CUPROBISMUTITE—A MIXTURE

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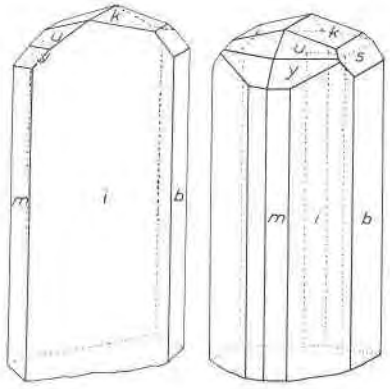
Examination of the type specimen of cuprobismutite upon which Hillebrand founded the species was made possible by the loan of the specimen (U.S.N.M. 92902) by the U. S. National Museum. This examination revealed the definite occurrence in it of two minerals, bismuthinite and emplectite, both in measurable crystals. Since a mixture of these substances would give the composition revealed by Hillebrand's analysis, the species has no validity. But, since both of the above-named minerals are so rare in measurable crystals, data observed are here recorded.

Cuprobismutite was given species rank by Dana in the *System*, p. 110, on the basis of Hillebrand's analyses, although the physical description was very incomplete. It was discredited by Short (1931), who examined the type specimen minerographically and identified the mineral present as emplectite. This conclusion, however, has not been accepted by Schneiderhöhn and Ramdohr, nor by Gaudin and Dicke (1939), but none of these authors gives data which in the least establish the species.

The type specimen from the Missouri Mine, Hall's Valley, Park County, Colorado, is a small mass of siliceous ore, dark from the embedded needles of emplectite which it contains. In drusy openings in the quartz the metallic minerals have formed free crystals. The most abundant of these are iridescent tarnished thin plates and needles which proved to be emplectite. Thicker striated crystals in two or three cavities proved to be bismuthinite. Chalcopyrite crystals and grains are rare. Nothing was seen that could be identified with the wolframite found to be present in the ore by Hillebrand.

Emplectite. The thin plates are numerous and generally extend from wall to wall of the cavities in which they occur. Broken surfaces show the perfect cleavage parallel to (010) and also the less perfect (001) cleavage. The plates are deeply striated vertically so that they give an endless chain of colored signals. They seem to be flattened, not parallel to the pinacoid (010) but to a pair of prism planes, not exactly measurable. The narrow edges of the plates revealed minute faces of the forms shown in Table 1 and in the figure. Comparison of the measured and calculated angles in Table 1 leaves no doubt of the identity of these crystals with emplectite as recently described by Palache and Peacock (1933).*

* Since the publication of this paper the setting has been transformed to correspond to the structure cell. Transformation formula Palache and Peacock to new position 010/300/001. The letters as given above are the same as used in the published table. The new ϕ is $(90°-\phi)$ of that table.



a *b*

FIG. 1*a*. Emplectite. Distorted crystal flattened parallel to a pair of prism planes.
FIG. 1*b*. The same crystal restored to symmetrical development.

TABLE 1. MEASUREMENTS OF EMPLECTITE

Forms	No. of faces	Measured		Calculated	
		ϕ	ρ	ϕ	ρ
k 011	2	0°00′	15°00′	0°00′	15°06′
s 051	2	0 00	53 12	0 00	53 27
h 201	1	90 08	51 30	90 00	51 57
u 111	2	67 07	34 47	67 06½	34 44½
y 221	2	67 07	54 00	67 06½	54 12½
p 131	1	38 10	45 37	38 17½	45 52½

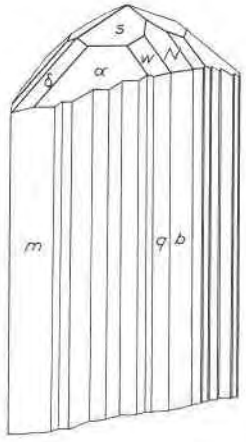


FIG. 2. Crystal of bismuthinite.

Bismuthinite. In a few cavities, besides the plates of emplectite, there were somewhat stouter reddish crystals, two of which were measured. They gave measurements which agree well with the angles of bismuthinite as given by Peacock (1933).**

TABLE 2. MEASUREMENTS OF BISMUTHINITE

Forms	No. of faces	Measured ϕ	Measured ρ	Calculated ϕ	Calculated ρ
q 130	2	18°58′	90°00′	18°40½′	90°00′
o 120	1	26 51	90 00	26 53	90 00
m 110	1	45 26	90 00	45 24	90 00
n 210	1	63 47	90 00	63 45	90 00
N 021	2	0 00	34 44	0 00	34 58½
z 301	1	90 00	46 56	90 00	46 46½
S 111	2	45 01	26 36½	45 24	26 28½
α 221	3	45 41	45 00	45 24	44 53½
w 121	3	27 18	38 01	26 53	38 06½
σ 211	1	63 40	38 54	63 45	38 20½

Figure 2 shows the forms present in somewhat idealized proportions.

In view of the facts above recorded, it appears that the name *cuprobismutite* has no mineralogical significance and may be discarded.

REFERENCES

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** Since the publication of this paper the elements have been changed to correspond to the dimensions of the unit cell. The *letters* used above for the forms are unchanged from the usage of the published table. The form w (121) has been reported by Wolfe (1938).