Medicine will be held in New York, November 19 and 20, 1953 (SCIENCE, p. 3, Oct. 16).

The membership of the Instrument Society is drawn as much from the users as from the manufacturers of instruments. Industrial firms, whose business depends on the efficient performance of modern instruments, especially those in the chemical, petroleum, utilities, and other process industries, are particularly interested in the activities of the Society and the work of the Society committees concerned with recommended practices for instrument specifications, installation, and standardization. Corporate membership is now available to corporations and organizations interested in the work of the Society, with dues of $250 per year. Manufacturers who exhibit at the annual conference are to be given corporate membership at no additional cost.

Officers of the Society for 1954 will be:

President, W. A. Wildhack, National Bureau of Standards, Washington, D. C.

Vice-Presidents, Warren H. Brand, Carbide and Carbon Chemicals Co., Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Delmas C. Little, Army Medical Research Laboratories, Fort Knox, Kentucky.

Axel H. Petersen, Mellon Institute, Pittsburgh, Pa.

Hans B. Freeman, Economy Equipment Co., St. Louis, Mo.

Secretary, Robert Sheen, Milton Roy Co., Philadelphia, Pa.

Treasurer, J. T. Vollbrecht, Energy Control Co., New York.

The Society Manager is P. V. Jones, and the Exhibit Manager is Richard Rimbach. Society headquarters are at 1319 Allegheny Avenue, Pittsburgh 33, Pa.

At the annual meeting of the Council, the governing body of the Society, approval was given to a proposal recommended by the Executive Board that the Society undertake the publication of its own journal within the next year. Thus, there will be available a more adequate vehicle for carrying the news of the Society and its activities, as well as a larger number of technical papers than the Society can publish in the present Journal of the ISA as a small section of the magazine *Instruments*. Prospective authors are urged to submit titles and abstracts for next year's conference, or for the new *ISA Journal*, as soon as possible, to permit adequate time for editorial review by appropriate committees, and for preprinting.

All readers are cordially invited to plan to attend next year's conference and exhibit in Philadelphia, to attend meetings of any of the 66 Sections of ISA throughout the country, and to affiliate with the Society if their work or interests require that they keep abreast of the broad and expanding field of instrumentation in their own branch of science or industry.

News and Notes

Fifth Annual Oak Ridge Summer Symposium

THE Oak Ridge Summer Symposium was held this year August 24–29, and was devoted to the subject, "Topics of Modern Physics." These summer symposia are offered jointly by the Oak Ridge National Laboratory and the Oak Ridge Institute of Nuclear Studies and are intended to provide a broad view of modern developments in various scientific fields. An attempt is made to arrange a program at each symposium with a broader coverage, both in subject matter and period of time, than is normally provided in meetings of professional societies. The symposia are scheduled each year at the end of the summer so as to coincide as nearly as possible with the period following the close of summer school sessions. The first symposia were devoted consecutively to the subjects of physics, chemistry, nuclear engineering, and the use of radioactive isotopes in agricultural research. Thus the symposium this year, in returning to the consideration of topics in modern physics, initiated a new cycle of annual offerings.

The total registration for the symposium was 248, of which 175 were local and 73 were from outside Oak Ridge. Among the latter, 36 universities and 25 states were represented. Two major fields of recent research in physics were covered in the symposium; namely, ultra-high energy particle phenomena and developments in spectroscopy throughout the range of the electromagnetic spectrum.

J. Steinberger of Columbia University presented a series of four lectures on mesons. Research on π-mesons was reviewed historically and the key experiments were described in some detail. Special emphasis was given to the concept of isotopic spin and the consequences of charge independence in nuclear interactions. The final lecture consisted of a brief review of experimental evidence relating to higher mass mesons and V-particles.

The remaining lectures in the field of ultra-high energy phenomena were given by M. S. Livingston of Massachusetts Institute of Technology. In his first lecture he described a detailed design, which has recently been completed by a group at Cambridge working

under his leadership, for a 15-Bev proton synchroton utilizing the principle of alternating magnetic gradient focusing. His second lecture consisted of the description of the operating characteristics of the Brookhaven cosmotron and the review of recent unpublished results obtained with it. In particular, the indicated trends of the π^+ and π^- cross sections on protons up to 1.5 Bev were shown, and recent cloud chamber studies of V-particles were described.

