meetings of the American Association for Cancer Research, and Dr. Karl F. Meyer, professor and chairman of the department of bacteriology at the University of California, is president of the American Association of Immunologists. The American Association of Anatomists also will hold its fifty-seventh annual meeting at Chicago on April 9, 10 and 11, under the presidency of Dr. Philip E. Smith, professor of anatomy at the College of Physicians and Surgeons of Columbia University.

SCIENTIFIC NOTES AND NEWS

THE doctorate of science will be conferred by the University of Wisconsin at its eighty-eighth commencement on June 23 on Dr. Herbert S. Gasser, director of the Rockefeller Institute for Medical Research.

THE Howard Crosby Warren Medal for "distinguished research" during the past five years, awarded by the Society of Experimental Psychologists, was presented at Rutgers University on March 28 to Dr. Clarence H. Graham, associate professor of psychology at Brown University, in recognition of his work in the psychology of vision. The medal was presented by Professor Carroll C. Pratt, of Rutgers University, chairman of the society.

IN recognition of "the outstanding service" rendered by Dr. William J. Gies, professor emeritus of biochemistry at Columbia University, he has been made a life member of the council of the International Association for Dental Research.

THE Society of Medical Officers of Health, London, gave a luncheon on February 21 in honor of Surgeon-General Thomas Parran, head of the United States Public Health Service, Dr. F. T. H. Wood, the president, being in the chair. The Lord Mayor of London, medical officers of health and representatives of local authorities and of the Ministry of Health attended the luncheon. Dr. George Buchan, who took the chair after the luncheon, proposed the health of Dr. Parran, and Dr. Parran replied. A private luncheon was given to Dr. Parran by the British Medical Association, at which Dr. J. E. Gordon, United States Liaison Officer with the Ministry of Health, Dr. John R. Mote, Medical Adviser to the American Red Cross Committee in London, Sir Wilson Jameson, chief medical officer to the Ministry of Health, and the principal officers and officials of the association were present.

The Experiment Station Record reports that the *Progressive Farmer's* annual award "'to the man of the year' for the most outstanding service to the agricultural program in national planning, teaching, research or organization" has been made to Dr. H. P. Stuckey, director of the Agricultural Experiment Station of the University of Georgia. The official statement reads: As a result of Dr. Stuckey's "special work in the thirty-two years at the Georgia Experiment Station we can list 12 superior varieties of muscadine grapes, the cabbage-collard, the now common practice of planting pollinizers in pecan groves, proof that blossom-end rot of tomatoes is due to irregular water supply. Under his supervision and friendly encouragement as director there have been developed the high-yielding Gasta and Sanford wheats, Terruf oats, Doxi soybeans and Cherokee sweet corn. An intensive peanut production research program now producing definite results has been under way since 1931. Dr. Stuckey has played a leading part in the development of the pimiento pepper, in recent years one of the leading cash crops of middle Georgia."

FIFTY scientific men—going back to Aristotle in the past, with Einstein and Millikan representing the present—are shown in a series of three paintings now on view at the New York Museum of Science and Industry, in Rockefeller Center, New York City. They are known as the "Apotheosis of Science," the work of Elmer E. Taflinger, of Indianapolis, executed for Robert Lovell, of that city. Darwin, Pasteur, Harvey, Roentgen and Audubon are among twenty-two scientific men depicted in the left panel. The center panel portrays Aristotle, Hippocrates, Euclid and Archimedes. Einstein appears in the right panel in the company of Newton, Franklin, Faraday, Descartes, Watt, Millikan and fourteen scientific men of both the Renaissance and contemporary periods.

DR. ARTHUR L. WALSH, dean of the faculty of dentistry of McGill University, was elected to the presidency of the American Association of Dental Schools at the recent annual meeting in St. Louis.

AT a meeting of the University of Buffalo Chapter of the Sigma Xi on March 17 officers were elected as follows: *President,* Dr. Richard N. Jones, assistant professor of physics, to succeed Dr. Guy E. Youngburg, professor of biological chemistry; *Vice-president,* Dr. Bird R. Stephenson, instructor in biophysics; *Secretary,* Dr. Carleton F. Scofield, associate professor of psychology, and *Treasurer,* Dr. Frederick J. Holl, assistant professor of biology. Seventeen members were elected. Dr. Edward Ellery, national president, spoke on matters of interest to the society. At the initiation meeting on May 9 the annual lecture will be delivered by Professor Stacy R. Guild, of the

Otological Research Institute of the Johns Hopkins University.

