takings [that is, exploring expeditions], that they may bring back what will be honourable to themselves and useful to the world". The Royal Geographical Society and the American Geographical Society have adhered to this principle.

Both Societies have also striven to advance geographical education along modern lines in their own countries. In the mid-'eighties the Royal Geographical Society took the lead in the movement that established geography in British universities and effected its improvement in the schools. Similarly, in the mid-'nineties the American Geographical Society adopted a policy of close collaboration with teachers. It gave moral encouragement and material assistance to the Association of American Geographers during the latter's formative period. The Association, consisting largely of university geographers, was founded by Prof. W. M. Davis in 1904 for the development of geographical research. The American Geographical Society also came to the rescue of the school teachers' *Journal of Geography* when that estimable little magazine was about to expire in 1918. In 1912 the Society conducted an excursion through the United States to the Pacific coast and back. Ninety American and forty-three European geographers participated, the Europeans as guests of the Society through the generosity of Mr. Archer M Huntington, the Society's outstanding benefactor. This extraordinary trip forged new bonds of friendship, esteem and collaboration across the Atlantic—bonds that held firm despite the First World War and that help to explain a broadening of the Society's world outlook in the years that followed.

Isaiah Bowman (1878–1950) was the first director; he served from 1915 until 1935, when he resigned to assume the presidency of the Johns Hopkins University. Before his appointment, the Society had confined its activities almost entirely to publishing a journal, building up an excellent library, holding semi-popular lectures, and awarding medals and other honours. Dr. Bowman more than quadrupled the membership and raised the scientific standards of the journal, which was renamed *The Geographical Review* in 1916. He inaugurated several series of monographic publications, including the well-known Research Series and the Special Publications, in which some eighty works have appeared to date. Furthermore, during Dr. Bowman's administration, chiefly through his initiative, and with the financial support of Messrs. Huntington, J. B. Ford and others, the Society embarked upon a new type of enterprise: the conduct of large programmes of original investigation both by members of its staff, who were added for the purpose, and by outsiders under the Society's general supervision. These have dealt especially with techniques of exploration and cartography, and with the geography of Latin America, of the polar regions, and of pioneer settlements in different parts of the world. They have yielded fruit in new instruments and techniques of reconnaissance surveying and map-making, in a great "Map of Hispanic America on the Scale of 1 : 1,000,000" (107 sheets), and in many other maps, monographic works, and periodical articles. In these ways the Society extended its influence and gained recognition as a genuine research institution.

The American Geographical Society is now crossing the threshold of its second century under the invigorating leadership of a British geographer. In 1950 Dr. George H. T. Kimble, formerly of the University of Reading, and later professor of geography in McGill University, Montreal, was appointed director. He is putting into effect a reformulation, recently adopted by the Council, of the Society's time-tested policies. Research is to be maintained and accelerated. The Hispanic-American programme will continue, though on a reduced scale. Fresh fields are being energetically opened: the geography of diseases, the study of glaciers in relation to climatic changes, and investigations of the distribution and use of natural resources. The Society is also seeking new ways and means whereby geography may be applied to useful purposes and is striving to "bridge the gap between geographical scholarship and teaching", a gap that yawns altogether too wide for safety, not only in the United States but also in most of the other countries of the world.

OBITUARIES

Prof. H. A. Kramers

An untimely death has removed from the world of physical science one of its most original and inspiring figures. Prof. H. A. Kramers was professor of theoretical physics in the Technical University of Delft.

Prof. Kramers was universally respected as a master in many fields, skilful alike in putting to use the most subtle methods of algebra and in bringing to light the essential physical features of the most varied phenomena. He was universally liked as a man: everyone who came into touch with his warm and fine personality yielded to its charm and mingled respect with affection. His shrewd judgment of human affairs and his interest in people made him eminently suitable for the responsible positions he occupied in international bodies ministering to the common needs of physicists of all nations. Deeply concerned with ethical problems, he regarded the control of nuclear energy as a most compelling task. His work in the Atomic Energy Commission of the United Nations Organization was a sacrifice accepted in all simplicity: he came back with his health irreparably undermined. Although in his last years his curiosity and enthusiasm for the new advances of physics were as youthful as ever, he had not recovered the vigour of his former days. Yet he strained to the last his failing strength in the fulfilment of his unselfish work for science.

To the physicists of my generation, who knew of the heroic days of quantum theory only by the tradition received from our elders, Kramers had about him the glamour and the wisdom of the pioneer. His early association with Bohr, his later collaboration with the young Heisenberg, exerted a marked influence on the shape taken by the development of quantum mechanics. He had been brought up against the background of the Lorentzian tradition, still very much alive even to this day in Holland, and the incisively critical spirit of his teacher Ehrenfest could not have failed to leave its mark on him. Kramers's role in this first period of his scientific life has thus been to carry over, in a highly original form, the great classical traditions of Dutch physics into the growing tide of quantum theory. This he did, above all, by his masterly analysis, in the spirit of Bohr's correspondence argument, of those optical problems which had absorbed Lorentz's attention so fully. His very first attempt, on the intensities in the Stark effect, became at once a model for the methods of

quantum theory in its initial stage; so much so that when Schrödinger first wanted to test the powers of his wave-mechanics, he quite naturally took up that very problem for comparison. But a still more decisive advance was Kramers's reformulation of the theory of optical dispersion, which paved the way to Heisenberg's great discovery.

After his return to Holland, the task he accomplished, though of a different character from his work in Bohr's circle, was no less honourable and no less exacting. If the old Dutch tradition of theoretical research in physics has been so brilliantly upheld and continued along the lines of quantum theory, it is due in no small part to the powerful influence of Kramers's personality. By his versatile activity he contributed much himself to the development of the methods of quantum mechanics and to their application to many fundamental problems of atomic physics. But who will tell how much he stimulated his fellow-workers by his example, his experimental colleagues by his advice, his pupils by his guidance, his students by his teaching? Besides all this, there was Kramers the man, to whom nothing human was foreign. His friends would never seek in vain his wise counsel in affairs of public import, or his warm sympathy in their private worries. His help often came unsought, and sometimes a hint, unobtrusively preferred, would make you realize that, unknown to you, he had given long and careful thought to your problems. His name will live in the annals of science; his gentle image in the hearts of his friends. L. Rosenfeld

Prof. Louis Guillaume

The death, following an accident at Strasbourg on May 29, is reported of Prof. Louis Guillaume, Ingénieur en chef at the Bureau de Recherches Géologiques et Géophysiques in Paris, and well known and respected among British geologists.

Guillaume, who was born in 1894, held academic posts at both Caen and Strasbourg, and in 1941 helped to found the Bureau des Recherches Géologiques et Géophysiques, the object of which was to co-ordinate, facilitate, and if need arose, to initiate, the search for useful economic materials in France. He was the author of numerous scientific articles in the fields of palæontology and stratigraphical geology, and his premature death deprives his colleagues of his collaboration in a number of important works, particularly on hydrogeology, for which he had assembled an extensive and valuable documentation.

Guillaume was a fervent anglophile and had made many friends in Great Britain; they will mourn the passing of a generous and dynamic personality.

A. C. Townsend

NEWS and VIEWS

Medical Protozoology in the University of London: Prof. H. E. Shortt, C.I.E., F.R.S.

Prof. H. E. Shortt, who has held the chair of medical protozoology in the University of London at the London School of Hygiene and Tropical Medicine since 1947, is to retire in October. Prof. Shortt was formerly in the Indian Medical Service, and has made discoveries of fundamental importance in the field of tropical medicine. During his work in India on the etiology of kala-azar, carried out over a period of twenty-five years, he proved that the transmitting agent was *Phlebotomus* and contributed profoundly to the knowledge of this disease and its causal organism. In recent years he has carried out brilliant researches on the life-cycle of the malaria parasites, in which Dr. P. C. C. Garnham collaborated, and for which they were jointly awarded in 1951 the Darling Medal and Prize given by the World Health Organization.

Dr. P. C. C. Garnham

Dr. P. C. C. Garnham, who is to succeed Prof. Shortt, was in the Colonial Medical Service during 1925–47 and was director of the Division of Insect-borne Diseases in Kenya during the last four years of his service. He has published numerous original articles, many of which are concerned with malariology, a subject in which he has specialized and achieved distinction. In Kenya he carried out important research not only on malaria but also on relapsing fever, plague, onchocerciasis and jungle yellow fever. The epidemiology of these diseases and the bionomics and control of their insect vectors were his special concern. An outstanding success in this field was his discovery of the use of DDT in destroying the larval stages of *Simulium neavei*, the vector of onchocerciasis in Kenya and other parts of East Africa. This method of control has resulted in the complete eradication of the insects in certain endemic foci. On joining the staff of the London School of Hygiene and Tropical Medicine as reader in medical parasitology in 1947, he participated in the experimental work which led to the first discovery of a pre-erythrocytic stage in the life-cycle of mammalian malaria parasites. His collaboration in this work and in the subsequent researches which established the presence of this long sought-for missing link in the life-cycle of the human malaria parasites, *Plasmodium vivax* and *P. falciparum*, has earned for Dr. Garnham an enduring name in the history of tropical medicine research.

Institution of Mining Engineers: President for 1953–54

Mr. J. Cecil Mitcheson has been elected president of the Institution of Mining Engineers for the year 1953–54, and will succeed Mr. R. J. Weeks at the annual general meeting to be held next January. Mr. Mitcheson comes of an old mining family, his great-grandfather having worked with George Stephenson at the Old Killingworth Colliery; both his grandfather and father were also associated with the industry. Mr. J. C. Mitcheson was educated at Bootham School, the Royal Military Academy, Woolwich, and the University of Birmingham, where he graduated B.Sc. in mining. After obtaining his colliery manager's certificate, he was appointed lecturer in coal mining and demonstrator in mine rescue in the University of Birmingham under the late Prof. K. Neville Moss. In 1924 he returned to the mining industry to assist his father in his consulting practice