the main chain, besides yielding valuable information as to the topography and glaciation of the region. In 1887 and 1889 Mr. Freshfield undertook further journeys to the Caucasus, which added very largely to accurate knowledge of the central group, to the physical geography of the main chain, and to the correct delineation of the higher region, which previously had been but imperfectly mapped. A journey from the headwaters of the Ingur through Abkhasia to Sukhum Kaleh also deserves mention. The two volumes in which Mr. Freshfield has published an account of these travels, 'Central Caucasus and Bashan,' 1869, and 'Exploration of the Caucasus,' 1896, are standard works on the region with which they deal, and contain excellent maps, the fine map of the Caucasus, embodying much new work, being especially noteworthy. In 1899 Mr. Freshfield broke new ground, carrying out an expedition into Sikhim and Nepal, where he made the circuit of Kanchinjunga at a high level, one of the passes being of the height of 20,000 feet. This journey, though interfered with by an exceptional snowfall, yielded valuable results as regards the glaciation and the physical geography of the district.

The recipient of the other royal medal, which is bestowed annually by the patron, is Captain Otto Sverdrup, the leader of the admirably organized and conducted expedition in the *Fram,* extending over a period of four years, which has done so much to complete our knowledge of the geography of the Arctic regions. The expedition was the first to penetrate through Jones Sound to the Arctic seas beyond. It explored the western shores of Ellesmere Land, defining the main outlines of its intricate system of fiords and reaching from the south to a point within sixty miles of that reached by Aldrich on his journey round the north coast. To the west of Ellesmere Land three large islands were discovered, extending west to about 106° west longitude; this discovery confirmed the conjecture that land existed to the north of the Parry Islands. Of the Parry Islands the north shores of Findlay's Island and North Devon were explored for the first time. It will be remembered that Captain Sverdrup was captain of the *Fram* during Dr. Nansen's great expedition, and assumed command when Nansen left the ship. He safely worked the *Fram* clear from the ice, after attaining a latitude of 86° north.

The Victoria medal for geographical research had already been awarded as a special medal to Dr. Sven Hedin.

The minor awards of the society have been bestowed by the council as follows: (1) The Murchison grant is awarded to Mr. Isaachsen, a lieutenant in the Norwegian army, who accompanied Captain Sverdrup on his last expedition. He assisted with the astronomical and magnetic observations, and had charge of the cartographical work. He was Captain Sverdrup's right-hand man, and did a great amount of exploring work. He it was who discovered the two most westerly of the three islands the existence of which the expedition made known for the first time. (2) The Gill memorial goes to Mr. Ellsworth Huntington, an American traveler, who carried out a remarkable journey through the Great Cañon of the Euphrates River, during which he made valuable observations in physical geography. (3) The Back grant is bestowed on Dr. W. G. Smith, of Yorkshire College, Leeds, for his investigations into the geographical distribution of vegetation in Yorkshire, embodied in maps and a paper which will shortly be published. (4) The Peek grant is received by Major Burdon, whose name has been mentioned as the probable first resident at Sokoto, in the Northern Nigerian Protectorate. He has presented to the society a number of excellent route maps which he has compiled as the result of his journeys in northern Nigeria.

SCIENTIFIC NOTES AND NEWS.

The spring meeting of the council of the American Association for the Advancement of Science will be held in the Cosmos Club, Washington, D. C., on Thursday, April 23, 1903, at 4:30 P.M.

The annual stated session of the National Academy of Sciences begins at Washington on Tuesday, April 21.

THE Laboratory of the United States Fish Commission at Woods Hole, Mass., will be opened on June 15 for the nineteenth season of its existence. The privileges of the laboratory, including the services of the staff of collectors and use of the commission's fleet of vessels, are as usual extended free of charge to those competent to carry on research in marine biology. Applications for tables should be sent to the director of the laboratory, Dr. F. B. Sumner, 17 Lexington Ave., New York City.

MR. OTTO H. TITTMANN, superintendent of the U. S. Coast and Geodetic Survey, has been appointed commissioner for the United States to mark the boundary line between this country and Canada.

