already covered by its own, such a supply is hardly likely to be of much service: we may therefore say that the arrangements favor self-fertilization.

Philosophical society, Washington.

May 24. — Mr. H. H. Bates read a paper on the physical basis of phenomena. —— Professor Thomas Robinson spoke of the strata and timbering of the east shaft of the water-works extension. As an incident to the engineering-works for the increase of the water-supply of Washington, a shaft has been sunk through the superficial deposits in the vicinity of Howard university. Professor Robinson presented a complete record of the formations pierced by the shaft, and discussed, also, the peculiar method of timbering.

June 7. — Mr. G. K. Gilbert presented a plan for the subject-bibliography of North-American geologic literature; and Major J. W. Powell presented a slightly different plan for the same purpose. These plans proposed to establish at the outset a limited number of divisions of the subject-matter of the literature, and to simultaneously prepare a bibliography of each, the total number of bibliographies being about seventy-five. A long discussion ensued, in the course of which the plans were vigorously criticised by Dr. Billings, who maintained that any classification would be found to require continual modification, and would be ultimately unsatisfactory. He advocated the adoption of the subject-index method, and the accumulation of a large body of references before classification was attempted.

NOTES AND NEWS.

WE have much pleasure in presenting the readers of *Science* with a few facts relating to some of the more prominent members of the British association, who are expected to be present at the Montreal meeting.

The permanent general secretaries (honorary) are Capt. Douglas Galton and Mr. A. G. Vernon Harcourt. The former has held office for many years; and, in addition to a wide scientific culture, possesses a special knowledge of every thing relating to sanitary science, and hence has been much engaged in promoting the International health exhibition. He is a cousin of Mr. Francis Galton. Mr. Harcourt is a near relative of the home secretary of state, and is professor of chemistry at Christchurch college, Oxford. He has devoted special attention to the chemistry of gas-lighting. The secretary, and general executive officer of the association, is Prof. T. G. Bonney, who is now president of the Geological society of London. For many years he was fellow and tutor of St. John's college, Cambridge, but at present fills the chair of geology, etc., at University college, London. He is distinguished rather as a petrologist and mineralogist than as a paleontologist. The treasurer, Prof. A. W. Williamson, the distinguished chemist, is unable to attend this meeting; but his functions will be discharged by Professor Burdon Sanderson, Waynflete professor of physiology at Oxford, and one of the scientific advisers of the government. The president of the association for this year is the Right Hon. Lord Rayleigh, an account of whose life is given on another page.

Among the twelve vice-presidents are the Right Hon. Sir Lyon Playfair, Sir J. D. Hooker, and Prof. E. Frankland. Sir L. Playfair has been nominated as the president of the association for the Aberdeen meeting in 1885. Born in 1819, he very early took great interest in chemistry, and in 1858 was elected professor thereof in the University of Edinburgh, which he now represents in parliament. He rendered great services as special commissioner in charge of juries at the International exhibitions of 1851 and 1862. In 1873–74 he was postmaster-general, and from 1880 to 1883 was deputy-speaker of the house of commons, and chairman of committee of ways and means. A great authority on all educational questions, he is one of the very few members of parliament who are eminent in science. Sir J. Hooker, the director of Kew gardens, so famous for his investigations of the laws which govern plant-distribution, was president of the Royal society from 1873 to 1878, and of this association in 1868. In 1877 he accompanied the U.S. survey parties in Utah and Colorado. Dr. Frankland, born in 1825, was president of the Chemical society in 1871, and for many years has been connected with the government teaching of chemistry, his present office being that of professor of chemistry in the Normal school of science, South Kensington. Much of his work has been in connection with the Rivers' pollution commission.

Coming now to the presidents of sections, mathematics and physics (section A) will be under the guidance of Sir W. Thomson, who has been professor of mathematics in the University of Glasgow since 1846, at which time he was twenty-two years of age. His famous researches in thermo-dynamics and in magnetism, and his practical work in submarine telegraphy, scarcely need a reference here. He was knighted in 1866, on the successful completion of the Atlantic cable, and was president of the association in 1871. Chemistry (section B) will be presided over by Prof. H. E. Roscoe, who, since 1858, has been professor of chemistry in Owens college, Manchester. He is president of the Literary and philosophical society of Manchester, and vice-chancellor of the new Victoria university. He is also one of the Royal commission on technical instruction, and will be knighted for his services in that capacity. He was president of the Chemical society in 1880, and the first president of the new Society of chemical industry in 1881. Geology (section C) will have for its president Mr. W. T. Blanford, the secretary of the Geological society of London. Section D (biology) will be guided by Prof. H. N. Moseley, who made his scientific reputation as one of the naturalists of the Challenger deep-sea surveying expedition, and eventually succeeded Professor Rolleston in his chair at the University of Oxford. Gen. Sir Henry Lefroy, a distinguished scientific officer of the Royal artillery, will preside over section E (geography). He has recently pub-

lished a valuable contribution to terrestrial magnetism. Section F (economic science and statistics) will be presided over by Sir Richard Temple, who was superintendent of relief operations for the Bengal famine in 1874, and governor of the Bombay presidency from 1877 to 1880. The president of section G (engineering) will be Sir Frederick Bramwell, brother of Baron Bramwell, the distinguished judge. He is a member of the heavy ordnance committee, and is constantly consulted by the government on engineering questions. At this meeting, the science of anthropology, instead of being, as heretofore, a sub-section of D (biology), will be raised to the dignity of a section by itself; and over section H, Dr. E. B. Tylor, the famous anthropologist, will preside. Born in 1832, he has devoted his life to the study of the races of mankind, their history, languages, and civilization. He is president of the Anthropological society, and keeper of the Oxford university museum, succeeding there Prof. H. J. Smith, whose chair of mathematics has just been filled by Professor Sylvester.

