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Analyses of the gold content of soils indicate that soil sampling may aid in detecting and tracing gold veins in the district; most high gold analyses could be correlated with known ore deposits. Of 911 samples, 38 had 0.1 ppm gold or more, 45 had 0.04-0.09 ppm, 58 had 0.02-0.03 ppm, and 770 had <0.02 ppm.

Ages of some of the Tertiary volcanic rocks in the general area of Virginia City have been measured by the potassium-argon method. Biotite from andesite porphyry gave 49.3 m.y., biotite from a rhyolite plug gave 44.7 m.y., whole rock from two basalt flows gave 32.7 m.y. and 30.3 m.y., and whole rock of basalt from Black Butte (a probable volcanic neck 20 miles south of Virginia City) gave 23.1 m.y. The ages suggest a more complex igneous history than is apparent from the geologic relationships. (K. L. Wier and R. F. Marvin, Denver, Colo.)

NEVADA Aurora District

The ore-bearing rock in the Aurora district, Mineral County, is andesite of unknown age, overlapped and intruded by younger andesitic to rhyolitic volcanic rocks. Some of these younger rocks appear to be postmineralization in age. Approximately 800 samples of altered (argillized, propylitized, and silicified) rock and quartz veins were collected in 1968 for spectrographic analysis and chemical analysis for gold, silver, arsenic, antimony, zinc, tellurium, molybdenum, and mercury. Approximately 200 samples of altered rocks from outside the main Aurora district will be analyzed to evaluate the potential for additional ore deposits outside the main district. About one-half of the Aurora samples have been analyzed. Preliminary geochemical anomaly maps for gold, silver, and molybdenum indicate the following:

1. Silver and gold values are highest in the northern part of the district and are concentrated around a small rhyodacite intrusive. A secondary and areally smaller concentration occurs on Silver Hill in the southern part of the district.

2. No low-grade wallrock mineralization has been found in the district. Quartz veins yield spotty assay results, although gray-streaked quartz, which is mentioned as a guide to ore in numerous old reports, generally contains several parts per million gold, and as much as ten times greater amounts of silver.

3. Background values of 0.02 to 0.06 ppm gold and 0.5 ppm silver in the propylitized, argillized, and silicified rocks of the district are anomalously high when compared to the average for the particular rock type in question. The values approach the detectability limits for these elements and may not be reliable.

4. Anomalously high values of molybdenum (up to 2 percent) have been found in quartz veins and limonite-coated fractures in a small area in the northern part of the district. Molybdenum apparently is not found elsewhere in the district in anomalous amounts, nor in the surrounding region. It may be related to a Mesozoic(?) granite lying beneath the basal andesite of Aurora, which is approximately 1,000 feet thick.

5. A possible breccia pipe complex crops out on the summit and southern flank of "East" Brawley Peak, approximately 1 mile south of the main part of the district. The outcrops consist for the most part of dense, silicified, extremely brecciated rock. The rock is commonly bleached white and has scattered hematite- and limonite-stained patches as well as a few concentrations of sulfides. Chemical analyses of samples are as yet incomplete, but samples not particularly rich in sulfides show a low but anomalous silver content, averaging 0.4 ppm. The presence of sulfides and the brecciated rock, which might produce a good host for ore at depth beneath the oxidized zone, make this an interesting area for further exploration.

Several volcanic units of basic to felsic composition intrude and overlap the mineralized andesite at Aurora. Potassium-argon analysis by Gilbert and others (1968) on an andesite flow overlying the mineralized andesite yielded an age of 12.4 m.y., indicating that mineralization occurred before that date. Potassium-argon ages on biotite and hornblende, 2.6 and 2.5 m.y. respectively, were obtained on a latite plug that forms a part of the eastern margin of the district. These dates indicate that volcanism was continuous in the Aurora district over a period of at least 10 million years and that ore mineralization was early in the sequence of events. (F. J. Kleinhampl and M. L. Silberman, Menlo Park, Calif.)

Carlin Mine

Geologic mapping in and around the Carlin gold mine in Eureka County shows that the gold mineralization is strongly influenced by structural controls. Premineralization faults and shear