A SYSTEM OF MINERALOGY.

DESCRIPTIVE MINERALOGY,

COMPRISING THE

MOST RECENT DISCOVERIES.

BY

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"*Hæc studia nobiscum peregrinantur....rusticantur.*"

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REWRITTEN AND ENLARGED, AND ILLUSTRATED WITH UPWARDS OF SIX HUNDRED WOODCUTS.

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1868.

1. Savodinski, Altai		Te 36·96	Ag 62·42	Fe 0·24=99·62 Rose.
2. " "	G.=8·41–8·565	36·89	62·32	0·50=99·71 Rose.
3. Nagyag	G.=8·31–8·45	[37·76]	61·55,	Au 0·69, Fe, Pb, S, *tr.*=100 Petz.
4. Retzbanya		27·96	54·67	Foreign substances 15·25=97·88 Ramm.

Pyr.—In the open tube a faint white sublimate of tellurous acid, which B.B. fuses to colorless globules. On charcoal fuses to a black globule; this treated in R.F. presents on cooling white dendritic points of silver on its surface; with soda gives a globule of silver.

Obs.—Occurs in the Savodinski mine, about 10 versts from the rich silver mine of Zirianovski, in the Altai, in Siberia, in a talcose rock, with pyrite, black blende, and chalcopyrite. Specimens in the museum of Barnaul, on the Ob, are a cubic foot in size. Also found at Nagyag in Transylvania, and at Retzbanya in Hungary; Stanislaus mine, Calaveras Co., Cal.

Kenngott examined crystals from Nagyag, and Peters, from Retzbanya. Hess made the Altai mineral rhombohedral, which Kokscharof does not sustain.

58A. PETZITE. (Tellursilber *Petz*, Pogg., lvii. 470; Tellurgoldsilber *Hausm.*, Handb., 1847. Petzit *Haid.*, Handb., 1845.) Differs from hessite in gold replacing much of the silver. H.=2·5. G.=8·72–8·83, Petz; 9–9·4, Küstel. Color between steel-gray and iron-black, sometimes with pavonine tarnish. Streak iron-black. Brittle. Composition Au Te+$4\frac{1}{2}$ Ag Te, Petz; Au Te+3 Ag Te, Genth. Analyses: 1, Petz (l. c.); 2–4, Genth (Am. J. Sci., II. xlv. 310); 5, Küstel (ib., B. H. Ztg., 1866, 128):

1. Nagyag	Te [34·98]	Ag 46·76	Au 18·26, Fe, Pb, S *tr.*=100 Petz.
2. Stanislaus mine	(½) [32·23]	42·14	25·63=100 Genth.
3. Golden Rule mine	32·68	41·86	25·60=100·14 Genth.
4. " "	[34·16]	40·87	24·97=100 Genth.
5. Stanislaus mine	35·40 ?	40·60	24·80=100·80 Küstel.

Occurs at the localities stated, with other ores of tellurium.

59. DALEMINZITE. Daleminzit *Breith.*, B. H. Ztg., xxi. 98, 1862, xxii. 44, 1863.

Orthorhombic, and isomorphous with chalcocite: $I \wedge I$=116°. Occurring planes O, I, i-$\breve{i}$, 2-$\breve{2}$, 1-$\frac{1}{2}$.

H.=2–2·5. G.=7·044–7·049. Physical characters like those of argentite.

Comp.—Ag S, or same as for argentite, it being the same chemical compound under an orthorhombic form.

Pyr.—Same as for argentite.

Obs.—From the Himmelfahrt mine near Freiberg. Much resembles stephanite.

Named from Dalminzien, the ancient name of Freiberg.

Akanthite is also orthorhombic sulphid of silver, but of very different angles.

