

Letters to the Editor.

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Early Rhodesian Mining and Zimbabwe.

MISS CATON-THOMPSON'S clear statement (NATURE, Oct. 19, p. 619) of her important contributions to the early history of Rhodesia, raises again the problem of the relations of the ruins and mining. Any one of four solutions may be possible: (1) Both ruins and mines may be prehistoric; (2) or both medieval; (3) or the ruins may be relatively modern and Bantu, while the mining may be exotic, may have been begun two or three millenniums B.C. and have been continued until Roman times, and to a small extent by the Arabs; or (4) some of the buildings may be medieval and rough copies of the ancient architecture—for it was the claim that some of the walls which MacIver proved to be medieval had been previously identified as such by South African archaeologists, owing to the crudeness of the work, that rendered his results unconvincing.

Miss Caton-Thompson's article deals only with the ruins; but her statement that "it is inconceivable to me . . . how a theory of Semitic origin could ever have been started", and some remarks in the leading article in NATURE of Oct. 19, both imply that her excavations disprove the extraneous origin of the mining.

The view that the early gold mining of Rhodesia is medieval and Bantu is faced by difficulties which make students of mining history hesitate to accept it. Mr. Hays Hammond recognised at the opening of the Rhodesian fields that the amount of gold won from them was so immense that it must have been the main source of gold in early times. He estimated in 1894 that the amount was undoubtedly "millions of pounds sterling worth of gold". By 1897 more of the ancient workings were known, and Telford Edwards estimated their yield as £75,000,000. Further ancient workings have been discovered since then, so that this amount must be increased. According to some estimates the ancient miners removed 100,000,000 tons of ore.

Where did all this gold go? There is no evidence of its use in South Africa. The amount exported in medieval times to Arabia must have been relatively small. Which lucky country received it? Ancient Egypt and Chaldea imported large quantities of gold; and the only known early gold workings adequate for their supply are in South Africa. Tibet and southern Siberia must be considered as a possible source from traditions; but there is no evidence of extensive ancient gold workings in either. Mr. L. Woolley ("Sumerians", 1928, p. 116) quotes the bill of lading of a vessel that returned to the Persian Gulf in the year 2048 B.C., after a two years' absence, with gold, ivory, copper ore, etc. This record shows that some of the gold of Ur came from far to the south, and the Mysore gold field, the only southern alternative to Rhodesia, is improbable.

In addition to the inferences from the distribution of early gold mining and the nature of the Rhodesian workings, there is evidence of pre-medieval mining in Rhodesia, such as a Roman coin found in a shaft 70 feet deep near Umtali; beads referred to Ptolemaic Egypt and pre-medieval India; the use of ingot moulds of the X-shaped pattern used by the Phœnicians in Cornwall; soapstone birds similar to those used in Assyria and in the gold and turquoise mines of Egypt;

a knobbed cylinder compared by Hogarth to one from Cyprus; the Groot Schur platter with the signs of the zodiac; inscriptions that have been identified as proto-Arabic and Semitic characters. Miss Caton-Thompson may regard these objects as all typically Bantu. But Sir H. H. Johnston, no mean authority on Bantu ethnology, declared (*Geog. Jour.*, vol. 37, p. 340) that except for "an incursion of a Semitic race of teachers I cannot otherwise explain the gold-mining, the soapstone birds, the phalli, and the several other features in these remains which are so utterly unlike anything that has ever been made by any race of Bantu negroes".

The leading article in NATURE refers to "this unique efflorescence of Bantu culture". Negative evidence has led some archæologists to deny the presence of Phœnicians in Britain. I understand that, with the exception of the tin ingot dredged in Falmouth Harbour, not a single Phœnician or Greek relic has been found in Cornwall. Yet the balance of opinion is still overwhelmingly in favour of the Cornish tin mining having been established under Phœnician influence.

The view that Zimbabwe may have been a medieval archæological museum where the Bantu collected the soapstone birds and ingot moulds of a then prehistoric people, and made crude copies of their own, is, of course, possible. But until some other explanations be offered of where the ancient Egyptians and Sumerians obtained their gold, where the gold from Rhodesia went, of the use by the early gold and copper smelters of Rhodesia of the Phœnician pattern of ingot mould, and of the resemblance of various objects to those of south-western Asia, the students of ancient mining will probably retain the belief that the early mining in South Africa was organised by foreigners who shipped the gold and copper to the Red Sea and Persian Gulf.

A note in NATURE of Sept. 28, 1928 (p. 493), summarises a paper by Dr. P. A. Wagner, which was read recently in South Africa, in which he extends the arguments for extensive mining in Northern and Southern Rhodesia, under alien influence, in times that were long pre-medieval. J. W. GREGORY.

The Late Palæozoic Glaciation.

PROF. SCHUCHERT, in his recent paper on the late Palæozoic ice age (*Bulletin of the Geological Society of America*, vol. 39, pp. 769-886), has strenuously fought for the view that the ice age is not older than Middle Permian. I have read with interest Dr. H. Dighton Thomas's article in NATURE (June 22, 1929, p. 946), and both I and, I think, all my colleagues of the Geological Survey of India, are in agreement with Dr. Thomas's views. It appears quite impossible to regard the whole of the Productus Limestone of the Salt Range as belonging to the Upper Permian only. I prefer to regard the Upper Productus Limestone of the Salt Range (Chidru beds) as Upper Permian, the Middle Productus Limestone with *Xenaspis carbonaria* as of Middle Permian age, and the Lower Productus Limestone with *Spirifer Marcoui* as Lower Permian. With the Middle Productus Limestone may be correlated, according to C. Diener, the bulk of the Zewan beds of Kashmir, and the fauna of exotic block No. 1 of Chitichun (*Pal. Ind.*, New Ser., vol. 5, Mem. 2, p. 110). Diener places the *Gangamopteris* horizon of Kashmir in the Lower Permian or Artinskian (*ibid.* p. 111).

In 1928, Dr. F. R. C. Reed and I visited Warcha Salt Mine in the Salt Range in order to examine the succession from the Glacial Boulder Bed upwards through the Permian to the Trias. The results of our