H—*Anthropology.* T. Wingate Todd, Western Reserve University.
I—*Psychology.* Walter R. Miles, Yale University.
K—*Social and Economic Sciences.* Wesley C. Mitchell, Columbia University.
L—*Historical and Philological Sciences.* Waldo G. Leland, American Council of Learned Societies.
M—*Engineering.* C. F. Kettering, General Motors Corporation.
N—*Medical Sciences.* Charles R. Stockard, Cornell University.
O—*Agriculture.* A. R. Mann, Cornell University.
Q—*Education.* Walter F. Dearborn, Harvard University.

SECRETARIES OF SECTIONS

A—*Mathematics.* E. R. Hedrick, University of California at Los Angeles.
B—*Physics.* H. A. Barton, American Institute of Physics.
C—*Chemistry.* J. H. Simons, Chicago, Ill.
D—*Astronomy.* H. T. Stetson, Ohio Wesleyan University.
E—*Geology.* Kirtley F. Mather, Harvard University.
F—*Zoological Sciences.* George R. La Rue, University of Michigan.
G—*Botanical Sciences.* Sam F. Trelease, Columbia University.
H—*Anthropology.* W. M. Krogman, Northwestern University.
I—*Psychology.* John E. Anderson, University of Minnesota.
K—*Social and Economic Sciences.* James Ford, Harvard University.
L—*Historical and Philological Sciences.* Joseph Mayer, American Association of University Professors.
M—*Engineering.* N. H. Heck, U. S. Coast and Geodetic Survey.
N—*Medical Sciences.* W. M. Simpson, Miami Valley Hospital.
O—*Agriculture.* P. E. Brown, Iowa State College.
Q—*Education.* William S. Gray, University of Chicago.

SCIENTIFIC NOTES AND NEWS

AT the banquet of the Cambridge meeting of the Geological Society of America the fifth presentation of the Penrose Medal for distinguished achievement was made to Dr. Edward Oscar Ulrich, of Washington, who recently retired after long service with the U. S. Geological Survey. The presentation was made by Dr. W. O. Hotchkiss, president of the Michigan College of Mines. At the same time the society honored the sole survivor of the thirteen men who formed it in 1888, Dr. Herman LeRoy Fairchild, professor emeritus of geology at the University of Rochester, with the presentation of an inscribed copy of "The Geological Society of America," a history which he helped to prepare. Dr. Fairchild is a former president of the society.

AT the close of the recent meeting at Washington of the National Council of Geography Teachers, the first award of the certificate of merit for service in teaching geography was presented to Dr. William Morris Davis, professor emeritus of geology at Harvard University.

DR. HENRY EYRING, research associate in chemistry at the Frick Chemical Laboratory of Princeton University, received the ninth annual $1,000 award of the American Association for the Advancement of Science at the close of the Atlantic City meeting. The prize was given for Dr. Eyring's paper entitled "Quantum Mechanics of Conjugate Double Bonds," presented to the chemical section.

THE annual gold medal award for conspicuous achievement in the medical sciences, given by the Phi Lambda Kappa fraternity, was presented to Dr. Béla Schick, of the Mount Sinai Hospital, New York City, discoverer of the Schick test for diphtheria, at the annual dinner on January 1. The annual gold medal award for the best thesis on a medical subject written by an undergraduate medical student was presented to Myron G. and Maurice M. Rosenbaum, of the University of Buffalo School of Medicine.

THE Rudolf-Virchow Medal of the Berlin Anthropological Society has been awarded to Professor Karl Pearson, director of the Francis Galton Laboratory for National Eugenics, University of London.

Nature reports that in commemoration of the seventieth birthday of Sir P. C. Rây, founder, foundation-president and patron of the Indian Chemical Society, a jubilee volume of some 350 pages is being published by the society, containing contributions from many eminent chemists in India and abroad.

DR. MARCHOUX, professor at the Institut Pasteur, Paris, has been nominated a Grand Officer of the Legion of Honor.

DR. CHARLES ZELENY, professor of zoology at the University of Illinois, was elected president of the American Society of Zoologists at the Atlantic City meeting.