Recent advances in spectroscopy throughout the electromagnetic spectrum were covered in a large number of papers of considerable variety and interest. W. Gordy of Duke University described a number of recent advances in microwave spectroscopy and gave special attention to transitions between Zeeman components in electronic semiconductors and other solids, Λ-doublets arising from electronic angular momentum in diatomic free radicals, and the successful extension of microwave spectroscopy to the one-millimeter wavelength region, which has recently been achieved at Duke. The significance of this last development, which can use exceedingly small gas volumes, for microwave spectroscopy with radioactive isotopes was pointed out. In a parallel paper, Ralph Livingston of Oak Ridge National Laboratory described his work on pure quadrupole spectra in solids in the microwave region; of especial interest was the large body of information on solid state structures that is obtainable from symmetry properties of the electrical field gradient in single crystals as revealed by the Zeeman effect on these spectra. The whole range of developments in infrared spectroscopy during the past fifteen years was surveyed by A. H. Nielsen of the University of Tennessee. Particular attention was given to the extensive developments in the new infrared sources, detectors, optical materials, and recording spectrometers, which have taken place during this period.

Spectroscopic developments in the visible region of the spectrum were covered in two papers. The first, by J. R. McNally, Jr., of Oak Ridge National Laboratory, was concerned with a variety of results on nuclear spins and magnetic and quadrupole moments now obtainable with high-resolution spectroscopy of hyperfine structures. The second paper, by G. R. Harrison of Massachusetts Institute of Technology, was on the subject of echelle spectroscopy. The theory of the echelle was described in some detail, and construction of echelle spectrographic instruments and the spectrographs obtained with them were shown by lantern slides. Of especial interest was the neat manner in which the instrument would record a broad prism spectrograph and simultaneously record on the same plate narrow segments of this spectrum spread out in high resolution by the echelle at right angles to the corresponding positions of the main spectrograph.

For the x-ray and gamma-ray region of the electromagnetic spectrum, J. W. M. DuMond of California Institute of Technology gave two lectures on the bent-quartz crystal focusing spectrometers which he has developed. Everyone in attendance at the symposium was thrilled by the achievement represented in the construction of these instruments and the remarkable precision obtainable with them. The first instrument that he described places the gamma-ray source at the focus of the crystal and uses a scintillation counter detector in a fixed position behind the crystal. The other spectrometer reverses these positions and records the gamma-ray spectrum on a photographic film placed in the focal plane of the crystal. A. Abragam of the Centre d'Études Nucleaires de Saclay, France, discussed the theoretical formulation of the problem of angular correlations of successive gamma rays from nuclear transitions, particularly as they are affected by crystalline electrical fields through quadrupole interactions and also by externally applied magnetic fields. T. A. Welton of Oak Ridge National Laboratory discussed quantum electrodynamics in two lectures with specific attention to the Lamb shift and the new covariant formalism of Schwinger, Feynman, and Dyson.

In a very interesting paper on a subject lying outside the domain of these two major fields, C. H. Eckart of the University of California Marine Physical Laboratory described a new approach to the theory of steady turbulence in fluids that he has developed, based on replacing time averages of velocity components with ensemble averages in a manner entirely analogous to the corresponding procedure followed in statistical mechanics. In an evening lecture open to the public of Oak Ridge as well as to the symposium participants, C. J. Craven of the University of Tennessee reviewed the remarkable and interesting results now being obtained in the new field of radio astronomy.

In addition to the formal symposium sessions, a tour of the reactors and other facilities at Oak Ridge National Laboratory was arranged for the first afternoon.

WILLIAM G. POLLARD
Oak Ridge Institute of Nuclear Studies
Oak Ridge, Tennessee

Scientists in the News

John M. Beal, Chairman of the Botany Department at the University of Chicago since 1949 and a member of the faculty since 1929, has retired. He is succeeded by **Charles E. Olmsted,** professor in the same department. Dr. Olmsted's interests lie chiefly in the field of physiological ecology. He has worked especially on the effects of photoperiodism and temperature on various grasses.

Dr. Beal received a B.S. from North Carolina State College in 1911, an M.S. from Mississippi State College in 1913, and a Ph.D. from the University of Wisconsin in 1927. His recent research has included studies of the effects of C^{14} on the genetic characteristics of plants.

During his tenure as department chairman Dr. Beal made cooperative arrangements for research with neighboring institutions, such as the plan whereby

graduate students in the Botany Department may pursue research on systematic and ethnological botany at the Chicago Natural History Museum. Besides using the museum's facilities, they benefit from the direction and advice of members of the museum staff.

Hwai-Sze Fang, Professor of Physiology at the National Taiwan University, has spent the last six months studying aviation medicine in the Department of Physiology at the Ohio State University Medical School. After attending the 19th International Physiological Congress, he has returned to Taiwan.

