THE RETIRING AND INCOMING HEAD OF THE BUREAU OF BIOLOGICAL SURVEY

JAY N. DARLING, chief of the Bureau of Biological Survey, relinquished his post on November 15 and has resumed his work as a cartoonist. He will be succeeded by Ira N. Gabrielson, now a consulting specialist to the chief of the bureau and assistant chief of the Division of Wildlife Research and for the last few months executive assistant to the Division of Scientific Research.

Mr. Darling, in accepting Secretary Wallace's invitation in March, 1934, to become chief of the survey, did so with the understanding that it would be for only a short time. He has continued with the Department of Agriculture long beyond the period originally contemplated, and leaves now only upon the insistence of the outside interests to which he is obligated.

Mr. Darling will continue to be active in efforts to bring together the multitude of wildlife groups of the United States into what he considers a most essential organization—a national federation of wildlife organizations. In a recent statement he says: "I have come to realize that most of our wildlife conservation troubles are due to lack of organization among those who are interested but ineffective in the conservation of wildlife. There is no mass strength to enforce adequate legislative and executive attention to wildlife interests. Every other element of American life has a national organization to get effective results. Wildlife interests remind me of an unorganized army, beaten in every battle, zealous and brave but unable to combat the trained legions who are organized to get what they want."

Mr. Darling joined the department in March, 1934, after having served for three months on the President's Committee on Wildlife Restoration. This committee recommended the immediate acquisition of five million acres of submarginal agricultural land in forty-four states, and the gradual acquisition of an additional eight to ten million acres for wildlife production and related purposes. Prior to that he had gained national recognition as a leader in wildlife conservation and restoration as a member of the Iowa Fish and Game Commission, of the Iowa Planning Commission, of the Migratory Bird Conservation Commission of the U. S. Department of Agriculture, National Association of City Planners, Des Moines City Planning Commission and of the Des Moines Park Board.

As chief of the Bureau of Biological Survey, Mr. Darling began putting into effect the program recommended by the President's committee. He obtained funds for the Government's effort to establish wildlife refuges. He reorganized the bureau for more effective prosecution of research, education and law enforcement.

Mr. Gabrielson has been connected with the bureau since October 1, 1915, when he was appointed assistant economic ornithologist to conduct field research in the food habits of birds. Since then he has served in every branch of the service and has become familiar with the wildlife problems throughout the North American continent. He went from field work in New England to the Mississippi Valley and the Great Plains states and was then transferred to the Pacific coast supervision of rodent and predatory animal control work in Washington, Oregon, California, Nevada and Idaho. As Regional Game Management Director for the states of the northwest he improved the organization and did valuable scientific work.

SCIENTIFIC NOTES AND NEWS

THE Nobel Prize in physics for 1935 has been awarded to James Chadwick, of the University of Liverpool, for his discovery of the neutron, made while working in the Cavendish Laboratory of the University of Cambridge. The prize in chemistry has been awarded to Professor Frederick Joliot and Mme. Irene Curie-Joliot for their synthesis of radioactive elements, working in the Curie Laboratory, Paris. It will be remembered that Mme. Curie-Joliot is the daughter of M. Pierre Curie and Mme. Marie Curie, who were awarded the Nobel Prize in physics in 1903 for the discovery of radium. Mme. Marie Curie also received the Nobel Prize in chemistry in 1911, for the isolation of radium.

THE University of Paris conferred *in absentia* on November 9 its honorary doctorate on Dr. Thomas Hunt Morgan, director of the William G. Kerckhoff Laboratories of the Biological Sciences at the California Institute of Technology.

THE Perkin Medal has been awarded to Dr. Warren K. Lewis, professor in chemical engineering at the Massachusetts Institute of Technology. The medal is awarded annually for valuable work in applied chemistry by a committee representing the five chemical societies of the United States. It will be presented to Dr. Lewis on January 10, at a meeting to be held at The Chemists' Club in New York City, when he will speak on "The Application of Physical Data to High-Pressure Processes."

THE Hughes Medal of the Royal Society, London, has been awarded to Dr. Clinton J. Davisson, research physicist on the staff of the Bell Telephone Labora-

tories, for his discovery, jointly with Dr. L. H. Germer, of electron diffraction. Recipients of the medal in the United States have included Dr. Alexander Graham Bell, Dr. O. W. Richardson, Dr. W. D. Coolidge and Dr. Irving Langmuir.

