Dr. Welch has reached his eightieth year, and a whole nation joins in good wishes to him.

Dr. Welch is our greatest statesman in the field of public health, and his public service to the nation well warrants our appreciation of him. With profound knowledge, wide experience and skill in dealing with men, sound judgment and a vision of the future, he has been a great asset to the nation, and we may fortunately hope that he will continue for many years more to bless mankind with his invaluable leadership.

Our age is marked by two tendencies, the democratic and the scientific. In Dr. Welch and his work we find expression of the best in both tendencies. He not only represents the spirit of pure science, but constantly sees and seizes opportunities to direct its results into service of human kind.

Medicine until modern times was a species of dramatic play upon emotions rather than a science made useful through technology. It combined centuries of experience in trial and error in reactions from many drugs, with a maximum of skill on the part of the practitioner in a kindly art of making the patient feel as hopeful and comfortable as possible while he was dying of the disease, the origin and treatment of which were as yet undiscovered. Providence was made responsible for his fate, rather than the bacillus which should never have been allowed to infect him.

Modern medical practice, however, is based upon a vast background of scientific research and discovery. In the creation of this science, in the conversion of its principles into technical methods for use in actual practice, in the diffusion of knowledge of these principles and methods and in the application of them upon a national and world-wide scale, Dr. Welch has played the leading American part.

As a research worker in pure science he has made original and valuable discoveries. As a technologist he has devised practical methods of applying pure science. As a teacher he has spread true knowledge and inspiration among thousands and hundreds of thousands. But in organizing and directing research and application of medical knowledge on a wider field of prevention of disease, he is among the preeminent few who deserve the title of statesman.

No valuable change in everyday practice of any of the great arts has ever been made that was not preceded by the accretion of basic truths through ardent and painstaking research. This sequence that precedes effective action in medicine is equally important in every field of progress in the modern world. It is not the method of stirred public emotions, with its drama of headlines; it is rather the quiet, patient, powerful and sure method of nature herself, of which Dr. Welch is the master.

Dr. Welch has happily combined in his character and intellect the love of truth and the patient experimental habit of the pure scientist, with the ingenuity of the inventor and the organizing vision and energy of the promoter of sound enterprise—and combines all these things with a worldly wisdom and gracious charm that have made him a leader among men.

I know that I express the affection of our countrymen and the esteem of his profession in every country when I convey to him their wishes for many years of continued happiness.

SCIENTIFIC NOTES AND NEWS

AT the banquet in Washington on April 8 celebrating the fiftieth anniversary of the American Society of Mechanical Engineers, President Hoover was presented with the first Hoover Gold Medal, founded "to commemorate the civic and humanitarian achievements of Herbert Hoover," and to be awarded hereafter for distinguished public service by engineers. The presentation was made by Dean Dexter S. Kimball, president of the board of award and past president of the society. The ceremony opened the exercises, which were presided over by Professor William F. Durand, past president, as toastmaster. Charles Piez, president, made an address on "The Broadening Responsibilities of the Engineer" and Dr. Robert A. Millikan followed, speaking on "The Bonds between Science and Engineering."

THE Founders' Medals of the society were presented at a luncheon at the Mayflower Hotel. Acting as honorary chairman was Ambrose Swasey, one of the six survivors of the founders of the society and a past president. John R. Freeman, also, past president, presided. Those honored besides Mr. Swasey were: John W. Cloud, of London; John S. Coon, Atlanta, Georgia; Robert Grimshaw and Francis H. Richards, of New York, and E. H. Robbins, of Pittsfield, Massachusetts.

GOLD and silver medals constituting the Rumford Premium of the American Academy of Arts and Sciences were presented on April 9 to Dr. John S. Plaskett, director of the Dominion Astrophysical Observatory, Victoria, B. C., in recognition of his researches on stellar spectroscopy. On the occasion of the award of these medals Dr. Plaskett addressed the academy on "The Gases of Interstellar Space."

DR. WILLIAM ELGIN WICKENDEN was inaugurated as president of the Case School of Applied Science on April 11. Delegates from 48 research and national scientific bodies and from 115 colleges and universities attended. Dr. Dexter S. Kimball, dean of engineering, Cornell University, spoke for engineering, and Dr. Charles G. Abbot, secretary of the Smithsonian Institution, for science. Frank A. Quail, president of the board of trustees, delivered the opening address.

