REFERENCES

COLE, W. F. AND A. R. CARTHEW (1953) An apparatus for differential thermal analysis. *Aust. Jour. Instr. Tech.* **9,** 23–30.

——— AND N. M. ROWLAND (1961) An abnormal effect in differential thermal analysis. *Am. Mineral.* **46,** 304–312.

DUNNE, J. A. AND P. F. KERR (1960) An improved thermal bead for d.t.a. of corrosive materials. *Am. Mineral.* **45,** 881–883.

KOPP, O. C. AND P. F. KERR (1957) Differential thermal analysis of sulfides and arsenides. *Am. Mineral.* **42,** 445–454.

——— (1958) Differential thermal analysis of pyrite and marcasite. *Am. Mineral.* **43,** 1079–1097.

KULLERUD, G. AND R. A. YUND (1959) The Ni-S system. *Carnegie Inst. Washington Year Book 58, No.* **1320,** 139–142.

MCLAUGHLIN, R. J. W. (1957) Other minerals. In, *Differential Thermal Investigation of Clays* 364–388, Mineralogical Society, London.

PICKERING, R. J. (1963) Apparatus for controlled-atmosphere differential thermal analysis of corrosive materials. *Am. Mineral.* **48,** 1383–1388.

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BERYL IN A MONTANA TACTITE BODY[1]

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The contact-metamorphic zone at the Calvert Creek (Red Buttons) tungsten mine, in the SE$\frac{1}{4}$ sec. 12, T. 1 N., R. 13 W., Beaverhead County, Montana, (Walker, 1963, p. 4–7, fig. 2) has yielded one specimen of carbonate rock containing beryl in close association with epidote and small flakes of altered mica. Further search may discover a few additional specimens but probably not a sizeable deposit.

No detailed geologic work has been done in this region, which is underlain by both sedimentary and intrusive rocks. In the mine area, white crystalline limestone, probably a roof pendant of Meagher Formation (Cambrian), is in contact with quartz monzonite similar to that of the Boulder batholith. Strike and dip of beds differ greatly within short distances. Contact zones have been metamorphosed to irregular garnet-rich tactite bodies containing epidote, quartz, and a minor amount of chlorite.

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Scheelite is sporadically disseminated in the tactite. The main ore body is about 200 feet in diameter and seems to plunge to the south at about 45°. A smaller ore body is exposed in a pit east of the main workings, and drilling has encountered other smaller tactite bodies (Walker, 1963, p. 4).

The locality can be reached by travelling about 8 miles west from Wise River on Montana Highway 43 to the Big Hole River bridge, then left on the Bryant Creek road for about $4\frac{1}{2}$ miles, then on the right-hand fork for about $1\frac{1}{2}$ miles, directly onto the mine dump. The specimen that provides the subject of this report was collected from the surface a few feet back from the edge of the high side of the pit. The mine is now inactive, and the mine road is not maintained in winter and early spring.

The beryl is principally in the form of a $\frac{1}{2}$-inch bundle of crowded subparallel polygonal rods about $1\frac{1}{2}$ inches long at most. No individual rod is more than $\frac{1}{8}$ inch across. Color ranges from almost colorless to blue—the material is aquamarine quality but too small to provide cut stones. In addition to this bundle of rods, a few minute needles are randomly oriented in the nearby part of the carbonate matrix. The smaller of these needles are completely transparent and colorless, but the larger ones are greenish blue to blue.

The matrix is chocolate-colored carbonate rock that effervesces vigorously in cold dilute hydrochloric acid and reveals rhombohedral cleavage traces. It contains epidote in the form of granules and as readily identifiable crystals, one of which is almost $\frac{1}{2}$ inch across and seems to extend through the rock. A similar crystal has been lost from the surface of the rock, leaving only the impression. Small flakes of altered mica are numerous. The specimen is no. 12803 in the museum at Montana College of Mineral Science and Technology (formerly Montana School of Mines.)

Beryl is commonly associated with tungsten minerals in quartz veins, and beryllium minerals other than beryl, notably helvite, are found in many tactite deposits (Warner *et al.*, 1959), but so far as known this is the first reported occurrence of beryl in tactite. Some massive smoky quartz is exposed in the pit wall, but neither the tungsten mineral (scheelite) nor the beryl seems to be closely associated with it. Beryllium minerals other than beryl have not been found at the Calvert Creek mine, but no thorough search for them has yet been attempted.

References

Walker, D. D. (1963) Tungsten resources of western Montana; miscellaneous deposits. *U. S. Bur. Mines Rept. Inv.* **6334.**

Warner, L. A., W. T. Holser, V. R. Wilmarth and E. N. Cameron (1959) Occurrence of nonpegmatite beryllium in the United States. *U. S. Geol. Survey Prof. Paper* **318.**