

Partial pseudomorph of native **copper** after octahedral crystal of **cuprite**, 6 cm. Collection: Anatoly V. Kasatkin. Photo: Michael B. Leybov.



INTRODUCTION

Despite its great size and varied ore deposits, Russia cannot boast many deposits with mineralogically impressive oxidation zones in which numerous spectacular specimens of supergene minerals are found. We can, however, mention three historical deposits in the Central Urals, which provided mainly in the 18th–19th centuries the magnificent specimens that adorn mineralogical museums worldwide: Berezovskoe with its rich chromate mineralization and Gumeshevskoe and Mednorudnyanskoe, two major sources of famous Russian malachite. The other Russian deposits are much more modest, but some of them provided spectacular specimens from oxidation zones: Tur'inskie and Blagodatanye Mines, Central Urals; Taininsky, Trekhsvyatitel'sky, and Zerentuevsky Mines, Eastern Transbaikalian Region; Zolotushinsky and Zmeinogorsky Mines, Rudnyi Altai; and Verkhny Mine in the Dalnegorsk ore field, Primorsky Krai. All of these deposits except Berezovskoe and Dal'negorsk were abandoned many years ago and became a part of history.

Some other Russian mines, where poorly developed oxidation zones are characterized by interesting mineralogy (for example, Blyava in the South Urals with varied sulfates and Khovu-Aksy in Tuva with numerous arsenates), were abandoned recently. Against this background, a discovery of rich original and extremely spectacular mineralization in the oxidation zone of the Rubtsovskoe base metal deposit at Rudnyi Altai is a great event.

The Rubtsovskoe deposit, unfamiliar as a mineralogical locality before 2008, became famous after the discovery of beautiful dendrites of native copper, including those powdered with native silver and well-described splendid cuprite provided its global fame.

The rich anomalous iodide mineralization found shortly after these findings was unexpected; previously, only insignificant iodides as micro-segregations were identified at Russian deposits, including those at Rudnyi Altai. The most significant finding in our country was described from the supergene zone at the Gaiskoe massive sulfide deposit, South Urals, where Chitaeva *et al.* (1971) reported miersite AgI, with variable Cu content, in clusters of crystals up to 0.1 mm in size.

The scale of iodide mineralization at the Rubtsovskoe deposit is comparable only with that at the famous Broken Hill ore field in Australia, where rich pods of iodide minerals were found at late 19th century. Iodargyrite AgI was an important constituent of rich silver ores produced in the Proprietary and ABH Consols Mines from 1888 to 1893 (Smith, 1896; W.D. Birch, pers. comm.). The second occurrence is Rubtsovskoe, where rich silver ore with iodargyrite as the major economic mineral was produced at the upper levels in 2009.

Fig. 1. Dendrite of native **copper** crowned by well-shaped, elongated twin on (111), 6 cm. Specimen: *Russian Minerals Company*. Photo: Michael B. Leybov.

