OBITUARIES

Dr. Robert Broom, F.R.S.

DR. ROBERT BROOM, who died on April 6 at the age of eighty-four, was distinguished not only for the great abundance of his contributions to the science of palaeontology, but also for the wealth of evidence which they provided in connexion with some of the most interesting problems of vertebrate evolution. Broom was born in 1866 and studied medicine at the University of Glasgow. He qualified in 1889, after first serving an apprenticeship in the Department of Chemistry as a junior assistant. It was during this interlude that his first scientific paper, "On the Volume of Mixed Liquids", appeared in the *Proceedings of the Royal Society of Edinburgh*. However, the current interest in evolutionary problems soon attracted him into the biological field, and he became particularly occupied with the question of the origin of mammals. Indeed, it was partly for this reason that in 1892 he went to Australia, for he sought opportunities for making embryological studies on monotremes and marsupials.

During the next few years Broom published a number of papers on morphological subjects, including several dealing with the structure of the skull, the vomero-nasal organ, and the development of the vertebrate skeleton. The main theme of these contributions concerned the establishment of homologies in mammals and reptiles as a basis for a discussion of phylogenetic relationships. While on a visit to London in 1897, Broom's interest was aroused by the cynodont skulls collected by Dr. H. G. Seeley in South Africa, and it was this which stimulated him to go to Cape Town in order to make further studies of the fossil remains of these mammal-like reptiles. He engaged in a modest medical practice which permitted him from time to time to make fossil-hunting expeditions to the Karoo, and for a few years he also occupied the chair of geology and zoology at Victoria College, Stellenbosch.

There followed a most productive period of some twenty years during which Broom published a succession of papers on the mammal-like reptiles, as well as many dealing with the anatomy and taxonomy of the Chrysochloroidea and other groups of recent mammals. In 1913 he was invited to give the Croonian Lecture of the Royal Society, choosing as his subject "The Origin of Mammals". In 1920 he was elected a Fellow of the Royal Society and in 1928 awarded one of the Royal Medals. These honours, supplemented later by the conferment of honorary degrees by several universities, bear witness to the respect and admiration aroused by his scientific work. In 1932 Broom's intensive studies of the material collected in the field by himself culminated in the publication of a large monograph entitled "The Mammal-like Reptiles of South Africa". Apart from the discovery of many new types, he made a detailed study of the Pelycosauria. He was the first to show that these were 'mammal-like reptiles', firmly establishing their phylogenetic status in relation to the origin of the Mammalia. He also made valuable contributions to the major classification of the Reptilia.

In 1934, at the personal instigation of the late Field-Marshal Smuts, Broom was given an appointment on the staff of the Transvaal Museum, Pretoria. It was soon after this that, convinced of the importance of the Taungs skull (*Australopithecus*) in relation to the problem of the origin of man, he sought for

further remains of these extinct apo-like creatures. His long experience in the field enabled him, with the most remarkable insight, to recognize other sites which might be expected to yield fossil fauna similar to Taungs, and within a few years he had made a most amazing collection of australopithecine material at Sterkfontein and Kromdraai, only a few miles from Pretoria. The results of these excavations were published in two monographs in 1946 and 1950. Soon afterwards, an even richer deposit was found at another site, Swartkrans, about a mile from Sterkfontein, and here Broom found (with the help of his assistant, Mr. J. T. Robinson) many more skulls, jaws, teeth, and portions of the limb skeleton, including those of adults, adolescents and infants. At the time of his death, he had just completed his manuscript for a monograph on this new material.

Although the major part of Broom's long scientific career was spent on a study of mammal-like reptiles, his name at the moment happens to be associated in the minds of most people with the fossil Australopithecinae, because of their topical interest. His work established clearly that the importance of these fossils lies in the remarkable combination of simian and hominid features which they present. It is true to say that this is now generally recognized, even though the precise taxonomic significance of the hominid characters has been a subject of controversy. Although he allowed himself the privilege of speculating in his popular expositions, in his scientific communications Broom actually expressed himself rather cautiously about the position of the Australopithecinae; he took the view that they either represent branches of the ancestral stock which gave rise (perhaps at an earlier time) to *Homo*, or that at least they were probably rather closely related to this stock. Following his outstanding work on this fossil material, Broom received two honours which gave him very great pleasure, the Wollaston Medal of the Geological Society of London, and the Elliot Gold Medal awarded by the United States National Academy of Sciences. The citation of the latter refers to Broom's monographs on the Australopithecinae as a scientific contribution to the study of fossil man "of the foremost rank".

Those who knew Broom personally were impressed by his indefatigability, for he possessed an astonishing combination of mental and physical energy. If the pace at which he worked sometimes gave to passing acquaintances an impression of impatience, and perhaps on occasion even a suggestion of impetuosity, this was but an expression of a most impelling enthusiasm which animated all his activities. This enthusiasm showed no signs of waning up to the very end of his life. Indeed, the last few years of his long life were just as productive as any equivalent period in the early part of his career. Probably few octogenarian men of science could claim as much.

W. E. LE GROS CLARK

Prof. G. A. R. Kon, F.R.S.

BRITISH chemistry has lost a unique personality in the sudden death on March 15 of George Armand Robert Kon, professor of chemistry at the Chester Beatty Research Institute of the Royal Cancer Hospital. George Kon was born in 1892 in St. Petersburg, having a Polish father and a French mother. His early education was in Russia, Tientsin and Vladivostok. At the suggestion of Sir Robert Hodgson he was sent to the University of Cambridge,