

is determined primarily by the polarizability of the flow units and, thus, decreases with increasing polarizability of the ions.

The Bingham Medal was presented at the evening meeting on November 3rd to Dr. W. F. Fair, Jr. A past-president of the Society, Dr. Fair is well known for his work in the bituminous products field. The citation read as follows: "For notable contributions to colloid chemistry, to the technology of bituminous materials, and to the science of rheology; for distinguished service to the American Society for Testing Materials in establishing standards; for his counsel in his position as a member of the governing board of the American Institute of Physics; and for his guidance of the affairs of the Society of Rheology in various positions and finally that of president for the years 1945 to 1949."

Previous recipients of the Bingham Medal were Melvin Mooney (1948) and Henry Eyring (1949).

The evening meeting concluded with a demonstration on color by George Welp and a motion picture "Rainbows to Order", produced by Interchemical Corporation.

E. K. Fischer and R. S. Marvin

SIGMA PI SIGMA

FIFTH NATIONAL CONVENTION

Sigma Pi Sigma, physics honor society, held its fifth national convention at Berea College, Berea, Kentucky, December 27-30. Eighty-seven delegates representing a majority of the 76 chapters were in attendance. As a prelude to the convention the delegates visited the Oak Ridge atomic energy installations on December 27. The alumni members of the Society at Oak Ridge joined with the visiting delegates in a luncheon which was addressed by James A. Lane, Associate Director of the Technical Division of the Oak Ridge National Laboratories. Dr. Lane described the current and long-range reactor programs of the Atomic Energy Commission. At one of the open meetings featuring the convention, William Webb, head of the physics department at the University of Kentucky, spoke on "America Before Columbus". He presented some findings in which the methods of physics were used in archaeological research in the southeastern section of the United States. The convention banquet speaker was M. H. Trytten, Director of the National Research Council Office of Scientific Personnel, who talked on "Physicists as National Assets", describing some of the scientific manpower problems facing the nation. Featuring the convention were several panel discussions on the problems facing physics students during emergency conditions. The retiring president of the Society, Homer L. Dodge, presided at the convention. The chairman of the local committee on arrangements was Waldemar Noll, head of the physics department at Berea College. Officers elected for the next triennium were: president, M. H. Trytten; vice-president, Vincent E. Parker, Louisiana State University; executive secretary, Marsh W. White, The Pennsylvania State College.

Marsh W. White

POCONO CONFERENCE

ON LATTICE IMPERFECTIONS

Amidst the rich display of warm red, orange, and yellow hues of fall foliage, a conference on lattice imperfections was held on October 12-14 at Pocono Manor. This conference, organized under the auspices of the Committee of Solid State Physics of the National Research Council, was aimed at bringing together representatives of various sciences interested in the general problem of imperfections in

crystalline lattices. It is the main purpose of the committee to provide such contacts between the physical sciences and to report results in the form of monographs on selected topics. A previous conference of this kind, which concerned the phase transformations in solids, was held at Cornell University in 1948; the resulting monograph is to appear shortly.

The present conference opened with a paper by W. Shockley and W. T. Read, Jr. on imperfections in almost perfect crystals, in which the natural occurrence of dislocations of various types was discussed. This was followed by a paper by J. Bardeen and C. Herring on diffusion in alloys and the Kirkendall Effect, which had primarily to do with interpretation of the peculiar movement of markers during diffusion in metals in terms of creation and disappearance of vacancies, and by two reviews of experimental data. The first review, by W. T. Read, Jr., summarized the present experimental information on slip lines; the second, by J. C. Fisher and C. G. Dunn, presented a critical survey of the very recent results on surface and interfacial tensions of single phase solids. In the afternoon of the same day F. Seitz presented a paper on imperfections in almost perfect crystals, in which a general survey of the various kinds of lattice imperfections was made and in particular their mutual interaction was analyzed. This paper, which leaned heavily on experimental data pertaining to ionic crystals, was followed by R. G. Breckenridge's survey of his work on relaxation effects in ionic crystals, in which the behavior and mobility of various impurities were discussed. The day's session was closed by a paper on the influence of dislocations and impurities on the damping and elastic constants of metal single crystals by J. S. Koehler, who described his theoretical investigation of damping due to movement of dislocations "pinned down" by impurities.