RETIREMENTS from active service at the close of the academic year at Columbia University include Dr. Charles E. Lucke, head of the department of mechanical engineering, who has served for thirty-nine years, and Professor Walter I. Slichter, executive head of the department of electrical engineering, who has been connected with the university for thirty-one years.

DR. EDWARD MACK, JR., has been made chairman of the department of chemistry of the Ohio State University to succeed Dr. Wm. Lloyd Evans, who will retire at the close of the academic year.

DR. FRANCIS J. BRACELAND, associate clinical professor of psychiatry at the Woman's Medical College of Philadelphia, has been appointed dean of the School of Medicine of Loyola University, Chicago, to succeed Dr. Louis D. Moorhead, dean since 1918, who has resigned to devote his time to private practice.

DR. DOROTHY S. THOMAS, director of research in social statistics at the Yale University Institute of Human Relations, has been appointed professor of rural sociology in the College of Agriculture of the University of California and rural sociologist of the experiment station and of the Giannini Foundation.

PROFESSOR PETER PRINGSHEIM, formerly of the University of Berlin and the University of Brussels, arrived in the United States in February. He has been appointed lecturer and research associate in physics at the University of California at Berkeley.

DR. JOSEPH E. WECKLER, JR., has been appointed assistant curator in the Division of Ethnology of the U. S. National Museum.

PROFESSOR JOHN GAMBLE KIRKWOOD, associate professor of chemistry at the University of Chicago, has been elected chairman of the division of physical and inorganic chemistry of the American Chemical Society and associate editor of the *Journal of Chemical Physics*.

IT is reported in the *News Edition* of the American Chemical Society that Harold G. Petering has resigned as research assistant in chemistry at the Michigan Agricultural Experiment Station, where he has been working on the industrial utilization of agricultural products under the Rackham Endowment Fund. He has become research chemist in the Biological Laboratory of E. I. du Pont de Nemours and Company, New Brunswick, N. J.

PROFESSOR WILBER E. BRADT, head of the department of chemistry and chemical engineering of the University of Maine, has been called to active military duty for one year as a captain in the 152nd Field Artillery. Dr. Irwin B. Douglass will be acting head of the department.

PROFESSOR QUINCY C. AYRES, of the department of agricultural engineering at Iowa State College, has leave of absence to become lieutenant commander in the Corps of Civil Engineers, Bureau of Yards and Docks.

MISS JOCELYN CRANE, of the department of tropical research of the New York Zoological Society, returned on March 10 from a seven weeks' expedition to Panama. She made a study of the courtship of more than twenty species of *Uca* fiddler crabs, completing observations made on two Zaca trips. She brought back a small collection of live mammals, birds and reptiles for the Zoological Park.

DURING the next two months distinguished leaders in the arts and sciences from Argentina, Brazil, Chile, Colombia and Uruguay will visit the United States for a period of travel and observation lasting from two to three months. Among these are Dr. Josué Gollán, rector and previously dean of the faculty of pharmacy of the Universidad del Litoral in Santa Fé, and Dr. Pacheco e Silva, professor in the psychiatric clinic of the Medical School of the University of São Paulo and the Paulista School of Medicine.

A PARTY which will travel under the auspices of the Carnegie Endowment for International Peace to study agricultural conditions in Brazil, Uruguay and Argentina this spring, will leave New York on April 11. Its members are Dr. T. W. Schultz, head of the department of economics and sociology at Iowa State College; Howard Hill, of Minburn, Iowa; Harry Terrel, of Des Moines, secretary of the Economic Policy Committee; James Patton, of Denver, president of the National Farmers' Union, and J. Elmer Brock, of Kaycee, Wyo., president of the American National Live Stock Association.

The Harvard Alumni Bulletin reports that an emergency expedition of six physicians and five technicians and secretaries has returned to Boston after a month spent in Halifax, Nova Scotia, assisting the medical authorities to combat epidemics of scarlet fever, diphtheria and spinal meningitis in that city. This expedition was headed by Dr. J. Howard Mueller, associate professor of bacteriology and immunology at Harvard University. Associated with him were Drs. LeRoy D. Fothergill, Silas Arnold Houghton, assistant professor of bacteriology and immunology and associate in pediatrics; Emanuel B. Schoenbach, instructor in bacteriology; John H. Dingle, assistant in bacteriology and in medicine; Stafford M. Wheeler, instructor in preventive medicine and epidemiology, and Lewis Thomas, research fellow in medicine. The purpose of the

group was to render assistance to the civilian population of a people at war and to acquire information on communicable disease in a war-time port.

