

Each year as funds permitted the division has undertaken conferences for the initiation and coordination of chemical research. Such conferences have been held on the subjects of permanence of printed records, on the coordination of chemical literature, on biological nomenclature, and on farm waste and chemistry of soils. The results of these meetings have been intangible in part, but the mere bringing together of eminent men interested in a certain phase of chemistry is important.

The division has from time to time collected pertinent data relating to chemistry. Since 1922, the division has each year made a census of graduate students in chemistry throughout the country, and this census has been published in the journals. The division also conducted a study of conditions of chemical research in the Southern States. The report of this study was published by the Chemical Foundation. Other activities include cooperation between academic and industrial research, and a list of research problems in various fields of chemistry.

One of the important activities of the division has been the administration of the grants in aid of re-

search. During the past four years 42 grants have been made to 37 individuals. Many papers have been published as a result of these grants and many capable research workers have been encouraged in their work. Particularly during the last few years, the grants-in-aid have proved invaluable to research workers who have found themselves handicapped through lack of funds.

Another important activity of the Research Council and of the Division has been in connection with the National Research Fellowships. Since their foundation, 257 fellowships in chemistry have been awarded to 150 individuals. While it is true that some will profit more than others from the opportunities afforded by these research fellowships, there can be no question that the National Research Fellowships have produced tangible results.

Through meetings of the division and of committees, and through other contacts afforded by the division, those interested in various fields of chemistry are brought together and contacts are established. It is from these contacts that we may expect some of the major benefits in the course of time.

## SCIENTIFIC EVENTS

### CHICAGO PROGRAM ON RADIATION AND PLANT LIFE

THE American Society of Plant Physiologists has joined with Sections G and O and their affiliated organizations in the programs of June 20 and 21. On the morning of June 22, however, a special symposium has been arranged for plant physiologists who are attending the meetings. The meeting will be held in the Civic Opera Building, Chicago, in the rooms of the Lighting Institute at 10:00 A. M. The meeting will be open to all visiting botanists and to professional growers of plants. The titles of the papers are as follows:

"Influence of Radiation on  $\text{CO}_2$  Absorption by Plants": W. H. Hoover, Smithsonian Institution.

"The Interrelated Effects of Light and Temperature on Plant Growth": A. D. Davis, University of California.

"Growth as a Criterion for Physiologic Response to Radiations": E. S. Reynolds, Missouri Botanic Garden.

"Photoperiodism and its Practical Application to Greenhouse Crops": Alex Laurie, Ohio State University.

"Responses of Certain Plants to Artificial Radiation Factors Applied as Supplements to Daylight": R. B. Withrow, Purdue University.

"The Response of Greenhouse Plants to Electric Light Supplementing Daylight": Laurenz Greene, Purdue University.

"Experimental Work at Pennsylvania State College

on Radiation as Applied to Plants": H. W. Popp, Pennsylvania State College.

"Chemical Responses of Certain Plants to Solar Ultra-violet Radiation": W. E. Tottingham, University of Wisconsin.

"Some Growth Responses of Plants to X-ray Treatments": C. A. Shull, University of Chicago.

The program will be continued in the afternoon, if necessary, followed by a round table discussion.

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### MATHEMATICS AT THE CHICAGO MEETING

THE preliminary program of the Chicago meeting of the American Association for the Advancement of Science and Associated Societies, printed in the issue of *SCIENCE* for May 19, contains information concerning the programs of the different sections, but it may be well to repeat here a summary of the plans of the mathematicians given in the announcement of the American Mathematical Association.

It reports that the American Association and associated societies will present unusually attractive programs in connection with the Century of Progress, the week of June 19 being devoted chiefly to pure science and the next week to applied science. There will be numerous addresses by prominent foreign scientific men who have been specially invited for

these meetings. These programs and the many interests offered at the Century of Progress exposition add unusually attractive features to our usual pleasant summer meetings.