DR. IRVING LANGMUIR, director of the Research Laboratory of the General Electric Company at Schenectady, addressed an audience of German scientific men, in Berlin, including Professor Albert Einstein, on March 11, on "The Chemical and Electrical Properties of Absorbed Films on Tungsten."

DR. FELIX W. PAWLOWSKI, Guggenheim professor of aeronautics in the college of engineering of the University of Michigan, has recently been elected a fellow of the Royal Aeronautical Society of England.

THE William Mackenzie Medal for 1929 for original contributions to ophthalmology has been awarded by the Glasgow Eye Infirmary to Professor Dr. van der Hoeve, of Leyden, Holland.

VICE-ADMIRAL SIR ROBERT DIXON, president of the Institute of Marine Engineers, and Dr. H. J. Weld, organizer of the Weld-Ashmolean Expedition to Kish, have been elected members of the Athenaeum Club, under the provision that empowers the election of persons of distinguished eminence in science.

THE honorary membership of the Academy of Sciences of Finland has been conferred on Sir J. C. Bose for his contributions in advancement of knowledge of life-reactions in plants.

AT a reception held at the Egyptian Legation in London on March 12 the chargé d'affaires, Dr. Hamed Mahmud, presented to Lord Moynihan, of Leeds, president of the Royal College of Surgeons, the Grand Cordon of the Order of the Nile, bestowed on him by King Fuad.

REAR-ADMIRAL ANDREW T. LONG, of the United States Navy, received sixty-one votes in an election for a successor as head of the International Hydrographic Bureau to Rear-Admiral Albert P. Niblick, United States Navy, who died last year. Seventy votes are necessary for election. Captain Mares, of Great Britain, had forty-six votes; Captain Speiss, of Germany, twenty, and Captain Laujauns, of Holland, eight.

DR. JAMES BRYANT CONANT, professor of organic chemistry of Harvard University, has been elected a member of the board of scientific directors of the Rockefeller Institute for Medical Research.

PROFESSOR JOSEPH B. SHAW, head of the department of ceramics in the School of Mineral Industries at the Pennsylvania State College, has been selected by the Bangor Association of Slate Manufacturers as its representative to work with the Bureau of Standards in fixing standards and devising tests to insure uniform grades of roofing slate for government use.

E. M. MERVINE, professor of agricultural engineering at Iowa State College, has resigned in order to enter the service of the U. S. Department of Agriculture. As agricultural engineer he will devote his time to the investigation and development of sugar-beet machinery.

GILBERT L. STOUT, who since 1926 has been field botanist for the Illinois State Natural History Survey with headquarters at the University of Illinois, has taken a position as plant pathologist with the California State Department of Agriculture at Sacramento.

DR. LYMAN F. KEBLER, for many years government specialist in drugs and medicines, dealing with the enforcement of food, drug and mail-order laws, is reported by the *Journal* of the Washington Academy of Sciences to have been made medical director of the Tennessee Products Corporation at Nashville, where his work will include assistance in the utilization of by-products, medicinally and otherwise, as well as health matters connected with the corporation's activities. Dr. Kebler will continue to be medical director of the John McEntee Bowman health interests, identified with the Biltmore chain of hotels, and in addition to his general headquarters in Washington, D. C., will have offices in Nashville and in New York City.

DR. HOWARD B. STOUGH has been promoted to the professorship of zoology and has been made head of the department at the University of Idaho.

DR. CHARLES CHRISTIAN JOHNSON, instructor in pharmacology at the Stanford University School of Medicine, has been appointed professor of pharmacology in the School of Medicine of the University of Utah.

DR. HARVEY J. HOWARD, professor of ophthalmology at Washington University, Saint Louis, announces the following appointments in the department: Dr. George H. Bishop, now associate professor of physiology in the School of Medicine, professor of applied physiology; Dr. Louis A. Julianelle, of the Rockefeller Institute for Medical Research, associate professor of applied bacteriology and immunology; Dr. James A. Hawkins, also of the Rockefeller Institute, associate professor of applied biochemistry; Dr. R. Wendell Harrison, of the University of Chicago, instructor in applied bacteriology and immunology, and Mr. Garvey Bowers, of the University of Kansas, research assistant in applied bacteriology.

