with first-class honours in physics, and was awarded the Granville scholarship. After taking his degree, he began research on electron diffraction under Prof. E. N. da C. Andrade, who was much impressed by his character and ability.

At the beginning of the Second World War, Jay joined the Air Ministry Telecommunications Research Establishment (later the Royal Radar Establishment). It was here that his abilities as a writer first came to notice, and after a short spell of experimental work he was attached to the chief superintendent, Mr. A. P. Rowe, to prepare the establishment progress report and other documents. Rowe attached great importance to presenting technical information to the layman in an intelligible form, and he would not tolerate jargon; his views undoubtedly left their mark on Jay's future career. When the Telecommunications Research Establishment moved to Malvern, Jay set up an information room, where all forms of graphical presentation were used to bring out the contribution of radar to the successful conduct of the War. During this period Jay did much to strengthen the chain of communication which was so successfully established between the scientists in the Telecommunications Research Establishment and the serving officers in the Royal Air Force.

In 1945 Jay went to the Cabinet Office to work on the *Official History of the War*. There he conducted the researches and composed the narrative relating to the history of radar, which was incorporated in the volume on the *Design and Development of Weapons*.

Three years later, Jay joined the Atomic Energy Research Establishment at Harwell as information officer, and in this post he laid the foundation of the present information service. However, he retained his interest in the more popular presentation of scientific information, and when the declassification of atomic information began to gather momentum in 1951, he put forward a proposal for a book on the work of the Atomic Energy Research Establishment. This was published in 1952 under the title *Harwell, the British Atomic Energy Research Establishment*; it was the first serious description of post-war nuclear research in the United Kingdom, and was an immediate success. This success led to Jay's transfer to a full-time, scientific-writing post, and in the next few years there followed four more books: *Britain's Atomic Factories* (1954), *Atomic Energy at Harwell* (1955), *Calder Hall* (1956) and *Nuclear Power Today and Tomorrow* (1961). Although the visits to distant establishments were a serious physical burden, he perhaps most enjoyed writing the books on the factories and Calder Hall, where an account of the scientific principles involved was combined with a fascinating story of engineering initiative and enterprise.

In addition to these major works, Jay was responsible for many years for writing the chapters dealing with research in the Atomic Energy Authority's annual report, and for a series of progress reports on activities at the Atomic Energy Research Establishment prepared for internal use in the Authority. He also wrote an introductory chapter to the first volume of Mrs. M. Gowing's official history of the United Kingdom atomic energy project, *Britain and Atomic Energy*, 1935–45.

In all his writing Jay took immense pains both to keep in mind the needs of his readers for a clear and simple exposition, and also to preserve scientific accuracy. In this way he was able to achieve the objectives he set himself, and at the same time to retain fully the confidence of the scientists about whose work he wrote: nearly all his writing was based on first-hand discussion with them.

A catalogue of his written work, however, cannot adequately represent the impact which Jay made on Harwell, and the Atomic Energy Authority. He was an excellent lecturer both in the history of atomic energy and on the presentation of scientific information; he was an active worker for standardization of nomenclature, and was chairman of a British Standard Institution subcommittee which produced their *Glossary of Terms used in Nuclear Science*. But perhaps most important, in the face of physical adversity he showed a cheerfulness and determination which were an example to all, and with his warm personality, he inspired the affection as well as the professional admiration of all who knew him. His award of the M.B.E. in 1956 was universally acclaimed.

Outside his office, as at work, Jay did not allow his disability to limit his activities. He was chairman of the Atomic Energy Research Establishment's Amateur Radio Club, an active worker for his parish church, and a member of the Science Writers' Guild. He was also author of some illustrated children's books on science, including *British Nuclear Reactors* (1960).

Science is becoming more complex, more expensive and more difficult to understand; at the same time, its understanding by laymen in industry and Government must increase if science is to be efficiently applied. Kenneth Jay had an outstanding ability to bridge this gap in communication between scientists and laymen: there is a great need for many more like him.

