
31219

INTRODUCTION

⇦ ***Emerald.*** *16.5 x 11 cm. Fersman Mineralogical Museum, Russian Academy of Sciences, No 31219*

The Ural Emerald Mines are of world importance, famous for their beryllium-bearing emerald, alexandrite, and phenakite. The ore district also hosts deposits of gold, molybdenum, tantalum, and niobium. Nearby is the Bazhenovskoe deposit, one of the world's largest deposits of chrysotile-asbestos. The Emerald Mines are in the Middle Urals, north-west of the town of Asbest and 80 km SE of Ekaterinburg, administrative center of the Central Urals. Administratively, they belong to the Asbest district of the Sverdlovsk oblast (Fig. 1)

The Ural mines were known in ancient times. They can be found in the writings of Pliny the Elder on Scythian emeralds as well as the archives of the Russian tsar Ivan the Terrible, who "was gifted a smaragd stone of pure green color, brought by the monk Methodius somewhere from behind the Kamen" (Sonin, 1993). (Note: "*Kamen*" is the ancient name for the Urals, and "*smaragd*" is a name for chromium beryl.) The original discovery took place in 1830 when Maxim Kozhevnikov, a peasant from the Beloyarsk district, found green, hexagonal-shaped stones in the roots of a tree that had been destroyed during a storm. The tree was in the deep pine forest of the River Tokovaya. The development of the Emerald Mines began in January 1831 and continues to the present day. In this 1.5–2 x 25 km area, twenty five deposits with emerald mineralization have been

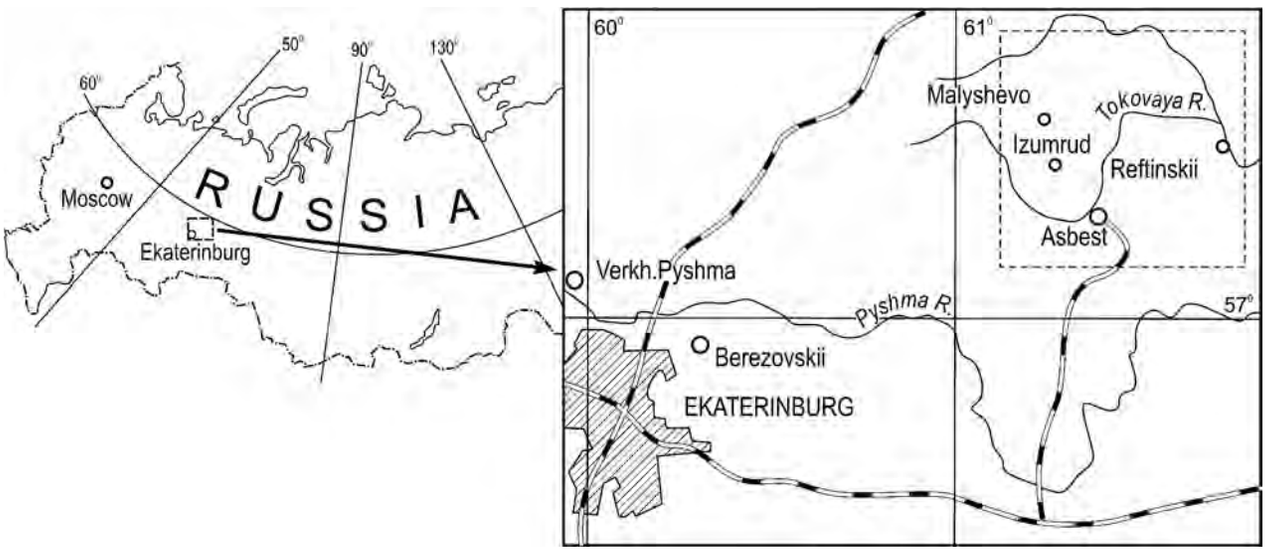

Fig. 1. Emerald deposits of the Urals are located 80 km SE of Ekaterinburg, administrative center of the Central Urals

found at different times. There are large deposits, such as Mariinskoe, Lyublinskoe, Sretenskoe, and numerous smaller deposits and occurrences. After the discovery of beryllium and emerald mineralization in the north at Neivo-Shaitanskoe and Glinskoe, phlogopite mineralization and rare-metal mineralization was discovered to the south at Shchuchinskoe, near the Gazetinskoe granite pluton, and also at Boevskoe and Ozernoe. The Ural Emerald Mines are not restricted to the relatively narrow strip along the eastern outer contact zone of the Adui granite pluton. Instead, they extend to the north and to the south. These deposits of beryllium-bearing gemstones occur along the Ural rare-metal belt.

The Ural Emerald Mines are mineralogically unique and include minerals of many genetic classes: magmatic, metamorphic, granite pegmatite, hydrothermal veins, and metasomatic. The richest mineralization was produced by pneumatolite-hydrothermal solutions. In all, 250 minerals have been recorded at these mines. They were recognised with varying degrees of certainty. There are the rarest kinds, such as bromellite, isokite, roggianite-"ginzburgite", behoite, clinobehoite, and others. Mineral specimens from these mines are featured in all the main collections of the world.

Finally, the Ural Emerald Mines are of great importance as a source of information on the geology, petrography, mineralogy and geochemistry of this deposit

Tokovaya River, 2006. Photo by Mikhail Popov

⇧ ***Alexandrite*** *in glimmerite (6.5 x 5.5 cm) and faceted set of alexandrite. Fersman Mineralogical Museum, Russian Academy of Sciences, No 80258, 1980, O.V. Khokhlov, A.N. Kapustin, and A.F. Laskovenkov. Sets presented by A.K. Faberge. Stock numbers* PDK *3630, 3631*

type. The geology and mineralogy of the Ural mines has been studied very closely. The list of publications on this subject includes about 400 references (Popov *et al.*, 2008).

The Ural emerald deposits are a natural laboratory where mineralogists study laws of physical-chemical conditions of origin, characteristics of localization of beryllium-bearing minerals, and the growth and alteration of these gem minerals. Their coexistence and inter-relation can be traced through time, from early alkaline stage through acidic to late alkaline stage, as well as space, from the contact with the granite to the zone of greenschist facies.

The author has been studying these deposits for many years. He is one of the most knowledgeable experts, and this work presents the result of his research.

↖ ⇧ ***Emerald*** *(1.05 ct) pave set with 211 full cut diamonds of 2.11 ct in a 19K White Gold Mount. Design by Michael Walsh*

↖ *Fine Oval* ***Emerald*** *7.90 ct set with 57 full cut diamonds of 0.57 ct in a 19K White Gold with 19K White Gold Chain. Design by Michael Walsh*

⇦ ***Alexandrite*** *of 1.11 ct oval set with 4 Certified Canadian diamonds with a total weight of 1.76 ct. Set in Platinum. Design by Michael Walsh.* ***Alexandrite*** *0.87 ct round set with 2 diamonds 0.46 ct in 18K White Gold. Design by Warren Boyd.*

Photo by Hanover Saffron. Courtesy of R. T. Boyd Limited