

corresponding to orientation I can be observed; the reflections are then more sharp, probably because the crystals are larger due to recrystallization. The dominance of orientation I is undoubtedly due to the fact that in nuclei having this orientation the Mg—O bonds have the same orientation that they had in the hydroxide, while in the crystals of the second orientation the Mg—O bonds are along directions different from those the bonds had in the brucite (Fig. 5).

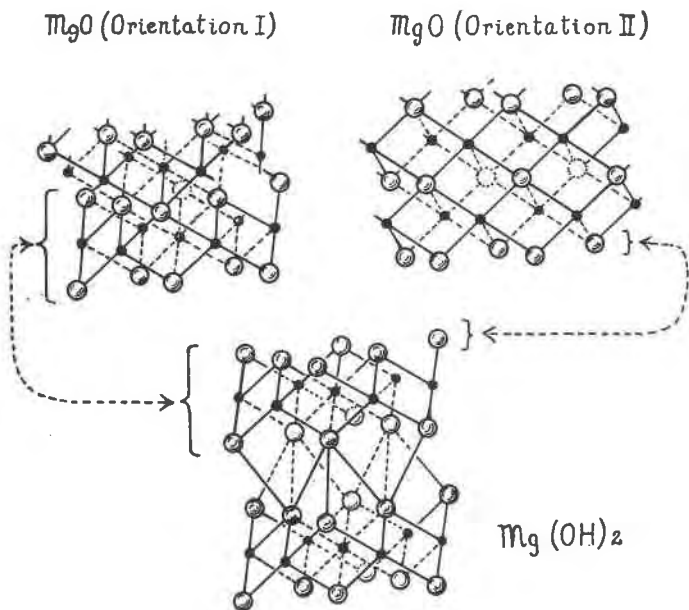


FIG. 5

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## NOTE ON THE OCCURRENCE OF CORUNDUM IN IDAHO\*

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During the field season of 1950 a corundum occurrence in sec. 22, T. 11 N., R. 4 E., of Valley County, 5 miles east of Smiths Ferry, was brought to the attention of the writer by Mr. Wayne Bowman, of Garden

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Valley, Idaho The occurrence was briefly visited by Mr. Bowman, the writer, and Mr. C. C. Popoff of the U. S. Bureau of Mines, in August of 1950. This occurrence is unique among known occurrences in Idaho in that the mineral lies in its original matrix; it probably represents the type of material which is the original source of the corundum found in Idaho gold placers.

Corundum has been reported from a number of gold placers in Idaho but, with one possible exception, the source rock has never been identified. It has been reported in the gold placers of Gold Fork and other tributaries of the Payette River in Boise County (Shannon, 1926, p. 193); blue and green sapphires have been reported near Pierce, in Clearwater County along Rhodes and Orofino creeks (Shannon, 1926, p. 193); as a very rare constituent of the Kelly Gulch placers at the north end of the Stanley Basin in Custer County (Stinson, 1950, p. 19); in gold placers near Resort in Idaho County (Shannon, 1926, p. 144); as a rare constituent in Salmon River gravels north of Lucile in Idaho County (Stinson, 1950, p. 28); as a common constituent in the Secesh placers southeast of Burgdorf (Stinson, 1950, p. 37); and also in the gold placers 5 miles north of Burgdorf in Idaho County.

The occurrence of corundum in the Rock Flat gold placer near Meadows, in Adams County, is of particular interest because the source of the material may have been established.

"The general formation of the district is gneiss, and the corundum crystals, which include some of gem quality, seem to be derived from a wide dike of basaltic clay formation with a peculiar spheroidal structure." (Quoted from *Mining World*, April 6, 1907, p. 449, by Mineral Resources of the United States for 1906, *U. S. Geological Survey*, 1907, p. 230.) It was suggested (Mineral Resources, 1907, p. 230) that prospecting the basalt dikes of the region might result in the discovery of more gem material. Shannon (1926, p. 193), however, said that, "the mineral has in no instance been found in its original matrix."

The corundum crystals in this new occurrence are metacrysts in schist inclusions in granodiorite of the Idaho batholith. The largest inclusion noted was thirty feet in diameter so the occurrence does not present commercial possibilities.

The corundum schist is dominantly composed of dark olive-green biotite, oligoclase (about  $An_{11}$ ) and corundum. The corundum crystals reach three centimeters in length and two centimeters in diameter, but crystals one to two millimeters long are also common. These crystals comprise from fifteen to twenty per cent of the rock. The biotite averages two to three millimeters in diameter. The feldspar, which has a tendency to concentrate around the corundum, averages 0.1 millimeters in diameter.

Minor amounts of an unidentified amphibole, chlorite, muscovite, magnetite and martite are also present, the last three as inclusions in the corundum.

No well formed corundum crystals are present, many are irregular in shape and some have an almost tabular habit. The majority of the crystals have a linear orientation in the plane of the foliation of the schist.

The color of the crystals varies from light gray to buff. Crushed fragments are mainly clear, but very pale blue, lavender, and pink fragments are also present. The specific gravity of selected material, as determined with a pycnometer is low, 3.91, as compared with the specific gravity given by Ford (1932, p. 522); but well within the range of specific gravities presented by Barlow (1915, p. 123). The indices of refraction were not accurately determined. The identity of the material was confirmed by means of an x-ray pattern, by Dr. J. W. Gruner of the University of Minnesota.

This particular area can not be considered as a potential source of corundum; however, an examination of the thin belt of metamorphic rocks on the border of the Idaho batholith, 12 miles to the west, might be of interest.

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#### DOUBLE FLUORIDES OF ZINC

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The following observations were made in connection with work on the preparation of  $ZnF_2$  and similar compounds for use as phosphors.

When  $ZnO$  or  $ZnCO_3$  is dissolved in excess HF solution, it immediately precipitates  $ZnF_2 \cdot 4H_2O$ , which is biaxial, negative, 2V, ca.  $50^\circ$ ,  $\alpha$ , ca. 1.46;  $\gamma$ , ca. 1.47. The product usually contains some  $ZnO$ , probably because the material never has been entirely in solution.  $ZnF_2 \cdot 4H_2O$  pre-