R. M. Fishenden

Dr. Duncan A. MacInnes

Dr. Duncan A. MacInnes, member emeritus of the Rockefeller University, died on September 23, in Hanover, New Hampshire. He was eighty years of age and had been active in scientific research until this past summer.

Dr. MacInnes had been affiliated with the Rockefeller University since 1926 and had been a member emeritus since 1950. During his career, he distinguished himself in teaching and research in several universities and as a civilian with the Office of Scientific Research and Development during the Second World War.

Many honours were conferred on Dr. MacInnes. He received the Nichols Medal in 1942, awarded by the American Chemical Society to stimulate original research. In 1948 he received the Acheson Medal, awarded every two years by the Electrochemical Society. He was also honoured with the Presidential Certificate of Merit in 1948.

Dr. MacInnes's field of research had been largely directed towards the study of electrolytes in aqueous solution. As emeritus member, he had continued to conduct laboratory research.

Born in Salt Lake City, Utah, March 31, 1885, he received his B.S. degree from the University of Utah in 1907. In 1909 he received his M.S. degree from the University of Illinois and his Ph.D. degree in physical chemistry in 1911. During the next six years he was successively an instructor and an associate in chemistry at the University of Illinois. During 1917–26 Dr. MacInnes carried out physical chemistry research at the Massachusetts Institute of Technology, first as an assistant and then as an associate professor. In 1926 he became an associate member of the Rockefeller Institute (now the Rockefeller University), in 1940 a member, and member emeritus in 1950.

He was a member of the National Academy of Sciences, the American Association for the Advancement of Science, the American Chemical Society, the Electrochemical Society (for which he served as president during 1935–37), the American Philosophical Society, and the Harvey Society.

Prof. Hermann Staudinger

Hermann Staudinger, whose death occurred on September 8, at the age of eighty-four, was a pioneer in the study of macromolecules and one of the founders of the subject of polymer chemistry. Born at Worms (Rhein) on March 23, 1881, he was educated at Halle, Darmstadt and Munich. In 1907 he became a lecturer in

chemistry at the University of Strasbourg, and after one year there he was appointed as an extra professor at Karlsruhe Technical High School (1908–12). After holding an ordinary professorship at the Federal Technical School, Zurich (1912–26), he was appointed to a professorship at Freiburg im Breisgau in 1926—a post which he held until he retired on reaching the age of seventy.

In his early years, Staudinger worked in the field of classical organic chemistry and with its well-defined substances which could be fully characterized by standard methods. The outcome of this work was the well-known monograph on *The Chemistry of the Ketenes*. It was not until the early 1920's that he selected as his field—at that time scarcely thought to be worth the consideration of an organic chemist of his reputation—the study of natural organic substances of high molecular weight. In this area he performed, with numerous collaborators, an enormous amount of experimental work on materials varying from natural materials, such as starch and cellulose, to synthetic substances, such as polystyrene and polyaldehydes, applying purely organic methods. He demonstrated that large linear molecules could be formed from small molecules by ordinary chemical reactions and, what is more, maintain their individuality even when they were subjected to chemical modification. Through this work he built up information for the foundation of the new branch of macromolecular chemistry. In one of his first publications he deplored the prevailing tendency to formulate polymeric substances as association compounds held together by "partial valencies" and he proposed the chain formulations of polystyrene and polyformaldehyde which are the ones accepted at the present time. He also advocated the long-chain structure of rubber and attributed the colloidal properties of these substances entirely to the size of their primary valence molecules. His chemical studies left no doubt as to the linear chain-like structures of these substances which he called 'macromolecules'.

