the opportunity of examining the original Australopithecine material) concludes¹ that "the evidence afforded by the morphology of the braincase and skull structure can hardly leave a well-founded doubt that the Australopithecine group were derived from the *Dryopithecus-Sivapithecus* stock", and that "although it is too much to expect that the close structural approach of *Plesianthropus* towards *Sinanthropus* will discourage those who cling hopefully to the myth of Eocene man, all the facts . . . tend to confirm the conclusions of [those] who regard man as the result of a morphological revolution which took place during the later Tertiary period".

Such a divergence of opinion among recognized experts only serves to emphasize the need for still more fossil material. In this connexion we would quote a remarkable statement by Dr. Broom: "When some wealthy man or corporation undertakes the systematic exploration of our deposits . . . I think one can safely affirm that within three or four years we will discover more of the origin of man than has been revealed during the past hundred. Practically all the discoveries described in the present work, except the Taungs skull, were made by me in about two years working almost single-handed. Not only had I to find all the specimens, I had to develop them out of the matrix, give all the descriptions and make all the drawings."

Dr. Broom is a veteran palaeontologist unequalled to-day in experience and reputation. This monograph on the Australopithecinae is a fitting climax to a long life devoted to palaeontological research, and to a record of fossil-collecting which is quite unsurpassed for its rich discoveries. Moreover, with the preliminary work on *Australopithecus* contributed by Prof. Dart, he has very considerably enhanced the prestige of South African science in the eyes of the world generally. Surely one may express with some confidence the expectation that his magnificent contributions to the story of human evolution will be recognized by his fellow countrymen, to the extent that they will provide the funds and the facilities for the realization of his hopes for further discoveries at Sterkfontein and elsewhere. No greater service could be done to the study of human origins, and no more appropriate expression of gratitude could be made to Dr. Broom.

W. E. LE GROS CLARK

¹ The South African Fossil Ape-Men: The Australopithecinae. By Dr. R. Broom and G. W. H. Schepers. (Transvaal Museum Memoir No. 2.) Pp. 272+18 plates. (Pretoria: Transvaal Museum, 1946.)

Mitt. med. Fac. Kais.-Jap. Univ., 6, 307 (1905).

² Morton, D. J., *Amer. J. Phys. Anthropol.*, 7, 1 (1924).

³ See Kaufmann, H., and Sauter, M., *Arch. Suisses d'Anthrop. gén.*, 8, 161 (1939).

⁴ See, for example, the most recent monograph on the subject, "Anthropoid and Human Endocranial Casts". By Pierre Hirschler. Pp. ix+150+11 plates. (Amsterdam: N. V. Noord-Hollandsche Uitgeversmij., 1942.) n.p.

⁵ *Ann. Transvaal Mus.*, 19, 339 (1939).

their wish was fully gratified. Alike at school and at Cambridge, Maufe distinguished himself. So early as 1896 we find him contributing with T. Sheppard to the *Glacialists' Magazine*. Thereafter he was caught up in the excitement aroused by P. F. Kendall's interpretation of glacial diversions of rivers in Yorkshire—as instanced in a description Maufe furnished with A. Jowett to the British Association at Bradford, 1900, to be expanded in 1904 in *Proc. Yorks. Geol. and Pael. Soc.*

After joining the Geological Survey of the United Kingdom in 1901, Maufe was identified with particularly interesting work, both in Ireland and Scotland. In the former country, where he had the good fortune to work under G. W. Lamplugh and alongside W. B. Wright, his problems continued mainly glacial. His account with Wright of "The Pre-Glacial Raised Beach of the South Coast of Ireland" in the *Scientific Proceedings of the Royal Dublin Society*, 1904, is a classic. In Scotland he was originator of three great non-glacial conceptions, covering the cauldron subsidences of Glen Coe and Ben Nevis; the recumbent fold of Ballachulish; and the dyke swarms of Etive and Mull.