Two evening lectures to the whole association will be given on Friday, Aug. 29, and Monday, Sept. 1, by Prof. O. J. Lodge and Rev. W. H. Dallinger. Dr. Lodge is professor of physics at University college, Liverpool, and is one of the most rising physicists of the day. The subject of his discourse is 'Dust,' to which he has devoted much attention of late. Rev. W. H. Dallinger is principal of the Wesley college, Sheffield, and one of the lecturers for the Gilchrist educational trust. His subject, on this occasion, is "The modern microscope in relation to the least and lowest forms of life," his researches on which, in connection with Dr. Drysdale of Liverpool, required enormous patience and perseverance to carry to a successful issue.

Within the limits of space allotted for this purpose, a few more names of those who are expected to be present, and to take part in the meeting, may be mentioned in alphabetical order: Prof. J. C. Adams, the Lowndean professor of astronomy in the University of Cambridge, widely known as the discoverer of the planet Neptune, from calculations of disturbances in the orbits of the other planets; Professor James Dewar, Jacksonian professor of natural and experimental philosophy at Cambridge, and Fullerian professor of chemistry at the Royal institution, London (the appointment held by Faraday), whose *collaborateurs* are Professors Liveing and McKendrick; Sir F. Evans, who succeeded Admiral Richards as the hydrographer to the British admiralty; Mr. James Glaisher, the veteran aeronaut and meteorologist, who in 1865 succeeded Admiral Fitzroy in the meteorological department of the board of trade; Professor Leone Levi, born in Italy, naturalized in England in 1847, who was the main promoter of the first (Liverpool) chamber of commerce in Britain, founded in 1849 — he is a great authority on international and commercial law; Dr. W. H. Perkin, president of the Chemical society of London, and also of the Society of chemical industry, who was the founder of the aniline-dye industry, and is now engaged in magneto-optical researches; Rev. S. J. Perry, director of Stonyhurst observatory since 1860, chief of the Kerguelen Island transit of Venus expedition of 1874, and of the Madagascar similar expedition of 1882; Prof. W. Chandler Roberts, chemist to the mint, and professor of metallurgy, etc., at the normal school of science, succeeding Dr. Percy — his researches on the physical properties of alloys are well known; Dr. P. L. Sclater, one of the secretaries of this association from 1877 to 1882, who since 1859 has been secretary of the Zoölogical society of London — he is specially known as an ornithologist; and Mr. Walter Weldon, who occupies a distinguished place among those who have striven to apply pure science to manufacturing problems, chiefly connected with the soda industry, with which, probably, no man is better acquainted — he preceded Dr. Perkin as president of the Society of chemical industry.

— A number of papers and abstracts have already been received for the mechanical section (D) of the American association; and a sufficient number, in addition, are expected from prominent gentlemen, to make sure that the sessions will be of unusual interest. In addition to the address of President R. H. Thurston, two papers have been promised by Prof. William A. Rodgers of Cambridge, in connection with his already celebrated labors on standard bars, perfect screws, etc. In the same connection, a paper will be read by J. A. Brashear of Pittsburgh, Penn., on the manipulation of optical surfaces. Other papers on connected subjects are expected; and it is suggested that at least one session be devoted to these papers, and discussions upon them. From Mr. Allan Stirling of New-York City, is promised 'The economy of the electric light;' and the engineer, Mr. W. A. Traill, of Portrush, Ireland, will explain the Giant's Causeway and Portrush electric tramway, and exhibit a working model of the same. A session may therefore be occupied with modern applications of electricity. Another session will be occupied with papers upon civil-engineering subjects, among which may be mentioned, "Three problems in river physics: 1°. The transportation of sediment, and the formation and removal of sand-bars; 2°. The flow of water in natural channels; 3°. The relation of levees to the low-water navigation of rivers;" by Professor Johnson of Washington university, St. Louis, Mo. Other papers announced are, 'The strength of cast-iron,' by J. A. Millar, secretary of the Institute of engineers and ship-builders, in Scotland; 'Driven wells,' by J. C. Hoadley of Boston; 'Belting,' by Professor Lanza of the Massachusetts institute of technology; 'Steam-cylinder condensation,' by Assistant-Professor Fisher; and 'Methods of teaching in mechanical engineering,' by Professor Alden of the Worcester free institute. It is hoped that there will be sufficient papers upon the last subject to devote a session thereto, and gentlemen interested are requested to come prepared to take active part in the discussions.

