of three new laboratory buildings, each designed to serve as a separate research unit.

RECENT DEATHS

DR. ALEXANDER S. BEGG, professor of anatomy and dean of the School of Medicine of Boston University, died on September 26 at the age of fifty-nine years.

DR. GEORGE RUTLEDGE, professor of mathematics at the Massachusetts Institute of Technology, died on September 21 at the age of fifty-eight years.

PROFESSOR JOHN E. EMSWILER, chairman of the department of mechanical engineering of the University of Michigan, died on September 23 at the age of sixty years.

DR. B. D. WILSON, professor of agronomy at the New York State College of Agriculture at Cornell University, an authority on the chemistry of peat and peat soils of northeastern United States, died from the results of an automobile accident on September 5. He was fifty-one years old.

EDWARD CHAUNCEY WORDEN, consulting chemist, who was head of the Worden Laboratory and Library at Millburn, N. J., died on September 22. He was sixty-five years old.

A CORRESPONDENT writes that the death of Joseph William Blankinship at Decoto, Calif., on July 2, 1938, professor of botany in Montana State College from 1898 to 1905, has only now become known. In later years, as a plant pathologist, Mr. Blankinship was employed by the smelter companies in Montana, Utah and northern California. In the course of his work he made extensive collections of spermatophytes in the upper Sacramento Valley, many of which are cited in Jepson's Flora of California.

CHARLES GABRIEL SELIGMAN, professor emeritus of ethnology at the University of London, died on September 19. He was sixty-seven years old.

PROFESSOR HANS ROSENBERG, an authority on astronomical photometry, former director of the Kiel Observatory and, of late, director of the Observatory at Constantinople, died on July 26 at the age of sixty-one years.

SCIENTIFIC NOTES AND NEWS

DR. FRANK B. JEWETT has resigned as president of the Bell Telephone Laboratories, in New York City, to become chairman of the Board of Directors. He will be succeeded as president of the laboratories by Dr. O. E. Buckley, who has been executive vice-president.

BECAUSE of difficulties in administration and especially in communication among the nations belonging to the International Astronomical Union the position of secretary has been taken over temporarily by Dr. Walter S. Adams, American vice-president of the union. Action to this effect has been approved by a majority of the members of the executive committee at the request of Sir Arthur Eddington, president of the union, and Dr. J. H. Oort, secretary. Communications relating to the activities of the union should now be addressed to Dr. Adams at the Mount Wilson Observatory, Pasadena, Calif.

A BANQUET was held in Chicago on September 14 in honor of Dr. Frederick B. Noyes, retiring dean of the College of Dentistry of the University of Illinois, in recognition of "his noteworthy contributions to the fields of orthodontia, dental education, dental research and organized dentistry." It was sponsored by the faculty of the College of Dentistry. The speakers included Dr. Allan G. Brodie, of the department of orthodontia of the College of Dentistry, who acted as toastmaster; Dr. Arthur Cutts Willard, president of the University of Illinois; Dr. Leroy M. S. Miner, dean of the Dental School of Harvard University; Dr. Arthur H. Merritt, immediate past-president of the American Dental Association, and Dr. Isaac Schour, president-elect of the International Association for Dental Research.

DR. HENRY B. ALLEN, secretary and director of the Franklin Institute, Philadelphia, and David Dietz, science editor of the Scripps-Howard Newspapers, have received the Goodrich award for distinguished public service.

PROFESSOR OLIVIER has been elected president of the Société Française de l'Histoire de la Médecine, Paris.

DR. EDWARD A. OLIVER, clinical professor of dermatology at Rush Medical College since 1927 and a member of the Rush faculty since 1912, has been appointed professor and chairman of the department of dermatology and syphilology at Northwestern University Medical School. He succeeds Dr. Arthur W. Stillians, who retired recently with the title of professor emeritus.

T. HOYLE LEE, graduate teaching assistant at the University of Wisconsin, has been appointed associate professor of mathematics at the University of South Carolina.

DR. HUGH J. BICKERSTAFF, associate director in the division of maternal and child health, Georgia State Department of Health, has resigned to become

associate professor in public health administration at the Johns Hopkins University School of Hygiene and Public Health.