Nature reports that in connection with the Physical and Chemical Survey of the National Coal Resources, which is one of the aspects of the fuel research work of the Department of Scientific and Industrial Research, the department has recently appointed a committee to deal with the West Yorkshire Coal Area. Among the members are: Professor J.

W. Cobb, Leeds; Professor J. A. S. Ritson, Leeds; Mr. C. E. N. Bromehead, Geological Survey of Great Britain; Dr. C. H. Lander, director of Fuel Research, and Dr. F. S. Sinnatt, superintendent of the Coal Survey. The object of the survey is to investigate the characteristics of the various coal seams in Great Britain with the view of their utilization to the best advantage. Local laboratories are established in each area for the examination of samples, and, when necessary, large-scale investigations are carried out at the Fuel Research Station (East Greenwich) or elsewhere.

DR. C. O. SWANSON, head of the department of milling industry at the Kansas State Agricultural College at Manhattan, has been granted leave of absence from May 1 to September 30 to enable him to make a study for the U. S. Department of Agriculture of the utilization of American wheat in Europe.

DR. THOMAS R. GARTH, professor of educational psychology in the University of Denver, is conducting researches on the color blindness of Indians, starting at Santa Fé, New Mexico.

WALTER GRANGER, paleontologist and second in command of the Central Asiatic Expedition of the American Museum of Natural History, and Albert Thompson, assistant paleontologist, sail from Seattle on April 18 for Peking, where they will join Dr. Roy Chapman Andrews on the fifth and final trip of the expedition into the Gobi Desert.

DR. ROBERT A. MILLIKAN gave an address on April 10 in the engineering auditorium, New York City, on "Recent Advances in Our Knowledge of the Universe around Us," under the auspices of the American Institute of the City of New York, the Museums of the Peaceful Arts and the New York Electrical Society.

DR. CHAS. B. DAVENPORT, director, department of genetics of the Carnegie Institution of Washington, at Cold Spring Harbor, L. I., delivered an address on "The Mechanism of Organic Evolution" before the Washington Academy of Sciences on April 16.

DR. WILDER DWIGHT BANCROFT, professor of chemistry at Cornell University, is to give the dedicatory address on "Modern Science" when the Hall of Science of the University of Southern California, the final wing of which has recently been completed, is formally dedicated on June 6, during the one-week semi-centennial celebration.

DR. JOSEPH ERLANGER, professor of physiology in the Medical College of Washington University, St. Louis, will deliver the Hitchcock lectures at the University of California, beginning on April 21. The general subject of the lectures is "The Analysis of the Electrical Manifestations of Nerve Action."

THE first course of lectures under the Porter Lectureship in Medicine of the University of Kansas School of Medicine was delivered on April 1 and 2 at the Bell Memorial Hospital by Dr. Lewellys F. Barker, emeritus professor of medicine, Johns Hopkins University. The subjects of the lectures were "Diagnosis and Treatment of the Commoner Personality Disorders" and "Psychology and Medicine."

DR. A. J. CARLSON, professor of physiology at the University of Chicago, lectured to the students and faculty of the Vanderbilt University School of Medicine on March 31. His subject was "Organotherapy." The lecture was given under the auspices of the Phi Beta Pi fraternity.

WALTER A. RUKEYSER, who has recently returned from a five months' trip in Russia, where he served as technical adviser to Uralasbest, the state absestos trust, gave recently a lecture before the department of geology of Princeton University on "The Consulting Engineer in the Union of Socialist Soviet Republics."

DR. VICTOR M. GOLDSCHMIDT, professor of mineralogy and crystallography at the University of Göttingen, gave in March lectures on chemical geology at the University of London.

The Experiment Station Record calls attention to the Ninth International Horticultural Congress which will meet in London from August 7 to 15 under the auspices of the International Committee for Horticultural Congresses and by invitation of the Royal Horticultural Society. Addresses are scheduled for three days and will be divided into three main groups of propagation, pomology, botanical gardens and general subjects. The remainder of the time will be largely devoted to excursions to private and commercial gardens, nurseries and similar establishments, the gardens of the Royal Horticultural Society and the Royal Botanic Gardens at Kew, the Rothamsted Experimental Station and the research stations at East Malling, Cheshunt and Long Ashton, and the John Innes Horticultural Institution. There will also be a special horticultural exhibition on August 14 and 15.