Willis E. Lamb of Stanford University will be in residence at Harvard University during the fall term and will lecture on microwave spectroscopy and quantum mechanics. Professors **Enrico Fermi,** University of Chicago, and **Freeman Dyson,** Institute for Advanced Study, Princeton, will be in residence for shorter periods of time, each giving colloquium talks and a series of four lectures.

Duncan E. Macdonald, Director of the Boston University Physical Research Laboratories since 1946, has been appointed Dean of the Graduate School. He will retain his directorship of the Physical Research Laboratories, but will move his headquarters to the Graduate School. The Laboratories are noted for their work, conducted under U.S. Air Force sponsorship, in the field of aerial photography.

William Frederick Meggers, Chief of the Spectroscopy Section at the National Bureau of Standards, has received an Elliott Cresson Medal from The Franklin Institute, Philadelphia, "for his monumental work throughout four decades in the field of Spectroscopy—work which has exhibited a high degree of diligence, consistent accuracy and scientific responsibility, work which has produced much of the reliable experimental data upon which rests our present detailed knowledge of the electronic structures of scores of elements."

In the Biology Department of the Western Illinois State College, Macomb, **R. Maurice Myers** has been appointed Head of the Department to succeed **Mary A. Bennett,** who is retiring, and **Howard F. Young,** formerly Assistant Professor of Zoology at the University of Arkansas, has been made an Associate Professor.

George Cheney Newton, Jr., Associate Director, Servomechanism Laboratory, Massachusetts Institute of Technology, has been awarded the Louis E. Levy Medal by The Franklin Institute, Philadelphia, for his paper, "Compensation of Feedback-Control Systems."

Arnold W. Ravin, postdoctoral fellow of the U.S. Public Health Service in the laboratories of Boris Ephrussi and Harriett Ephrussi-Taylor at the University of Paris, has been appointed Instructor in Biology at the University of Rochester. Dr. Ravin will continue his research on bacterial transformation, and will take a major role in developing the basic elementary biology course.

Warren E. Wilson, formerly President of the South Dakota School of Mines and Technology, has been appointed Director of the Engineering Sciences Division, Office of Ordnance Research. OOR is the administrative office which supervises the $4,000,000 program of basic research sponsored by the Ordnance Corps, U.S. Army. It is located on the campus of Duke University. Dr. Wilson succeeds **Newman A. Hall,** who has returned to his academic duties as Head of the Heat Power Division, Department of Mechanical Engineering, University of Minnesota.

Education

The **A. F. Davis Welding Library,** located at **The Ohio State University** in Columbus, has recently acquired over 2200 abstracts of British welding patents; these are classified in the usual manner. The library was established in 1942 by A. F. Davis, Vice President and Secretary of The Lincoln Electric Company, Cleveland. Ohio State is the only university in this country that offers a five-year course in welding engineering leading to the degree of Bachelor of Welding Engineering.

At **Harvard University** a new fireproof, air-conditioned botanical building is being constructed and will be ready for occupancy early in 1954. This building, which will be adjacent to the north wing of the Museum of Comparative Zoology and the Farlow Library and Herbarium, is designed to house the Gray Herbarium and Library, a major part of the Library and Herbarium of the Arnold Arboretum, the Orchid Herbarium of Oakes Ames, and Harvard's paleobotanical collections. By bringing these collections together in close physical proximity to the Botanical Museum, the Farlow Library and Herbarium, the library of the Museum of Comparative Zoology, and the Biological Laboratories, the work of staff members and graduate students will be stimulated and facilitated.

An evening course in **industrial optics,** designed to be of value to engineers and technicians seeking advanced knowledge in this specialized field, is being offered this fall by the **Illinois Institute of Technology** in cooperation with optical firms in the Chicago area and with the Optical Society of Chicago.

The course will have weekly sessions, conducted by specialists from industry and from the Institute, beginning Oct. 13 and continuing through Feb. 2, 1954. The following areas will be covered: colorimetry and photometry; geometrical optics; electron optics; and laboratory practice and instruments. If the new course is successful, it may be the forerunner to the establishment of a complete curriculum in optical engineering at IIT.

The New York Academy of Medicine is sponsoring its 19th annual series of **Lectures to the Laity** under

the general heading, "The Reciprocal Relations Between Medicine and the Other Disciplines." The schedule for the first three lectures is as follows:

Nov. 4, "The Application of Physics to Medicine." Norbert Wiener, Professor of Mathematics, Massachusetts Institute of Technology.

