

R. Emerson, research professor in botany, University of Illinois; J. F. Enders, chief, Division of Infectious Diseases, Children's Hospital, Boston; P. J. Flory, professor of chemistry, Cornell University; G. Gamow, professor of theoretical physics, George Washington University, Washington, D.C.; V. Hamburger, professor of zoology, Washington University, St. Louis; C. E. Hille, professor of mathematics, Yale University; J. O. Hirschfelder, professor of chemistry, University of Wisconsin; J. G. Horsfall, director, Connecticut Agricultural Experiment Station, New Haven; E. H. Land, president, Polaroid Corporation, Cambridge, Mass.; D. P. C. Lloyd, member, Rockefeller Institute for Medical Research, New York; H. W. Nissen, associate director, Yerkes Laboratories of Primate Biology, Orange Park; D. Rittenberg, associate professor of biochemistry, Columbia University; J. F. Schairer, physical chemist, Geophysical Laboratory, Carnegie Institution, Washington, D.C.; T. Shedlovsky, member, Rockefeller Institute for Medical Research, New York; J. C. Street, professor of physics, Harvard University; M. Tishler, director, Development Research Department, Merck and Company, Inc., Rahway, N.J.; H. G. Wood, head of the Department of Biochemistry, Western Reserve University; and R. B. Woodward, professor of chemistry, Harvard University.

Foreign Associates: J. H. Oort, director, Leyden Observatory; and Wilder Penfield, professor of neurology and neurosurgery, McGill University, and director, Montreal Neurological Institute, Montreal.

KOSSUTH PRIZES IN HUNGARY FOR 1953

WINNERS of the 1953 Kossuth Prizes in Hungary, which are given for outstanding work during the past year, have recently been announced. These Prizes carry monetary awards of various amounts (1,000 forints is approximately £3), and those given for scientific, technological or medical work include the following. A Prize of 50,000 forints to Frederick Riesz, president of the Mathematical Section of the Hungarian Academy of Sciences, for his book entitled "Lesson of Functional Analysis", written in conjunction with B. Nagy, in which theories are developed that are of great importance in the development of mathematics. Prizes of 20,000 forints to: B. Nagy, correspondent member of the Hungarian Academy of Sciences, for his part in the joint work with F. Riesz, mentioned above; F. Ratkovszky, for work on the electrification of the country and for making a 'diabolo-transformer'; K. Novobatzky, professor of theoretical physics in the University of Budapest, for research on the quantum theory; J. Egerváry, for work in applied mathematics on the theory of differential equations, particularly in the development of a method for computing the critical limit of rotations of rotors in turbo-generators; Z. Csűrös, academician, for results achieved in the study of heterogeneous catalysis; A. Ábrahám, correspondent member of the Academy, for research of the nerve tissues, based on the teachings of Pavlov; Z. Gyulai, correspondent member of the Academy, for research work on the boundary layers of crystals and solutions, and for the production of artificial quartz crystals; V. Keilwert,

chemical engineer at the Láng engineering factory for directing the planning of the Debrecne penicillin factory; J. Prosz, professor in the Inorganic Chemistry Institute, for pioneering research in the preparation of organic silicon compounds; L. Kulin, specialist in children's diseases, for results achieved in curing tuberculosis in babies; G. Bárczi, director of the Budapest Therapeutical Teachers Training College, for results achieved in basing Hungarian medical teaching and education on the natural sciences and for applying Pavlovian theories; J. Kollonitsch, departmental head of the Medicine Industry Research Institute, for medical research and work in the pharmaceutical industry, particularly in the new preparation of 'Treomycin' for the treatment of whooping cough, typhoid and dysentery.

Prizes of 10,000 forints to: P. K. Károly, correspondent member of the Academy, for his text-book entitled "The Factory Science of Electrical Machines", and for research; L. Verebely, professor at the Technical University, for his handbook entitled "Transmission of Electrical Energy", and for work on electrification; J. Urbanek, director of the Central Research Laboratory of the Electrical Industry, for his text-book entitled "Introduction to the Technical Science of Theoretical Electricity" and for his new method of cooling turbo-generators by refrigeration; S. Müller, correspondent member of the Academy, for work in organic chemistry in connexion with the industrial production of synthetic materials; A. Romwalter, university professor, for research in coal chemistry; K. Rauss, professor at the Pécs Medical Science University, for research into children's diseases and dysentery inoculation; L. Fuchs, university dean, for work on the theory of structural algebra.

HYDRATION OF METAL CATIONS

By DR. E. GLUECKAUF and G. P. KITT

Atomic Energy Research Establishment, Harwell, Berks

MEASUREMENTS have been made by the isopiestic method of the water content of hydrogen and metal polystyrene sulphonates at different water vapour pressures and at two different temperatures, using concentrated sulphuric acid solutions as vapour pressure standards. This permits of a calculation both of water-activities (see curves *A* and *B*) and of the differential heats of hydration \bar{H} of the ions (curve *C*). The polystyrene sulphonates of monovalent ions show in this respect great similarity to the behaviour of strong 1:1 electrolytes such as, for example, lithium chloride or perchloric acid and, as has been shown previously^{1,2}, can be considered as concentrated solutions of electrolyte in their swelling water. Indeed, the trend of *H* for the hydrogen polystyrene sulphonate (curve *C*) is very similar to that of concentrated sulphuric acid³ in the range where the latter may be regarded as a monovalent acid, $\text{H}\cdot\text{SO}_4\text{H}$ (see curve *D*). For a study of concentrated solutions the polystyrene sulphonates have a great advantage over most aqueous solutions: they can be concentrated without crystallization to any desired strength (100 molal and above) and thus provide information on the interaction of water with all kinds