THE subject of the Silliman lectures to be given at Yale University by Professor J. J. Thomson, of Cambridge University, will be 'The Present Development of Our Ideas of Electricity.' The lectures, eight in number, will begin May 14.

THE Prince and Princess of Wales, will receive the honorary degrees of Doctor of Laws and Doctor of Music respectively from the University of London on Wednesday evening, June 24.

THE British Academy has elected new fellows increasing the membership from forty-eight to seventy. Among those elected were Professor F. Y. Edgeworth, professor of political economy, Oxford University; Professor B. Bosanquet, professor of moral philosophy, St. Andrew's University; and Dr. G. F. Stout, Wilde reader in mental philosophy, at Oxford University.

DR. FREDERICK C. NEWCOMBE, professor of botany at the University of Michigan, has been elected president of the Michigan Academy of Science.

PROFESSOR W. S. JACKMAN, of the University of Chicago, has been elected president of the Natonal Society for the Scientific Study of Education.

THE Hon. Andrew D. White, recently ambassador to Germany and formerly president of Cornell University, will return to the United States in June and will spend the summer at Ithaca.

DR. WALDEMAR KOCH, assistant in pharmacology, at the University of Chicago, leaves, at the end of the quarter, for six months' work in Schmiedeberg's laboratory in Strassburg. Dr. Koch will also visit the leading physiological and pharmacological laboratories in Europe, including Pawlow's in St. Petersburg.

DR. K. A. EWALD, professor of medicine in the University of Berlin, expects to visit the United States in May.

PROFESSOR H. L. BOLLEY, botanist of the North Dakota Agricultural College and Experiment Station has been appointed special agent for the investigation of the flax crop and flax diseases in Europe. Mr. Bolley will sail the first of June, spend some time in the Netherlands and then proceed to eastern Russia, where an extensive study will be made upon the Russian crop, with a view to procuring types of seed which will be valuable for use in this country. Professor Bolley has lately made some very interesting discoveries concerning the cause of flax-sick soil. He seems to have shown that the reason flax can not be grown continuously on the same ground is due to the presence of a wilt disease caused by a species of Fusarium.

MR. ELLSWORTH HUNTINGTON has lately been appointed research assistant by the Carnegie Institution and will go with Professor Davis to join Professor Pumpelly in Turkestan. Mr. Huntington graduated at Beloit College, Wisconsin, in 1897; he then spent four years as science teacher in Euphrates College, Harput, Turkey, and while there made an adventurous journey through the cañons of the Euphrates, for which he has lately received the Gill memorial from the Royal Geographical Society of London. For the past two years he has been attending the Graduate School of Harvard University, and last summer he was one of Professor Davis's party in Utah and Arizona.

DR. HERBERT S. JENNINGS, assistant professor of zoology at the University of Mich-

igan, has been awarded a grant of $250 by Carnegie Institution.

Mr. Albert P. Morse, curator of the Zoological Museum of Wellesley College, has been appointed a research assistant in the Carnegie Institution. Mr. Morse will undertake a systematic and biological study of the North American *Acrididæ* with especial reference to geographical distribution, dispersal and variation; and will probably spend July and August in field work in the southeastern states.

The New York *Times* states that the administrative board appointed to organize and conduct the international congresses to be held in connection with the World's Fair in St. Louis in 1904, met on March 11 at the eastern offices of the exhibition. There were present President Butler, of Columbia University, chairman; President Harper, University of Chicago; President Jesse, University of Missouri; Dr. Herbert Putnam, Librarian of Congress, and Frederick W. Holls, member of The Hague Tribunal. The board met to consider the report of the committee on the Congress of Arts and Science, which had been in session the two preceding days. The members of the committee met with the board. They are: Professor Simon Newcomb, Washington; Professor Hugo Münsterberg, Harvard University, and Professor Albion W. Small, University of Chicago. Mr. Howard J. Rogers, director of congresses, was also present. There is to be a 'Congress of Arts and Science,' with 128 sections. The board adjourned to meet in St. Louis on April 29.

The Swedish government has appropriated $20,000 for the publication of the scientific results of Dr. Sven Hedin's journey through central Asia. The work will comprise an atlas of two large volumes, while a third volume will contain Dr. Hedin's report on the geography of the country. Further volumes will be devoted to the meteorological observations, the astronomical observations, the geological, botanical and zoological collections, and the Chinese manuscripts and inscriptions. The work will be published in the English language.