The second day of the conference was opened with a paper by N. F. Mott, entitled "Strength of Materials". In the absence of the author, it was presented by H. Brooks, who added his own interpretation of the various phenomena in terms of dislocations. Properties and effects of grain boundaries were then discussed by B. Chalmers, who stressed the distinction between the properties of the grain boundaries themselves and those properties resulting from the presence of grain boundaries. This general topic was carried further by W. T. Read, Jr. who described the dislocation models of grain boundaries and the quantitative conclusions and predictions obtainable from the theory. The basic question of the nature of deformed metal was subsequently discussed by B. E. Warren and B. L. Averbach in their paper on x-ray diffraction studies of cold work in metals. Their results seem to cast new light on this old problem. In the afternoon of the same day, C. S. Smith presented his analysis of interphase interfaces in which various experimental results were surveyed and certain new topological relationships deduced, followed by a review of substructures in crystals by A. Guinier, who described numerous recent results of his x-ray studies of polygonization. At the close of the session C. Zener presented his paper on diffusion theory in which the various proposed mechanisms of diffusion are compared, including his recently suggested "ring diffusion".

The last day of the conference started with a paper by C. S. Barrett dealing with imperfections from transformation and deformation, in which the resulting faults and stacking disorders were discussed, followed by a review of the present theoretical and experimental information pertaining to movement and diffusion phenomena in grain boundaries by R. Smoluchowski.

As closing item of the conference program, a general discussion of the present status of research in the field of imperfections and in the field of solids in general was introduced by F. Seitz, who compared research in the pure, in the applied, and in the intermediate regions, and who appealed for more effort directed at answering basic, elementary phenomena. The following discussion was very animated and disclosed a wide range of opinions as to which, exactly, might be called the most important objectives. As it is often the case, the main argument was between the theoretical physicists, desiring experiments which would be suitable for a theoretical analysis, and experimental research men who wanted better theoretical guidance as to what experiments may lead to clarification of elementary or basic concepts. The lack of quantitative theoretical predictions was cited as one of the problems facing both the theoretician and the experimentalist.

Besides the numerous American scientists, the conference was attended by Sir Lawrence Bragg and E. Owon of Cambridge, England, the latter recently of the Massachusetts Institute of Technology; B. Chalmers of the University of Toronto; A. Guinier and Miss Y. Cauchois of Paris. Each participated very actively in the discussion, their often different viewpoints adding considerably to the interest of the meeting.

The organizational committee of the Pocono Manor Conference consisted of W. Shockley (chairman), J. H. Hollomon, F. Seitz, R. C. Gibbs as chairman of the Division of Physical and Mathematical Sciences of the National Research Council, and the undersigned as chairman of the Committee on Solid State within the Division. The committee was aided by the technical assistance of J. S. Roros, and the conference itself was made possible through the financial support of the Office of Naval Research, in keeping with its farsighted policy towards science.

The conference closed with a feeling that the smooth organization and benevolent weather contributed towards a perfect conference on an "imperfect" subject. Afterwards, a number of those attending stayed on to contemplate the less theoretical but perhaps also more beautiful perfection of the sunny outdoors.

R. Smoluchowski

MEETINGS TO BE HELD

AMERICAN PHYSICAL SOCIETY

Pittsburgh will be the scene of the 304th meeting of the American Physical Society on the 8th, 9th, and 10th of March. Two sections of the Society, the division of solid state physics and the newly created division of chemical physics, are planning to hold several symposia during the meeting. The chemical physics symposia reportedly will stress statistical mechanics, valence theory, and internal rotation. A joint symposium has been scheduled for the morning of March 8th.

BRITISH PHYSICAL SOCIETY

Heralded as unique in showing side by side the work of British research and development work from industrial, government, and academic laboratories, the thirty-fifth exhibition of scientific instruments and apparatus, held annually by the Physical Society of Great Britain, will take place from April 6th to 11th in London. A handbook of the exhibition, containing full descriptions of all exhibits, will be obtainable in early March from the Physical Society, 1 Lowther Gardens, Prince Consort Road, London, S. W. 7.

