

of polymers and consisted of a series of invited papers by Toblansky, J. D. Ferry, T. W. de Witt, R. S. Marvin, A. W. Nolle, and H. S. Sack. The high polymer division sessions will be described in more detail in the August issue of *Physics Today*.

A comprehensive picture of the work being done at the National Bureau of Standards was given during a full-day program of invited papers on April 27th. A. V. Astin, who presided over the first session, reviewed generally the Bureau's current research activities, after which other members of the Bureau's scientific staff described specific NBS projects. R. D. Huntoon discussed the use of atomic systems for defining standards of measurement, U. Fano spoke on the diffusion and penetration of x-rays and electrons, W. F. Meggers gave a good picture of the Bureau's work in establishing the spectra of artificially-produced elements, J. R. Pellam reviewed some recent NBS results in supraconductivity and superfluidity, and A. G. McNish spoke on the physical state of the outer atmosphere. The second part of the NBS program, with W. R. Brode presiding, consisted of a set of six additional papers. J. H. Curtiss described the Bureau's application of the "Monte Carlo" method to calculations of Eigenvalues, and two papers, by R. J. Slutz and I. C. Gardner, were concerned with high-speed computing machines. H. F. McMurdie then spoke on crystal synthesis, G. B. Schubauer discussed the hot-wire technique in aerodynamic research, and recent developments in acoustics were reviewed by R. K. Cook.

The use of computing machines in solving physical problems at several major laboratories was the theme of a symposium given the following day at another session in the East Building of the Bureau of Standards. Ray Pepinsky of the Pennsylvania State College described crystal-structure calculations on X-RAC; the computation of statistical fields for atoms was discussed by L. H. Thomas of the Watson Scientific Laboratories; J. A. Wheeler and D. L. Hill, Los Alamos, presented a paper on droplet dynamics and nuclear fission; L. V. Spencer of the NBS spoke on the solution of x-ray diffusion problems with the SEAC; and calculations on the formation of the elements in an expanding universe were discussed by R. A. Alpher and R. C. Herman of Johns Hopkins. A symposium on stable isotopes, with C. C. Lauritsen presiding, consisted of four papers by C. P. Leim, J. R. McNally, Jr., M. L. Pool and D. N. Kundu, and A. O. C. Nier, who reviewed recent developments in the production and the use in research (especially in atomic spectroscopy) of stable and enriched isotopes.

Two visitors from abroad gave invited papers on the general subject of "material testing" during the first afternoon of the meeting. A. Scheibe, of the Physikalisch-Technische Bundesanstalt at Braunschweig, Germany, described the current research program of that laboratory, and W. Ehrenberg, of Birkbeck College in London, spoke on temperature effects in electron-bombardment conductivity and in impurity semiconductors.

The banquet of the Physical Society featured addresses by NBS director E. U. Condon and by Alan T. Waterman, director of the National Science Foundation. Congratulations upon having completed its first half-century were offered to the Bureau of Standards by C. C. Lauritsen, president of the Physical Society, together with a warm tribute in praise of the Bureau's many contributions to the progress of physics in particular, and to the national welfare in general.

RADIO-ELECTRONICS

IRE CONVENTION DRAWS 23,000

The 1951 IRE National Convention became the largest meeting ever held in a single field of engineering or science when over 23,000 radio engineers and scientists from the United States and thirty foreign countries gathered at the Waldorf-Astoria Hotel and Grand Central Palace, overflowing to the Belmont-Plaza, in New York City on March 19-22 to witness a comprehensive program of 210 technical papers and 280 exhibits. The papers and exhibits covered every phase of the radio-electronic field with particular attention being given to the impact of the mobilization effort on the industry and to recent developments in television.

The subject of television received a send-off when on the first day of the convention, a 14-foot scale model of the Empire State multiple TV antenna was unveiled at a ceremony attended by FCC commissioners and the heads of the broadcast stations that will be using the new antenna in the near future. The model was later placed on display at Grand Central Palace where, on the following day, a symposium was held by the IRE Professional Group on Broadcast Transmission Systems at which the electronic and mechanical constructional features were described in detail.

Tube reliability and quality control were the subjects of a symposium at which tube designers, manufacturers, and users discussed tube life and causes for failure. Circuits were extensively considered in a series of six sessions, with one session devoted to applications of circuit theory to the study of such far-removed phenomena as the spread of rumors, the spread of contagious diseases, and the efficiency of operation of a five-man task group under different conditions of communication with each other. Other sessions held during the convention included information theory, propagation, antennas, microwaves, nuclear science, instrumentation, audio, radar and navigation, computers, and telemetering and remote control.