AT the Cambridge meeting of the Geological Society of America the following officers were elected: Dr. Charles Kenneth Leith, of the University of Wisconsin, *president;* Professor Rollin T. Chamberlin, University of Chicago; Dr. E. M. Kindle, chief of the Division of Paleontology of the Canadian Geological Survey; Professor E. S. Moore, of the University of

Toronto, and Herbert P. Whitlock, curator of mineralogy at the American Museum of Natural History of New York, *vice-presidents*. Dr. Charles P. Berkey, of Columbia University, continues as secretary for his eleventh term, and Professor Edward B. Mathews, of the Johns Hopkins University, continues as treasurer.

THE Paleontological Society of America elected E. M. Kindle, of Ottawa, *president;* E. B. Branson, University of Missouri, *first vice-president;* J. B. Reeside, Washington, D. C., of the United States Geological Survey, *second vice-president;* M. A. Hanna, Houston, Texas, *third vice-president;* B. F. Howell, Princeton University, *secretary;* C. O. Dunbar, of Yale University, *treasurer,* and Walter Granger, of the American Museum of Natural History, New York City, editor of the *Bulletin*.

OFFICERS elected by the Mineralogical Society of America were Herbert P. Whitlock, curator of mineralogy for the Morgan-Tiffany collection at the American Museum of Natural History, New York City, *president;* Frank R. Van Horn, Case School of Applied Science, Cleveland, Ohio, *secretary,* and Waldemar T. Schaller, of the U. S. Geological Survey, *treasurer*.

AS has already been announced, the annual meeting of the British Association will be held next year in Leicester from September 6 to 13, under the presidency of Sir F. Gowland Hopkins, of the University of Cambridge, president of the Royal Society. *Nature* reports that the following sectional presidents have been appointed: Section A—Mathematical and Physical Sciences, Sir Gilbert Walker; B—Chemistry, Professor R. Robinson; C—Geology, Professor W. G. Fearnsides; D—Zoology, Dr. J. Gray; E—Geography, the Right Hon. Lord Meston; F—Economic Science and Statistics, Professor J. H. Jones; G—Engineering, R. W. Allen; H—Anthropology, the Right Hon. Lord Raglan; I—Physiology, Professor E. D. Adrian; J—Psychology, Professor F. Aveling; K—Botany, Professor F. E. Lloyd; L—Educational Science, J. L. Holland; M—Agriculture, Dr. A. Lauder.

THE Royal College of Physicians and Surgeons of Canada has conferred honorary fellowships on Lord Bessborough, and on Dr. John Stewart and Dr. I. H. Cameron, emeritus professors of surgery at Dalhousie and Toronto Universities, respectively.

THE title of emeritus professor has been conferred on Dr. William Savage Boulton, who recently retired from the chair of geology at the University of Birmingham.

PROFESSOR W. M. GARDINER, principal of the Technical College, Bradford, will relinquish the editorship of the *Journal* of the Society of Dyers and Colorists at the end of the present year, after holding it for thirty-four years. Dr. F. M. Rowe, professor of color chemistry at the University of Leeds and foreign editor of the journal, has been appointed in his place as co-editor with Mr. Ellis Clayton, chief lecturer in dyeing and cellulose chemistry at the Technical College, Bradford.

DR. DOUGLAS H. SPRUNT, New York, was recently appointed assistant professor of pathology at Duke University School of Medicine, and Dr. Ernest M. Poate, Southern Pines, professor of psychiatry.

HAROLD P. FAWCETT, instructor in mathematics, Columbia University, has become assistant professor of mathematics in the Ohio State University.

DR. LUDWIG HEKTOEN, professor of pathology at the University of Chicago and director of the John McCormick Institute for Infectious Diseases, has been elected chairman of the Board of Governors of the Chicago Institute of Medicine.

DR. GILBERT E. DOAN, associate professor of metallurgy at Lehigh University, has been granted for 1933 a sum of money sufficient to employ a research fellow in continuation of studies of pure iron for arc welding. The study is foundational to the investigation of quality of steel for arc welding, and is sponsored by the Engineering Foundation.

THE *Journal* of the Washington Academy of Sciences reports that Frank T. Davies, formerly of the Byrd Antarctic Expedition, and now on furlough at the request of the Meteorological Service of Canada, from the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, is in charge of the Polar Year station at Chesterfield Inlet. This station is the nearest point to the North Magnetic Pole at which continuous records will be taken during the Polar Year. W. J. Rooney, of the Department of Terrestrial Magnetism, who was temporarily assigned to the U S. Coast and Geodetic Polar Year Station at College, Alaska, to assist in the installation of the atmospheric-electric and earth-current equipment, has completed his work and returned to Washington. K. L. Sherman will be in charge of the work during the Polar Year.