Nov. 18, "The Relation of Electrochemistry to Medicine." Theodore Shedlovsky, Associate Member of The Rockefeller Institute.

Dec. 2, "The Practice of Psychiatry—Past and Present." Clarence P. Oberndorf, Clinical Professor of Psychiatry, Columbia University.

Grants and Fellowships

The **Life Insurance Medical Research Fund** invites faculty members to nominate candidates for 1954–55 predoctoral fellowships for research in the medical sciences, preferably in the cardiovascular field. *Nomination deadline is Nov. 30.* Open to those who will have completed a year or more of work in a medical or graduate school and can devote most of their time to research, stipends range from $2,000 to $2,400. Further information is obtainable from the Scientific Director of the Fund whose address is 345 E. 46 St., New York 17, N.Y.

The **National Research Council** of the National Academy of Sciences is now accepting applications for the following postdoctoral and predoctoral fellowships that provide special opportunities for advanced study and training in fundamental research in the natural sciences for the 1954–55 academic year.

National Research Council Postdoctoral Fellowships in the Natural Sciences. Supported by the Rockefeller Foundation, these are intended to promote the training of investigators in basic research in the natural sciences, primarily in educational and research institutions of the United States and in exceptional cases in institutions abroad. These fellowships are open to citizens of the United States and Canada. A fellowship applicant must choose an institution other than that at which he has had most of his academic training. Fellowships are available in the fields of Agriculture, Anthropology, Astronomy, Biochemistry, Biophysics, Botany, Chemistry, Forestry, Geography, Geology, Geophysics, Mathematics, Paleontology, Physical Geography, Physics, Psychology, and Zoology.

Lilly Research Laboratories Postdoctoral Fellowships in the Natural Sciences. These fellowships are available in those sciences fundamental to the understanding of biological phenomena, especially in the borderline fields between Chemistry, Biology, and Physics. Applicants must produce evidence of training in one of the natural sciences equivalent to that represented by the Ph.D. or Sc.D. degree and must have demonstrated superior ability for creative research. A fellowship applicant must choose an institution other than that at which he has had most of his academic training. These fellowships are open only to citizens of the United States.

Merck Senior Postdoctoral Fellowships in the Natural Sciences. These Senior Fellowships are awarded for the purpose of giving advanced education, training, and development to individuals who have demonstrated marked ability in research in the physical, chemical, or biological sciences and who wish to broaden their fields of investigational activity by acquiring some familiarity with another area. A fellowship applicant must choose an institution other than that at which he has had most of his academic training. Applicants must produce evidence of training in Physics, Chemistry, Biology, or preclinical medical sciences equivalent to that represented by the Ph.D. degree, and must have had at least three years of postdoctoral professional experience in their major field, including not more than one year of fellowship work. These fellowships, with no age restriction, are open only to citizens of the United States.

RCA Predoctoral Fellowships in Electronics. These are offered to give special graduate training and experience to young men and women in the general field of electronics, either as a branch of Electrical Engineering or as a part of the general field of Physics. Applicants must have demonstrated ability and aptitude for advanced work and must have had training in electronics equivalent to that represented by one year beyond the bachelor's degree in a university of recognized merit in this field. It is understood that the training for the bachelor's degree may come from the general area of Electrical Engineering or Physics. Applicants must be citizens of the United States and fellowships will be awarded only for study and research in the United States.

Applications for any of these programs must be postmarked on or before Dec. 10. Fellowships are awarded in the late winter or early spring. Complete details and application blanks may be obtained from the Fellowship Office, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C.

Since January, 1953, **Sharp & Dohme,** Division of Merck & Co., Inc., has made grants totalling $45,910 to 13 institutions scattered throughout the United States and Canada.

In the Laboratories

The plant pest control offices of **The Connecticut Agricultural Experiment Station** have been transferred from Danielson, where they have been located for the past 40 years, to the Station's Tobacco Laboratory at Windsor.

The Texas Division of **The Dow Chemical Company** is dedicating a new $2,600,000 research center to William Reed Veazey, recently retired director and research consultant. The new building has 69,000 sq ft of space to house the Division's organic, chemical engineering, and electrochemical research, as well as the analytical laboratory, research administrative offices, a patent office, and a library.