Dr. William T. Harris, U. S. Commissioner of Education, will deliver an address on April 25 at the School of Pedagogy, New York University, on 'Education in the United States.' The meeting has been arranged as a memorial to Dean Edward R. Shaw, and a portrait of Dr. Shaw will be presented by the students to the university.

Professor Henry Barker Hill, director of the Chemical Laboratory of Harvard College, died on April 6 in his fifty-fourth year.

Rear-Admiral George E. Belknap, retired, who in addition to eminent services in the navy was in charge of important hydrographic work and was at one time superintendent of the Naval Observatory, died on April 7, at the age of seventy-one years.

Dr. Laborde, an eminent French physician and a member of the Academy of Medicine, died on April 7.

The death is announced of Professor J. G. Wiborgh, of the Stockholm School of Mines, at the age of sixty-four. He was the leading authority on the metallurgy of iron in Sweden and the author of numerous works on the subject.

The daily papers state that the headquarters of the Carnegie Institution, Washington, are about to be removed from the private house at the corner of K and Fifteenth Streets, to a suite of offices in the Bond Building, at the corner of New York Avenue and Fourteenth Street.

A conference to consider the founding of a national seismic association will be held at Strasburg at the end of July.

Four thousand Spanish physicians and fifteen hundred foreigners have already registered for the International Congress of Medicine to be held at Madrid at the end of the present month.

We learn from *Nature* that the officials of the Sanitary Deparment of the Egyptian Government, into whose hands the expenditure of the recent gift of 40,000*l.* entrusted to Lord Cromer and his successors in office by Sir Ernest Cassel for the relief of ophthalmia and eye diseases has virtually passed, have decided

to employ it in establishing a 'traveling dispensary' in the form of a tent, to suffice for all purposes of operation and treatment, and to work solely in the provinces.

THE annual meeting of the general board of the National Physical Laboratory of Great Britain was held on March 20, Lord Rayleigh, the chairman of the board, presiding. According to a notice in the London *Times* the annual report of the executive committee, giving details of the work since the opening of the laboratory, was approved. It appears from the report that subscriptions and donations amounting to nearly £1,000 a year have been promised by the Institution of Civil Engineers, the Iron and Steel Institute, the Institute of Chemical Industry, and various private firms. Efforts are being made to extend the list and more especially to render the laboratory self-supporting by increasing the work done for firms and private individuals. Examples of such work are given in the report and in a lecture to the Students' Association of Mechanical Engineers recently delivered at the Institution of Mechanical Engineers by the director and now being published in *Engineering*. The scheme of work suggested by the director for 1903 was also approved. After the meeting an inspection of the laboratory took place, and in this the board were accompanied by a number of gentlemen who have assisted the laboratory by serving on its various committees, or as donors of apparatus.

CABLEGRAMS are no longer sent giving reports of the plague in India, and the subject has been practically forgotten by the general public. For the last week, however, for which reports are at hand, the deaths numbered 28,860, much more than at any corresponding period of the year since the original outbreak of the plague in 1896.

THE 'Annual Report of the Field Operations of the Bureau of Soils' for 1902, containing the results of the soil survey work of the bureau for the calendar year, has just been completed and is now in press. It will not, however, be available for distribution before October next, owing to the length of time necessary to lithograph the accompanying maps. It will be issued in two parts, one containing 44 lithograph soil maps drawn on a scale of one mile to the inch, covering each of the areas surveyed, indicating in colors the location and extent of the various soil types, and in addition, in western areas, the presence and amount of alkali existing. The other part, embracing about 800 pages, illustrated, contains the reports of assistants in charge of surveys. These reports treat each area in detail, and contain valuable data relating to the location and boundaries of the areas, history of settlement and agricultural development, climatic conditions, physiography and geology, descriptions of soil types with origin and process of formation, crops grown and yields, crops to which soils are especially adapted, special soil problems, irrigation and drainage, alkali conditions, agricultural methods in use, cultivation, cropping, and general agricultural and economic conditions. Fifteen soil parties were maintained in the field during the year, and there was surveyed and mapped 17,911 square miles, or 11,463,040 acres, covering thirty-two areas in twenty-five states and territories and in Porto Rico. The area previously surveyed by the bureau was 15,871 square miles, making a total to date of 33,782 square miles, or 21,620,480 acres. The total cost of the work, including transportation, salaries, subsistence, supplies, inspection, preparation of reports, etc., amounts to an average of $2.88 per square mile, or about thirty-three cents per one hundred acres. During the current year the number of soil survey parties has been increased to twenty, which it is expected will make surveys of about fifty areas in thirty-two states and territories.

