undiscovered gas,' and narrated a search for an element with the atomic weight of 20, lying in the periodic system between helium and argon. Many 'triads' are found in the periodic system, with a difference in atomic weight of about 36 between the extremes, viz.: fluorin, chlorin, manganese, 19–55; oxygen, sulfur, chromium, 16–52; nitrogen, phosphorus, vanadium, 14–51.4, etc. If argon has an atomic weight of 40 and helium of 4 there might be expected a triad here, with a middle element of atomic weight about 20. Professor Ramsay and his assistant, Mr. Travers, made a diligent search for this element, which would, like argon and helium, probably be an indifferent gas. The gases from various minerals and mineral springs were carefully examined in vain. Helium was then fractioned by diffusion through porous plates. After 180 diffusions two fractions were obtained, the larger portion having a constant density of 1.98, that is pure helium, while the smaller portion had a variable density, and was finally proved to be helium with a small portion of argon. This search also proved fruitless. The non-existence of the gas is, however, not proven; helium itself in fergusonite, one of the minerals which yields it in reasonable quantity, is present only to the extent of 33 parts in 100,000, and if the new gas, as is by no means improbable, occurs far less abundantly than helium it will be a work of extreme difficulty to separate it from helium or argon.

IN the last *Chemical News*, G. G. Boucher describes a possible new element in cast-iron. He has found it to the extent of a few thousandths per cent. in the residues left after dissolving iron in sulfuric acid. The metal seems to possess some of the reactions of tungsten and of antimony, but has not yet been identified with any known element.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

MEETING OF THE TRUSTEES OF THE MARINE BIOLOGICAL LABORATORY.

A MEETING of the Trustees was held at Woods Holl, Mass., upon Friday, September 10th. Thirteen members of the Board were present, including the Director, Professor Whitman; Professor Clarke, of Williams; Professor Macfarlane, of Pennsylvania; Professor Osborn, of Columbia; Mr. E. G. Gardiner, of Boston; Professor Bumpus, of Brown; Professor Penhallow, of McGill; Professor Metcalf, of Baltimore; Professor Patten, of Dartmouth; Professor Conklin, of Pennsylvania; Professor Morgan, of Bryn Mawr; Professor Peck, of Williams; and Mr. C. G. Kidder, of New York. The first business was the election of a President in place of Professor Farlow, of Harvard, resigned, and Professor Osborn, of Columbia, was chosen by ballot. Mr. D. Blakeley Hoar, of Boston, was elected Treasurer in place of Mr. Laurence Minot, resigned, and a resolution was passed gratefully acknowledging Mr. Minot's long and generous services to the Laboratory during the past four years. Professor Bumpus, clerk of the corporation, was elected Secretary. According to the new By-Laws, the business of the Trustees will be largely transacted by an Executive Committee, which consists of the principal officers of the Association and three members at large. This Committee was constituted for the coming year as follows: at large, Messrs. Gardiner, Peck and Kidder; and *ex officio*, Messrs. Osborn, Whitman, Bumpus and Hoar. The powers of the Executive Committee were carefully defined and limited, and this Committee was instructed to keep formal record of all its business and report to the Trustees at each meeting. A very full report of the financial condition of the Laboratory was received from the retiring Treasurer, Mr. Laurence Minot, and presented, with an analysis of the receipts and expenditures of the last season, by Mr. Kidder. It was shown that the Laboratory is practically self-supporting, but that the interest and other general charges cause an annual deficiency, which must be met by special subscription. The report of the Director was deferred until the next meeting of the Board. Two important Committees were chosen,

namely, upon Collegiate Cooperation as follows: Professor Libbey, of Princeton, Chairman; Professors Whitman, Macfarlane, Penhallow, Gardiner, Mall and Osborn; also a Committee upon Admission to Membership in the corporation, Professor T. H. Morgan, of Bryn Mawr, Chairman; Dr. E. G. Conklin, Dr. J. P. McMurrich, Dr. W. F. Ganong, Dr. E. G. Gardiner and Miss Katharine Foot. It was decided to hold the next full meeting of the Board at Ithaca, during the meeting of the American Society of Naturalists in December, and to issue the annual report immediately thereafter.

THE JOHNS HOPKINS BIOLOGICAL STATION IN JAMAICA.

