Participating in a program on the general subject of "Some Present and Future Problems in Chemistry" were Dr. G. N. Lewis, head of the department of chemistry in the University of California, whose topic was "Physical Chemistry"; Dr. C. H. MacDowell, president of the Armour Fertilizer Works, "Chemistry Applied to Industry"; Dr. Edward R. Weidlein, director of the Mellon Institute of Industrial Research in Pittsburgh; Dr. Charles A. Kraus, head of the department of chemistry in Brown University, who discussed "Inorganic Chemistry"; Dr. Moses Gomberg, head of the department of chemistry in the University of Michigan, and Associate Professor M. S. Kharasch, whose topic was "Organic Chemistry." Dr. Carl Voegtlin, of the United States Public Health Service, and Dr. A. P. Locke, Seymour Coman fellow in chemistry applied to medicine, spoke on "Chemistry and Medicine."

SCIENTIFIC NOTES AND NEWS

THE one thousand dollar prize offered annually by the American Association for the Advancement of Science for "a noteworthy contribution to science" presented at the meeting was awarded at Des Moines to Professor Arthur J. Dempster, of the University of Chicago. Professor Arthur H. Compton, with whom Professor Dempster is associated at Chicago, is reported to have said: "The most important contribution of twentieth-century physics is that the physical world can be reduced to three kinds of particles—protons, electrons and photons, and that each of these particles has also the characteristics of waves. The last stage is the proof that the protons, the positively charged parts of matter, have wave characteristics. It is this completion of the great work of twentieth-century physics which has been accomplished by Professor Dempster."

THE first gold medal awarded by the New York Academy of Medicine has been conferred on Dr. Carl Koller. The medal was presented by Dr. John A. Hartwell, president of the academy, the citation read by Dr. Linsly R. Williams being as follows: "Dr. Koller, distinguished ophthalmologist, able in the field of biology, painstaking in research, the discoverer of the anesthetic properties of cocaine, the inaugurator of the era of local anesthesia, conferring on humanity an enormous relief from suffering, a fellow of this academy since 1898, in recognition of his services is awarded this first academy medal."

THE Perkin medal is to be presented on January 10 to Dr. Herbert H. Dow, president of the Dow Chemical Company, of Midland, Michigan. The presentation is made because of his developments of improvements in the production of chlorine, bromine, magnesium and numerous other chemical materials. The presentation will be at a joint meeting of the Society of Chemical Industry, American Chemical Society, the Société de Chimie Industrielle and the American Electrochemical Society. An informal dinner at 7:00 P. M. will precede the meeting. The following program will be presented in Rumford Hall of the Chemists' Club at 8:15 P. M.: "Early Days of the Medalist," James T. Pardee; "Accomplishments of the Medalist," E. O. Barstow; presentation of Perkin medal, Marston T. Bogert, and acceptance speech, Herbert H. Dow. Dr. Dow will speak on the "Economic Trend in the Chemical Industry."

THE A. Cressy Morrison Prizes of the New York Academy of Sciences for 1929 have been awarded as follows: For the most acceptable paper in the field of experimental biology, embodying the results of original research not previously published, to Michael Heidelberger and Forrest E. Kendall, for their joint paper entitled "A Physico-chemical Interpretation of an Immune Reaction: A Quantitative Study of the Precipitin Reaction between Type III, Pneumococcus Polysaccharide and Purified Homologous Antibody." For the most acceptable paper in a field of science covered by the academy or an affiliated society, but not included in the above, which paper embodies the results of original research not previously published, to Horace W. Stunkard, for his paper entitled "The Life History of *Chryptocotyle lingua* (Creplin) with Notes on the Physiology of the Metacercariæ."

DR. THEOBALD SMITH, of the department of animal pathology of the Rockefeller Institute for Medical Research at Princeton, has agreed to act as consultant in bacteriology to the division of laboratories and research of the New York State Department of Health at Albany. Dr. James Ewing, professor of pathology at Cornell University Medical College in New York City, has accepted the appointment of consulting pathologist to the laboratories.

DR. HERBERT V. NEAL, professor of zoology and dean of the graduate school of Tufts College, was elected president of the American Society of Zoologists at the recent Des Moines meeting. E. E. Just, professor of zoology in Howard University, Washington, D. C., was elected vice-president.