60. ACANTHITE. Akanthit *Kenng.*, Pogg., xcv. 462, 1855.

Orthorhombic. $I \wedge I$=110° 54′; $O \wedge 1$-$\bar{i}$=124° 42′; $a : b : c$=1·4442 : 1 : 1·4523. Observed planes: as in f. 77, with also vertical i-$\breve{2}$, i-$\bar{2}$; domes, $\frac{5}{8}$-$\bar{i}$?, $\frac{2}{3}$-$\bar{i}$?, $\frac{5}{6}$-$\bar{i}$?, $\frac{5}{4}$-$\bar{i}$, 2-$\bar{i}$, 8-$\breve{i}$?; octahedral, $\frac{1}{3}$, $\frac{5}{4}$; $\frac{5}{8}$-$\bar{5}$?; $\frac{1}{2}$-$\bar{2}$; $\frac{5}{4}$-$\bar{\frac{5}{3}}$; $\frac{8}{3}$-$\breve{8}$; 2-$\breve{6}$; $\frac{5}{2}$-$\breve{5}$; $\frac{4}{3}$-$\breve{4}$; 20-$\breve{\frac{5}{2}}$?; 4-$\breve{2}$, $\frac{2}{5}$-$\breve{2}$, 1-$\breve{2}$, $\frac{1}{2}$-$\breve{i}$, $\frac{15}{3}$-$\breve{\frac{15}{4}}$? (Dauber). $O \wedge 1$-$\breve{i}$=135° 10′; $O \wedge 1$=119° 42′; $O \wedge \frac{2}{3}$-$\breve{2}$=140° 40′, i-$\breve{i} \wedge 2$-$\bar{2}$=138° 33′, i-$\breve{i} \wedge I$=124° 33′, $1 \wedge 1$, over 1-$\breve{i}$,=88° 3′ (obs.) $1 \wedge 1$-$\bar{i}$=150° 31′ (obs.) $1 \wedge I$ = 140° 18′, 1-$\bar{i} \wedge i$-$\bar{i}$=145° 18′, 1-$\bar{i} \wedge 1$-$\bar{i}$, over i-$\bar{i}$,=110° 36′. Twins: composition parallel to 1-$\bar{i}$. Crystals usually slender-pointed prisms. Cleavage indistinct.

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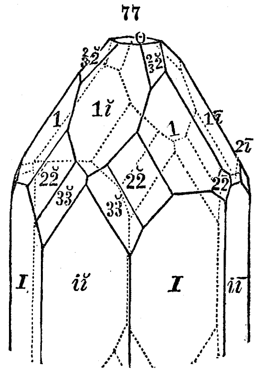

Freiberg.

H.=2·5 or under. G.=7·16–7·33; 7·16–7·236, from Freiberg; 7·188–7·326 from Joachimsthal. Lustre metallic. Color iron-black or like argentite. Fracture uneven, giving a shining surface. Sectile.

Comp.—Ag S, or like argentite. P. Weselsky obtained (J. pr. Ch., lxxxi. 487) from a Freiberg specimen 86·71 silver, 12·70 sulphur; from a Joachimsthal specimen, 87·4 silver.

Pyr.—Same as for argentite.

Obs.—At Joachimsthal, with pyrite, argentite, and calcite, usually on quartz; also at the Himmelfürst mine, near Freiberg in Saxony, along with argentite and stephanite. The crystals are parallel with those of stromeyerite when $1\text{-}\bar{i}$ is made I; in that case $I \wedge I = 110° \ 36'$, and $I\text{-}\breve{i} \wedge 1\text{-}\breve{i} = 89° \ 40'$; while in stromeyerite these angles are $119° \ 35'$ and $i\text{-}\breve{i} \wedge 1\text{-}\breve{i} = 91° \ 44'$; and twins are compounded parallel to I in each. On cryst., see H. Dauber, Ber. Ak. Wien, xxxix. 685. The prisms $1\text{-}\bar{i}$, and I, correspond nearly in angle to the twining form $\frac{4}{3}\text{-}\breve{i}$ of chalcocite.

The ore analyzed by W. C. Taylor, and referred by him to stromeyerite, may belong to acanthite, as suggested by Kenngott; but this can be made certain only by ascertaining its crystalline form.

61. CHALCOCITE. Æs rude plumbei coloris pt., *Germ.* Kupferglaserz, *Agric.*, Interpr., 461, 1546. Koppar-Glas pt., Cuprum vitreum, *Wall.*, 282, 1747. Cuivre vitreux *Fr. Trl.* Wall., i. 509, 1753. Kopparmalm, Cuprum sulphure mineralisatum pt., *Cronst.*, 174, 1758. Vitreous Copper, Sulphuret of Copper. Cuivre sulfuré *Fr.* Kupferglanz *Germ.* Copper Glance. Chalcosine *Beud.*, Tr., ii. 408, 1832. Cyprit *Glock.*, Syn., 1847. Redruthite *Nicol*, Min., 1849. Kuprein *Breith.*, B. H. Ztg., xxii. 35, 1863.

Digenit *Breith.*, Pogg., lxi. 673, 1844. Carmenite *H. Hahn*, B. H. Ztg., xxiv. 86, 1865.

Orthorhombic. $I \wedge I = 119° \ 35'$, $O \wedge 1\text{-}\bar{i} = 120° \ 57'$; $a : b : c = 1{\cdot}6676 : 1 : 1{\cdot}7176$. Observed planes: O; vertical, I, $i\text{-}\breve{i}$, $i\text{-}\bar{i}$, $i\text{-}\frac{3}{2}$, $i\text{-}\breve{3}$; domes, $2\text{-}\breve{i}$, $\frac{5}{3}\text{-}\breve{i}$, $1\text{-}\breve{i}$, $\frac{2}{3}\text{-}\breve{i}$, $\frac{1}{2}\text{-}\breve{i}$; octahedral, $\frac{1}{3}$, $\frac{1}{2}$, 1, 4.

$O \wedge \frac{1}{3} = 147° \ 16'$	$O \wedge \frac{2}{3}\text{-}\breve{i} = 147° \ 6'$	$O \wedge 1\text{-}\breve{i} = 135° \ 52'$
$O \wedge \frac{1}{2} = 136 \ \ 2\frac{1}{2}$	$O \wedge 2\text{-}\breve{i} = 117 \ \ 16$	$i\text{-}\breve{3} \wedge i\text{-}\breve{3} = 120 \ \ 25$
$O \wedge 1 = 117 \ \ 24$	$O \wedge \frac{4}{3}\text{-}\breve{i} = 124 \ \ 30$	$1 \wedge 1$, mac., $= 126 \ \ 56\frac{1}{2}$

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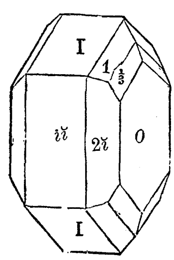

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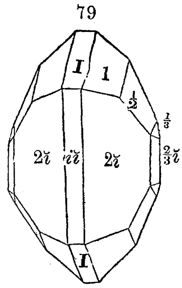

Bristol, Ct.

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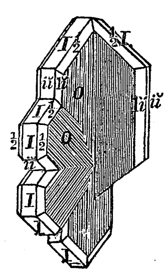

Bristol, Ct.

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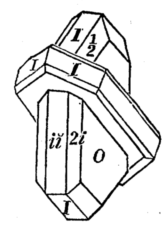

Bristol, Ct.

Cleavage: I, indistinct. Twins: (1) composition-face I, producing hexagonal, or stellate forms (left half of f. 80); (2) composition-face $\frac{4}{3}\text{-}\breve{i}$, a cruciform twin (f. 80), crossing at angles of 111° and 69°; (3) (f. 81), a cruciform twin, having O and I of one crystal parallel respectively to $i\text{-}\breve{i}$ and O of the other; (4) c.-face $\frac{1}{2}$. Also massive, structure granular, or compact and impalpable.

H.$=2{\cdot}5-3$. G.$=5{\cdot}5-5{\cdot}8$; $5{\cdot}7022$ Thomson. Lustre metallic. Color and streak blackish lead-gray; often tarnished blue or green; streak sometimes shining. Fracture conchoidal.

Comp.—$\mathrm{\overline{C}u}$ S=Sulphur 20·2, copper 79·8=100. Analyses: 1, Ullmann (Syst. tab. Uebers., 243); 2, 3, Scheerer (Pogg., lxv. 290); 4, Schnabel (Ramm. 4th Supp., 121); 5, C. Bechi (Am. J. Sci., II. xvi. 61); 6, 7, Wilczynsky (Ramm., 5th Suppl., 151, and Min. Ch., 997); 8, P. Collier (private contrib.):

	S	Cu	Fe
1. Siegen	19·00	79·50	0·75, S̈i 1·00=100·25 Ullmann
2. Tellemark, Norway, G.=5·795	20·43	77·76	0·91=99·10 Scheerer.