VOLCANOLOGY ABSTRACTS

BYKOVSKAYA, E. V., A. O. SOBOLEV, A. A. TARKNAEV, and A. P. KARPINSKY, All-Union Geological Research Institute, Leningrad, USSR

Peculiarities of Volcanism of Marginal-Continental Volcanic Belts of East Asia

The eastern Sikhote-Alin and Okhotsk-Chukhotskiy volcanic belts represent a linear structure extending for thousands of kilometers. They developed at the margin of the Asian continent during the middle Cretaceous and formed over a heterogenous basement of older, folded rocks. Both volcanic belts developed in multiple stages, and the magmatic evolution of both was the opposite of normal magmatic trends. Thus, a rhyolite-granite association characterizes the oldest stage of development; andesite-granodiorite, the mature stage; and basaltic associations, the youngest stage. Consequently, their structural style also changes—from the development of ring volcanic-tectonic depressions, calderas, and domes during the oldest and mature stages, to the development of grabens, linear depressions, and shield volcanoes during the youngest stage.

Significant metallogenic properties of these belts are related to the development of gold-silver, silver-tin, tin and associated metals, mercury-antimony, porphyry molybdenite-copper, and fluorite mineralizations.

Geochemical zonation parallels the trend of the volcanic belts, with the expected increase in potassium and aluminum oceanward, and an increase in sodium continentward. The copper and molybdenum ores are concentrated along the axis of the volcanic belts, whereas tin and its related metals association are concentrated along the western (external) parts of the volcanic belts. Transverse zonation is seen in the variations in SiO_2, $K_2O + Na_2O$, MgO, and other types of metallic associations. For example, gold and silver mineralization is associated with paleouplifts.

The close relationship between magmatism and the formation of tin, and their distribution in the contexts of subsurface geology, fault-block tectonics, and the host country rocks, are demonstrated by the results of the geological and geophysical studies presented.