We have received from Mr. J. E. Duerdon, curator of the Jamaica Institute at Kingston, some notes regarding the researches undertaken this summer at the Marine Laboratory at Port Antonio under the charge of Professor J. E. Humphrey, whose sad death we were recently compelled to record. The party, twelve in number, secured two well-lighted rooms in the Titchfield Hotel of the Boston fruit company for a laboratory which afforded accommodation for eight tables, the necessary apparatus and reagents being brought from the University Laboratory. From the shallow waters around the harbor collections have been made in most of the various groups of animals, while the land has also been scoured for representatives of the fauna and flora. It was not found possible to carry on much dredging. In the facilities for collecting and in the richness of forms met with, the locality has been shown to surpass Port Henderson in many ways; though, owing to the continuous absence of a smooth sea about the margin of the coral reefs, Port Antonio compares unfavorably for reef work with the conditions to be met with, for some hours each morning, at the Port Royal Cays near Port Henderson.

Professor Humphrey was giving special attention to the shell-perforating algæ or sea-weeds and to the embryology of certain groups of the flowering plants, particularly among the latter to those of the pepper and ginger families. Dr. F. S. Conant continued investigations begun by him last summer upon the *Cubo-medusæ*, a rare group of jelly-fish of which two species have been found in extraordinary abundance in Jamaican waters. The chief object of investigation this season has been the function of the sensory organs of the jelly-fish, and material has been prepared with especial reference to a study of the changes, under the influence of light and darkness, in the pigment or coloring matter of the retina of the eyes. Dr. H. L. Clark has been engaged in a continuation of the work which he also began last summer on the Echinoderms (star-fish, sea-eggs, sand-dollars, sea-cucumbers, etc.), of the island, giving especial attention to the Holothurians or 'sea-cucumbers,' forms of life which are very abundant around Jamaica. Over fifty species of the group of the Echinoderms have now been collected by him and other workers, some of which are possibly new to science. Mr. Sudler has been studying the life history of *Lucifer*, one of the small crustaceæ; Mr. Greve, Ophiurius, or sea stars, and Mr. Berger, especially pseudo-scorpions. Collections have been made by Mr. A. Fredholm, of the Smithsonian Institution, Mr. Wilson and others. Mr. Duerdon was allowed the facilities of the laboratory and made a study of the Actiniaria.

THE CONFERENCE ON THE SEAL FISHERIES.

The British Foreign Office has issued a blue book of 130 pages containing the correspondence with the United States government respecting the seal fisheries in Behring Sea. Lord Salisbury, replying to Secretary Sherman's despatch of May 10th, sent a short note to Ambassador Hay on July 28th. We reproduce this note, as it shows that the conference in Washington is intended to be strictly scientific in character.

"I have to state that her Majesty's Government are willing to agree to a meeting of experts, nominated by Great Britain, Canada and the United States, in October next, when further investigations to be made on the islands during the present season will have been completed.

"The object of the meeting would be to arrive at correct conclusions respecting the numbers, condition and habits of the seals frequenting the Pribylov Islands at the present time, as compared with several seasons previous and subsequent to the Paris award.

"It seems to her Majesty's Government that Washington would be the most suitable place for such meeting.

"The other portions of Mr. Sherman's despatch, in so far as they require any reply from her Majesty's Government, have been answered by anticipation in despatches which I addressed to her Majesty's Ambassador at Washington on April 2 and May 7 last, and which have been communicated to the Government of the United States."

Russia and Japan have signified their intention of being represented at the conference on the invitation of the United States. The United States will be represented by ex-Secretary John W. Foster and ex-Assistant Secretary Charles S. Hamlin. It has been arranged that President Jordan, of Stanford University, and his assistants, as well as the British scientific experts, shall appear personally before the conference to give the results of their investigations.

GENERAL.

THE Tenth Annual Winter Meeting of the Geological Society of America will be held at McGill University, in the city of Montreal, on December, 29, 30, 31, 1897. Details of the meeting will be announced in a circular to be issued by the Secretary, Professor Herman LeRoy Fairchild, about November 1st.

THE Berlin Academy of Sciences has made an appropriation of 3,000 Marks to Professor B. Hagen, Frankfurt, for the publication of an anthropological atlas; one of 1,500 Marks to Professor Kohen, Greifswald, for mineralogical researches, and one of 800 Marks to Professor R. Bonnet, Greifswald, for anatomical researches.