THE London *Times* states that a new association to be called the Ulster Fisheries and Biology Association has been formed in Ireland. The object of the new association is to investigate the flora and fauna of the shores and fresh water loughs of Ulster, with special reference to the fisheries. At a meeting held at the museum, Lord Shaftesbury, who presided, said the association had in view

the organizing and equipment of a marine laboratory for the purpose of carrying out investigations and researches. It was hoped that the work of the new organization would assist to develop the fishing industry. He was glad to say that the Department of Agriculture and Technical Instruction had been approached and had decided to help them. That, he thought, was sufficient to indicate that the new association had useful work before it. Mr. H. H. Smiley, who has subscribed £200 towards the funds of the association, was elected first president. It is proposed to start operations at Larne Harbor, where there will be a small marine laboratory. A naturalist has been appointed, who will furnish reports from time to time in the physical and chemical characteristics of the sea water and make other observations.

Recently the President asked the Commissioner of Fish and Fisheries to have made a comprehensive and thorough investigation of the salmon fisheries of Alaska, and for this purpose Commissioner Bowers has appointed a special Alaska Salmon Commission consisting of the following: President David Starr Jordan, of Stanford University, executive head; Dr. Barton Warren Evermann, ichthyologist of the U. S. Fish Commission; Lieutenant Franklin Swift, U. S. N., commanding officer of the *Albatross;* Cloudsley Rutter, naturalist of the *Albatross;* A. B. Alexander, fishery expert of the *Albatross;* and J. Nelson Wisner, superintendent of fish cultural stations of the U. S. Fish Commission. The steamer *Albatross* has been detailed to this work and will go north early in June. The Alaska salmon fisheries are of very great importance, the output of the canneries last year amounting to 2,631,230 cases (of 48 pounds each) valued at $8,667,673. To secure this pack more than 36,000,000 salmon were utilized. It is doubtful if the waters of Alaska can long withstand such an enormous drain as this, and it is for the purpose of securing information upon such questions as this that the investigations will be made.

The Baltimore *Sun* gives details of the expedition to be sent by the Geographical Society of Baltimore to the Bahama Islands, according to which the staff will number fifty persons, and will leave Baltimore early in June in a specially chartered vessel, fully equipped to serve as the home and laboratory of the party during its absence on the trip. The scientific staff will be divided into departments for the study of insular geology, botany, zoology, medical and hygienic conditions, climatology, physics, commercial geography and history. Dr. George B. Shattuck, who was asked by the directors of the society to organize the expedition, will have charge of the geological work. He will have three assistants. Dr. W. C. Coker, professor of biology in the University of North Carolina, will direct the work in botany. Dr. Barton Blow, curator of fish in the National Museum, will investigate the fish of the seas around the islands. Mr. O. C. Glaser, of the Hopkins department of biology, will study the mollusks and Mr. R. P. Cowles, fellow in biology, the cardita of the island. Dr. O. L. Fassig, of the Baltimore office of the United States Weather Bureau, will superintend the work in climatology. A person not yet named will direct the survey of the commercial possibilities of the islands. Mr. J. M. Wright of the Hopkins historical department will have access to the records of the islands, and will prepare a monographic history of them. Mr. A. H. Baldwin, a Washington artist, will be the official illustrator. To Dr. C. A. Penrose will be given the position of director of the medical staff. This department will look into the sanitary conditions of the islands and will notice the effect of the climate on Americans.