The society will hold a session on Tuesday afternoon in Mandel Hall at which Professor Tullio Levi-Civita, of the University of Rome, will speak on "Some Mathematical Aspects of the New Mechanics," and Professor G. D. Birkhoff, of Harvard University, will speak on "Quantum Mechanics and Asymptotic Series." At a symposium at ten o'clock Wednesday morning in Mandel Hall, Professor Lipót Fejér, of the University of Budapest, will speak on "The Infinite Sequences Arising in the Theories of Harmonic Analysis, of Interpolation, and of Mechanical Quadratures," this to be followed by addresses by Professor C. N. Moore, of the University of Cincinnati, "On the Use of Cesàro Means in Determining Criteria for Fourier's Constants," and Professor Dunham Jackson, of the University of Minnesota, on "Certain Problems of Closest Approximation." A second symposium will be held at two o'clock on Wednesday in the Italian Building on the Fair Grounds; addresses will be given by Professor Levi-Civita on "Nets on a Surface and Extension of Trigonometry," by Professor W. C. Graustein, of Harvard University, on "Invariant Methods in Differential Geometry," and by Professor Enrico Bompiani, of the University of Rome, on "Deformations of Higher Species of Surfaces and Manifolds." At two o'clock on Friday, in Eckhart Hall, an address will be given by Professor L. E. Dickson, of the University of Chicago, on "Recent Progress in Additive Number Theory," following which there will be a session of short papers on number theory. Sessions for the reading of short papers will be held on Monday afternoon and Thursday and Friday mornings.

Among the addresses of the week by physicists will be the following: At 4:30 Tuesday, at the Fair Grounds, Dr. Bjerknes, Geophysical Institute, Bergen, Norway, on "Atmospheric Soundings, Methods and Results"; at 4:30 Wednesday, in the Italian Building, Enrico Fermi, University of Rome, on "Theory of Hyperfine Structures"; at 8:00 P. M. Wednesday, place to be announced, Dr. F. W. Aston, University of Cambridge, on "The Story of Isotopes" and Dr. R. A. Millikan, California Institute of Technology, on "New Light on Nuclear Physics"; at 4:30 Thursday, in the Italian Building, Professor Niels Bohr, of the University of Copenhagen, on "Space and Time in Contemporary Physics." Other addresses by the visiting scientists will be announced in the current issues of *SCIENCE*.

The joint dinner of the mathematicians and their guests will be held on Friday evening at 6:30 at

Judson Court. On Monday evening the American Association and its associated societies will hold a general reception on the grounds of the Century of Progress. The American Association will hold a dinner on Thursday evening at which the visiting scientists will be guests.

#### CHEMISTRY AT THE CHICAGO MEETING

ACCORDING to an announcement sent out by the American Chemical Society, joint sessions with the sections of the medical sciences, physics and geology and geography of the association have been arranged by the Section of Chemistry, of which Professor Arthur B. Lamb, of Harvard University, president of the American Chemical Society, is chairman.

Professor Francis W. Aston, of the University of Cambridge, England, Nobel prize winner in chemistry for 1922, and Professor The. Svedberg, of the University of Upsala, Sweden, Nobel prize winner in chemistry for 1926, will head a contingent of foreign chemists who will take part.

Professor Aston and Professor Robert A. Millikan, of the California Institute of Technology, Nobel prize winner in physics for 1923, will deliver addresses at a public meeting Wednesday night, June 21. Professor Aston will speak on "The Story of Isotopes," a subject which has thrown new light on the structure of atoms, building blocks of the universe, and Professor Millikan will discuss nuclear physics.

American chemists from universities and government and industrial bureaus of research will detail advances in the application of mathematics to chemistry's problems and gains in chemistry's war on disease.

Two recipients of the Langmuir Medal of the American Chemical Society, annually awarded to the young chemist who shows most promise of achievement, will present papers. They are Professor Linus Pauling, of the California Institute of Technology, first medal winner, and Dr. Oscar K. Rice, of Harvard University, second medal winner. Dr. Henry Eyring, of Princeton University, who was awarded the prize of the American Association for the Advancement of Science for 1932, will also participate.

A symposium devoted to the earth's age will bring together the sections of chemistry, physics and geology and geography on Wednesday afternoon, June 21, at two o'clock in Rosenwald Hall. The secretary of the section is Professor J. H. Simons, of Northwestern University.

Because of the importance of chemistry to medicine, the Section of Chemistry will meet jointly with the Medical Section on Monday morning, June 19, at 9:30 o'clock in Thorne Hall for a symposium on the relation of colloid chemistry to biological problems.