AT the annual meeting of the Board of Trustees of the American School of Prehistoric Research held at Vassar College, December 28, 1929, Professor George Grant MacCurdy, of Yale University, was re-

elected director of the school for a term of two years. With the exception of 1922 and 1923, Dr. MacCurdy has been director of the school since it was founded nine years ago.

AT the annual meeting of the Royal College of Physicians, London, on December 5, Sir Norman Walker was elected president and Dr. Robert A. Fleming vice-president.

PROFESSOR THOMAS J. TALBERT, of the department of horticulture in the college of agriculture of the University of Missouri, has been elected governor of the Missouri-Kansas-Arkansas district of Kiwanis Clubs for the year 1930.

DR. HARVEY W. WILEY has resigned as director of the *Good Housekeeping* Bureau of Foods, Sanitation and Health which was established by and for him in 1912. He becomes director emeritus.

THE *Bulletin* of the American Mathematical Society reports that on account of the death of Dr. J. W. L. Glaisher, editor of the *Quarterly Journal of Mathematics* and the *Messenger of Mathematics,* the former journal will be discontinued, with the completion of its fiftieth volume. Professor G. H. Hardy has consented to edit the current volume (volume 58) of the *Messenger of Mathematics,* and it is hoped that this journal can be continued.

DR. HENRY KNUTE SVENSON has taken up the work of curator of plants at the Brooklyn Botanic Garden. Previous to accepting this appointment, Dr. Svenson was connected with the editorial office of *Biological Abstracts.*

E. P. HENDERSON, of the U. S. Geological Survey, has been appointed assistant curator of applied geology in the U. S. National Museum.

NELSON S. PERKINS has been appointed to succeed Dudley F. Holtman as construction engineer of the National Committee on Wood Utilization.

DR. ALBERT F. ZAHM, who was recently appointed to the new Guggenheim chair of aeronautics at the Library of Congress, has taken up his new work. He has been director of the aerodynamic laboratory of the Navy Department since 1916.

DR. SANFORD R. GIFFORD, of Omaha, who has been appointed head of the department of ophthalmology at the Northwestern University School of Medicine, Chicago, took up his work on January 1.

DR. L. A. CALKINS, formerly head of the department of obstetrics and gynecology at the University of Virginia, has been appointed head of the department of obstetrics and gynecology at the University of Kansas School of Medicine.

DR. WALTER B. CANNON, George Higginson professor of physiology at the Harvard Medical School, has sailed for France to serve as Harvard exchange professor at the Sorbonne and at the Ecole de Médecine in Paris. He will lecture also at provincial universities in France and in the Belgian universities during the second half year.

DR. FREDERICK L. HOFFMAN, consulting statistician, Wellesley Hills, Massachusetts, will participate in the Latin-American Medical Congress, reading an address on "The Value of Vital Statistics in Latin-American Countries." Dr. Hoffman will go by aeroplane from Birmingham to Mexico City, and will also make a flight to Yucatan. He expects to cover about three thousand miles or more by plane before he returns.

THE *Journal* of the Washington Academy of Sciences reports that Professor C. H. Ostenfeld, director of the Botanical Garden and Museum, Copenhagen, Denmark, recently spent several days in Washington, giving particular attention to Alaskan plants in the National Herbarium, especially those of Arctic Alaska. His studies were undertaken in connection with the preparation of a flora of northern Canada, a project upon which he is jointly engaged with Dr. M. O. Malte, chief botanist of the Canadian National Herbarium, Ottawa.

LLEWELLYN N. EDWARDS sailed from New York on December 20 for the British Isles, where he will study methods of design and construction of highways and bridges and will also devote some time to engineering research and investigation work in progress there. He plans to make a study of early bridge structures having historical value in the engineering profession.

DR. PAUL BARTSCH, of the U. S. National Museum, has returned from a trip to the West Indies, made under the auspices of the Walter Rathbone Bacon traveling scholarship. He visited most of the islands between Porto Rico and Trinidad, except Antigua and Barbuda, which had been thoroughly explored by Mr. J. B. Henderson, and Barbados. After leaving Trinidad, his expedition sailed along the coast of South America, visiting the Leeward Islands, Margarita, Orchilla, El Roque, Bonaire, Curaçao and Aruba.

DR. ALAN M. CHESNEY, associate professor of medicine of the Johns Hopkins School of Medicine, will deliver the fourth Harvey Society Lecture at the New York Academy of Medicine, on Thursday evening, January 16, 1930. His subject will be "Acquired Immunity in Syphilis."

