

suggested that the down-buckling of geosynclines might be the primary cause of granitization and that the presence of sediments might be incidental. Dr. G. M. Lees challenged the use of such words as 'granitic' and 'ultrabasic' to describe the undetermined material between physical boundaries, and also suggested that there is no evidence for a difference between the materials of the continents and the ocean floor. In this he was supported by a reference to the results of seismic shooting at one station in the Atlantic, but Dr. Bullard quoted unpublished work which indicates velocities of about 8 km./sec. under the Pacific.

OBITUARIES

Dr. R. S. Clark

BORN in Aberdeen in 1882 and educated there at the Grammar School and the University (M.A., 1908), Robert Selbie Clark had intended to become a schoolmaster; but the influence of Prof. J. Arthur Thomson in zoology and of Prof. J. W. H. Trail in botany made him a biologist (B.Sc., 1911). His first post, under Dr. W. S. Bruce in the Scottish Oceanographical Laboratory in Edinburgh, turned his attention to Antarctic marine life in general and particularly to fishes, and these two interests dominated his scientific life.

In 1913 Clark was appointed naturalist at Plymouth Marine Laboratory; but in the following year he joined Shackleton's ill-fated Antarctic expedition on the *Endurance*. He had many vivid and amusing stories to tell of the hardships suffered after the *Endurance* sank in the Weddell Sea, of the journey on the ice-pack and the months of isolation on Elephant Island; but his great regret was that the marine collections he had amassed so carefully were lost with the ship.

From the Antarctic, Clark returned in 1916 to a life scarcely less uncomfortable and hazardous on H.M. minesweepers during the First World War, and eventually resumed the duties of peace at Plymouth. In 1923 he returned to Aberdeen as senior naturalist to the Scottish Fishery Board, and eleven years later succeeded Dr. A. Bowman as scientific superintendent, a post later converted into the directorship of the Scottish Home Office Marine Laboratory. Under his charge, the scientific staff of the Laboratory increased in numbers and engaged in a wide variety of activities linked with the programme of the International Council for the Exploration of the Sea.

Clark himself was too critical of his own work to be a prolific writer, but his papers have a permanent value for fishery research. His earliest publications describe some of the fishes brought home by the Scottish National Antarctic Expedition; his later work all bore upon British fisheries. An examination of thousands of rays and skates resulted in a valuable and much-needed revision of the characters and nomenclature of the European species and their early stages. His contributions at meetings of the International Council included papers of importance on the characters and distribution of the larvæ of spring and autumn herring and on the influence of the size of mesh of trawl nets in regulating the escape of under-sized fishes; and his analysis of the independent stocks of haddock in European waters led to the encouraging conclusion that in any year some-

where in the area of haddock distribution a lucrative fishery would be possible.

Clark was a striking personality, an all-round sportsman, who had represented Aberdeenshire, Hampshire and Scotland at cricket and had played Association football as an amateur in the Aberdeen team, and who in maturer years retained his skill as a golfer and an angler. His scientific activities did not end with his official retirement in 1948, for since then, at the request of the International Council, he had been chairman of its Northern North Sea Committee, and took an active part in the Edinburgh meeting of the Council in 1949. He died after a short illness on September 29, and is survived by his widow, for whom much sympathy will be felt.

JAMES RITCHIE

Mr. R. H. Worth

RICHARD HANSFORD WORTH, whose death occurred on November 11, was born in Plymouth on November 5, 1868, the son of R. N. Worth, journalist, geologist, archaeologist and historian of Plymouth. He was educated at Plymouth High School (now Plymouth College) and lived in his native city all his life. A civil engineer by profession, he followed his father in having very wide cultural interests. As a geologist he worked on the petrology of Dartmoor and its neighbourhood, and, in co-operation with the Marine Biological Association, contributed to our knowledge of the geology of the English Channel by a study of the rocks dredged from the sea floor. He also studied the Foraminifera.

In his professional capacity he was interested in hydrology and the water flow of rivers, and for many years was secretary and, later, recorder for the Committee of the Devonshire Association responsible for drawing up the annual statements on the climate of the county. It is not possible in the space available to list his many activities; but Hansford Worth will best be remembered as the greatest authority on Dartmoor in all its aspects. The scientifically accurate and objective descriptions he made of the antiquities, both prehistoric and historic, will be of lasting value. He first began to publish papers on Dartmoor in 1889, and many of his important records are to be found among the pages of the *Transactions of the Devonshire Association*, of which he was a past president. He was associated with the Dartmoor Exploration Committee started by Burnard, Baring-Gould and R. N. Worth in 1893 for the excavation of archaeological remains, and in 1897 succeeded his father as secretary of the Association's Committee on Barrows, later becoming recorder. He issued full descriptions of the sixty-one stone rows, a class of monument in which Dartmoor is particularly rich. His evidence that their orientation had no ritual significance but depended upon topographical conditions is definite, and his decision that they afforded no clue as to their function beyond that they were sepulchral monuments with barrows usually at their higher ends was typical of his independent and objective outlook. He also issued descriptions of ruins connected with tin mining on the moor, and of many other historic remains and implements.

Probably no man has known so much of the topography of Dartmoor and of its history. Many lovers of Devonshire will miss his kindly and distinguished presence, and their sympathies will be deep for his widow, who accompanied him on so many excursions to the moor. F. S. RUSSELL