Calendar of events

February

- 1-3 American Physical Society, New York City
- 1-3 American Association of Physics Teachers, New York City
- 6 Society for Applied Spectroscopy, New York City
- 10 American Association of Physics Teachers (Oregon Section), Linfield College, McMinnville, Oregon
- 15-19 American Crystallographic Association, Washington, D. C.
- 19-22 Technical Association of the Pulp and Paper Industry, New York City
- 19-22 American Institute of Mining and Metallurgical Engineers, St. Louis, Missouri
- 21-24 American Society of Civil Engineers, Houston, Texas
- 23-24 American Mathematical Society, Cincinnati, Ohio
- 24 American Mathematical Society, New York City
- 28 Inter-Society Color Council (Annual Meeting), Washington, D. C.

March

- 1-3 Optical Society of America, Washington, D. C.
- 5-7 Conference on Analytical Chemistry and Applied Spectroscopy, Pittsburgh, Pennsylvania
- 5-9 American Society for Testing Materials, Cincinnati, Ohio
- 6 Society for Applied Spectroscopy, New York City
- 8-10 American Physical Society, Pittsburgh, Pennsylvania
- 11-14 American Institute of Chemical Engineers, White Sulphur Springs, West Virginia
- 13-15 The Institute of Metals (Annual General Meeting), London, England
- 13-16 National Association of Corrosion Engineers, New York City
- 16 Institute of Aeronautical Sciences, Sixth Annual Flight Propulsion Meeting, Cleveland, Ohio
- 19-23 Institute of Radio Engineers, New York City
- 19-23 American Society for Metals, Oakland, California

April

- 1-5 American Chemical Society (119th Annual Meeting), Boston, Massachusetts
- 2-5 American Society of Mechanical Engineers, Atlanta, Georgia
- 3 Society for Applied Spectroscopy, New York City
- 5-7 Southeastern Section, American Physical Society, Chattanooga, Tennessee
- 6-11 The Physical Society of Great Britain, 35th Annual Exhibition of Scientific Instruments and Apparatus, London, England
- 8-12 American Chemical Society (119th National Meeting), Cleveland, Ohio
- 14 Chesapeake Section, American Association of Physics Teachers, Newark, Delaware
- 16-18 U.S.A. National Committee of the International Scientific Radio Union (URSI) and the Professional Group on Antennas and Wave Propagation of the Institute of Radio Engineers (Regular Spring Meeting), Washington, D. C.
- 18-20 Technical Association of the Pulp and Paper Industry (Coating Division), Boston, Massachusetts
- 19-21 American Philosophical Society, Philadelphia, Pennsylvania
- 20-21 American Mathematical Society, New Orleans, Louisiana
- 22-26 American Ceramic Society, Inc., Chicago, Illinois
- 23-25 National Academy of Sciences, Annual Meeting, Washington, D. C.
- 23-26 Society of Exploration Geophysicists joint meeting with American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, St. Louis, Missouri
- 26-28 American Physical Society, Washington, D. C.
- 26-28 American Physical Society, Division of High-Polymer Physics, Washington, D. C.
- 27-28 American Mathematical Society, New York City
- 27-28 American Mathematical Society, Chicago, Illinois
- 28 American Mathematical Society, Stanford, California
- 30-2 American Geophysical Union, Washington, D. C.
- 30-4 Materials Handling Conference and National Materials Handling Exposition, sponsored by American Material Handling Society and Material Handling Institute, respectively. International Amphitheatre, Chicago, Illinois
- 30-4 Society of Motion Picture and Television Engineers, New York City

May

- 1 Society for Applied Spectroscopy, New York City
- 2-3 American Meteorological Society, Washington, D. C.
- 4-5 5th South American Congress of Chemistry, Lima, Peru
- 10-12 Acoustical Society of America, Washington, D. C.
- 13-16 American Institute of Chemical Engineers, Kansas City, Missouri
- 14-15 Horological Institute of America, Washington, D. C.
- 16-18 Society for Experimental Stress Analysis, Washington, D. C.
- 22-23 National Conference on Weights and Measures, Washington, D. C.