

Olivenite as well-formed crystals under the name “*olive ore*” was probably first reported by F.I. Shvetsov (Colossal block..., 1836). Later, this mineral was mentioned by Meyer (1876) and Fedorov (1900), as well as by Fersman and Shubnikova in their translation of Dana’s *Descriptive Mineralogy* (1937). Other literature sources refer to the first mention, according to which olivenite is associated with brochantite and cuprite, and including chalcotrichite, in porous brown iron from the the Nadezhnaya and Avrorinskaya pits. Soloviev cited an opinion of V.I. Stankevich that olivenite specimens deposited in the “*Gornozavodkoi Ural*” Reserve Museum (Nizhniy Tagil) are libethenite. Bushmakina’s inspection of the museum collection did not reveal olivenite. We did not find it as well.

Chlorides

Atacamite was reported among the Mednorudnyanskoe minerals without description (Soloviev, 1953). In the Kozin collection, atacamite was found in one specimen. These are light blue fine spherulites and individual plates 20-30 micron in size (*Fig. 222*) overgrowing nodules consisting of blocky pseudomalachite crystals. This mineral was identified using EDX.

Silicates

Silicates of the Mednorudnyanskoe deposit are rock forming minerals composing schists, porphyritic rocks, and skarns. These are feldspars, pyroxenes, amphiboles, micas, clay minerals and less abundant minerals. Only some of them occur in substantial amounts in the orebodies: mostly Cu- and Fe-bearing minerals. Zavaritsky (1929, 1963) summarized the data on rock-forming minerals predominantly on the basis of petrography and taking into account the previous data of Karpinskiy, Fedorov, Trushkov, Yakovlev, Nikitin, and Boldyrev.

Among pyroxenes there are **augite** and **diopside**. In the dike of diabase porphyry, augite occurs as numerous short-columnar phenocrysts, yellowish in transmitted light, sometimes zoned, and partly chloritized along fractures. Diopside (Fe-rich) was reported from syenites. It is also observed in skarns. The diopside crystals are very small, and the mineral is usually unaltered (Zavaritsky, 1929).

Feldspars, **albite**, **oligoclase**, and **orthoclase** (microperthite) were mentioned in various altered intrusive and effusive rocks, in syenites in the northern part of the deposit, mafic dikes, and in feldspatholiths (Zavaritsky, 1929). In carbonate-quartz veins feldspars occur with hematite, epidote and tremolite (actinolite), and also in breccias with fragments of such vein aggregates as large twins of albite. Oligoclase in epidote-quartz-feldspar veins with actinolite is usually seen as simple Carlsbad twins. In karst, potassium feldspar is commonly argyllized.

The garnets **andradite** and **grossular** overwhelmingly prevail in magnetite-calcite-epidote-garnet skarns and vein aggregates, mostly in the eastern (hanging) wall of the orebody. Massive garnet rock (Zavaritsky, 1929) was found in the Temnopavlovskaya pit. Andradite is usually brown and greenish

222. **Atacamite** tablets (a) amid **pseudomalachite** blocked crystals. Mednorudnyanskoe deposit. Specimen: V.A. and V.I. Popovs #932, collected by N.I. Kozin. SEM photo: I.A. Blinov