THE Dutch Academy of Sciences at Harlem has proposed seventeen subjects for papers to be presented before the beginning of next year. A gold medal is offered in each subject, or, in its place, 500 florins, with an addition of a further 500 florins in special cases. The essays may be in English. The details may be secured from the Secretary of the Academy, Professor Bosscha, Harlem.

LORD KELVIN has returned to New York from the Pacific coast and is at present the guest of Mr. John Bottomley, at Southampton, L. I. He proposes to make another short visit to Canada, and after visiting Mr. Westinghouse at Lennox will return to Great Britain.

WE learn from *Natural Science* that Dr. Henry Woodward, keeper of the department of geology in the British Museum (Natural History), has been permitted by the Treasury to retain his office for another two years. According to the rules of retirement in the civil service, his term of service would have expired next November.

MR. PERCY EMARY has been elected Secretary of the Geologists' Association, of London.

MR. HENRY W. SAGE, President of the Board of Trustees, of Cornell University, died at Ithaca, on the night of September 17th, at the age of eight-three years. Mr. Sage had given more than one million dollars to Cornell University and had been a generous donor to other educational and public institutions.

WE regret to record the death, in Assam, on July 29th, of Samuel Edward Beal, at the age of sixty-two years. He had made contributions to a wide range of sciences, including geography, astronomy, philology and agriculture.

SIR EVERETT MILLAIS, the author of numerous publications on scientific dog-breeding, and at one time editor of the *Stockkeeper*, died at Shepperton, on Tuesday, 7th. Sir Everett introduced into England the Basset hounds whose pedigrees Dr. Galton recently used for his important study on heredity.

MR. R. T. GUNTHER has gone to Lake Urumiya, on the Persian frontier, with a view to studying the fauna of the lake.

THE extensive collections of fossils made by Mr. F. E. Gurley, Danville, Ill., formerly State Geologist, is offered for sale.

THERE has just been added to the Philadelphia Museums a laboratory of tests and technology for the examination and analysis of raw and manufactured products.

COL. YOUNG, United States Army, acting Superintendent of the Yellowstone Park, has made a report to the Secretary of the Interior, stating that black bears and coyotes have multiplied so rapidly in the Park as to become annoying, and recommends capturing some of the bears for zoological gardens and killing some of the coyotes. He states that some of the people

living near the Park object to the protection of wild animals in their vicinity.

Mr. J. G. Jack opened, on September 18th, a course of lectures at the Bussey Institution, Arnold Aboretum. The lectures are popular in character and are followed by field meetings in the Aboretum. Subsequent lectures will be given on the following subjects: September 22d, maples and cherries; September 29th, thorns, locusts and hollies; October 2d, ashes and sumachs; October 6th, walnuts and hickories; October 9th, cornels and viburnums; October 13th, elms; October 16th, oaks.

The September number of the *American Naturalist* is the first to be edited by Dr. Robert P. Bigelow, of Boston, assisted by an Editorial Board, the names of whose members are not given, and a number of associate editors. To these have been added since the last issue of the journal, Messrs. G. Baur, C. E. Beecher, D. H. Campbell, J. H. Comstock, W. M. Davis, D. S. Jordan, C. Palache, H. M. Richards, W. E. Ritter, F. Russell, W. Trelease, S. Watasé. The strong hand of Professor Cope will be greatly missed in the *Naturalist* as elsewhere, but the continued usefulness of the journal appears to be assured under its new management. There is undoubtedly room in America for a monthly journal devoted to the natural sciences, in addition to the special journals devoted to a single science. With the *American Journal of Science* occupied more especially with the physical and geological sciences, the *American Naturalist* for the natural sciences and special journals for each of the sciences, America is admirably provided with the means of publication so essential for the advancement of science.

