energy. Trautz had independently come to the same conclusion in 1916 but, on account of the First World War, the *Zeitschrift für anorganische und allgemeine Chemie* was not available to Lewis, and both can claim equal credit for their outstanding contribution. The Trautz-Lewis collision theory gave a very considerable impetus to the study of chemical change.

In collaboration with Blair Bell, Lewis led, in the early 1920's, another active team of physical chemists in cancer research. This circumstance probably explains why, like Arrhenius before him, he later transferred his research interest to biochemical and physiological problems.

Lewis is most widely known as the author of "A System of Physical Chemistry", a graduate text-book in three volumes which went into four English editions in nine years. To the task of preparing it he brought the experience of a skilled experimentalist, the wide learning of one conversant with many foreign tongues and the sympathy of one accustomed to teach. His book reveals a breadth of outlook which is not entirely unexpected from one familiar with the methods of research of so many different universities; there is in it no vestige of the narrowness so often found in books written by those who teach only where (and often only what) they were taught. His book is by no means perfect. At the time of its appearance the character of physical chemistry was rapidly changing, and the author must have worked exceptionally hard to keep abreast with the many developments of that period. As things turned out, material which Lewis had to put in an appendix to his third volume appears in the introductory passages of modern text-books. Despite its shortcomings, however, his text-book exerted a wide influence and can truly be described as the first original treatise of advanced physical chemistry in the English language.

Nature had endowed W. C. McC. Lewis not only with a brilliant intellect but also with magnificent physique, so that the reflexion of most men on meeting him was that here was a grand type of man. The dignity of his appearance was heightened by his impeccably correct bearing and mellifluous voice. The frequent gleams of humour in his eye and flashes of Irish wit in his utterances saved him from being ponderous or pompous. He was an extremely retiring man and abhorred publicity. His attendance at public scientific gatherings averaged one in twenty years. He made lasting friends of those whom he taught, and proved himself to be throughout his career a great scientist and a kind man.

E. A. MOELWYN-HUGHES

Dr. Harold King, C.B.E., F.R.S.

DR. HAROLD KING, a former member of the scientific staff of the Medical Research Council, died suddenly at his home in Dorset on February 20 at the age of sixty-eight.

The son of a schoolmaster, King studied chemistry at Bangor under K. J. P. Orton and in 1911 published, with Orton, his first group of papers, on the chlorination of aromatic compounds. From Bangor he moved for a few months to a company of tar distillers at Beckton, but, finding the atmosphere uncongenial, he accepted in 1912 an appointment with Burroughs Wellcome. Here he came into contact with F. L. Pyman, G. Barger and H. H. Dale, and acquired his abiding research interest in the

chemistry of pharmacologically active compounds. In 1919, King was asked to join a small group of workers who were to establish the reputation of the new National Institute for Medical Research at Hampstead; here he remained for the rest of his working life.

A man of quiet and retiring disposition, King preferred his laboratory bench to all other attractions, and his gradual emergence as a scientific figure of international repute seemed almost to surprise him. Early contributions on hyoscine, muscarine and the cinchona alkaloids were followed, in 1924, by the first paper of a long series on trypanocidal arsenicals. While no outstanding new drug was synthesized during these investigations, there emerged a much fuller understanding of the relationship between constitution and trypanocidal action, and eventually, in collaboration with the late Warrington Yorke and E. M. Lourie, King developed an entirely new group of chemotherapeutic drugs, the diamidines.

Although probably the most active British chemist of his generation in chemotherapy, with many contributions on trypanocides, antimalarials, amœbicides and on the chemotherapy of virus infections, King's interests ranged over a much wider field, and his most outstanding contributions were in the field of the chemistry of natural products. In 1935, he published in *Nature* a brief note on curare, followed by a masterly series of papers extending over fourteen years in the *Journal of the Chemical Society*; in these he reported methods for the isolation of pure curare alkaloids; he also provided complete proof of the structure of *d*-tubocurarine and related alkaloids and clarified the botanical problem of the origin of the different curares. Moreover, he stimulated work at the National Institute on the polymethylene di-quaternary ammonium salts, simple analogues of tubocurarine, now in general therapeutic use as the well-known methonium compounds.

In 1932 also, King, together with the late Dr. O. Rosenheim, suggested a new structural formula for the steroids, which was quickly accepted as an outstanding clarification of the field, and made possible the rapid progress which followed in elucidation of the structural relationships of the sex hormones and the cardiac aglycones.

Although he did not welcome administrative responsibility, Dr. King was for many years an efficient secretary to the Chemotherapy Committee of the Medical Research Council, and during the War, secretary also to the Committee for Penicillin Synthesis. In 1933, he was elected to the Royal Society, and in 1941 was awarded the Hanbury Medal of the Pharmaceutical Society.

One additional publication deserves special attention, since it relates to King's activity outside the laboratory; in 1946 he read a paper to the South London Entomological and Natural History Society on the "Sex-attractant Principles of Moths". Few men can have derived such constant pleasure from their hobby as did King from his collection and study of British moths. No colleague could regard himself as a friend until he had been privileged to examine that collection, and no other subject could thaw King's natural reserve in the same way. Perhaps this collection showed his true character more clearly than any scientific paper; a lover of order, peace and beauty, King was a true naturalist. Those of us who passed through his laboratory as junior colleagues will always remember him with affection, not only because he was helpful, but also because of his

likeable personal idiosyncrasies, his determination to do things for himself, his staunch insularity and his refusal to discourage or disparage the ideas of his juniors, however wild those ideas may have seemed to a man of his scientific insight.

