

Chalcolithic copper mining in Sinai's 'empty desert'

Since 1967, numerous expeditions have been made into South and Central Sinai to locate and investigate relics of ancient mining and metal production, and related habitation. These expeditions were led by Professor Rothenberg as a continuation of his previous work in the adjacent Arabah, and the survey map today shows more than 700 ancient sites, of which more than half are in Sinai.

Several key sites have now been excavated; they include a number of smelting installations dating to the Chalcolithic and Early Bronze Age (early 4th millennium to early 3rd millennium BC), as well as to the days of Dynastic Egypt.

The Sinai peninsula has hitherto been regarded as an empty desert. With the exception of some turquoise mines, operated by expeditions from Dynastic Egypt and excavated at the beginning of the present century by Flinders Petrie, there were no permanent Egyptian settlements in Sinai and the only remains of their presence are mining camps and temples.

Professor Rothenberg's expeditions have established that, long before the Pharaohs, much of South and Central Sinai had a fairly large, semi-nomadic population which developed its own culture, including the practice of metallurgy. This culture, known as the "Timnian culture", after the site of its first discovery in the Timna Valley, spread from the Nile Delta across Sinai into southernmost Palestine, and was closely related to the Maadi culture of Lower Egypt (the Delta).

First 'Copper King'

Egyptian documents, dating to the days of the first Dynasties, refer to a bitter struggle between the kings of Upper Egypt, and the "Asians" of the north and the Sinai desert. Professor Rothenberg considers these "Asians" to be identical with the indigenous inhabitants of the "Timna" settlements which were abandoned or destroyed during the "Unification" of Egypt. According to pictorial and hieroglyphic records, this process of total subjugation reached its peak during the 3rd Dynasty, and by this time the "Timnian" settlements of Sinai had ceased to exist.

Rothenberg's expeditions have established that copper, as well as turquoise, was mined by Pharaonic incursions into Sinai. Numerous copper mines have been identified and investigations point to the fact that Ammenemes III (1842-1798 BC) was the first great "copper king" of the Egyptians. His enterprise was later paralleled by Ramesses II and III, of the New Kingdom, who developed the large smelting site of Bir Nasib, in South Sinai, and the big copper works in the Timna Valley.

Egyptian activities in Sinai ended in the 12th century

BC with the retreat of Egypt from its eastern provinces, and Sinai became Bedouin country without a history. The Roman period saw a renewal of mining in Sinai, and Rothenberg has identified the Roman road from Aila (present Aqaba) to Clysma (Suez), marked on the famous *Tabula Peutingeriana*, as a route to the mines of South Sinai. Countless Nabataean-to-Byzantine rock-drawings and inscriptions were carved into the rockfaces all along this road, at first by miners and perhaps metal merchants, and later by Christian and Jewish pilgrims on their way to Mount Moses and its monasteries.

A first summing up of the work in the peninsula appears in *Sinai*, Rothenberg-Weyer, published recently by Kummerly and Frey, Bern, and a detailed scientific report is planned for publication in the IAMS series, *Metal in History*.

Publications

Two IAMS book publications are at present with the printers:

B. Rothenberg, *The Mining Sanctuary of Timna*; and B. Rothenberg — A. Blanco, *Studies in Ancient Mining and Metallurgy in South-West Spain*.

IAMS Monograph Number One, Rothenberg-Tylecote-Boydell, *Chalcolithic Copper Smelting*, is still available at bookshops or directly from IAMS London office. The monograph series is shortly to be continued.

A full report on the excavations of the ancient mines and smelting camp No. 30 at Timna has been published (in German): H.G. Conrad — B. Rothenberg (ed.), *Antikes Kupfer im Timna-Tal*, available from Deutsches Bergbau Museum, Bochum, W. Germany.

A first review of the Sinai explorations 1967-1978 by the Arabah Expedition, affiliated to IAMS, is published by Kummerly & Frey, Bern, Switzerland: B. Rothenberg — H. Weyer, *Sinai, Pharaohs, Miners, Pilgrims and Soldiers*, (also in French and German editions).

Papers on Timna metallurgy by Prof. H.G. Bachmann and Dr. P. Craddock, members of the IAMS research group, and by Prof. B. Rothenberg on the ancient mines of Chinflon (S.W. Spain) have recently been published in *Scientific Studies in Early Mining and Extractive Metallurgy*, British Museum, Occasional Papers, No. 20 (obtainable from British Museum, Great Russell Street, London WC1B 3DG).

Prof. R.F. Tylecote's *Metallurgy in Archaeology*, which has become a standard text book and was out of print for many years, will soon be republished in a revised, enlarged edition.