A

SYSTEM

OF

MINERALOGY,

COMPRISING THE

MOST RECENT DISCOVERIES:

INCLUDING

FULL DESCRIPTIONS OF SPECIES AND THEIR LOCALITIES, CHEMICAL ANALYSES AND FORMULAS, TABLES FOR THE DETERMINATION OF MINERALS, AND A TREATISE ON MATHEMATICAL CRYSTALLOGRAPHY AND THE DRAWING OF FIGURES OF CRYSTALS.

ILLUSTRATED BY NUMEROUS WOOD CUTS AND FOUR COPPER PLATES.

By JAMES D. DANA, A. M.

Member of the Soc. Cæs. Nat. Cur. of Moscow, the Soc. Philomathique of Paris, the American Academy of Arts and Sciences at Boston, etc.

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THIRD EDITION,

REWRITTEN, REARRANGED, AND ENLARGED.

NEW YORK AND LONDON:

PUBLISHED BY GEORGE P. PUTNAM.

1850.

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This gives Hermann for the oxygen of protoxyds, peroxyds, silica, and water,

5·07 : 14·93 : 21·90 : 6·22,

whence he deduces the ratio 1 : 3 : 4 : 1, corresponding to $\dot{R}^3\ddot{S}i+3\ddot{A}l\ddot{S}i+3\dot{H}$.

But 14·93 is to 21·90 very closely as 2 : 3 instead of 3 : 4; and this gives for the ratio 1 : 3 : 4½ : 1½ (or 1), which, excluding the water, is the proportion in wernerite and nepheline, giving the formula $\dot{R}^3\ddot{S}i+2\ddot{A}l\ddot{S}i+2\frac{1}{2}\dot{H}$ (or 2 $\dot{H}$).

The large proportion of water, and the presence of the ingredients magnesia and iron to the amount they occur, an amount hitherto unknown in the feldspars, favor Breithaupt's opinion that the crystals have undergone alteration; and if not pseudomorphs after lepolite, they may be after some other species of the feldspar group.

Linnæite, p. 474.—Siegenite.—Analyses of octahedral crystals from Siegen, by Schnabel, (Ramm. 4th Supp. 117),

S 41·98	Ni 33·64	Co 22·09	Fe 2·29=100.	G.=4·8.
42·30	42·64	11·00	4·69=100·63.	G.=5·0.

Rammelsberg deduces the formula $\dot{R}S+\dot{R}^2S^3$, or more precisely (Ni, Co, Fe)S+(Ni, Co, Fe)^{2}S^3, confirming Frankenheim's view of this species. The mineral is a nickel linnæite, (*kobaltnickelkies*, Ramm.), and the variety may be named *Siegenite*.

Magnetic Iron, p. 434.—A variety of magnetic iron containing titanium, afforded Rhodius, titanic acid 9·63, peroxyd of iron 94·12, or

Titanium 5·89, Iron 65·87, Oxygen 28·24.

This corresponds to a magnetic iron with the composition ($\dot{F}e$, $\dot{T}i$) $\ddot{F}e$=Titanic oxyd 8·69, peroxyd of iron 61·27, protoxyd of iron 31·80=101·76, Rammelsberg. G.=5·1.

An earthy *magnetic iron* (Eisenmulm) from near Siegen afforded Genth, (Ann. Chem. u. Pharm. lxvi, 277),

$\ddot{F}e$ 66·20, $\dot{F}e$ 13·87, $\dot{M}n$ 17·00, $\dot{C}u$ 0·09, Sand, &c., 1·75=98·91.

Corresponding to $\ddot{F}e$ ($\dot{F}e$, $\dot{M}n$). Specific gravity 3·76.

Meteoric Minerals.—Apatoid, Sphenomite, Iodolite, and Chantonnite, are the names of substances in meteoric stones, imperfectly described by Prof. C. U. Shepard. See Amer. J. Sci. [2], ii, 379, 380, 381.

Miargyrite, p. 539.—This species is isomorphous with Augite. M : M in Miargyrite is 86° 4′, in Augite 87° 6′; P : M in Miargyrite is 101° 6′, in Augite 100° 25′. The Augite group of isomorphs, includes with this addition, augite, borax, glauber salt, acmite, hornblende, spodumene, and miargyrite, with the several varieties of these species. See Amer. Jour. Sci. [2], ix, 223, 228, 230, 429.

Mica Family, p. 556.—1. *Muscovite.*—Analysis of a variety from Zsidovácz in Hungary, (G=2·817), by Kussin, (Ramm, 4th Supp. p. 75):

$\ddot{S}i$ 48·07, $\ddot{A}l$ 38·41, $\ddot{F}e$ $\dot{M}n$ *trace*, $\dot{K}$ 10·10, $\dot{H}$ 3·42=100.

This gives for the oxygen of the protoxyds, peroxyds, silica, and water, 1·71 : 17·93 : 24·97 : 3·04, corresponding very nearly to 1½ : 12 : 16.

Rammelsberg in his 4th Supplement has calculated anew the several analyses of muscovite, and lays down the formulas of the varieties. But by some oversight he makes the ratio 1 : 12 : 15 equal to ½ : 9 : 12, as if 4 : 5 equals 3 : 4; and the formula deduced is that based on the former ratio. As the point is of some importance, we give here the ratios from his calculations, making the oxygen of the alumina 12, for better comparison with that of the silica, as well as the protoxyds. A slight variation in the protoxyds, whether from impurity or not, varies largely the ratio to the other ingredients; while the ratio between the peroxyds and silica, since it is much nearer equality, is not liable to such fluctuations. The results (corresponding to the analyses on page 557) are as follows: