NOTES AND NEWS

CORONADITE "REDIVIVUS"

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In 1905, W. F. Hillebrand and myself published some notes on a new mineral from the Coronado vein, Morenci, Arizona,[1] to which the tentative formula of $3MnO_2 \cdot PbO$ was given. The mineral was examined carefully, and there was no doubt in our minds that it was substantially homogeneous and represented a new species.

In 1923, a short note on this mineral was published by E. E. Fairbanks,[2] in which it was maintained that the so-called coronadite consisted mainly of a galena-white mineral with a brown streak, through which is a finely disseminated substance which shows polarization with crossed nicols. The galena-white mineral was called hollandite (psilomelane), and the disseminated substance was referred to as an unidentified lead mineral. Thus died coronadite, and on its tombstone Dana-Ford, 4th edition, p. 495, wrote that coronadite was shown to be a mixture.

MORENCI, ARIZONA		BOU TAZOULT, MOROCCO	
Recalculated to 100 percent. Traces of vanadium. (W. F. Hillebrand, Analyst)		(G. Campredon, Analyst)	
MnO_2	60.80	MnO_2	59.60
MnO	7.12	MnO	8.02
PbO	28.66	PbO	28.68
ZnO	0.11	BaO	0.23
CuO	0.05	CaO	0.05
Al_2O_3	0.68	CuO	0.14
Fe_2O_3	1.10	Al_2O_3	0.10
MoO_3	0.37	Fe_2O_3	0.60
H_2O	1.11	P_2O_5	0.03
		As_2O_5	0.04
		V_2O_5	0.20
		SO_3	0.02
		CO_2	0.04
		H_2O+	1.80
		SiO_2	0.26
	100.00		99.81

[1] W. Lindgren, The copper deposits of Clifton-Morenci: *Prof. Paper* **43**, *U. S. Geol. Survey*, 1905, pp. 103–106.

[2] E. E. Fairbanks, Mineragraphic notes on manganese minerals: *Am. Mineralogist*, **8**, 1923, pp. 209–210.

Now we come to the resurrection. In 1932, J. Orcel[3] published a description in the *Comptes Rendus* of a mineral from Morocco, which proved to have a composition identical with the old coronadite of Lindgren and Hillebrand. The two analyses are given above.

There can be no reasonable doubt as to the identity of the two substances, and Orcel gives the following formula as the most probable: $2MnO_2 \cdot PbO$. The occurrence in Morocco is in the upper levels of an important manganese deposit.

Much encouraged, naturally, by this new development, particularly as Mr. Orcel had the kindness to send me a beautifully polished specimen of the coronadite from Morocco, I set about to ascertain something more about the original occurrence. Apparently the specimen which Mr. Fairbanks had examined came from the Harvard Mineralogical Museum; it was collected by W. F. Ferrier, and now forms a part of the Holden Collection. I was allowed to examine it through the kindness of Professor Charles Palache.

It consists essentially of quartz grains with some decomposed silicates between which veinlets and masses of the questionable minerals are embedded; it is not nearly as good as the original specimen analyzed by Hillebrand. The mineral appears as a dark gray to black material, and in places has an extremely finely fibrous structure whereas other parts are fine granular. Any of this dark material gives a strong reaction for lead by the iodide method.

In Professional Paper 43, the hardness was given as 4, which is not quite correct; it is more nearly 5. The specific gravity of the analyzed material was 5.246, but the material contained 7 percent SiO_2 and the figure is, therefore, too low. Orcel obtained 5.505. The highest specific gravity of the other manganese oxide minerals is 4.9 ranging from this to 3.3. The higher specific gravity of the coronadite is naturally caused by the lead.

Polished sections show veins of an almost galena-white mineral with granular to fine fibrous texture. The reflectivity is high, probably corresponding closely to Orcel's figures (0.31 to 0.34). It is strongly anisotropic with dark brown to gray colors. In places it is

[3] J. Orcel, Sur l'existence de la coronadite dans les minérais de manganèse de Bou Tazoult, région de l'Imini (Maroc): *Comptes Rendus, Acad. Sci.*, séance du 30 Mai, 1932.

J. Orcel et St. Pavlovitch, Charactères microscopiques en lumière réfléchie de quelques minerais oxydés de manganèse: *Bull. Soc. française de Mineralogie*, **54**, p. 145, 1931.

decomposing to a cryptocrystalline black metallic mineral, which also spreads in small veinlets; it is probably some variety of psilomelane. The texture and polarization of the coronadite corresponds exactly to Orcel's description. The data given by Fairbanks are incomplete and obscure. Evidently he thought that the "galena-white" mineral was hollandite. He makes no statement as to its anisotropism. What he means by the "finely disseminated substance which shows polarization by crossed nicols" is not clear to me. I think we may safely discard his diagnosis and admit the identity of the coronadite from Morenci with Orcel's coronadite from Bou Tazoult.

Orcel's formula $2MnO_2 \cdot PbO$ is probably correct; the small amount of water appears to represent the beginning of a leaching of lead and a change towards psilomelane.

Thus, the mineral is rescued and resuscitated.

ERRATA

In the article by J. D. H. Donnay and J. Mélon, June issue 1933, kindly note the following corrections:

Page 231. The last eight lines of Table 2 should be placed on top of p. 232, so as to have the forms listed according to increasing values of S^2.

Page 234. Table 4, column III: face No. **6** should be $20\bar{1}$ instead of *201*.

Page 240. Table 5: The sixth and seventh lines of forms should read:

$10\bar{1}$ $0\bar{1}1$ $1\bar{1}0$ *110* 011 *101*

and

$\bar{1}11$ $\bar{1}\bar{1}1$ $1\bar{1}1$ 111

instead of

$10\bar{1}$ $1\bar{1}0$ $1\bar{1}0$ *110* 011 *101*

and

$\bar{1}11$ $\bar{1}\bar{1}1$ $11\bar{1}$ 111