the Stuart pattern and are machined from cast phenolic resin (see *Nature*, July 8, p. 59).

A newly erected spinning-band fractionating column is being used for the purification of fatty acids.

The main effort of the High Polymers and Plastics Section is being devoted to a study of the ion-exchange properties of high polymers, in particular the effect of polymer structure on ion-exchange equilibria and kinetics. An interesting exhibit was a 'mixed-bed' deionization column. This apparatus, which consists simply of a mixture of a strongly basic resin with a strongly acidic resin in a glass column, provides a very convenient method of preparing water of very low conductivity (specific conductivity = 0.1×10^{-6} mhos).

The Microbiology Section exhibited work on the growth requirements of sulphate-reducing bacteria, showing the progressive increase of growth obtained in a series of media ranging from purely inorganic (autotrophic growth) to a very rich organic media. The importance of certain amino-acids for growth was illustrated. Other exhibits showed the quantitative reduction of sulphate to sulphide by these organisms and the competitive inhibition of the reduction by selenates. Work on the functions of sulphate reducers in the underground corrosion of metals was shown, with examples of corroded water and gas mains and suggested methods of prevention. Examples of the photosynthetic green and purple bacteria, which oxidize hydrogen sulphide to elementary sulphur, and of sulphur-oxidizing bacteria, were shown. Included in this Section is the newly formed National Collection of Industrial Bacteria, which maintains more than three hundred strains. Since January 1, 1950, the Collection has sent out some one hundred and fifty cultures in response to requests not only from research laboratories in Great Britain but also from Belgium, Ceylon, Czechoslovakia, Finland, France, Germany, Holland, India, Italy, Poland, Sweden and Trinidad. Methods of preservation, diagnostic tests and classification of bacteria were illustrated.

In addition to the research groups and sections, reference should also be made to the well-equipped workshops, where much of the special experimental plant is designed and constructed. An interesting exhibit on the machines were the jigs used in the preparation of the molecular models.

OBITUARIES

Dr. J. S. Gooden

JOHN STANLEY GOODEN was born in Adelaide on April 11, 1920. His early education was at the Pultney Grammar School and later Saint Peter's College. He was at the University of Adelaide during 1938-41, where he concentrated on physics and mathematics, graduating in 1941 with first-class honours in physics. He was also proficient in sport, being a valued member of the lacrosse and cricket teams, and a good lightweight boxer.

Early in 1942 he joined the Australian military forces, working on radar problems. In that year he married Miss Claire Ward, daughter of the headmaster of Prince Alfred College, Adelaide. In 1943 he was invalided out of the army after applying for active service, and joined the Radio Physics Laboratories of the Australian Council for Scientific and Industrial Research in Sydney, where he became noted for exceptional experimental ability and his

wide knowledge of physics. After the end of the War he worked on the production of one-million volt electrons from cavities excited by pulsed magnetrons, and was the first to attain success in this field.

In December 1945 Gooden arrived in England, and led the team under Prof. M. L. E. Oliphant in the construction of the 1,000 million-volt proton synchrotron in the Nuffield Laboratory at the University of Birmingham. He was responsible on this project for the major part of the general and detailed design and theoretical work, and his ability and energy were an inspiration to all members of the group. It is very sad that he has not lived to see the completion of this large and difficult project after putting into it more than four years of very hard work.

Dr. Gooden made considerable contributions to the theory of particle accelerators, in particular to that region where the motion cannot be regarded as either classical or extremely relativistic. For this work he was awarded the degree of Ph.D. of the University of Birmingham. He also developed the technique of paramagnetic nuclear resonance for the accurate measurement of rapidly rising magnetic fields, as in the proton synchrotron. This led him to investigate this effect under non-adiabatic conditions. During 1947 Dr. Gooden made an extensive tour of many physics laboratories in the United States of America.

Dr. Gooden was a member of the council of the Atomic Scientists' Association. His chief hobby was painting, and his outside interests included the history of art, music and social conditions. The friendship and hospitality of both him and his wife were highly valued by his colleagues.

In early May of this year, Dr. Gooden and his wife and young son flew back to Adelaide, where he fought hard to regain his health; but he died on June 9.

W. I. B. SMITH

Dr. J. G. F. Druce

IN the early hours of June 22, Gerald Druce died in a London hospital after six months of failing health and much pain. Born in 1894 at Leamington Spa, Druce was educated at Kendrick School and University College, Reading, and at University College, London, taking his M.Sc. in 1921. It was at University College that he first met Hrovsk, through whom he became interested in Czechoslovakia and its people. In 1920 he paid the first of more than thirty visits to that country, and in 1923 was awarded the degree of Doctoris Rerum Naturalium of the Charles University, Prague—a distinction shared by few Englishmen.

During most of his professional life, Druce was chemistry and botany master at Battersea Grammar School, and at the time of his death was head of the Chemistry Department. It was, in fact, in the temporary laboratory in the playground of the School at its original site on St. John's Hill, Clapham Junction, that Druce carried out his early work in search of the missing elements 43, 75 and 93, congeners of manganese, and in 1925 he published, with F. H. Loring, one of the three almost simultaneous papers announcing the discovery of 75 (rhenium). His pupils of those days will well remember the excitement of his isolation of a few colourless crystals of potassium perhenate from pyrolusite. Yet Druce was an unassuming man; he knew his subject well and knew how to pass on his knowledge to others.