DR. ROLF ELIASSEN, assistant professor of sanitary engineering at the Armour Institute of Technology, has been appointed to succeed the late Lewis Van Carpenter as head of the Sanitary Engineering Research Laboratory with the title of associate professor. Dr. Hamilton Gray, consulting engineer, has been appointed assistant professor. He will establish and direct a new laboratory for the study of foundation soils and soil mechanics. Dr. Clair N. Sawyer, doctorate fellow in sanitary engineering at the University of Wisconsin, has become assistant professor of sanitary engineering.

DR. C. R. CARPENTER has been appointed associate professor of psychology at the Pennsylvania State College. He will continue to cooperate with the School of Tropical Medicine at San Juan, Puerto Rico, in work with the Santiago Primate Colonies, holding a nominal appointment as research associate.

DR. ELFRIEDE FREDERICK BROWN, of the Colorado State College, has been made associate professor of foods and nutrition at the Iowa State College.

DR. WALTER B. LANCASTER, ophthalmic surgeon, associate in ophthalmology at the Harvard Medical School, has been appointed chief of staff of the Eye Institute of Dartmouth College. He will take up the work on November 1.

DR. VERNE VINCENT CALDWELL, professor of psychology at the Oregon College of Education, has been appointed dean of the General Extension Division of the Oregon State System of Higher Education.

PROFESSOR M. M. RHOADES has been elected managing editor of *Genetics* in succession to Professor L. C. Dunn. Manuscripts intended for publication in *Genetics* should be sent to Editor of *Genetics*, Schermerhorn Hall, Columbia University.

DR. JOHN M. BUTLER, who recently received his doctorate in organic chemistry from the Ohio State University, has become a member of the Bakelite Corporation, Unit of Union Carbide and Carbon Corporation at Bloomfield, New Jersey.

JACK COMPTON, formerly connected with the Cellulose Laboratory of the Boyce Thompson Institute for Plant Research at Yonkers, N. Y., has become a member of the Physical Research Laboratory of the B. F. Goodrich Company, Akron, Ohio.

PHILIP C. COOKE has been appointed director of engineering and maintenance of Sharp and Dohme, Philadelphia. Dr. Willard F. Verwey has joined the staff of the Medical Research Division.

DR. FRANCIS S. SMYTH, professor of pediatrics at the Medical School of the University of California, has returned from a leave of absence which he spent in South America, part of the time in the laboratories of Professor B. A. Houssaye, of the Physiological Institute of Buenos Aires.

THE Middleton Goldsmith Lecture of the New York Pathological Society will be given at the New York Academy of Medicine on October 4 by Dr. William Cramer, of the Barnard Free Skin and Cancer Hospital, St. Louis. His subject will be "Sex Hormones and the Endocrine Balance."

TWELVE Thursday night lectures on "Cultivation of Trees and Shrubs" will be given at 7:45 at the New York Botanical Garden, Bronx Park, by P. J. van Melle, nurseryman and the horticultural writer of Poughkeepsie. This series inaugurates the autumn term of a two-year course designed for amateur gardeners. A second series, on "Cultivation of Greenhouse Plants," will begin in January and the spring term will bring a course in "Indoor Gardening Practice." A science course for professional gardeners will open, with registration at 7 P.M., on October 7.

THE autumn convention of the Electrochemical Society will be held in Ottawa, Canada, from October 2 to 5.

THE annual meeting of the Research Council on Problems of Alcohol will be held in New York City on October 15. There will be seven group conferences at 11 A.M. and a luncheon at 1 P.M.

A CONFERENCE on Nuclear Physics will be held on the occasion of the opening of the new physical laboratory of Indiana University on Friday and Saturday, October 25 and 26. Speakers at the conference and their subjects are as follows: Professor I. I. Rabi, Columbia University, "The Possibility of Measuring Spins and Magnetic Moments of Radioactive Nuclei"; Professor G. Breit, University of Wisconsin, "Formal Aspects of Resonance Theories on Nuclear Reactions"; Professor L. A. DuBridge, University of Rochester, "Some Nuclear Reactions Produced by High Energy Protons"; Professor H. A. Bethe, Cornell University, "Present Status of the Theories of Nuclear Forces"; Professor Don M. Yost, California Institute of Technology, "Studies on Vitamin B Using Radioactive Tracers"; Dr. Joseph G. Hamilton, University of California, "Tracer Studies on Biology and Medicine."

