

# Emerald mining in Roman and Byzantine Egypt

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The periods of Roman and Byzantine domination of Egypt\* saw high levels of mining and quarrying in the Eastern Desert. Large quantities of porphyry, granite, gneiss and diorite were quarried at a number of sites (e.g., Mons Porphyrites,<sup>1</sup> Mons Claudianus,<sup>2</sup> and Wadi Barud<sup>3</sup>). There were numerous gold mines, the largest Byzantine example probably being Bir Umm Fawakhir in the Wadi Hammamat.<sup>4</sup> It was also in the Late Roman and Byzantine period that the emeralds of the Eastern Desert began to be quarried on a fairly large scale in the Eastern Desert between Myos Hormos and Berenice, principally in the Sikait-Zubara region (fig. 1). Because of these activities and the trade-routes via Red Sea ports such as Myos Hormos and Berenice, the desert was dotted with roads, watch-towers, way-stations and *hydreumata* (fortified wells) which attest to the presence of troops.<sup>5</sup>

The Egyptian emerald mines, which were perhaps first worked as early as the Ptolemaic period (c.332-30 B.C.), are believed to have been one of only two sources of emeralds for Europe and Africa during the Greco-Roman period (the other being the Habachtal mines in Austria).<sup>6</sup> Although an uncut emerald has been tentatively identified in a necklace from the Predynastic site of el-Kubaniya, immediately north of Aswan,<sup>7</sup> such gem-quality beryls do not appear to have been used regularly in Egyptian jewellery until the Roman period, when techniques for polishing the stones probably began to be introduced. The Egyptian mines continued to be exploited until at least the Middle Ages, when Arab writers document the appearance of larger, heavier stones from the Indian subcontinent. In the 16th c., the Spanish conquest of the New World resulted in the export of emeralds from Colombia and Brazil to Europe and Asia on a massive scale, finally eclipsing the trade in Egyptian emeralds. In more recent times, fine emeralds have also been mined in a number of other Old World countries, including Zimbabwe, Zambia, and Pakistan.

Several geologists and archaeologists published accounts of their visits to ancient Egyptian emerald mines, particularly during the first three decades of the present century.<sup>8</sup> In 1989, Grubessi employed X-ray diffraction and infrared spectroscopy to compare the emeralds from

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\* All dates in this article are A.D. unless otherwise indicated.

1 R. and D. Klemm, *Steine und Steinbrüche im Alten-Ägypten* (Berlin 1993) 387-95; D. P. S. Peacock and V. Maxfield (edd.), *The Roman Imperial porphyry quarries: Gebel Dokhan, Egypt. Interim reports 1994-6* (Southampton-Exeter 1994-96).

2 T. Kraus and J. Röder, "Mons Claudianus — Bericht über eine erste Erkundungsfahrt im März 1961," *MittKairo* 18 (1962) 80-120; M. J. Klein, *Untersuchungen zu den kaiserlichen Steinbrüchen an Mons Porphyrites und Mons Claudianus in der östlichen Wüste Ägyptens* (Bonn 1988); D. P. S. Peacock, *Rome in the desert: a symbol of power* (Southampton 1992); D. P. S. Peacock and V. A. Maxfield, *Survey and excavation at Mons Claudianus 1987-1993, I. The topography and quarries* (Cairo 1996); D. P. S. Peacock et al., "Mons Claudianus and the problem of the *granito del foro*: a geological and geochemical approach," *Antiquity* 68 (1994) 209-30.

3 Klemm and Klemm (supra n.1) 408-11.

4 C. Meyer, "A Byzantine gold-mining town in the eastern desert of Egypt: Bir Umm Fawakhir, 1992-3," *JRA* 8 (1995) 192-226.

5 G. W. Murray, "The Roman roads and stations in the eastern desert of Egypt," *JEA* 11 (1925) 138-50; R. E. Zitterkopf and S. E. Sidebotham, "Stations and towers on the Quseir-Nile road," *JEA* 75 (1989) 155-89.

6 See J. Sinkankas, *Beryl* (London 1986) 184-210.

7 A. Lucas, *Ancient Egyptian materials and industries* (4th ed. rev. J. R. Harris; London 1962) 390.

8 D. A. MacAlister, "The emerald mines of northern Etbai," *GeogJ* 16 (1900) 537-49; E. S. Thomas, "The mineral industry of Egypt: emeralds," *Cairo Scientific Journal* 3.38 (1909) 267-72; Murray (supra n.5).