His practical classes were a model and his technique impeccable. The untidy laboratory and slapdash experimenting were anathema to him. Among his scientific writings were the monographs: "Brief Outline of the History of Science" (1925) and "Rhenium" (1948).

To mention his scientific work alone would be to tell only half the story, for Druce was a man of letters as well as a man of science, a scholar and a traveller. During the past thirty years he and his wife, and later their son, visited most of the countries of Europe, and he became fluent in many languages, including Czech and the Slavonic tongues. He once remarked that he learned his languages the 'easy' way, by living with the people. Yet, of the countries on the Continent, Czechoslovakia was his first love, and his writings on that country and its people revealed the depth of his understanding of their problems; in 1937 he was invested with the Order of the White Lion for his cultural and scientific work. He was also an honorary foreign member of the Masaryk Academy of Work and a corresponding member of the Royal Bohemian Scientific Society. In 1943 he was awarded the London M.A. degree for a thesis on "The Role of Men of Science in the Czech National Revival Movement".

His passing is mourned here and abroad, and those of us who received from him our first intro-

duction to chemistry may indeed count ourselves fortunate.

KENNETH PANKHURST

Dr. H. Wambacher

ON April 25 Dr. H. Wambacher died in Vienna at the age of forty-eight after a long illness. Dr. Wambacher is mainly known for her work relating to scientific uses of photography, and especially for developing the method of detecting tracks in photographic emulsions of corpuscular rays due to atomic disintegrations and cosmic radiation. She worked at first together with Dr. M. Blau (now of New York). Her work is distinguished by the detection of the first multiple atomic disintegration ('star') in the emulsion of an Ilford plate, which was exposed for some months on the Hafelekar near Innsbruck (Tyrol). This discovery was followed by several publications concerning the occurrence of 'stars', their dependence on the number of tracks, the altitude, etc. The results of this work were not only of the greatest interest to scientific workers in this field, but also were of value to manufacturers producing special plates for nuclear research.

Dr. Wambacher's work was acknowledged by the award by the Vienna Academy of Sciences of the Jgnaz Lieben Prize for physics, 1938 (together with Dr. Blau).

G. ORTNER

NEWS and VIEWS

Prof. Egon Orowan, F.R.S.

THE Massachusetts Institute of Technology has recently announced that Dr. Egon Orowan has been appointed to a full professorship on the staff of its Mechanical Engineering Department. He will be taking up his new duties in October 1950. Dr. Orowan was born in Budapest in 1902, and studied at the Technical University of Berlin-Charlottenburg, where he continued for some years as a teacher and carried out research with Prof. Becker. On his return to Hungary he was for some time in charge of the krypton gas works of the United Incandescent Lamp and Electric Co. Eventually Dr. Orowan left Hungary, and in 1937 he resumed research on the mechanical properties of metals in the Physics Department of the University of Birmingham. In 1939 he went to the Cavendish Laboratory, where his researches were at first supported by the British Iron and Steel Federation and later by the Nuffield Foundation. He was given the title of reader by the University of Cambridge, and has had a group of about a dozen research students working under him for a number of years.

Dr. Orowan is well known in Great Britain for his work in metal physics. He combines an active and inquiring mind with an outstanding ability to design and construct ingenious apparatus. He has worked upon the deformation of single crystals, the theory of rolling, plasticity at high rates of deformation, the yield point of steel, and many other problems. He has been a member of many committees, and has taken part in numerous scientific gatherings, where his lively mind always stimulated the discussions. He has received a number of honours while in Great Britain, among them the Thomas Hawksley Gold Medal of the Institution of Mechanical Engineers in 1945 and the fellowship of the Royal Society in 1947.

Royal Naval Scientific Service: Mr. W. R. J. Cook

MR. W. R. J. COOK has been appointed chief of the Royal Naval Scientific Service in succession to Sir Frederick Brundrett, now deputy scientific adviser to the Ministry of Defence (see *Nature*, July 1, p. 17). Mr. Cook, who is forty-five years of age, was educated at Trowbridge High School and the University of Bristol, where he obtained the B.Sc. degree with first-class honours in applied mathematics in 1925. He followed this with two years fundamental research in theoretical physics at the same University, obtaining the M.Sc. degree in 1927 before taking up an appointment under the War Office in the Research Department at Woolwich. During 1927-35 he was engaged on research work in field of gunnery ballistics, the determination of shell velocities in flight and of pressures, temperatures and rates of heat transfer in guns. From 1935 he worked on gas dynamics and rocket development, and in 1939 was transferred to the Ministry of Supply Projectile Development Establishment. In 1940 he was appointed to the Ministry of Supply headquarters as an assistant director in the Directorate of Projectile Development, and was responsible for the assessment and planning of rocket requirements and research. In 1943 Mr. Cook returned to the Projectile Development Establishment as superintendent (R. and D.) in technical charge of all research and development; but in 1945 he was again recalled to the Ministry of Supply headquarters as deputy director of the Directorate of Guided Projectiles. He became chief superintendent of the G.P. Establishment at Westcott in 1946. In 1947 he transferred from the Ministry of Supply to Admiralty service as the director of physical research in the Royal Naval Scientific Service. In this post he has shown outstanding ability and great energy, gaining a very high reputation with both Naval and scientific staff in a comparatively short period.