DR. OTTO STRUVE, professor of astronomy at the University of Chicago, director of the Yerkes Observatory and of the McDonald Observatory, gave on March 29 the eleventh Joseph Henry Lecture before the Philosophical Society of Washington. He spoke on "The Constitution of Diffuse Matter in Interstellar Space."

DR. GEORGE R. COWGILL, professor of physiological chemistry at Yale University, lectured at Iowa State College on March 25. The subjects of his lectures were "Nutrition in Tropical America" and "Studies of Vitamin B_2 Deficiency." The former lecture was given at a meeting of Sigma Xi.

THE forty-first annual meeting of the American Association of Pathologists and Bacteriologists will be held at the College of Medicine of New York University on April 10 and 11, under the presidency of Dr. Stanhope Bayne-Jones, of Yale University.

DISCUSSION

ANOTHER NOTE ON THE ISOSTATIC CONTROL OF FLUCTUATIONS OF SEA LEVEL

THE purpose of this note is to supplement an earlier one dealing with the effect of the loading and unloading of the earth's crust by continental glaciers.[1] It discusses very briefly the effect of orogenesis and of erosional degradation upon the level of the ocean. In the absence of accurate data necessary for rigorous discussion and for positive numerical results, certain assumptions are made, the departure of which from the truth is unknown. The writer disclaims, however, any attempt to arrive at numerically reliable results. It is his intention rather to show that sea-level changes with the uplift of mountains and with their degradation, as well as with continental erosion, under the control of isostasy. The problem might be presented in algebraic form without the handicap of numerical assumptions; but there is some advantage in using assumed concrete values and in obtaining even very rough approximations for the measure of fluctuation of sea level. It seems to be more important to sketch a picture of the causes and processes of that fluctuation than to pretend, with defective data, to estimate accurately its amount. The effect on sea level of shift of load in or on the earth's crust is presented from a qualitative rather than a quantitative point of view. The figures used are to be regarded merely as those of an illustrative example.

Effect of orogenesis on sea level.—The great mountain ranges which diversify the surface of the globe have been elevated for the most part since the beginning of Tertiary time. They are sometimes referred to in geological literature as the Tertiary mountains; but some of them were uplifted in post-Tertiary time. The aggregate length of these ranges is about 64,000 km, and their mean width may be assumed to be about 160 km. The altitude of their crests varies greatly. Some of them have suffered degradation throughout a large part of Tertiary time, while others of later uplift have been reduced by erosion relatively little. It is assumed, however, that the "Tertiary" mountains in general had an initial mean height, in transverse profile, of 3 km. That is to say, the mean altitude of the orogenic belt was increased 3 km, its surface prior to uplift having been that of a lowland; or shallow sea-floor.

The mean initial uplift of the mountains being 3 km in transverse profile, the light rock of which they are composed was depressed 21.75 km into the deeper heavier rock for flotation, according to the equation: $3.3x = 2.9\ (3 + x)$ where x is the amount of depression. This means that the light rock of the crust (mean density 2.9) was concentrated to a thickness of $3 + 21.75 = 24.75$ km, or 253,440,000 cu. km, in excess of the normal, where no mountains exist. But the 21.75 km of light rock, which was pushed down into the heavy rock, displaced $64{,}000 \times 160 \times 21.75 = 222{,}720{,}000$ cu. km of the latter, and this was distributed in depth to the rest of the earth beyond the mountains; so that the volume of light rock that came into the mountain belts in the orogenic movement exceeded the volume of heavy rock which was displaced and redistributed by $253{,}440{,}000 - 222{,}720{,}000 = 30{,}720{,}000$ cu. km. This lowered the surface of the earth beyond the orogenic belts, sea and land alike, $\frac{30{,}720{,}000}{494{,}080{,}000} = .062$ km, the denominator being the area of the earth less that of the mountains.

Effect of erosion and sedimentation on sea level.—Let us suppose now that the "Tertiary" mountains have to date lost by erosion the equivalent of a layer 2 km thick over their entire area. This amounts to $64{,}000 \times 160 \times 2 = 20{,}480{,}000$ cu. km. The area of the land surface of the earth is 140,800,000 sq. km. Deducting from this the area of mountain belts, 10,240,000 sq. km, leaves 130,560,000 sq. km of lowlands that have been degraded at a much slower rate, let us say one fifth of the rate of reduction of the mountains. Then the discharge of sediment to the ocean has been $\frac{130{,}560{,}000 \times 2}{5} = 52{,}224{,}000$ cu. km from the continental lowland; and the total discharge to the ocean has

[1] SCIENCE, August 23, 1940.