We quoted recently an editorial article from the *Journal of Geology*, on the debasement of the Missouri Geological Survey. The current number of the *American Geologist* also contains an editorial on the subject, from which it appears that Governor Stevens appointed a board consisting of political workers of the lowest type, Professor E. M. Shepard, of Drury College, Springfield, the only scientific member of the board, having resigned, and that the State Geologist appointed by them has no scientific qualifications of any sort. The records and cabinets of the Survey, which have been accumulating for the past eight years, under the present law have been consigned to the attic of an old building; all field work has been abandoned and several pieces of work, almost ready for publication, have been thrown aside. The work of the Survey at present appears to consist of drawing the usual salaries from the State Treasury. We believe that public sentiment, when expressed, is sufficient to prevent the subversion of science and education to politics, but it is often difficult to secure the expression of this sentiment, especially in cases which appear to be local in character.

From the *Sydney Morning Herald*, *Natural Science* condenses the following information regarding the second expedition to make deep borings into the coral atoll of Funafuti, which set sail from Sydney on June 3rd: Toward the expense of the expedition, Miss Eadith Walker, of Yaralla, has contributed £500; the government of New South Wales has lent a diamond drill; the Hon. Ralph Abercromby has furnished an oil-engine at a cost of £100; the Hon. H. C. Dangar and Professor T. P. Anderson Stuart have provided a fine boat; the Royal Society, London, contributes £100 directly, and probably another £100 through its coral-boring committee; finally, the London Missionary Society has offered to bring the party back to Sydney in September. The expedition is under the auspices of the Royal Geographical Society of Australasia, and its leader is Professor T. W. E. David, of Sydney. He and Mr. G. Sweet, of Melbourne, are going at their own expense, and will take charge of the borings. Mrs. David accompanies them as store-keeper and botanical collector. Mr. W. Poole, an engineer of Sydney University, will manage the light boring apparatus, and will be aided by Mr. Woolnough, who also takes charge of the zoological collecting. These gentlemen give their services free. The large diamond drill is in charge of Mr. Hall, a foreman of considerable experience, who has under him two sub-foremen and three drill-workmen. In view of the difficulties already met with at Funafuti, a special boring plant has been provided under the direction of Chief-Inspector W. H. J. Slee, and weighs over 25 tons. The main bore, on the

central island of Funafuti, will be begun with a standpipe having an inside diameter of 6 inches, and the lining pipe at first is to be 5 inches inside diameter. If, at two or three hundred feet, the friction should become too great, 4-inch pipes will be lowered inside these. It is thought that the foundations of the atoll will be reached between 200 and 500 feet, but the apparatus taken permits of a depth of 1,000 feet being reached. The core obtained will be forwarded first to the Royal Society of London, which will return one-half to the Royal Geographical Society of Australasia. The expedition will also make smaller borings on the sand cay in the middle of the lagoon, will conduct dredging operations for Sydney University and the Australian Museum, and will collect samples of sea-water for Professor Liversidge to examine for gold.

THE Philadelphia Normal School has this year established a psychological laboratory equipped for studying the senses and mental processes. Ten years ago there were only two psychological laboratories in America; at present they form an integral part of nearly all our universities and larger colleges. Their extension to normal schools is a forward step of importance in educational methods.

PSYCHOLOGICAL laboratories will probably also be established soon in hospitals for the insane, in asylums for the defective classes and in prisons. A beginning has been made in several places, but the first well equipped laboratory is now being established in the Illinois Eastern Hospital, under the direction of Dr. William O. Krohn, lately professor of psychology in the University of Illinois. A laboratory of this character will be of great practical value to the patients in the asylum, and may also be expected to make valuable contributions to psychology. As an organ for the publication of its scientific work, the Illinois hospital is about to establish a laboratory bulletin, which will appear at least four times a year. Subscriptions, $2.00, may be sent to the Hospital at Hospital, Ill.

