

tween the Mesa formation and the lithologically similar upper part of the Miocene Honda series; these observations require further checking.

Finally, the presence of the mineral provides a possibility of correlating the quartzoid-bearing andesitic-dacitic periods of volcanism of the Cordillera Central of the Colombian Andes with the sedimentary rocks of the Upper Magdalena Valley.

#### ICELAND SPAR IN TAOS COUNTY, NEW MEXICO

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Recently a commercial deposit of Iceland spar has been opened in New Mexico. Since such deposits are very rare and seldom last very long it seems desirable that a description of it be recorded.

*Location.* The deposit, officially known as the Iceberg Lode Mining Claim, is located in Sec. 31, T. 23 N., R. 11 E., Taos County, New Mexico, at the southern end of the old Copper Mountain Mining district, not far from the old Lithia deposits of Harding. It is about 30 miles south-southwest of Taos by road and approximately 55 miles north-northeast of Santa Fe. The operators are Messrs. E. M. Stanton and J. W. McCoy of Santa Fe, New Mexico.

*Geology.* The deposit occurs in pre-Cambrian rocks, mica schists and quartz mica schists. It occupies a tubular or conical space nearly circular in horizontal section along a fault plane. At the surface the deposit is approximately 20 feet in diameter. As of August, 1939, the workings had penetrated to a depth of from 20 to 25 feet along the southwestern side of the deposit. From the excavation it would appear that the deposit is plunging slightly to the south or southwest. The calcite appears to occupy a former cavity in the schist. It has clean-cut boundaries. The schist around the borders is altered to a clayey material. The calcite has developed as a mass of intergrown crystals of large size which completely fill the space and form a solid mass of the mineral. The surface and near surface portions of the deposit which were visible at the time of visit were discolored, more or less opaque, badly flawed, intergrown, and in some cases twinned, and were not suitable for optical use. Around the borders crystals of calcite up to  $1\frac{1}{2}$  feet across grew out into the clayey decomposed schist. To date these have supplied all of the material marketed. The outer surfaces of most of these crystals are etched and coated with clayey material. The high grade material gives a clear ringing sound when struck, quite different from the dull thud of a badly flawed piece.

*Origin.* Tertiary vulcanism was active in the general region as shown by the abundant basic lava flows which cap the mesas along the Rio Grande Valley and which filled the old valley with a thick series of flows. Local mineralization is shown by the fact that within a radius of two miles of the Iceland spar deposit there are numerous prospect holes which have yielded specimens of gold, copper, tungsten and molybdenum ores. In the opinion of the writer the deposit was formed by circulating warm waters, heated and mineralized by the cooling lavas. These travelled along the fault plane and deposited the calcite in the cavity along the fault, probably enlarging the cavity by attacking the rocks lining it. The highly altered rock and the character of the residual material around the borders of the calcite deposit support this view.

*Methods of mining.* The softness and perfect cleavage of the spar add greatly to the difficulties of mining as they practically prohibit the use of explosives or violent hammering. Technically it could be said that the deposit is worked by open pit methods with considerable "gophering" around the edges. Work is done by hand with bars, light hammers and chisels with only very small amounts of material being handled at a time.

After being extracted from the pit the calcite is carried to a work table where all colored or fractured material is immediately discarded. The balance is carefully cleaved in such a way that all imperfect material is removed from the clear flawless portions, and the latter is left in as large pieces as possible. This operation requires a high degree of skill and judgment.

Needless to say the percentage of waste to marketable material is very large and unfortunately there is practically no market for the discarded material. Some of the second-grade material, clear but slightly flawed or containing bubbles may be sold to mineral dealers for schools, museums and mineral collectors.