PROFESSOR H. WEYL, of the University of Göttingen, has accepted the invitation of Swarthmore College to give the William J. Cooper Foundation Lectures for 1932–33. He will reside at Swarthmore from the middle of February until the middle of March. During this period he will give five lectures on the gen-

eral subject of "Mind and Nature" and will take part in the honors work of the college.

DR. J. C. DRUMMOND, professor of biochemistry, University College, London, will deliver the next Lane Lectures early in April at the Stanford University School of Medicine in San Francisco. Professor Drummond expects to arrive in San Francisco about April 1, 1933. There will be five lectures, under the general title of "Recent Advances in the Biochemical Study of Nutritional Disorders." The lectures are to be published later.

DR. HENRY A. CHRISTIAN, Hersey professor of the theory and practice of physic at Harvard University Medical School, Boston, conducted the third graduate teaching clinic at the Central Maine General Hospital, Lewiston, from November 21 to 22. Dr. Christian gave an address on "Cardiac Disease and Its Treatment."

DR. WALTER B. CANNON, George Higginson professor of physiology at the Harvard Medical School, will give the Beaumont Lectures of the Wayne County Medical Society, on January 30 and 31. The subject tentatively selected is "The Relation of the Autonomic System to the Functions of the Alimentary Canal."

A SERIES of scientific discussions will be offered by the Institute of Arts and Sciences of Columbia University during the next three months. Michael Pupin will discuss the "Future of Science"; Dr. Arthur H. Compton, of the University of Chicago, will speak on "Cosmic Rays and their Significance"; Dr. John Bellamy Taylor, of the General Electric research staff, will speak on "Audible Light"; Albert Edward Wiggam, author of "The New Decalogue of Science," will lecture on "Biology in Human Affairs"; Professor Walter Rautenstrauch, of Columbia University, will analyze technocracy, and Auguste Piccard, of Belgium, will tell of his explorations of the stratosphere.

ON behalf of the Geological Society of America, its president, Professor Reginald A. Daly, of Harvard University, has protested the proposed cuts in Congressional appropriations for the U. S. Geological Survey. In a statement to Science Service, Professor Daly said: "Directly and indirectly geological service is a principal aid to American business in locating underground raw materials. If the U. S. Geological Survey is now seriously crippled it will be costly if not impossible to restore personnel and skilled experience. Applied geology and profitable mining depends on research of the survey type and to destroy any of the survey's efficiency would be bad economy from the viewpoint of the American consumer of goods that are made from metallic and non-metallic underground raw materials. The Geological Society of America would regard a serious cut of the survey's budget a major disaster for the producers of wealth in this country."

SUPPORT of President Hoover's executive order transferring river and harbor engineering work now directed by army engineers to a new Division of Public Works in the Interior Department is announced by the American Engineering Council, representing 60,000 engineers in this country. The reorganization will remedy the present War Department control that is "exceedingly undemocratic and unfair to the more than 200,000 professional engineers of the United States and particularly so to that faithful and efficient group of civilian engineers" working under the War Department. The council predicted material savings in cost, elimination of waste and increase of efficiency when the reorganization is effective.

A BEQUEST of $150,000 for a professorship of geography at Princeton University and one of $500,000 to the Geographical Society of Philadelphia, are included in the will of Henry Grier Bryant, noted explorer, who died on December 7. The American Philosophical Society will receive $10,000 for its building fund, and $5,000 each is to go to the Museum of the University of Pennsylvania, the Pennsylvania Academy of the Fine Arts, the Children's Country Week Association and the Appalachian Mountain Club of Boston, the interest to be applied "to the maintenance of refuge huts or mountain trails operated by the club."

THE twenty-third annual exhibition of scientific instruments and apparatus, arranged by the Physical Society, London, was held from January 3 to 5 at the Imperial College of Science and Technology, South Kensington. If the program given in *Nature* was carried out the leading manufacturers of scientific instruments exhibited their latest products in the Trade Section. The Research and Experimental Section contained contributions from most of the important research laboratories in Great Britain, and there was a special sub-section devoted to experiments of educational interest. In addition, the work submitted for the craftsmanship competition by apprentices and learners was on view. Discourses were delivered each day at 8 P. M. as follows: January 3, Dr. Allan Ferguson: "Surface Tension and its Measurement"; January 4, Mr. R. A. Watson Watt: "Cathode Ray Oscillography"; January 5, Mr. F. Hope-Jones: "Time Measurement: Old and New."