AMONG papers announced to be read at the next meeting of the Australasian Association for the Advancement of Science at Sydney next Christmas are the following: 'The Classification of Eucalypts,' by J. G. Luckman; 'A Statistical Account of Australian Fungi,' by D. M'Alpine; 'The Algæ of Victoria,' by H. T. Tisdell; 'Flowers of the Order Proteaceæ,' by J. Shirley; 'Underground Fungi of Tasmania,' by L. Rodway; 'Australian Oceanography,' by T. W. Fowler; 'On the Formation and Structure of Coral Reefs,' by J. J. Wild; 'The Dialectic Changes of the Indo-Polynesians,' by the Rev. S. Ella; 'The Oceanic Peoples,' by E. Tregair; 'The Ancient Geography of the Maoris' and the 'Geographical Knowledge of the Polynesians,' by S. Percy Smith; 'The Mythology of the Efotese,' by the Rev. Dr. Macdonald; 'Old Samoa' and 'Australian Cave Paintings,' by the Rev. J. B. Stair; 'The Pankuma Natives,' by the Rev. F. J. Paton; 'Notes from Ambrom,' by the Rev. Dr. Lamb; 'The Tongans' and 'The Tongan Language,' by the Rev. J. E. Moulton; 'Ancient Maori Rites and Customs,' by Mr. Elsdon Best; 'The Food of the Ancient Maoris,' by the Rev. J. G. Hammond; 'Anthropometric Data, taken from School Children at Randwick,' by Jas. A. Dick; 'The Characteristics of Australian and other Diamonds,' by E. W. Streeter. The sub-committee of the council appointed to consider the matter of excursions, entertainments, visits to works, etc., has not yet completed its arrangements, but a harbor excursion had been decided upon, and two popular lectures, with possibly a third one, for workingmen, also a concert, at the University, and a conversazione by the Royal Society.

AN International Congress against alcoholism met at Brussels from August 30th to September 3d. It was under the patronage of King Leopold, and was presided over by the Minister of Agriculture.

THE sixth session of the International Institute of Statistics was opened at St. Petersburg by the Grand Duke on August 30th, holding its sessions simultaneously with those of the International Geological Congress. Numerous papers were presented dealing with military anthropometry, criminal statistics, the production of the precious metals, agricultural products, etc. Dr. Körösey, director of the statis-

tical bureau at Buda-Pesth, presented a plan for a simultaneous census of the population of the world in 1900.

THE steamship *Hope*, with Lieutenant Peary and the several scientific parties who accompanied him, arrived at Sydney, C. B., on September 20th. Lieutenant Peary has secured the large Cape York Meteorite destined for the American Museum of Natural History.

A PROPOSITION has been made for the establishment of an agricultural experiment station in Madagascar for the introduction of foreign plans of economic value and the study of those native to the island.

IT is stated in *Nature* that Mr. C. Michie-Smith, the Government Astronomer at Madras, in his reports for the year ending March 31st, says that, as regards the staff, the government has sanctioned the revival of the appointment of a chief assistant. The past year has been conspicuous by the great amount of heavy rain, and both the director's and assistants' houses have suffered considerably. Observations for time have, as usual, been carried on, and the investigation for the determination of the divisions error of the Meridian Circle has been completed, no less than 72,192 micrometer readings being employed. The Madras Catalogue has further advanced, and the mean places for the first sixteen hours have been deduced. Proposals have been sanctioned for observing the total eclipse of the sun next January, and Karad has been fixed upon as the most suitable station.

IN an address on 'Medical Botany,' presented before the Section of Materia Medica, at the recent meeting of the American Medical Association, and printed in the Journal of the Association, Professor Trelease states that while botany is still taught, to a certain extent, in medical colleges and schools of pharmacy, an analysis of the appropriateness of this study in the curriculum of either school has led him to the conclusion that for the physician it is to be regarded as an accomplishment rather than a necessity, inasmuch as in the medical practice of to-day prepared drugs and fluid extracts are prescribed, rather than the crude material, which in any event rarely comes under the physician's own observation, his knowledge dealing with the physiological rather than the physical properties of the remedial agents employed by him. While the pharmacist still has some occasion for discriminating between crude drugs, Professor Trelease concludes that even for him the botanical knowledge required is rather that of pharmacognosy than of botany in the ordinary sense; and the opinion is expressed that a knowledge of medical botany, in the old sense, is to-day essential rather to the expert of the manufacturing house than to either the physician or the pharmacist. Attention, however, is called to that branch of medical botany which has recently come into nearly all of the better equipped medical schools, dealing with the bacteria of disease, although even here it is argued that the study is rather for the expert than for the everyday practicing physician.