THE Production Division of the American Management Association will meet on November 12 and 13 in Cleveland to discuss manufacturing problems created by the industrial preparedness program. The sessions will be held at the Hotel Cleveland. To deter-

mine specifically the problems created for the average concern by the increased industrial tempo, the American Management Association for weeks has been in touch, through letter and questionnaire, with companies representing virtually every industry in the United States. The association reports that it finds hundreds of companies engaged in the solution of individual manufacturing problems, nearly all confronted with major problems involving personnel, methods and materials.

DR. ANTON J. CARLSON has given his library of scientific journals and monographs to the department of physiology of the University of Chicago. He became professor emeritus on October 1, having reached the age of sixty-five years. The library includes approximately sixteen thousand classified reprints of scientific articles, twelve hundred books and research monographs and complete files of fifteen scientific journals.

H. H. HSIAO, head of the department of psychology of the National Central University at Chungking, China, writes to SCIENCE under date of August 20 as follows: "Owing to the governmental control of foreign exchange, we have been out of touch with new literature in the field of psychology almost since our removal to Szechwan, but there is an increasing need for up-to-date information in our research work here. We wish that you will render us the much-needed help by sending your donations in the form of reprints, periodicals or test forms."

AT a recent special meeting of the membership the official name of the National Association of Audubon Societies was changed to the National Audubon Society. The organization, whose purpose is the protection of wild bird and animal life, was founded in 1905.

THE *Journal* of the American Medical Association reports that the biochemical division of the Bureau of Animal Industry of the U. S. Department of Agriculture has been merged with the pathologic division and the division of animal nutrition. The position of chief of the biochemical division has not been filled since the death of Robert M. Chapin. Activities of the division relating to animal diseases have been transferred to the pathologic division and those relating to the nutritive value of animal products have been assigned to the animal nutrition division at Beltsville, Md.

DR. C. STUART GAGER writes: "At a visit to the Bowdoin College Library this past summer, I was interested to find there an extensive work of some twenty volumes of illustrations in water color of the flora of Maine, by the late Kate Furbish. The sheets are somewhat larger than a standard size herbarium sheet, and are beautifully bound. They date from April, 1870, to October, 1908, and include, besides flowering plants, illustrations of about five hundred Maine mushrooms dating from May, 1897, to October, 1905. Since this is a manuscript work it occurs to me that its existence may not be generally known to systematic botanists, and others who might be interested in the flora of Maine. No public notice is known of this work, except in one of the local papers at the time the gift was made to the library, and in the annual report of the president of Bowdoin College for 1908–1909. The librarian writes me that 'Personally, I should be very glad to have the attention of botanists called to this work for strictly scientific purposes, or even for their own interest. The college should be glad to cooperate with any real botanist in the use of this work.'"

WE are requested by the Stanford University Press to state that when Volume I of Abrams's "Illustrated Flora of the Pacific States" was published in 1923 the paper stock was unsatisfactory, with the result that the pages are now rather brittle and will not stand the long handling that a reference book of this type is subjected to. As a result the edition has been reprinted on a much better quality of paper rather than distribute more of the original printing. Volume I is now printed on paper that will last indefinitely. Some necessary corrections have been made and the price of the volume has been reduced from $9.00 to $7.50. Copies of the first printing returned to the press will be credited with $3.00 on the purchase price of the new edition. Volume II of this series, describing and illustrating 1,655 species in families from Buckwheats to Kramerias will be published in December. There will be four volumes in all, rather than three as originally intended.

AS reported in *Nature*, Dr. Raymond Priestley, vice-chancellor of the University of Birmingham, in the course of a circular letter addressed to headmasters of a number of schools in the Midlands, has pointed out that the age at which undergraduates will be called up for military service has been fixed by the Government at twenty years. This will enable many men to complete their university training before entering the Services. With the object of enhancing the value of such men to the national effort, it has been decided by the University of Birmingham that all future entrants will be required to choose one of the following options as part of their university course: (1) compulsory physical education for one year; or (2) two years service in the University contingent of the Officers Training Corps. Those who choose the latter will be accepted for the Officers Training Corps only if they are approved by an interviewing board set up by the Military Education Committee, the main criteria being personality and power of leadership (latent or developed). Training in the O.T.C. will be carried out with the view of

developing powers of leadership rather than training technical experts. The advantages of this general military training apply equally to those taking medical and dental courses, since the military background essential to an R.A.M.C. officer can be adequately acquired in this way. Those who obtain War Certificates A and B will have definite advantages when they are called up for military service.