THE Morris Foundation that has recently affiliated the Morris Arboretum at Chestnut Hill, Philadelphia, with the University of Pennsylvania, has also provided funds for a number of graduate fellowships for students in botany working for higher degrees. A sti-

pend of $1,250 accompanies each appointment. Since appointments may take effect with the middle of February, applications for consideration should be sent at an early date to the Director of the Morris Arboretum, at the Department of Botany, University of Pennsylvania.

DISCUSSION

THE USE OF VITAMIN D FROM COD-LIVER OIL IN MILK AND BREAD

As was pointed out in an editorial which appeared in the *Journal* of the American Medical Association for November 26, 1932, it would be of advantage if antirachitic properties could be imparted in a suitable degree to a few foods (such as milk and bread) that enjoy wide-spread use, particularly in the dietary of childhood, because, in spite of several years of vigorous antirachitic propaganda, rickets remains all too prevalent in many communities.

Work with this specific objective in view has been carried on for some years at Columbia University. During the course of experiments conducted for the purpose of determining what substance in cod-liver oil conferred on this oil its well-known therapeutic value in the treatment of rickets, it was found that the antirachitic factor (to which McCollum gave the name of "vitamin D") could be concentrated in a fraction representing a very small part of the original oil.

The process by which this concentration is effected is briefly as follows: The cod-liver oil is treated with 95 per cent. ethyl alcohol, which dissolves out the antirachtic substance together with some other materials, chiefly fatty acids. The fatty acids are saponified, precipitated as calcium soaps, and treated with acetone which removes the active substance. The acetone solution is concentrated, and then treated with ether. After further purification of the ether solution, the ether is distilled off, leaving a brownish, waxy residue (still a very complex mixture) which can be conveniently handled dissolved in oil.

Rat assays showed this concentrate to be highly antirachitic, and later tests at the Children's Clinic of Bellevue Hospital and other health centers showed that it possessed the same curative effects on rachitic infants known to be produced by cod-liver oil.

In its original form, the concentrate had a restricted usefulness, since it contained much of the bad taste and unpleasant odor of cod-liver oil, but further refinements have made possible the elimination of these disadvantages and have produced a product which can be added to milk without altering its flavor. While we are still dealing with an impure substance, the activity of the more recent concentrates is now approaching that of irradiated ergosterol.

Dr. Barnes, of the Detroit Health Department, has conducted a series of tests with milk so treated on rachitic infants and has found that a quart of milk having 150 units of "vitamin D" (equivalent to 3 teaspoonfuls of cod-liver oil), and also amounts corresponding to about 100 units, give excellent results in the treatment of rickets.

It has also been found practical to add the concentrate to bread, as the vitamin D is not destroyed at baking temperatures. An arbitrary standard of 90 units to a 1-lb. loaf has been temporarily adopted.

An economic advantage of this process lies in the fact that the de-vitaminized cod-liver oil is still suitable for industrial purposes, and can be sold at full price so that the raw material cost of the concentrate is very low.

It was originally taken for granted by those engaged in the development work on the cod-liver oil concentrate that the process would be made freely available to any one who wished to use it, but objections to this plan began to multiply. In the first place, conferences with representatives of drug manufacturers made it clear that no one would undertake the extensive work needed for perfecting production methods and marketing the product unless protected from competitors who could enter the field after the pioneering work was done and secure profits without material outlay. Secondly, it seemed desirable to control the manufacture, application and promotion of the product, so that the public could be protected against improperly treated foods on one hand and false claims on the other.

Finally, the president of Columbia University indicated that he had had in mind for some time the creation within the university of some means of meeting just such situations. At his behest, the Board of Trustees passed a resolution creating a Board of University Patents, which now functions under the name of University Patents, Inc. This board consists of trustees and faculty members and is empowered to accept patent rights and copyrights and administer them for the public good. The vitamin D concentrate process was patented in several countries and the applications were assigned to University Patents, Inc. It was decided that royalties which might accrue were to be used for further research within the university.

License contracts were then entered into between University Patents, Inc., and National Oil Products Company, by which the latter obtained the right to manufacture and sell the concentrate in the United