THE committee of the British Association appointed to report on the elucidation of the life conditions of the oyster under normal and abnormal environment, including the effect of sewage matters and pathogenic organisms, presented at Toronto a report on the green disease, drawn up by Professor Herdman and Professor Boyce. They conclude by stating that there can by no doubt that Ryder, in America, about 1880, investigated the same kind of green oyster with which they are dealing. He showed that the green coloring matter was taken up by the amœboid blood-cells, and that these wandering cells containing the pigment were to be found in the heart, in some of the blood-vessels and in aggregations in 'cysts' under the surface epithelium of the body. He describes the color (in the ventricle) as a 'delicate pea-green,' and states that it is not chlorophyll nor diatomine; he suggests that it may be phycocyanin or some allied substance. The committee have now shown that it is due to a copper compound, and consider that Ryder came nearer to what they now consider to be the truth than any previous investigator has done. He was trying to show that the color was derived from the food. Carazzi has recently suggested that the color (this, it must be remembered, is in the Marennes oyster), due to iron, is derived from the bottom on which the oyster is lying. The committee have tried numerous experiments in feeding oysters on iron and

copper salts, both soluble and insoluble, of various strengths, and also in keeping oysters on a bottom of iron or copper salts —including rusty iron, old copper and copper fillings—but in none of these experiments (the full details of which will be published later) have they got sufficiently consistent and continuous results to enable them to determine whether or not the animal obtains its copper from the contents of the alimentary canal or from the water through the surface of the body. These experiments and observations are still being carried on. They add that the green oysters containing copper are found in some localities where there can be no question of copper mines or old copper from ships' bottoms, and suggest that the pigmentation may be due to a disturbed metabolism whereby the normal copper of the body becomes stored up in certain cells.

UNIVERSITY AND EDUCATIONAL NEWS.

IT will be possible for Columbia University to open its academic year at its new site on November 4th, though there may be some delay in certain of the laboratory courses. It is noteworthy that of the six buildings now erected, two are for general university purposes, a library and university hall (which at present contains only the powerhouse and gymnasium), while the four other buildings are for the sciences, Schermerhorn Hall for the natural sciences, Havermeyer Hall for chemistry, and halls for physics and engineering. These buildings for the sciences have been erected at a cost of over $1,200,000, and demonstrate the importance of the place now occupied by science in a modern university.

AT the opening exercises of Dartmouth College, President Tucker stated that the plans are well formulated for the proposed new physical laboratory, the result of the $75,000 bequest of the late Charles T. Wilder, of Lebanon, N. H. The committee has set apart $50,000 for its erection and $20,000 for maintenance. Additional appropriations have been made for an observatory, foundations for which will be laid at once.

OF the colleges that opened last week, Dartmouth, Lafayette and Dickinson report increases in the entering classes, which are 185, 106 and 60 respectively. The classes at Union and Beloit are smaller than usual.

THE Hon. William L. Wilson, formerly member of Congress and Postmaster-General, was inaugurated as President of Washington and Lee University, Lexington, Va., on September 15th. Addresses were made by President Gilman, Johns Hopkins University; Chancellor Kirkland, Vanderbilt University, and Professor Cameron, in the place of President Patton, Princeton University. President Wilson made an inaugural address.

THE Rev. James G. K. McClure, a Presbyterian clergyman, has been elected President of Lake Forest University.

AT Union College Mr. Frank S. Thompson, A.B. (Princeton), has been appointed assistant in physics, and Dr. A. A. Tylor, A.B. (Lafayette) and Ph.D. (Columbia), instructor in biology.

DR. W. E. THOMSON has been appointed professor of physiology at Anderson's College, Glasgow.

PROFESSOR CARL FRIEDHEIM, of Berlin, has been appointed professor of inorganic chemistry in the University at Bern, and Dr. Rodet professor of bacteriology at the University at Lyons.

DISCUSSION AND CORRESPONDENCE.

TYPES IN NATURAL HISTORY AND NOMENCLATURE OF RODENTS.

TO THE EDITOR OF SCIENCE: Three communications have recently appeared in SCIENCE, directly or indirectly relating to work of my own, and I would ask your permission to say a few words concerning them.

The first two are Mr. Charles Schuchert's paper on 'Types in Natural History*, and Dr. Merriam's† critique on it, and it is to the latter I would first refer.

With characteristic emphasis Dr. Merriam scorns Mr. Schuchert's suggestions for further names to represent different classes of types, and incidentally speaks of 'several obsolete

*SCIENCE, V., p. 636, April 23, 1897.

†SCIENCE, V., p. 731, May 7, 1897.