

There will be six public performances a day. One at 11 o'clock in the morning, then again at 2, 3, and 4 o'clock in the afternoon, and two performances at night—one at 8, and one at 9 o'clock and, for the time being at least, five public Sunday showings at the same afternoon and evening hours. Each presentation will last from 35 to 40 minutes, with a lecturer to explain the movements of the stars.

The Hayden Planetarium, made possible through a gift of \$150,000 from Charles Hayden and through funds loaned by the R.F.C., is a two-story structure erected at a cost of \$650,000. It has a dome-like roof which supports the semispherical projection ceiling in the auditorium on the second floor. The building was designed by Trowbridge and Livingston, and was built by the White Construction Company. The Zeiss Optical Company supplied the instruments for the planetarium.

The officers of the Planetarium Authority, of which F. Trubee Davison is president, are: Daniel E. Pomeroy, *first vice-president*; Cleveland E. Dodge, *second vice-president*; E. Roland Harriman, *treasurer*, and Clarence L. Hary, *secretary*. They are also members of the Executive Committee, together with Junius S. Morgan, H. Rivington Pyne, A. Perry Osborn and Robert Moses.

The administrative officers are: Roy Chapman An-

draws, *director*; Dr. Clyde Fisher, *curator*; Wayne M. Faunce, *vice-director* and *executive secretary*, and Frederick H. Smyth, *bursar*.

The planning and building of the Planetarium were aided by an advisory committee made up of the following: A. Cressy Morrison, *chairman*; H. Rivington Pyne, Charles J. Liebman, O. H. Caldwell, John A. Kingsbury, John M. Morehead, John I. Downey, Henry Norris Russell, George Ellery Hale, Samuel Alfred Mitchell, Harlow Shapley, William A. Chadbourne, S. L. Rothafel, Duncan H. Read and Wallace W. Atwood.

Dr. Clyde Fisher, curator of astronomy, will be the active head of the Planetarium, with William H. Barton, Jr., as associate curator. The following assistant curators are on Dr. Fisher's staff: Marian Lockwood, Dorothy A. Bennett, Arthur L. Draper. Charles A. Federer, Jr., will be one of the guest lecturers.

Under the terms entered into with the R.F.C., the cost of building was financed through the issue of \$650,000—twenty-year Reconstruction Finance Corporation bonds at 4½ per cent. Under the rules imposed by the federal government all income, except actual operating costs, must be turned over to the R.F.C. It is tentatively proposed to charge 25 cents admission for morning and afternoon performances and 35 cents at night.

SCIENTIFIC NOTES AND NEWS

DR. ALBERT N. JORGENSEN, professor in the School of Education at the University of Buffalo, has been elected president of the Connecticut State College at Storrs.

DR. WILLIAM T. ROOT, JR., professor of educational psychology and head of the department, has been appointed dean of the Graduate School of the University of Pittsburgh. He will continue as head of the work in psychology. Dr. E. R. Weidlein, director of Mellon Institute, has been acting dean of the Graduate School since the resignation of Professor L. P. Sieg to become president of the University of Washington.

DR. CHAIM WEIZMANN, the newly elected president of the World Zionist Organization, director of the Agricultural Experiment Station at Rehoboth in Palestine and president of the Hebrew University at Jerusalem since its inception, has been named chairman of the board of governors of the university. He is succeeded as president by Dr. Judah L. Magnes, who had previously filled the office of chancellor.

WITH the opening of the new college year Professor Stanhope Bayne-Jones, professor of bacteriology in the faculty of medicine, assumes the deanship of the

Yale School of Medicine, in succession to Dr. Milton C. Winternitz, who resigned at the end of the college year.

DR. THOMAS S. BAKER, since 1922 president of the Carnegie Institute of Technology, Pittsburgh, Pa., has retired from active service on account of ill health. At a meeting of the Board of Trustees on September 17 the title of emeritus was conferred on him and he was nominated for membership on the board. Until a successor is selected, Dr. Charles Watkins, director of the Margaret Morrison Carnegie College, will continue as acting president. In announcing the retirement of Dr. Baker, Samuel Harden Church, president of the board of trustees, said: "The board has acted upon Dr. Baker's wish for retirement with a most profound regret, all the members feeling what this step would mean as a loss to the educational interests of Pittsburgh and the world at large. During the time that Dr. Baker has occupied the presidency of Carnegie Tech he has deepened the resources of its scholarship and expanded its influence until it is now recognized as one of the world's great engineering schools. Dr. Baker has made Carnegie Tech practically a great reservoir for the advancement of scientific knowledge, particularly in the development of metal-

lurgy in all its branches and in the knowledge of coal and its by-products to the uses of industry."

