248 mine, Terlingua quicksilver district, Brewster County, Texas.

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248 MINE

TERLINGUA QUICKSILVER DISTRICT, BREWSTER COUNTY, TEXAS

By Robert G. Yates and George A. Thompson,
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The 248 quicksilver mine is in Section 248, Block G-4, 2 miles east of Terlingua and 86 miles by dirt road from Alpine, Tex., the nearest railway shipping point (see accompanying maps). Cinnabar, the quicksilver mineral, was discovered before 1902. By 1934 there were only about 700 feet of subsurface workings, but in recent years the Esperado Mining Co., which has the property under lease, has greatly extended exploratory workings and has built a Herreshoff furnace rated at 40 tons per day. At the present time there are 1 1/3 miles of underground workings and 800 feet of surface trenches.

The workings are in and close to a vertical pipelike mass of brecciated rocks enclosed in flat-lying slightly fractured sedimentary rocks. The nature and thicknesses of the rocks are given in the explanations and sections of the accompanying maps. The sedimentary rocks were described in detail in an earlier Federal Geological Survey press release on the nearby Chisos mine at Terlingua.

The sedimentary rocks enclosing the 248 breccia pipe are broken by vertical fractures with displacements of less than 1 foot. Near the surface the pipe, with a 100-foot diameter, is roughly circular in cross section, but as it extends downward for more than 500 feet it gradually enlarges and becomes elongate in plan (see plate 2). The breccia filling to the depth explored consists of Boquillas flags and Buda limestone in angular blocks and fragments of all sizes and shapes. The breccia contains no fragments from underlying formations, and there is no evidence of upward movement within the pipe. On the contrary, the borders of the pipe show evidence of slumping. At some places on the periphery there are blocks that show all stages of detachment and slump. Some of these on the west side of the pipe are shown in section A-A', plate 1. Incipient fracturing behind large bordering blocks at the 420 level on the east side of the pipe is illustrated in the same section.

Much of the breccia has a soft clayey matrix of comminuted and altered shale of the Boquillas flags. At many places, however, the breccia blocks have no matrix. Tar, some of which is brittle but much of which is fluid and drips from the backs of the workings, and calcite containing tar fill or line many of the open spaces between the blocks. The tar may have been derived from organic material in the Boquillas flags.

Alteration of the breccia is markedly selective. Fragments of the Boquillas flags that contain high percentages of calcium carbonate are generally unaltered or only slightly altered. Adjacent blocks of shaly Boquillas are commonly changed to soft, claylike masses that contain tar and disseminated euhedral crystals of analcite up to a quarter of an inch across.

The breccia pipe is surrounded on the 500 level by a trachybasalt sill 60 feet thick; below the 556 level, tongues of altered trachybasalt irregularly intrude the pipe. In the northwest and southeast crosscuts on the 556 level, soft clay occurs between the breccia pipe and the surrounding Buda limestone. The field relations indicate that this clay represents a dikelike body of trachybasalt that was intruded along the margin of the breccia and subsequently altered. Similar altered igneous rock was encountered in the shaft below the 556 level. In late January 1944, the bottom of the shaft, which was then about 600 feet, was entirely in altered igneous rock.

Prospecting for quicksilver ore may be aided by an understanding of the structural history of the area. The major structural events may be summarized as follows: (1) large-scale faulting formed northwesterly trending grabens; (2) fracturing took place along northeasterly lines; (3) solutions removed rock material and resulted in collapse, gradually forming a breccia pipe; (4) trachybasalt intruded and lifted the Boquillas flags, forming a sill around the breccia pipe and intruding the breccia (see plate 1). Deposition of cinnabar took place after the foregoing events.

The quicksilver deposits of the 248 mine are readily divided into two groups. The more important group includes all deposits in marginal fissures of the breccia pipe and within the breccia. The other group comprises fillings along fracture systems outside of the breccia pipe. In both types of deposits the only important quicksilver mineral is cinnabar (HgS). Cinnabar is later than the analcite, tar, and most of the calcite and pyrite.

The deposits in fractures outside the pipe, which are neither extensive nor high in grade, are varied, and consist of fillings and replacements by cinnabar and calcite, with small amounts of pyrite and iron oxides. Most of the mineralized fractures trend N. 65° E., but some trend about N. 15° W. In places the fracture walls are coated by thin films of cinnabar which locally widen to veinlets of a quarter of an inch or more. The widest fillings are developed where the fractures cross limestone beds in the Boquillas flags. These beds are generally no more than 1 or 2 feet thick. Cinnabar is found in some places along bedding planes on both sides of fractures. The trachybasalt sill contains cinnabar in small fractures and irregular disseminations.

Deposits in marginal fissures of the breccia pipe and within the breccia are best developed between the 270 and 360 levels. A deposit on the 320 level illustrates the type. The smooth curve of the western border of the pipe on this level (see plate 1) is broken by a large block of the wall rock, which juts into the pipe. This block, however, is detached and slightly slumped toward the pipe. The fissure thus developed is filled with small breccia fragments and is mineralized

by cinnabar. The ore there is limited by the length of the block. Pockets of ore fill marginal fissures along other large blocks. Exceptionally large blocks seem to be a reliable guide to ore, at least on these levels. Where the mineralization extends into the breccia pipe, the breccia commonly contains very large blocks, as on the northern side of the pipe on the 360 level.

The base of the Del Rio clay is the best ore horizon at other mines in the district, and has been mined to a depth of 650 feet in the Chisos mine. If intrusive bodies have not added to the rock column between the 556 level and the base of the Del Rio clay, this horizon lies about 250 feet below the 556 level. At other mines, the Mariposa mine for example, the ore at this horizon was in collapsed cave zones along northeasterly fractures. It is possible that similar zones extend northeast and southwest from the 248 breccia pipe at the base of the Del Rio clay.

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