Maufe's recognition of the curvature of the Glen Coe boundary fault, which leads it to bend from north-west to north, south of Glen Coe, and of the significant association of this fault with an external granitoid intrusion, can clearly be recognized in notes he contributed to the Survey's "Summary of Progress" for 1904. The next point came to him early in the field season of 1905. One Sunday morning, when I climbed across from Loch Leven to visit him at Clachaig Inn, Glen Coe, Maufe told me of his new discovery. He had already seen enough on my side of our mutual boundary to show that north of Glen Coe both the fault and its attendant intrusion swing round to run approximately east-south-east. "If this be so," I exclaimed, "we are dealing with what Suess calls a cauldron subsidence, and the granite around it has spurted up like the liquor of a full bottle when the stopper settles home!" At that time eroded cauldron subsidences were an unknown phenomenon in world geology.

As regards the Ballachulish fold, Maufe wrote in the "Summary of Progress" for 1905: "The structure of the district [part of Glen Etive] is evidently that of a huge overfold, the limbs of which dip gently westwards and are at least 3 miles in length (from trough to crest). The quartzite which caps the hills also forms the floors of the valleys."

Maufe seems to have been the first among geologists to recognize the individuality of great swarms of parallel dykes that sometimes extend both ways from an igneous focus. His work in the West Highlands took him across the margins of two such swarms: the Etive swarm running north-north-east, of Devonian age; the Mull swarm running north-west, of Tertiary age.

Before severing his connexion with the Survey of Great Britain, Maufe was lent in 1905 to examine railway cuttings in Uganda. His account, issued as a "Colonial Report", 1908, contains much of value. So, too, does a description, written jointly with R. G. Carruthers, of a holiday research on "The Lower Palaeozoic Rocks around Killary Harbour, Co. Galway and Co. Mayo". This last was communicated to the Dublin meeting of the British Association, 1908, and was reproduced more fully in the *Irish Naturalist*, 1909.

In 1910 Maufe was secured as director for the newly founded Geological Survey of Southern

OBITUARIES

Mr. H. B. Maufe

It has been sad news indeed for many friends of Herbert Brantwood Maufe to hear of his unexpected death in London on May 8 at the age of sixty-six. Only a few days previously he had been speaking of an early return to Africa.

It had been an ambition of Maufe's parents that their son should engage in scientific research; and

Rhodesia. His loss at home was keenly felt; but when one looks back over the long history of the doyen of Geological Surveys, one must recognize among its most useful services the training it has given to men who have afterwards occupied important posts abroad. I have no special qualification to speak of Maufe's contribution to the development of Southern Rhodesia during 1910-35—though I watched with appreciation the output of maps, bulletins and other publications, and sympathized with my friend's enthusiasm concerning the Great Norite Dyke of his adopted country. I may, in conclusion, quote from the words of the acting High Commissioner, when in 1930 the latter received for transmission the Lyell Medal of the Geological Society: "Mr. Maufe has built up for himself a reputation for integrity which is recognized not only by his own staff, by the general Civil Service, by the mining companies in the Colony, but also by the community in general".

E. B. BAILEY

Prof. K. Martin

PROF. K. MARTIN died at Leyden on November 14, 1942, at the age of nearly ninety-one years. A long life, almost wholly devoted to scientific research (his first publication dates from 1873, the last one from 1941), was thereby finished.

Johannes Karl Ludwig Martin was born at Oldenburg in 1851; he studied geology at the Universities of Munich, Leipzig and Göttingen, at the latter of which he took his doctor's degree in 1874.

After the establishment of a chair of geology in 1876, Martin was appointed professor of geology, mineralogy, crystallography and palaeontology at the University of Leyden on October 1, 1877, an appointment which he held until 1922. He was also director of the Rijksmuseum van Geologie en Mineralogie from 1878 until 1922. Among the collections of this institution he found the fossils collected by Fr. Junghuhn in Java, and they directed his attention to Dutch East Indian palaeontology. So much pioneer work on the Tertiary fauna of Java has been done by him since that time that Rutten called him the Linnæus of the Javanese Tertiaries.