DR. HENRY A. CHRISTIAN, Hersey professor of the theory and practice of physic at the Harvard University Medical School, will deliver the annual lecture

of the Scripps Metabolic Clinic at La Jolla on January 25 on "Chronic Non-valvular Heart Disease: Its Causes, Diagnosis and Management."

THE address of the retiring president of the Philosophical Society of Washington was given on January 4 by Dr. Leason H. Adams on "The Significance of Pressure in Geophysical Investigations."

THE biennial Huxley lecture was given by Sir William Bragg in the Charing Cross Hospital Medical School on November 28 on "The Crystal Structure of Organic Substances in Its Relation to Medicine."

BOTANISTS, plant physiologists and phytopathologists planning to visit France at the time of the botanical meetings to be held in Cambridge next year are asked to communicate as soon as possible with Dr. Jean Dufrénoy, Station de Pathologie Végétale, Etoile de Choisy, Versailles, S. O., France, in order that an organized trip through France may be arranged.

AN Associated Press dispatch reports that seventeen Russian agricultural engineers arrived from Moscow on December 29 on the *Nieuw Amsterdam* to study the manufacture of farming implements in the United States. They are reported to have said that the Soviet government is planning to construct the world's largest factory for the manufacture of agricultural machinery and implements at Nijni-Novgorod.

THE twentieth annual exhibition of electrical, optical and other physical apparatus was held by the Physical Society and the Optical Society, London, on January 7, 8 and 9, at the Imperial College of Science and Technology, South Kensington. As on previous occasions, there was a trade section and a research and experimental section.

THE yacht *Corsair* has been formally transferred to the service of the United States by Mr. J. Pierpont Morgan. The yacht was renamed the *Oceanographer* before the transfer was made and will be used in the recharting of the Atlantic and Gulf seaboard by the Coast and Geodetic Survey. It is stipulated that the vessel shall not be disposed of by the government until it is scrapped. It will be placed under the command of Captain F. L. Peacock, of the Coast and Geodetic Survey.

THE Secretary of the Interior announced on December 2 that the advisory committee on education by radio had received grants from the Carnegie Corporation of New York, the J. C. Penney Foundation and the Payne Fund, amounting to $16,500, and that the Payne Fund had lent the services of an expert for several weeks. With these resources it is expected that the committee will continue to conduct investigations into the extent to which radio has been used in school work and by colleges for broadcasting programs of an educational nature. The committee intends to make some recommendations for scientific research designed to ascertain the effectiveness of radio as an educational tool.

EMILE PICARD, general secretary of the Academy of Sciences in Paris, has received from an American, who prefers to remain anonymous, a check for 300,000 francs, for the "Amis des sciences," a society organized for the aid of unfortunate scientific men and their families.

THE Field Museum of Natural History has begun publication of a monthly bulletin, *Field Museum News*, which is to be circulated among the institution's members, now numbering nearly 6,000. Announcements, reports and records of all museum activities will be published in the periodical, including notes on additions and improvements in the exhibition halls, and accounts of the work conducted in the museum's scientific research laboratories, and by its many expeditions operating in widely scattered and remote parts of the world. Dr. Stephen C. Simms, director of the museum, is the editor. Contributing editors include Dr. Berthold Laufer, curator of anthropology; Dr. B. E. Dahlgren, acting curator of botany; Dr. O. C. Farrington, curator of geology, and Dr. Wilfred H. Osgood, curator of zoology. H. B. Harte, head of the museum's division of public relations, is managing editor. The paper is printed by Field Museum Press, the museum's own plant, which also prints the scientific books and pamphlets published by the museum. A feature of the January issue is the first installment of a history of the museum since it was founded by Marshall Field in 1893, written by Dr. Farrington, who is dean of the scientific staff, having been head of the department of geology since the museum's earliest days.

THE mining interests of central Pennsylvania have organized an advisory board to cooperate with the school of mineral industries of the Pennsylvania State College. At a recent meeting in Johnstown members of the board studied the curriculum and research projects with the object of making any suggestions which might bring the college service closer to the industry. A board representing the western mining interests was organized in December and one from the anthracite fields will be formed in the spring.