At the meeting of the American Psychological Association held in Ann Arbor on September 6, the following testimonial, engrossed on parchment and signed by Professor Albert T. Poffenberger, president of the association, and Professor Donald G. Paterson, secretary, was presented: "We, members of the American Psychological Association, present this testimonial to James McKeen Cattell, a founder of the Association and its president forty years ago, in grateful appreciation of his distinguished services to Psychology. We honor him for his eminent achievements in experimental psychology, mental measurement, and the scientific analysis of individual differences. We are grateful for his services to psychology through this Association, for the journals which he has founded and edited, for his contributions to the establishment of psychology among the sciences, and for his devotion to the cause of science in general." The testimonial was presented *in absentia*, as Dr. Cattell was attending the seventh American Scientific Congress in Mexico City, as delegate of the United States Government and of the National Academy of Sciences, the American Association for the Advancement of Science and the American Psychological Association.

At a meeting of the general committee of the British Association on September 6, at which Sir Josiah Stamp was elected president, additional appointments were made as follows: Professor P. G. H. Boswell was appointed to replace Sir Josiah Stamp as general treasurer; new general secretaries, F. T. Brooks and Professor Allan Ferguson. Six vacancies on the council were filled by the election of Lord Bledisloe, Professor Fearnside, Professor R. Robinson, Sir Gilbert Walker, Dr. Julian S. Huxley and Dr. Tierney. The association will meet at Blackpool in 1936.

At the San Francisco meeting of the American Chemical Society, E. P. Kohler, of Harvard University, was reelected associate editor of the *Journal* of the society, and Professor F. C. Whitmore, of the Pennsylvania State College, was also elected an associate editor. W. A. Schmidt, of Los Angeles, Dr. E. R. Weidlein, director of the Mellon Institute, Pittsburgh, and F. C. Zeisberg, of Wilmington, Del., were reelected associate editors of *Technologic Monographs*, and Carl S. Miner, of Chicago, was elected to fill the unexpired term of the late A. D. Little on that board. Professor H. B. Weiser, of Rice Institute, Houston, Texas, and Professor T. R. Hogness, of the University of Chicago, were elected for a two-year term, beginning on January 1, 1936, as associate editors of the *Journal of Physical Chemistry*. Walter A. Schmidt, of Los Angeles, was elected for a term of three years, as a member of the council committee on policy.

DR. FRANKLIN J. BACON, professor of pharmacognosy at Western Reserve University, has been elected president of the Plant Science Seminar. The seminar was organized by the University of Minnesota in 1923 to promote interest in medicinal plants, vegetable drugs and food products. It will have its annual meeting next July in Portland, Ore.

MILES E. CARY was elected president and Dr. Roswell H. Johnson, formerly of the University of Pittsburgh, executive secretary, of the Social Hygiene Association of Hawaii, which was organized on August 21 in Honolulu.

DR. BRADLEY MERRILL PATTEN, assistant director of the medical sciences at the Rockefeller Foundation, has been appointed professor of anatomy and director of the anatomical laboratories at the University of Michigan. Professor Patten will be on leave of absence for the first semester of the university year, 1935-1936.

DR. WOLFGANG KOEHLER, formerly head of the Psychological Institute at the University of Berlin, has been appointed visiting professor of psychology at Swarthmore College. He will conduct seminars in systematic psychology and in the philosophical implications of modern science.

PROMOTIONS at Northwestern University include: Dr. Oliver J. Lee, chairman of the department of astronomy and director of Dearborn Observatory, from associate professor to professor; Malcolm Dole, from instructor to assistant professor of chemistry; Dr. Charles H. Behre, Jr., chairman of the department of geology and geography, from associate professor to professor; Dr. Walter S. Huxford, from assistant professor to associate professor of physics. The following new appointments have been made: Arthur R. Sayre, instructor in astronomy; P. W. Selwood, instructor in chemistry.

DR. ROY K. MARSHALL, who was for eighteen months a lecturer at the Adler Planetarium and Astronomical Museum of Chicago and who was engaged in research at the Yerkes and Harvard College Observatories last winter, has been appointed instructor in astronomy and mathematics at Wilson College, Chambersburg, Pa.