In a paper published in 1926, Staudinger remarked that "many of the properties of synthetic high polymers are so similar to those of natural origin that they may be used as substitutes for them. It is not improbable that sooner or later a way will be discovered to prepare artificial fibres from synthetic high molecular-weight products because the strength and elasticity of natural fibres depend exclusively on their macromolecular structure". How brilliantly this prediction was fulfilled in his lifetime is commonplace knowledge. Staudinger's views were not widely accepted at once. Many of his colleagues in high academic positions remained for a long time unconvinced. They did not approve either of his methods and results or the manner in which he elevated his own working field to a "new branch of organic chemistry". Many will recall the numerous occasions in the 1920's and early 1930's when the history of polymer science was made in the eloquent clashes between Staudinger—who relentlessly championed the macromolecular hypothesis—and those who believed that polymers were aggregates of small molecules. One of his best-known contributions was the establishment of a relationship between the viscosity of a solution of a high polymer and its molecular weight. As with other aspects of his work, much doubt and controversy centred on the so-called viscosity law which Staudinger proposed in 1930. The difficulties, however, were soon resolved, and the utility of the later modified relationship between viscosity and molecular weight played an important part in the determination of molecular weights and in the development of the physical chemistry of high polymers.

Staudinger's importance in the development of polymer chemistry is now universally accepted. His prodigious output of research and publications and his never-failing enthusiasm in a field in which he had to fight at every step to establish new concepts or justify new methods places him first when it comes to the question of who contributed the greatest number of facts and figures to the new macromolecular chemistry.

In addition to his outstanding scientific achievements, Staudinger was also a great teacher, who succeeded in transmitting his new ideas and creative thinking to the very large number of students always working in his laboratory. These students carried with them into academic life and industry the convictions of their master, and a generation of leaders in polymer science emerged.

Staudinger's many honours included the Nobel Prize for Chemistry in 1953; honorary degrees of Karlsruhe (1950), Mainz (1951), Salamanca (1954), Zurich (1955) and Strasbourg (1959); and honorary membership of numerous academies of science and scientific societies. He was awarded the Leblanc Medal of the French Chemical Society (1931), Cannizzaro Prize, Rome (1933), and Goldene Ehren-Medaille des Vereens der Textilchemiker (1962). He was made an honorary citizen of Freiburg in 1955.

C. E. H. Bawn

NEWS and VIEWS

Royal Society of Edinburgh : Elections

At the annual statutory meeting of the Royal Society of Edinburgh, held on October 25, the following were elected to the Council of the Society for the 183rd session: *President*, Prof. J. N. Davidson; *Vice-Presidents*, Prof. C. F. Davidson, Dr. M. Ritchie, Prof. J. Allen, Dr. G. H. Mitchell, Prof. A. E. Ritchie, Prof. C. H. Waddington; *General Secretary*, Prof. N. Feather; *Secretaries to Ordinary Meetings*, Dr. A. F. Brown, Prof. W. L. Weipers; *Treasurer*, Dr. J. R. Peddie; *Curator of Library and Museum*, Dr. R. Schlapp; *Councillors*, The Right Hon. Lord Balerno of Currie, Dr. J. M. Jackson, Prof. I. N. Sneddon, Prof. P. E. Weatherley, Dr. Neil Campbell, Prof. P. L. Pauson, Prof. J. R. Raeburn, Prof. J. D. Robertson, Prof. P. W. Brian, Dr. H. E. Butler, Sir David Lowe, Dr. D. G. Sopwith.

Metallurgy in the University of Oxford : Prof. W. Hume-Rothery, O.B.E., F.R.S.

Prof. W. Hume-Rothery will retire from the Isaac Wolfson chair of metallurgy in the University of Oxford on September 30, 1966. His long and distinguished scientific career has been spent almost entirely in Oxford, and the date will be a sad occasion for his friends and colleagues. Prof. Hume-Rothery intended to make his career in the Army (and would surely have become a general !), but a serious illness as a young man left him totally deaf, and he turned to science instead. After taking an Oxford first in chemistry, he worked for his Ph.D. at the Royal School of Mines, and then returned to work in Oxford in 1926. Using his chemical background to great advantage, he began there the work on the theory of alloy formation for which he is so renowned, and the Oxford school of alloy chemistry eventually grew into the present Department of Metallurgy. In 1957 he became the first professor of metallurgy in Oxford, and the choice was so unquestionable that the University dispensed with the formality of an election. Throughout his career, "H. R." has played a leading part in associating metallurgy with solid-state physics and chemistry. He pioneered the scientific approach to metallurgy, not only by his own research, but also by his brilliant expositions of basic theory in books which