Industrial and Engineering Chemistry reports that efforts of American chemists to save from destruction by mold the only official records of the construction period of the Panama Canal, a series of five mural paintings in the Administration Building at Balboa, have been successful. W. B. Van Ingen, instructor in Cooper Union, supervised the treatment of the pictures. When the presence of mold, the gangrene of paintings, became apparent on the pictures last year, Mr. Van Ingen, who painted the series at the request of George R. Goethals, builder of the canal, was com-

missioned by Harry Burgess, governor of the Canal Zone, to undertake the restoration of his paintings. The treatment finally used was devised by Albert B. Newman, director of the department of chemical engineering at Cooper Union, with the cooperation of Charles Thom, chief mycologist of the Bureau of Chemistry and Soils of the Department of Agriculture; Alexander Scott, of the British Museum, and other mold experts. Mr. Van Ingen said that the thin film of paraffin covering his pictures would remain unchanged indefinitely, and would prove an absolute protection against the effects of exposure to the tropical climate as long as it existed. The use of paraffin was suggested by the experience of New York City engineers, who made an extensive examination of the Obelisk in Central Park to determine how it could be protected from the city climate. Among the mold experts who assisted Mr. Van Ingen and Professor Newman, in addition to Drs. Thom and Scott, were: Lewis T. Bates, chief of the laboratories of the Health Department of Panama; Bernard O. Dodge, plant pathologist of the New York Botanical Garden, where important research in this field is in progress; Charles F. McCoombs, of the New York Public Library; T. R. Beaufort, professional picture restorer; Leslie Ewart Morris, of the British Cotton Research Association; George Smith, of England, and Hugh L. Robinson, editor of the *Journal of the Textile Institute of Manchester.*

PLANS are now well advanced, under the direction of Sir Richard Allison, chief architect to the Office of Works, London, for the construction of the building which is to house the Museum of Practical Geology. The museum is at present in Jermyn Street, and the new site is in South Kensington, adjoining the Science Museum in Exhibition Road, just beyond the northeast corner of the Natural History Museum, and the proposal is to connect the new structure by a bridge with the Science Museum, from which it will be only a few yards distant. Although the plans for the new building are not yet complete, they are far enough advanced for a beginning to be made very shortly in constructing the foundations. The estimated cost of the new building is £220,000. The general scheme is that it shall be on four floors, with a top-lighted roof and central well. The problem of finance is simplified by the fact that the site in Jermyn Street, which belongs to the Crown, is of great value. The museum was founded in 1852. Its library is essentially a library of the geological surveys and maps of the world, together with the economic geology of Britain, the British Dominions and the world generally. Huxley and Tyndall were among those who at one time lectured in the museum. In 1900, during reconstruction, the lecture hall was thrown into the museum library. It is hoped to resume the lectures in the new building or in the lecture theaters of adjacent museums in South Kensington.

The British Medical Journal reports that the act to incorporate a Royal College of Physicians and Surgeons of Canada received last June the royal assent, and in accordance therewith an inaugural meeting, convened by the general secretary of the Canadian Medical Association, was held at Ottawa on November 20. This meeting was attended by sixty of the leaders of the medical profession in Canada, designated charter fellows, and it marked the culmination of a movement which began in 1920. The act provides that the council may organize the college into medical and surgical divisions, those admitted into them being designated fellows of the Royal College of Physicians of Canada or fellows of the Royal College of Surgeons of Canada (or their equivalents in the French language). At the inaugural meeting, Toronto was chosen as the headquarters of the college; Professor Jonathan C. Meakins, of McGill University, Montreal, was elected president; Professor Duncan Graham, of Toronto, vice-president in charge of the medical division, and Dr. F. N. G. Starr, also of Toronto, vice-president in charge of the surgical division. Dr. T. C. Routley, general secretary of the Canadian Medical Association, was elected registrar-secretary.

DISCUSSION

SOME LIMITATIONS OF THE EXPERIMENTAL METHOD IN BIOLOGY

AT the present time much is being written as to the value of the experimental method of attack in biological problems. There can be little doubt of the great utility of the experimental method of approach, but in itself this method may lead to extremely fallacious conclusions. A notable example, apparently, of this deplorable result is presented by current investigations on the experimental production of new species.

Obviously, in pursuing the study of experimental evolution we must keep our eye closely focused on the conditions in nature because it is under the conditions prevailing in nature that new species appear from time to time. The normal course of events in the case of the coming into existence of members of a species has been contemptuously designated by one of our prominent experimental biologists as "the passing show." If we were to continue the figure of the show, we would on the same basis naturally characterize a