VISITING lecturers at Harvard University this year include Dr. Leonard Carmichael, professor of psychology at Brown University, in psychology, and Dr. Rudolph E. Langer, of the University of Wisconsin, and Dr. Lars V. Ahlfors, of the University of Helsingfors, in mathematics.

DR. CHARLES F. MCKHANN, assistant professor of pediatrics and communicable diseases at the Harvard Medical School, Boston, has been appointed visiting

professor of pediatrics at Peiping Union Medical College during the first half of the school year 1935-36. He will return to Boston early in March, 1936.

DR. JOHN ALFRED RYLE has been appointed Regius professor of physic in the University of Cambridge in succession to Sir Walter Langdon Brown, who will retire on September 30.

DUNCAN MACCALLUM BLAIR, professor of anatomy and dean of the medical faculty, King's College, University of London, has become Regius professor of anatomy in the University of Glasgow, in the place of Professor T. H. Bryce, whose resignation takes effect on September 30.

THE leave of absence of Dr. Erwin E. Nelson, of the University of Michigan, has been extended to permit him to complete his task of reorganizing the enlarged pharmacological laboratory of the Food and Drug Administration of the U. S. Department of Agriculture.

UNDER a fellowship of the John Simon Guggenheim Foundation of New York, Dr. T. H. Goodspeed, professor of botany and director of the Botanical Garden of the University of California, will spend the months October to February collecting species of *Nicotiana* and related genera in Peru, Chile, Bolivia and Argentina. Accompanying Dr. Goodspeed as collector will be James West, of San Rafael, and Mrs. Ynes Mexia, collector in Central and South America, will join the expedition at Lima. Most of the collecting will be done in higher altitudes of the Andes, but it is anticipated that certain members of the expedition will collect south of Santiago, crossing the Andes in the Chilean lake region and continuing through the Patagonian pampas to Buenos Aires.

DR. HAMILTON FAIRLEY, secretary of the Royal Society of Tropical Medicine in London, is planning a visit to the United States to address the annual meeting of the American Society of Tropical Medicine, to be held in St. Louis from November 20 to 22. He will go first to San Francisco, making his first appearance before the San Francisco County Medical Society on November 13. The following day he will address the Pasteur Society, and on November 15 he will address the students and staff of the University of California Medical School.

THE eleventh International Congress of Psychology will be held in Madrid from September 6 to 12, 1936.

THE American Association of Agricultural College Editors has voted to hold its annual meeting in the summer of 1936 in Wisconsin, probably at the university. The association, first formed in 1913, held its last conference in Wisconsin in 1915.

AT the invitation of the American Association for the Advancement of Science, the United Chapters of Phi Beta Kappa, an affiliated society, has arranged to sponsor a lecture at the winter meetings of the association. This lecture is intended to symbolize the cultural value of science and the interest of scientific men in the humanistic relations of their research. The first of the annual Phi Beta Kappa lectures will be delivered at the St. Louis meeting at a general public session on Wednesday evening, January 1, 1936. The speaker will be Dr. Frederick J. E. Woodbridge, Johnsonian professor of philosophy at Columbia University, formerly dean of the faculties of political science, philosophy, pure science and fine arts. The subject of the lecture will be "The Claims of Science."

A CONGRESS of the Association pour la Documentation Photographique et Cinématographique dans les Sciences will be held in Paris from October 4 to 11. It is planned to exhibit radio-cinematographic films of organs synchronized with the sounds produced by them and scientific films in direct color.

A CELEBRATION of the three hundredth anniversary of the founding of the Royal Hungarian Peter Pazmany University was held in Budapest from September 15 to 29. The program included a conversazione, a Te Deum in the university church, a visit to the central building of the university, an exhibition in the library and a performance in the Royal Opera House. Honorary degrees were conferred and there was a reception by the Minister of Education. There were, in addition, the usual sight-seeing trips and excursions.

IN connection with the Centennial Central Exposition to be held in Dallas in 1936, in celebration of the 100th anniversary of the independence of Texas, it is proposed to erect on the exposition grounds the first unit of a natural history museum to cost approximately \$300,000. The project is sponsored by the Texas Centennial Central Exposition, a corporation, and is being directed by George L. Dahl, architect and chief of the technical division. The exposition will open next June.