Martin studied fossils belonging to the most varied groups, from Foraminifera to Mammalia, but his principal work was on Mollusca, to which the greater part of two large monographs, "Die Tertiärschichten auf Java" (1879-80), and "Die Fossilien von Java" (1891-1922), and many smaller publications were devoted. Most of his publications appeared in the *Sammlungen des Geologischen Reichsmuseum*, which he founded in 1881. Though he was an eminent taxonomist, who made good, concise descriptions of hundreds of new species, and discovered the fossil occurrence of great quantities of recent species already described, his main object was to decide the age of the sediments from which the faunas he studied derived.

When in 1919 he published the comprehensive "Unsere paläozoologische Kenntnis von Java", Cænozoic molluscan faunas from some thirty localities in Java had been investigated, which he considered to be of Eocene, Lower Miocene, Upper Miocene, Pliocene and Quaternary age. Although subsequent investigations have shown that parts of these faunas—mainly those of which Martin had but very poor material—were not correctly dated, his opinion about the most important localities (for example, Nangulan,

Eocene; West Progo Mountains and Rembang, Lower Miocene; Tjilang, Upper Miocene; Sonde, Pliocene) was corroborated by further investigations. These faunas have served as an important basis of comparison for the study of neogene molluscan faunas from almost the whole Indo-West Pacific region since.

Even after his eightieth birthday, Martin undertook the examination of the mollusca discovered in the asphalt of Buton Island. This fauna appeared to consist only of species new to science, thirty-five of which were described and figured by Martin. He could bring forward strong evidence for an Oligocene age of this fauna, which thus partly filled the gap existing hitherto between the Eocene and Lower Miocene faunas of the Dutch East Indies.

Under his direction the collections of the Leyden Museum of Geology and Mineralogy, from a modest beginning, became the most important of their kind in the Netherlands. Numerous valuable collections from the East Indies were sent to Martin as an outstanding authority, and by purchase and exchange many fine specimens were added. Moreover, the materials of his three journeys to the Dutch East and West Indies (1884-85, Surinam, Curaçao and Aruba; 1891-92, Moluccas; 1910, Java) enriched the Museum.

From the fine records of his travels his broad interest in ethnography and general natural history is also evident.

Martin took a keen interest in Lepidoptera. Mainly during the last twenty years of his life he brought together a fine collection of these insects from the neighbourhood of Leyden as well as from Madeira and several European regions to which he paid visits during his holiday trips. In this study he was assisted by his second wife, Mrs. Martin-Icke, who also had taken part in his investigations on the Tertiary mollusca of the Dutch East Indies.

All who met Prof. Martin were impressed by his charming personality and gripped by his lively way of narrating. I, myself, visited him for the first time in March 1939 and was astonished to hear him speak about his early investigations on Javanese palaeontology about 1880 as if it were the other day.

A bibliography of Martin's publications, the best evidence of his many-sided activity, is to be found in volume 5 of the *Leidsche Geologische Mededeelingen*, which volume was issued on his eightieth birthday in 1931 and contains complete reviews of the stratigraphy and palaeontology of the Dutch East and West Indies. A supplement to this bibliography, containing ten papers by Martin which appeared later than 1931, was published by Umbgrove (*Geologie en Mijnbouw*, N.S., 4, 93, footnote 4 (1942)).

C. O. VAN REGTEREN ALTENA

Dr. E. B. R. Prideaux

EDMUND BRYDGES RUDHALL PRIDEAUX died at his home, Upmoor, Canford Cliffs, Bournemouth, on May 8, a few months after his retirement from his post as reader in physical and inorganic chemistry in the University College of Nottingham.

He was born in Barbados in 1878 and educated at the Auckland Grammar School and at Canterbury College, New Zealand University, where he gained the M.A. degree. In 1901 he came to England and worked under Ramsay in London and later with Donnan at Liverpool. He was awarded the D.Sc. of the University of London for his work on fluorine