

PART 5. FORMATION CONDITIONS OF RODINGITES OF BAZHENOVSKOE OPHIOLITE COMPLEX

The formation conditions of rodingites of Bazhenovskiy ophiolite complex were discussed in detail in Mineralogy... (1996) and Antonov (2003). Metamorphism of Bazhenovskoe rocks (including rodingites) was believed to evolve from pumpellyite-actinolite ($T = 390^{\circ}\text{C}$, $P = 4 \text{ kb}$) to zeolite ($T = 220\text{--}150^{\circ}\text{C}$, $P = 2 \text{ kb}$) facies. The study of gabbro from the Asbest pluton (Erokhin, 1998₂) showed that transformation of the rocks of an ophiolite assemblage started at higher PT parameters. Metamorphism evolved from amphibolite ($T = 650\text{--}700^{\circ}\text{C}$, $P = 5\text{--}6 \text{ kb}$) through green-schist to zeolite ($T = 230\text{--}210^{\circ}\text{C}$, $P = 1 \text{ kb}$) facies. Mineral assemblages and the chemical composition of the minerals changed during this metamorphic evolution.

In general, various rocks within the ultramafic massif of Bazhenovskiy ophiolite complex are suggested to be rodingitized as a result of green-schist facies regional metamorphism. Volcanic rocks and gabbro in the vicinity of the massif are metamorphosed to this grade. For example, gabbro of the Asbest pluton is replaced by homogeneous suassurite-tremolite rock, which resulted from the upper green-schist facies metamorphism (Erokhin, 1998₂). During regional metamorphism, ultramafic rocks were transformed to antigorite serpentinite. Rodingitization started at about 450°C and below. Notably, despite different substrate (gabbro, diorite, pyroxenite), newformed rodingites have an identical mineral composition, which slightly differs only at the initial stage of rodingitization.

ACKNOWLEDGMENTS

This issue could not be published without references to many papers by Ernst M. Spiridonov, Andrey A. Antonov, Alexander E. Zadov, Kim K. Zolov, Yuriy A. Sokolov, Vladimir G. Krivovichev, Natalia S. Barsukova, Vladimir A. Popov, and Inna A. Popel (Antonova).

The author is grateful to all who assisted in its preparation and who facilitated the writing of the manuscript, specially to Prof. Igor V. Pekov for editing of the manuscript, some comments and additions and Dr. John White and Dr. Peter Modreski for improving English style.

Editorial and author express our gratitude to the directors and curators of museums, and to collectors for their kind permission to provide opportunity for mineral photography:

Fersman Mineralogical Museum RAS, Moscow – Pavel Yu. Plechov, Nina A. Mokhova and Inna A. Lykova;

Vernadsky State Geological Museum RAS, Moscow – Sergei V. Cherkasov, Iraida A. Starodubtseva, and Irina P. Andreeva;

Ural Geological Museum of Ural State Mining University, Yekaterinburg – Dmitriy A. Kleimenov and Valeriy I. Kainov;

Museum of Mineralogy, Stone Carving and Jewelry Art, Zarechniy City, Sverdlovsk Oblast – Alexander N. Selivanov;

Collectors: Alexander B. Loskutov, Elena A. Novgorodova, Oleg S. Bartenev, Alexander P. Chertikhin, Nikita V. Chukanov, Anatoly V. Kasatkin, Alexey G. Levin, Vladimir A. and Yulia P. Pelepenko, Igor V. Pekov, and Nikolay B. Belenkov.

Editorial is sincerely grateful to Group of the History of Geology at the Geological Institute, RAS headed by Dr. Irina G. Malakhova; photographers: Eugeny F. Tamplon, Alexander B. Loskutov and Elena A. Novgorodova for kind permission to use their photos; and Nikolay B. Belenkov for help in preparing this issue.