THE first award of the David Anderson-Berry Prize of the Royal Society of Edinburgh has been made to Dr. Charles Melville Scott, lecturer in materia medica at the University of Edinburgh, for his essay "On the Action of X- and Gamma-Rays on Living Cells." This prize, which consists of a gold medal and a sum of money, was founded by the late Dr. David Anderson-Berry in 1930, and is awarded triennially to the person, who, in the opinion of the council, has recently produced the best work on the nature of x-rays in their therapeutical effect on human diseases.

DR. A. P. COLEMAN, formerly professor of natural history and geology at Victoria University, and later professor of geology and dean of the faculty of arts at the University of Toronto, was presented with his portrait on November 18 at the Founders' Day observance of Victoria University.

A DINNER in honor of M. Albert Caquot, the French civil engineer, was given recently by the Franklin Institute, Philadelphia, under the auspices of the Franco-American Institute of Science and the Association Franco-Americaine. After the dinner he gave a lecture before the institute.

Nature reports that at the annual statutory meeting of the Royal Society of Edinburgh, held on October 28, the following officers were elected: *President,* Professor D'Arcy Wentworth Thompson; *Vice-presidents,* Professor C. G. Darwin, Professor R. A. Sampson, Principal O. Charnock Bradley, Professor P. T. Herring, the Marquis of Linlithgow and Professor E. B. Bailey; *General secretary,* Professor J. H. Ashworth; *Secretaries to ordinary meetings,* Professor F. A. E. Crew and Professor J. P. Kendall; *Treasurer,* Dr. James Watt.

DR. ARTUR HAAS, of the University of Vienna, is this year visiting professor of physics on the Tallman Foundation at Bowdoin College, Brunswick, Me. Dr. Haas is taking a lecture tour through the Middle West and to the West Coast during January. He will deliver the third Alexander Van Rensselaer Lecture at the Drexel Institute, Philadelphia, on December 4.

DR. RAOUL BLANCHARD has resigned as professor of geography at Harvard University. He holds a chair of the same name at the University of Grenoble, and since 1928, when he received a permanent appointment at Harvard, he has divided his time between the two institutions. In 1917 he was the French exchange professor at Harvard. His resignation will take effect at the end of the current calendar year.

DR. O. E. JENNINGS has been appointed head of the department of biology at the University of Pittsburgh, which has been formed by combining the existing departments of zoology and botany. All members of the former departments of zoology and botany are retained. Dr. Jennings has been connected with the university since 1911, since 1914 as head of the department of botany. He is also curator of the Carnegie Museum and director of the Lake Laboratory at Presque Isle since 1930. Dr. Robert T. Hance, since 1927 professor and head of the department of zoology, is now in charge of an enlarged program in the field of cytology.

THE following promotions have been made at the Stanford University School of Medicine: From associate professor to professor—James P. Baumberger, physiology; Maurice L. Tainter, pharmacology. From assistant professor to associate professor—Charles E. Clifton, bacteriology; John Field, II, and Victor E. Hall, physiology; John K. Lewis, medicine. From instructor to assistant professor—Charles W. Barnett, medicine; Edward Leef, medicine (radiology); James B. McNaught, pathology; Andrew B. Stockton, pharmacology.

H. H. WESTVELD has been appointed assistant professor of forestry in the department of horticulture of the College of Agriculture of the University of Missouri.

DR. MORRIS A. STEWART, instructor in biology at the Rice Institute, has resigned to join the department of entomology and parasitology of the College of Agriculture of the University of California at Davis.

DR. EDWARD HINDLE has been appointed regius professor of zoology in the University of Glasgow in place of Professor John Graham Kerr, resigned.

FRANK STUART ATKINSON, since 1925 manager of the Hatfield Main Colliery, has been appointed to the chair of mining at the University of Leeds, in succession to Professor J. A. S. Ritson, who has been appointed professor of mining at the Royal School of Mines, London.

DR. LEONARD HALFORD DUDLEY BUXTON, fellow of Exeter College, Oxford, has been appointed for a period of seven years reader in physical anthropology.

DR. THOMAS SHIRLEY HELE, university lecturer in biochemistry and fellow of Emmanuel, has been elected master of Emmanuel College, Cambridge.