AN international league for combating trachoma was founded at the thirteenth International Ophthalmological Congress. The president of the league, Professor Emile de Grósz, and the secretary, Dr. F. Wibaut, were entrusted with the formation of a committee composed of delegates from the various national ophthalmological societies. Up to the end of February forty-nine delegates had been nominated from twenty-six countries. The next meeting of the league will be held on July 26 in Geneva, and the program will be issued at the close of May.

AN institute of natural sciences will be held at Bowdoin College early in 1931. This will be the fifth institute in the series begun in 1923, the first four having covered the fields of modern history, literature, the fine arts and the social sciences.

THE Twenty-fourth Annual Convention of the Illuminating Engineering Society is to be held in Richmond, Virginia, from October 7 to 10. Present plans contemplate sessions to be devoted to lighting practice, natural lighting, lighting service, ultra-violet radiation, lighting education, light in architecture and decoration, as well as the usual business sessions on the opening day. The committee on lighting service is also planning to hold a pre-convention meeting on the day immediately preceding the opening of the convention, which will be devoted entirely to subjects of interest to central-station lighting service engineers. This will be held on October 6.

SIGMA PI SIGMA, honorary physics fraternity, has granted petitions for charters at the University of Washington, Park College and William Jewell College. Chapters at these institutions will be installed about the middle of May in connection with the installation of several other chapters at institutions where petitions are now under consideration.

AN Associated Press Dispatch reports that the Massachusetts General Hospital, the Boston Museum of Fine Arts, the Massachusetts College of Pharmacy and several other institutions will share to the extent of several millions of dollars in the estate of the late Mrs. Harriet J. Bradbury. The estate is valued at between $12,000,000 and $15,000,000.

MORE than a quarter of a million dollars has been subscribed to the centennial memorial building fund of the Medical Department of the University of Georgia for the erection of a building to commemorate the one-hundredth anniversary of the founding of the medical school by Dr. Milton Antony in 1823. The sum of $40,000 still remains to be subscribed.

MR. JOHN D. ROCKEFELLER, JR., has offered to contribute $250,000 to an endowment fund of $2,000,000 which is being raised for the International Y. M. C. A. College at Springfield, on condition that $1,750,000 be received in cash from other sources before July 1, 1935.

OHIO WESLEYAN UNIVERSITY has received a bequest of $50,000 by the will of Frank E. Stuyvesant, of Cleveland, Ohio.

THE nineteenth Annual Report of the Brooklyn Botanic Garden contains a résumé of research that has been in progress during 1929, including studies of the diseases of cereal grains, beardless iris project, forest pathology, systematic botany and genetics; also a summary of the educational activities. Over 1,127,000 visitors were recorded at entrance turnstiles, and study material including living plants and petri dishes with sterile agar were supplied to 6,457 teachers for the instruction of 282,000 pupils. Over 795,000 packets of seeds were supplied to school children for planting in school and home gardens and 38 exhibits were installed in the public schools of Brooklyn and other boroughs. Numerous gifts are also recorded.

DISCUSSION

COSMICAL MATTER AND STELLAR EVOLUTION

IN his address before the British Association for the Advancement of Science at the recent meeting in Cape Town, as given in SCIENCE of July 26 last, Lord Rayleigh touches on what would be called in Spanish countries a "palpitating question" in astronomical problems of to-day.

The importance of the underlying cause of the spectral conditions which he discusses can not be overestimated. But there are some points in connection with the nebulae especially in which it seems to me a diversity of opinion is permissible.

Interest in the relation of nebulosity to early-type activity, although not in the same sense as Lord Rayleigh appears to favor, was stated in an article on the cause of stellar spectral differences.[1]

[1] *Ap. Jour.*, 47: p. 305, 314, 1918.

It has been a profound mystery to me why so obvious a source of energy and one so efficacious as cosmical matter has been ignored—not simply unrecognized, for it has been found everywhere, but just ignored. Clouds of it, great and small, abound in the Milky Way; the great nebulae such as Orion, Trifid, Eta Argus and M8 show it; all the spiral nebulae large enough to show detail reveal it; the meteors in our atmosphere, the corona and zodiacal light about our sun are other examples. We also find many variable stars and novae enveloped in clouds which are best explained as such. Comets are doubtless nothing but clouds of such matter, and the asteroids are believed to have a similar constitution.

The Pleiades are enveloped in a great cloud of such matter, and a great many early-type stars have clouds either attached or near.