Grand Central Palace was the scene of 280 exhibits where examples of the latest electronic devices were on display. The exhibits featured materials, components, transmitters and receivers, measuring instruments of all descriptions, and complete communication systems. The Navy, Air Force, and Signal Corps combined to put on an Armed Services exhibit depicting the latest military electronic apparatus not on the restricted list. Radiation detection devices, cloud height indicators, telemetering systems, and facsimile equipment were given prominent

attention. The Signal Corps displayed a model of the "G-string" transmission system which may eventually replace coaxial cables for television networks. The system works on the principle that an electromagnetic wave can be propagated along the surface of a dielectric-coated single wire conductor over large bandwidths and with little attenuation. A number of improved versions of World War II communications equipment, such as walkie-talkies, were on view. The principal improvement in the new models was in the considerable reduction in weights and sizes through the use of printed circuits, miniature components, and plug-in subassemblies.

HIGH SPEED PHOTOGRAPHY

FEATURED AT SMPTE MEETING

Methods of taking and projecting high-speed and time-lapse three-dimensional motion pictures and techniques developed for making x-ray motion pictures by photographing fluoroscopic images were described in papers highlighting three sessions on high-speed photography at the sixty-ninth semiannual convention of the Society of Motion Picture and Television Engineers, held from April 30 to May 4 in New York City. A paper on three-dimensional pictures was presented by Major R. V. Bernier of the Wright-Patterson Air Force Base at Dayton, Ohio. Another, on methods and applications of cinefluorography, was co-authored by S. A. Weinberg, J. S. Watson, Jr., and G. H. Ramsey, all of the University of Rochester School of Medicine and Dentistry.

Other papers on related subjects included a description of a high constant-speed rotating mirror, suspended in a high vacuum by a magnetic field and capable of rotation at extremely high speeds that can be held constant to one part in 10 million, presented by J. W. Beams and J. M. Watkins, of the University of Virginia. Another, by Alseide W. Hogan of the Naval Ordnance Laboratory, described the use of an image phototube as a high-speed camera shutter.

EXPLORATION GEOPHYSICISTS

JOINT MEETING HELD IN ST. LOUIS

The twenty-first annual meeting of the Society of Exploration Geophysicists, held jointly in St. Louis during the week of April 23rd with the American Association of Petroleum Geologists and the Society of Economic Paleontologists and Mineralogists, was the largest meeting in the Society's history, with a total attendance of over three thousand scientists from all parts of the world.

Keynoting the meeting, George E. Wagoner, retiring president of the Society of Exploration Geophysicists, pointed out in his presidential address that by now nearly all of the prospective oil areas of the United States have been explored by geophysical methods applied by competitive companies and operators. The geophysical frontier, therefore, is no longer the virgin area. Present-day frontiers are those of skilled interpretation

of old and new geophysical data, research into improved methods, and engineering development of field techniques and instruments. No new method of oil finding is at present in sight, he continued, and the discovery rate of the great proven oil reserves of the United States is still directly proportional to the amount of geophysical exploration done. Wagoner concluded that the record of the immediate past indicates that adequate future reserves will be discovered by present geophysical and geological methods, and that, across the frontier, as always, success will lie for the careful, for the exacting, and for the ingenious operator.

Technical sessions featured twenty-nine addresses by leading geophysicists covering the most recent advances in prospecting techniques, with considerable emphasis placed upon applications of gravity and magnetic methods as well as upon seismic research and interpretation. In addition to its own program, the SEG participated in several joint sessions with the other societies.

The meeting was initiated with a group of geophysical papers of general interest which included descriptions of survey records made during studies of particular regions and discussions of certain interpretive methods in geophysical exploration. The session also included an address by David M. Delo, executive director of the American Geological Institute, who reviewed the AGI's activities in response to the national emergency, most of which have had to do with problems of the training and utilization of scientific manpower.

During the last day of the technical sessions, W. Heiskanen, director of the Finnish Geodetic Institute and a consultant with the Mapping and Charting Research Laboratory of the Ohio State University, described the Laboratory's world-wide gravity program. The program has as its aim, he said, the conversion of North American, European, Russian, and various other geodetic systems to a generally accepted world geodetic system on which might be computed the geographical coordinates of any important point in the world where astronomical observations have been made or which is plotted on a local map with a reliable grid. The program also involves studies of the size and shape of the earth and computations of the distances and directions between specific points in the world.

The increased use of geophysics in the search for essential metallic ores has led the SEG to consider the organization of a mining section, and an informal group discussion took place during the meeting to explore the possibilities for such a section. Sigmund Hammer, who served as SEG vice president during the past year, pointed out that although the Society was originally organized (in 1930) to promote the use of geophysics in oil exploration, many of the methods developed during the following years have been used also by mining scientists seeking new metallic ore deposits. A mining geophysics section within the Society, he continued, would provide a better opportunity for oil and mining geophysicists to exchange ideas and thus aid in the development of more efficient techniques in both industries.