The British Medical Journal summarizes the vital statistics for the year 1902 of the seventy-six large towns dealt with in the Registrar-General's weekly returns. The 452,909 births registered in these towns during last year were equal to an annual rate of 30.0 per 1,000 of their aggregate population, estimated at 14,862,880 persons in the middle of the year. In London the birth-rate was equal to 28.5 per 1,000, while it averaged 31.1 per 1,000 in the seventy-five large provincial towns. The lowest birth-rates in these towns

were 17.1 in Bournemouth, 18.2 in Hastings, 20.8 in Hornsey and in Bury, 21.3 in Halifax, 23.0 in Bradford, and 24.0 in Rochdale; the highest rates were 36.4 in East Ham, 36.5 in South Shields, 36.7 in Gateshead, 37.5 in St. Helens, 37.9 in Wigan, 39.4 in Merthyr Tydfil, and 41.5 in Rhondda. During the period under notice 263,091 deaths were registered in these seventy-six towns, corresponding to an annual rate of 17.4 per 1,000 living. In London the rate of mortality was 17.7 per 1,000, while it averaged 17.6 in the seventy-five other large towns, among which the rates ranged from 8.6 in Hornsey, 10.9 in Hansworth, 11.5 in Walthamstow, 11.6 in King's Norton, 11.9 in East Ham and in Leyton, and 12.4 in Bournemouth to 20.0 in Hanley, in St. Helens and in Manchester, 20.2 in Middlesbrough, 20.6 in Wigan, 22.5 in Liverpool, and 23.1 in Merthyr Tydfil. The 263,091 deaths from all causes registered in these seventy-six towns last year included 32,021 which were referred to the principal infectious diseases; of these, 1,764 resulted from small-pox, 7,441 from measles, 2,870 from scarlet fever, 3,924 from diphtheria, 5,578 from whooping-cough, 2,336 from 'fever' (principally enteric), and 8,108 from diarrhea. The death-rate from these diseases averaged 2.12 per 1,000 in the seventy-six large towns.

THE efforts of the hydrographic branch of the United States Geological Survey are being directed to the discovery of sufficient water to lead to the reclamation and habitation of that area of the Great Plains lying west of the prairies and east of the Rocky Mountains, commonly known as the High Plains. The section is admirably suited to agriculture and grazing except for its inadequate water supply, which is so uncertain that great areas of fertile land lie quite uninhabited. This is especially true of the regions lying between the river valleys which cross it at wide intervals. These broad intervalley plateaus are practically waterless, but it has been discovered that water may be had from underground sources by wells and windmills, and it has been demonstrated that, while the region may not be largely reclaimable by irrigation, it may be successfully used for grazing by creating stock-watering points at comparatively close intervals. It will, however, be difficult, if not impossible, for the grazers to raise anything besides fodder cane of the drought-resisting varieties, such as Kaffir corn. Vegetables and other products will, for the most part, probably have to be grown elsewhere. The river valleys, on the other hand, seem destined to be extensively cultivated by irrigation, the water for which will be pumped from the gravels of the river beds, where an underflow has been known to continue in the summer season after the rivers themselves have ceased to run. These areas will furnish garden produce for the ranches on the plateau, and in this manner make the region as a whole habitable. The details of this investigation, with exhaustive studies of the nature of the underground waters of the High Plains, appear in the Twenty-first and Twenty-second Annual Reports of the United States Geological Survey, the latter of which is now in press and will soon be issued.

UNIVERSITY AND EDUCATIONAL NEWS.

ON April 1 Governor Peabody signed a bill giving to the University of Colorado two fifths of a mill annually on the taxable property of the state. This assures an income for the present of $140,000 per annum, with an automatic increase depending on the growth in wealth of the state. The university has now enrolled about 550 students.

MR. ANDREW CARNEGIE has offered to pay the expenses of the students of Cornell University, who suffered from typhoid fever during the recent epidemic at Ithaca.

MRS. VAIL, wife of Professor Vail, has given Hobart College $5,000 to establish a fund to be known as the Charles Delamater Vail library fund.

THREE scholarships of $200, $150 and $125 are announced for the Harvard summer geological course in Colorado under Mr. C. H. White. These scholarships are open to general application from teachers and students of geology, whether now enrolled at Harvard University or not. Applications should be addressed to Mr. White, at the Rotch Build-