VERNE E. CHATELAINE has become acting assistant director of the newly-established Branch of Historic Sites and Building of the National Park Service.

DR. EUGEN FISCHER has been appointed head of the Institute for the Biology of Heredity and Racial Hygiene, which was recently opened at Frankfurt-on-Main.

Nature reports that the following appointments have recently been made by the British Secretary of State for the Colonies: A. Pickles, entomologist, Department of Agriculture, Trinidad; J. W. Costello, late assistant conservator of forests, assistant conservator of forests, Nigeria; T. A. Strong, deputy conservator of forests, conservator of forests, Malaya, and J. G. Watson, conservator of forests, deputy director of forests, Malaya.

DR. W. H. MILLS, the Right Hon. Lord Riverdale, Professor A. Robertson and H. B. Shackleton have been appointed members of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research of Great Britain, to succeed Dr. E. J. Butler, Sir Kenneth Lee and Professor N. V. Sidgwick, who have retired.

THE Committee on Scientific Research of the American Medical Association has made a grant to Dr. Harry H. Sobotka, head of the department of chemistry at the Mount Sinai Hospital, New York, in aid of a "Chemical and Serological Study of the Enzymatic Destruction of the Blood-group Specific Carbohydrate."

DR. H. L. SHIRLEY, of the Lake States Forest Experiment Station, has recently been granted a fellowship under the Carl Schurz Memorial Foundation. Under this fellowship Dr. Shirley is making a study of forest tree seed germination practices and reforestation methods generally in Germany, Czechoslovakia, Poland, Switzerland and other Central European countries. He will be in Europe for several months.

DR. O. M. HELFF, associate professor of biology at New York University, has leave of absence for a year, during which he expects to work in the department of zoology of the University of Cambridge and in other European laboratories.

DR. LEO LOEB, professor of pathology at the Medical School of Washington University, St. Louis, delivered a Sigma Xi lecture at the University of Missouri on October 31. His subject was: "The Thyroid Stimulating Hormone of the Anterior Pituitary Gland."

THE eleventh annual Norman Lockyer Lecture, established by the British Science Guild as a means of periodically directing the attention of the public to the influence of science upon human progress, was given by Sir Josiah Stamp, president of the British Association for the Advancement of Science, on November 13. The subject of the lecture was "The Calculus of Plenty."

DR. BERNARD SMITH, who was recently elected director of the British Geological Survey and Geological Museum, delivered one of the Cantor Lectures of the Royal Society of Arts on November 18. He will deliver the second and third lectures on November 25 and December 2. The title of the lectures is "Geological Aspects of Underground Water Supplies."

THE annual meeting and dinner of the U. S. Institute for Textile Research was held in New York City on November 14. Dr. Robert A. Millikan, of the California Institute of Technology, and Dr. J. R. Katz, director of warp-sizing research of the institute, were the principal speakers. Among those present at the dinner were Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, and Dr. Henry A. Barton, director of the American Institute of Physics. Dr. Francis P. Garvan, of the Chemical Foundation, was elected president.

THE Committee on Grants-in-Aid of the National Research Council will hold its next meeting in March, 1936. Applications for grants to be considered at this meeting must be on file with the secretary of the committee, Dr. Clarence J. West, not later than February 15. Application blanks will be furnished on request.

APPLICATIONS for associate and assistant metallurgist (recovery) and associate and assistant metallurgist (physical) must be on file with the U. S. Civil Service Commission, Washington, D. C., not later than December 9. The entrance salary for the associate grade is $3,200 a year, and for the assistant grade $2,600 a year. These salaries are subject to a deduction of 3½ per cent. toward a retirement annuity. Optional branches are: ferrous, nonferrous and ore dressing.

A FUND of $7,800 has been donated by the E. R. Squibb and Sons Company of New York City for the study of cyclopropane at the University of Wisconsin. The research program will be under the direction of Dr. Ralph M. Waters, professor of anesthesia in the Medical School at Madison.