DISCUSSION

THE ACTIVE REGION ON THE SUN'S SURFACE

IN the *Publications of the Astronomical Society of the Pacific* Volume 47, August, 1935, it was shown that for two periods of 80 solar rotations each there was a permanent region of high solar activity as shown by Wolfer's sun-spot relative numbers.

The first series of 80 solar rotations began on January 6, 1917, and ended on December 25, 1922, and the second series began on May 16, 1925, and ended on May 4, 1931. Both series gave the maximum sun-spot activity on the same day of the average rotation period of 27.25 days. The periods were separated by 872 days (32 rotation periods) in order to include the sun-spot maxima of 1917 and of 1927–28.

The Character Figures of Solar Phenomena, as given in volumes I and II of *Publications of the International Astronomical Union,* were tested in the same manner as were the sun-spots for both 80-rotation periods, and while the results were not as definite as in the case of the sun-spots, owing to the number of missing days, they were sufficiently definite to show without question that the region of maximum sun-spot activity applied to the calcium flocculi and to both the bright and dark hydrogen flocculi which accompanied the sun-spots.

Since *The Monthly Weather Review* has been publishing daily records of the area of visible sun-spots expressed in millionths of the sun's visible surface, and since we have been passing through another period of maximum sun-spot activity, it has seemed worth while to determine if the region of maximum solar activity still persists and if it may be identified by means of the areas covered by sun-spots as it was by Wolfer's sun-spot numbers.

To test this question the total areas of visible sun-spots for each day of twenty solar rotations of 27.25 days each, beginning on July 1, 1938, and ending on January 6, 1940, were arranged in successive periods and the average total sun-spot area for each day of a single solar rotation was determined. The result is indicated by Fig. 1, where the ordinates represent 1/20 of the average spot areas for each day of one solar rotation period and the abscissas represent the days of the rotation.

The maximum sun-spot area occurred on the 14th day of the average rotation period. The date of the

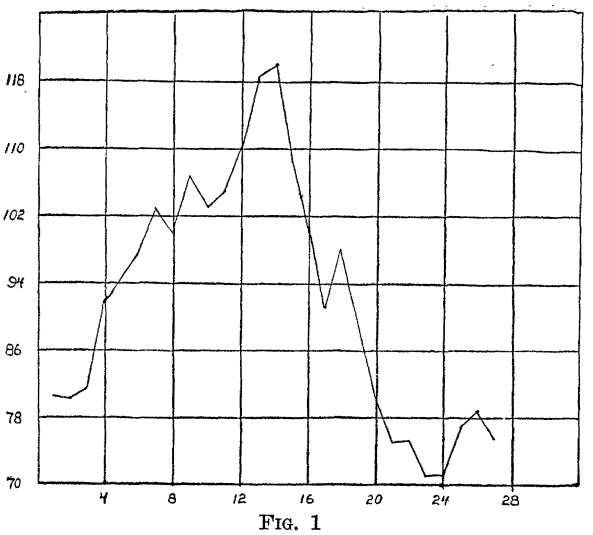

FIG. 1

last maximum of the two sun-spot series referred to above occurred on May 2, 1931. From May 2, 1931, to July 14, 1940, there were 3,287 days, equaling 121 solar rotations of 27.25 days each, thus establishing the fact that the active region on the sun's disc has persisted for 23 years since January 6, 1917.

This period is certainly too long for the persistence of a single sun-spot, and during this time there have been several years without any conspicuous sun-spot.

There are also indications that it has persisted for a much longer period. For example, the great sun-spot reported by Howlett in *Monthly Notices of the Astronomical Society of London,* 1865–66; crossed the central meridian of the sun on October 13, 1865. It had an area of more than 972 million square miles. The greatest sun-spot mentioned by Maunder, which he says was the greatest for twenty years and perhaps the greatest ever recorded at Greenwich, crossed the central meridian of the sun on October 31, 1903.

Between the passage of these two great spots there were 38 years and 18 days, 13,897 days. Allowing 27.25 days to one solar rotation would give exactly 510 solar rotations between the passage of these two great spots.

From the great Howlett spot of October 13, 1865, to July 14, 1940, was 27,109 days. Assuming that there were 995 solar rotations in this period, a single rotation would require 27.245 days, lacking only 7 minutes of 27.25 days, which period has been selected as the