BY the will of Mrs. Anna Phipps Tinker, nearly the entire estate, amounting to over \$200,000, will go eventually to the children's medical division of Bellevue Hospital, New York City, in memory of Dr. Horace H. Tinker. Mrs. Tinker's will, setting forth that most of the property had come from him, stated: "He loved children and was glad to give his services without compensation to needy children during his lifetime."

BY the will of the late William Charles Gotshall, Lehigh University and Union College, Schenectady, N. Y., each receive two tenths of the residue of the estate, and Washington University, St. Louis, and

Rensselaer Polytechnic Institute each receive one tenth.

THE first number of a new quarterly, *Annals of Science*, devoted to the history of science since Renaissance times, will be published by Messrs. Taylor and Francis, London, on January 15, 1936, under the editorship of Dr. D. McKie, of University College, London, joint author of "The Discovery of Specific and Latent Heats"; Professor Harcourt Brown, of Washington University, St. Louis, author of "Scientific Organizations in Seventeenth Century France," and H. W. Robinson, librarian of the Royal Society of London, coeditor of "The Diary of Robert Hooke."

THE London *Times* reports that The Institute of Chemistry of Great Britain celebrated at a dinner held in London recently the completion of fifty years' existence under Royal Charter. The institute was founded in 1877 as "the result of a long pent-up feeling of dissatisfaction, particularly among the younger fellows of the Chemical Society, at the deficiency of means for chemists to exert a common action and influence," and the primary object of its formation was to ensure that those who practised the profession of chemistry were duly qualified for the proper discharge of the duties they undertook, by the thorough study of chemistry and allied sciences and of their application to public health, agriculture, the arts, industries and commerce. Sir Edward Frankland was the first president. The institute became incorporated under Royal Charter on June 13, 1885, and

acquired the right to confer definite qualifications—A.I.C. and F.I.C. The register of the institute now includes the names of over 6,300 fellows and associates practising in all parts of the Empire, and of about 800 students who are in course of preparation for the profession of chemistry. Local sections have been established in twenty areas, including the Cape of Good Hope, New Zealand and Malaya.

Nature writes: "The Australian National Research Council, having come to the conclusion, at a general meeting last January, that it is not properly fulfilling its function as a national body representative of scientific thought and endeavor, will, during this year, examine the possibilities of effecting a federation of the various State Royal Societies, the Linnean Society of New South Wales and a number of professional organizations such as the Australian Chemical Institute, the Institute of Physics, the Institution of Engineers and the Australian Veterinary Association. The federation will be confined to bodies concerned with the physical and biological sciences. No constitution has yet been suggested, but the general proposal is that each constituent member shall retain its independence as at present and shall have the right to representation on the Federal Council. The nature of the representation and the definition of duties of the council will be the subject of discussion at a conference of delegates from the interested societies, to be called later by the present National Research Council."

DISCUSSION

VITALISM, IRRITABILITY AND PERPETUUM MOBILE

BLACKMAN¹ has called attention to the fact that our general terminology of irritability, stimulus and response has no basis in physical or chemical mechanics. The history of the development of the concept of irritability shows that it was built up in such a way as to make any such basis not only unnecessary but undesirable. It is not surprising, then, that frequently we should find ourselves in difficulty when we try to express some of these concepts in mechanical terms. One such difficulty is the postulate of perpetual motion which is often implied when we attempt to describe the simultaneous action of two or more different agents upon the same tissue or organism. When we remember that physicists as well as laymen believed in the possibility of perpetual motion at the time when the terminology of irritability was developed, we need not

be surprised at its persistence in our heritage of dialectics, which still constitutes an orthodox part of physiology, pharmacology, psychology, and psychiatry, and others unnamed.

There is a general implication that irritability is in inverse ratio to the quantity of work which is necessary to elicit a reaction in an organism or tissue. The irritability is said to be high when the work necessary to stimulate is low. Thus, the irritability of a tissue requiring only 1×10^{-7} ergs for its stimulation is greater than that of a tissue requiring 1×10^{-4} ergs for excitation. Provisionally we may say that

$$I = \frac{1}{W},$$

where I is the irritability and W the quantity of work necessary to stimulate. Irritability may be expressed as the reciprocal of the work.

If W is the work necessary for stimulation, done by an electrical current, e.g., under control conditions, then some other agent acting upon the tissue may

¹ F. F. Blackman, *Nature*, 78: 557, 1908; *American Naturalist*, 42: 637, 1908.