The **General Electric Company** plans to construct a $1,800,000 combustion laboratory in Schenectady. The story and a half building will provide 14,200 sq ft of floor space, and is scheduled for completion in late 1954. It will be divided into five main working areas: an air compressor and preheater room; a combustion test cell for evaluating new ideas on the theoretical and practical aspects of combustion; a turbine bucket study area; a high-speed test pit; and shock wave experimental facilities. The new laboratory will be devoted chiefly to basic scientific studies in order to obtain information about the exact chemical and thermal nature of combustion.

A new **method for counting virus particles** has greatly aided cancer research at Duke University. The new system, developed by Gordon Sharp of the Duke Medical School, saves scientists months of work. For example, investigations on 105 virus-produced cancers in chickens which formerly would have required two months can now be completed in approximately 20 minutes.

In the new method a sample of unpurified blood plasma—only 1/30 of a drop being needed—is spun down in a centrifuge, so as to separate out the virus particles, which adhere to agar at the bottom of the test tube. The virus particles are then transferred from the agar to a liquid coating of collodion and placed under an electron microscope where they are counted over a given area. By multiplying this count by the magnifying power of the instrument, the scientist learns how many virus particles are in the sample.

A machine that automatically scans photographic plates of the heavens, identifies individual stars, and punches their positions on IBM cards has just gone into operation at the **Watson Scientific Computing Laboratory.** Prof. Wallace J. Eckert, Director of the laboratory, which is jointly operated by Columbia University and the International Business Machines Corp., headed a team of astronomers and engineers that has been working on the project for six years. The unique "star factory" makes as many measurements in one day as a highly trained person can in a week, and with four times the accuracy.

Photographic plates 17 inches square, which contain the images of from 300 to 450 stars each, are placed on the adjustable plate holder of the measuring device. From IBM cards the approximate location of individual stars, obtained from a previous star catalogue, is transmitted to selsyn motors. These motors move the appropriate image in front of a very sensitive photoelectric eye, and the eye measures its exact position to within tenths of a micron. The position is then relayed back to the same card and punched on it. In order to relate positions measured on the plate to the true positions in the sky, elaborate computations are necessary. Electronic calculators can do this work automatically, using the punched cards from the "star factory." The resulting true positions can then be printed electrically and reproduced photographically. This final step in mechanizing a once arduous and time-consuming part of astronomy will provide increasing amounts of data to astronomical theorists. Some of the problems solved in building the "star factory" will also be applicable to the automatic operation of machine tools and to manufacturing plants.

Miscellaneous

A major study of the neurological disorder called **amyotrophic lateral sclerosis** has just been initiated on Guam, where it has been highly prevalent for generations and where the character of the population and the environment make possible an analysis of its causes. This was recently pointed out by Donald R. Koerner, Navy physician stationed for some years in Guam. The U.S. Public Health Service, the Navy Bureau of Medicine and Surgery, and the Department of the Interior are participating in the two-month project, which will be headed by Leonard T. Kurland, Chief Epidemiologist of the National Institute of Neurological Diseases and Blindness, who left for Guam in September. Donald Mulder, U.S. Navy, and K. K. Waering and S. Tillema of the Government of Guam will cooperate in the investigation.

Amyotrophic lateral sclerosis is popularly recalled as the illness responsible for Lou Gehrig's death. It is a degenerative disease of the nervous system marked by demyelination of the nerve fibers, and seems to manifest itself in two types: a slow progressive type primarily paralyzing the muscles of the hands and arms (eventually affecting other organs as well), and a more rapidly progressive type in which shoulders, neck, tongue, lips, palate, and pharynx are initially involved and paralyzed. There is no treatment for the disorder, and its cause is still unknown. Its incidence in the United States is also unknown, but most neurologists agree that there are approximately 1500 to 2500 cases yearly, with the average case having about three years to live from the time of onset. The disease occurs most frequently between the ages of thirty and fifty-five.

The new research group hopes to determine whether or not the disease is as prevalent on Guam as believed, if it is exactly similar to the disorder as it is known elsewhere, and finally, just what the possible causes may be—whether genetic, traumatic, infectious, economic, nutritional, or otherwise.

Poland has received from Czechoslovakia the original manuscript of the major work of the great Polish astronomer, Nicholas Copernicus. Known in Latin as ***De Revolutionibus Orbium Coelestium Libri VI*** (Concerning the Revolutions of the Heavenly Spheres), the document which altered man's concept of the universe had been in Czechoslovakia for the last 400 years. It is now in the National Museum in Warsaw. First to see the manuscript after its return to Poland were the participants in the special session held by the Polish Academy of Sciences to commemorate the 410th anniversary of Copernicus' death. (The 400th anniversary could not be observed because of the occupation of Poland.)