Dr. King married in 1923 Miss E. M. Croft and is survived by her and his one son. T. S. WORK

Dr. Robert M. Yerkes

THE death occurred on February 5 of Dr. Robert M. Yerkes who, for well over fifty years, played a dominant part in the development of animal psychology and, in particular, the study of the behaviour of apes and monkeys. Yerkes graduated in 1899 from Harvard University, where he was given his first teaching post. In 1917, the year the United States entered the First World War, he left to become professor of psychology and director of the Psychological Laboratory at the University of Minnesota. During the course of this appointment he became special adviser on the selection of officers to the Armed Services, and chairman of the Research Information Service of the U.S. National Research Council. He also held a number of other official advisory appointments, and in 1921 became chairman of a Committee on Problems of Sex that was set up by the National Research Council. This body, of

which Yerkes continued to be chairman until 1947, was highly influential in developing the study of reproductive physiology and of endocrinology.

Yerkes will be best remembered for his studies of the behaviour of apes; his own research interest was mainly in the question of intelligence and ideational behaviour. His first big monograph on the subject, entitled "Mental Life of Monkeys and Apes", was published in 1916. The work for which he is best remembered was done after 1924, when he was appointed professor of psychology at Yale University. It was during this phase of his career that Yerkes established and organized the Yale Laboratory of Primate Biology at Orange Park, Florida. This Laboratory specializes in work on chimpanzees, and has been responsible not only for most of the behavioural studies that have been made of apes, but also for much of the information we have about their reproductive physiology.

In 1929 Yerkes published, in collaboration with his wife, Ada W. Yerkes, a monumental work called "The Great Apes". This book immediately became, and remains, a source book of information on almost all aspects of the apes except their anatomy. In 1943, shortly before he retired from the active direction of his department at Yale, Yerkes published another book under the title "Chimpanzees: a Laboratory Colony", which is also the authoritative work in its field. S. ZUCKERMAN

NEWS and VIEWS

Industrial Metallurgy in Birmingham:

Prof. E. C. Rollason

PROF. E. C. ROLLASON, at present Henry Bell Wortley professor of metallurgy in the University of Liverpool, has been appointed to the chair of industrial metallurgy in the University of Birmingham in succession to Prof. A. J. Murphy, who has been appointed principal of the College of Aeronautics (see *Nature*, 176, 55; 1955). Prof. Rollason has distinguished himself in both university work and industry. He took his M.Sc. degree at Birmingham in 1932 and gained his first experience of teaching at the County Technical College, Wednesbury. Returning as senior lecturer to the Department of Metallurgy in Birmingham in 1935, he carried out research which led to the Ph.D. degree, and contributed to the development of teaching methods in the Department. At the outbreak of war, Prof. Rollason was seconded to the firm of Murex Welding Processes, Ltd., to pursue researches on the welding of armour plate and other important defence problems. In 1942 he accepted the post of research manager; he later became a director of the Company, and played an important part in building up the Research Department. Prof. Rollason returned to academic life in 1951 when he was appointed to the chair of metallurgy at Liverpool, where he has devoted himself to the reorganization of the laboratory training and the development of the undergraduate and postgraduate schools. Prof. Rollason has taken an active part on the Research Board and committees of the British Welding Research Association, and is the author of many papers on the metallurgy of stainless steel, metal spraying, and the welding of ferrous and non-ferrous metals, as well as of a successful text-book, "Metallurgy for Engineers".

Millport Marine Station, Scottish Marine Biological Association:

Mr. E. Ford

MR. E. FORD is retiring from the joint post of director of the Millport Marine Station and secretary to the Scottish Marine Biological Association, which he has held since 1949. Previously the secretaryship had been a part-time post not held by the director of the Station. At the same time as Mr. Ford was appointed, the Association took under its auspices the Oceanographic Laboratory at Edinburgh and, in his capacity as secretary, Mr. Ford became responsible for both laboratories. He successfully achieved the formidable task of administration involved in the organization of the Association's office at Millport, from which the affairs of both laboratories are controlled. During the seven years of his directorship at Millport, Mr. Ford has been responsible for major developments, and the Station has become a research institute of major importance. Much of the research accommodation has been rebuilt and enlarged, the library reorganized and a workshop and stores erected. With aid from the Carnegie Trust of the Universities of Scotland, a new aquarium has been erected and a new classroom is now just completed. The scientific staff has increased, and a second research vessel has been acquired.

Dr. C. H. Mortimer

DR. C. H. MORTIMER, who succeeds Mr. Ford, has been for some twenty years a member of the staff of the Windermere Laboratory of the Freshwater Biological Association, reaching the grade of senior principal scientific officer. After graduating in zoology from the University of Manchester, Dr. Mortimer took a research degree at the University of Berlin. His first work was on cytology and repro-