THE 1935 award for chemical engineering achievement, to be presented by *Chemical and Metallurgical Engineering* at the close of the coming Fifteenth National Exposition of Chemical Industries, has been bestowed on E. I. du Pont de Nemours and Company for meritorious achievement in the successful large-scale production of synthetic rubber, synthetic camphor and a variety of other essential organic chemicals and dyestuffs. The award consists of an appropriate bronze plaque, suitably engraved to indicate the nature of the achievement and the name of the recipient. The first of these awards was won by the Carbide and Carbon Chemicals Corporation, and presented at the previous exposition.

FOR the past twenty-two years, the Brooklyn Botanic Garden and the Botanical Society of America have

cooperated in the production of *The American Journal of Botany*, in accordance with an agreement executed in 1913. The society had charge of the editing and the garden had charge of the business management and assumed certain financial responsibility. In harmony with a provision in this agreement, the Botanic Garden suggested to the society last June that the cooperation be terminated at the earliest convenience of the society. The society has now notified the Botanic Garden naming January 1, 1936 as the date for the termination of the agreement. After that date, the Brooklyn Botanic Garden will have no official connection with *The American Journal of Botany*.

AN expedition of nine men has left England to spend fourteen months in North-East Land. It is supported, according to the London *Times*, by Oxford University and the Royal Geographical Society, and will be under the leadership of A. R. Glen, leader of the 1933 expedition. The objects of the expedition are to map the unknown north and east coast of North-East Land, and also to explore the islands to the north and east. It is hoped to continue the survey of Victoria Island during the summer of 1936. Investigations on the ionosphere will be carried out, in continuation of the work of the British Polar Year Expedition, 1932–33, and research will also be made on cosmic rays, ozone and the *aurora borealis*. Two winter stations will be established on the western ice-sheet; each will be maintained by two men through the winter in order to examine the present balance of glacial conditions. The base hut is being built in Rijps Bay. The motor-ship Polar of Tromsö has been chartered to take the expedition to North-East Land, where no expedition has yet wintered.

DISCUSSION

POWER TO MOVE CONTINENTS

THE subject of continental drift seems to be still very much alive. This is evidenced by the fact that the International Astronomical Union[1] has been engaged in checking gross movements of earth crust since 1926 to determine the existence of systematic drift and by the very adequate discussion of the geological aspects of the case by Dr. W. W. Watts[2] in his presidential address before the British Association for the Advancement of Science in September, 1935.

It is notable that in all the discussion of the subject, the fact that "no plausible explanation of the mechanics involved has been offered" appears to be the final reason for not accepting the drift theory. This paper is an attempt to present a reasonable, understandable process of drift and is proposed for such consideration as it may deserve.

If continental drift occurred, if Malasia, Australia and Antarctica were moved from the Indian Ocean area, the problem is one of transportation; if the Americas were swung away from the Eurasia-Africa land body, transportation is again the central problem. The thing accomplished is a great engineering feat, done by recognized engineering methods. When inquiry is made regarding an adequate source of power to separate two continents by two thousand miles, the engineer answers without hesitation that only one such is conceivable—the heat engine.

What, then, are the geologically possible conditions under which a great natural heat engine may be created and so function as to separate continental masses?

The first requirement is that solid ocean bottoms shall not present an effective barrier to continental movement. This in turn demands a liquid substratum in the earth structure. Since the publication of Joly's[3] work on the geological effect of radioactivity the idea of a periodical liquid phase in a subsurface zone appears to be gaining favor. The engineer may then proceed on the basis that there are periods when the solid shell of rock is underlain by a liquid zone of like material. Moreover, that portion under the continental mass will be in a highly superheated condition; *i.e.*, dissolved gases will be exerting high pressure and the more volatile constituents of the complex liquid will be ready to vaporize with the slightest release of confining pressure. This condition of high temperature and high mobility with internally developed pressures is normally productive of dikes, sills and batholiths as well as lava flows, small and great.

Again, the fact that solid rock is heavier than its own melt is vital to the question. Ocean bottom, once broken into blocks, would sink and present no obstruction to the advancing continent. In fact, the advancing continent would act as an "ice breaker" and ride down the obstructions as encountered.

The stage is set for action by considering such an accumulation of temperature under the continental mass that bursting pressures occur and rupture takes place along a line following, of course, such lines of weakness as have been previously developed. A con-

[1] Science News note, SCIENCE, May 31, 1935.
[2] SCIENCE, September 6, 1935.
[3] "Radioacitvity and the Surface History of the Earth," Clarendon Press, 1924.