Professor Webb, the secretary of the section, may in future be addressed at the association headquarters in Philadelphia; and he requests that abstracts, and especially titles of papers, should be sent as soon as

possible to the permanent secretary, Prof. F. W. Putnam, Hotel Lafayette. Space has been provided for models and apparatus, and attention is directed to the reduced rates of transportation to and from Philadelphia.

— From the report of Lieut. W. P. Ray, U.S.N., in charge of branch hydrographic office, New Orleans, La., Aug. 9, we learn that Capt. C. W. Reed, of the City of Dallas, reports that all the captains cruising along the eastern edge of the bank of Yucatan and north-eastern part of Yucatan have been very much surprised at the absence of the usual northerly current during April, May, June, and July. There has been no perceptible current until the last three days. The sailing directions give one and a half to two and a half knots per hour for these months.

— The Navy department has ordered Commander W. T. Sampson and Lieut. Commander T. F. Jewell to Montreal, in attendance on the British association for the advancement of science, and Lieut. Commander Jewell to Philadelphia during the meeting of the American association.

— The U. S. geological survey has recently published two topographical sheets of north-eastern Arizona, and one of north-western New Mexico, crossed by the line of the Atlantic and Pacific railroad, — the work of surveys in 1881, 1882, and 1883, by Messrs. Gilbert Thompson, A. H. Thompson, and their subordinates. The scale is 1: 250,000, with contours every two hundred feet. The region included is of relatively simple plateau structure, complicated by volcanic action that has built cones and spread out lava-beds, and by the erosion of irregularly branching cañons which in several places have a remarkable resemblance to the veins of a maple-leaf. Most of the stream-courses are now dry, and serve as well-enclosed trails between the scattered settlements. Shallow lakes and pools are not uncommon, and springs are marked at the heads of small ravines; but their waters soon disappear in the sand below. Many Indian villages and ruins are mapped, including the Zuni towns on the Mesas, and the cliff dwellings of the Cañons de Chelly and del Muerto. The lettering is not so good as it should be, that of the legend of the plates being about as bad as possible, and the spelling of some of the Spanish names is certainly un-Spanish. The artistic execution reflects no credit upon the survey, being far below the standard gained in recent years.

— The thirty-ninth volume of the Mémoires of the topographic section of the Russian general staff has recently appeared in St. Petersburg. Its contents comprise, among other important papers, a report by Lebedeff on the Bessarabian triangulation. As the author's work is connected with the general triangulation of the empire, it has been taken in hand with the view, among other things, of calculating the difference of level between the Black and Baltic Seas. The result, however, is subject to too large a probable error to have more than an experimental interest; but a levelling recently executed has proved that there is no sensible difference of level between the Black Sea at Odessa and the Baltic at Libava.

A topographical exploration of northern Khorassan and southern Turcomania, with the astronomical data furnished by Gladysheff, has permitted the construction of an excellent map of this region on a scale of 1: 210,000. Farther to the east, Arkhipoff has established the course of the routes leading from Karchi and Bukhara to Kilif and Charjui, along the Amu Daria.

The topography of the country between the Altai Mountains and the valley of the Upper Irtish, along the Russo-Chinese frontier, has been recently the subject of extensive exploration, a sound basis being afforded for the work by the astronomical observations of Miroshnichenko.

Triangulation has recently been carried on between Vladivostok and the Amur on a line between the Ussuri River and the west flanks of the Sikhota Mountains. In the same province, by surveys along the Russo-Chinese frontier, a termination has been put to the uncertainty in regard to the boundary which has so long interfered with the proper administration of justice and collection of taxes.

— Great preparations are being made for the exhibition of goldsmiths' work, to be held next year in the ancient town of Nuremberg. Exhibits are to be duty free; and a lottery, of which the prizes will be exhibits, will be held, and a guaranty fund of fifty thousand pounds has been subscribed. Indian and Persian work is expected; Japanese, promised. America, Spain, and Portugal have shown their sympathy with the undertaking; and France, Italy, Belgium, and Austria are already represented. The historical department is expected to be of considerable scientific interest.

— Letters received from Prjevalski announce his arrival at Alashan in January, 1884, after having crossed Mongolia without accident. No one was ill, though the mercury had frozen several times during the journey. At present the explorers should be in Thibet, or at least in Tzaïdam.

— The principal results of the meteorological station in Novaia Zemlia have been made public. The coldest monthly mean was that of January, 1883 (about −2° F.); but the thermometer indicated −61° F. on several occasions. The north-east and north-west winds were extremely violent, and being always accompanied by drifting snow, and sudden in springing up, were dangerous for any of the party who might be away from the station.

— The fall of a meteor near Odessa was recently reported to the French academy. It seems, that as the track of the meteor, as seen from the city, made it probable that it must have fallen near by, a reward was offered by one of the local papers for its discovery, which was responded to by a peasant who had seen it fall in the field where he was at work. It proved to be a shapeless mass of about eighteen pounds.