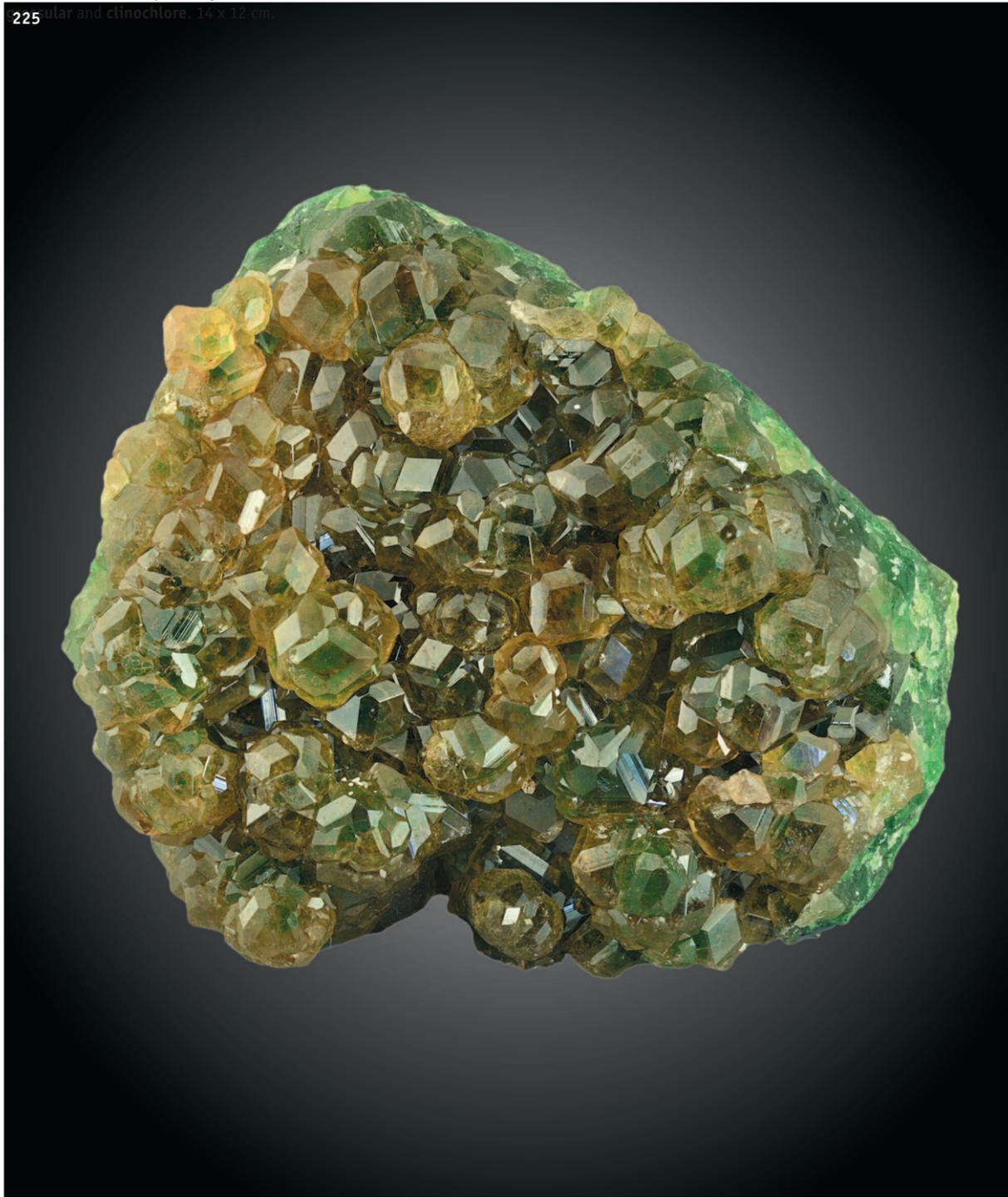


216. Cluster of purple crystals (up to 1 cm in length) of Mn-bearing **vesuvianite**.
 217. **Vesuvianite** crystal of 2.8 cm in length. South open pit. Specimen: Alexey G. Levin.
 218. Obelisk-like crystal of **aragonite**. 7.5 x 1.2 cm. North open pit.
 Photo 216, 218 specimens: Alexander B. Loskutov and Elena A. Novgorodova.
 219. Fine-fibrous **chrysotile** (chrysotile asbestos) coating magnetite segregation. 5.5 x 3.5 cm.
 Specimen: Fersman Mineralogical Museum, RAS, #38099, O.A. Shikhova, 1938.
 220. Multicolored **diopside** crystal (3 x 2 cm) on **clinocllore** crystal crust. Specimen: V.A. Pelepenko, #203.



221. Group of **grossular** crystals. 4 x 2.4 cm.
Specimen: Alexander B. Loskutov and
Elena A. Novgorodova.

222. Multicolored **diopside** crystals with
225. **grossular** and **clinocllore**. 14 x 12 cm.



Central open pit. Specimen:
Alexey G. Levin.

223. Fine-crystalline **pyrite** crust
and blue-black film of **covellite**
on **grossular**. 7 x 4.5 cm.
South open pit. Specimen: Alexey
G. Levin.

224. Cube-like rhombohedral
crystal of **calcite**. 1.8 cm. Private

