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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1868.

	F	Al	Na	
1. Miask	$\frac{3}{4}$ [56·82]	16·48	26·70	Chodnef.
2. "	$\frac{3}{4}$ [56·57]	15·75	27·68	Ramm.

Obs.—Rammelsberg by his analyses appears to show that besides cryolite there are two other related compounds at Miask, one of his analyses sustaining the chiolite of Hermann, and the other the chiolite of Wörth and Chodnef; and on the basis of his results this species is made distinct from the others.

168. PACHNOLITE. Pachnolit *Knop.*, Ann. Ch. Pharm., cxxvii. 61, 1866.

Monoclinic. $I \wedge I = 98° 34'$, $\frac{1}{2} \wedge \frac{1}{2} = 108° 15'$, $I \wedge \frac{1}{2} = 153° 37'$, $O \wedge I = 90° 20'$, front edge of pyr. on front edge of prism 146° 45', Descl. Twins: composition-face $i\text{-}\bar{i}$ (f. 132); crystals always twins; $\frac{1}{2} \wedge \frac{\bar{1}}{2}$ adjacent 94° 13'. Cleavage: O and I, unequal. Lustre vitreous. Colorless to white. Transparent to subtransparent. Optic-axial plane and one bisectrix normal to $i\text{-}\bar{i}$; and inclined 10°—15° to a normal to $i\text{-}i$, and 23° 15'—18° 15' to a normal to the front edge of the pyramid.

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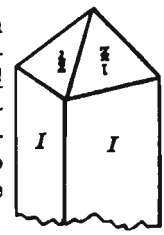

Comp.—3 (Ca, Na) F + Al^2 F^6 + 2 Ḣ, with Ca : Na = 3 : 2 = Fluorine 51·12, aluminum 12·29, calcium 16·14, sodium 12·38, water 8·07 = 100. Analyses: 1, Knop (l. c.); 2, G. Hagemann (Am. J. Sci., II. xli. 119):

F	Al	Ca	Na	Ḣ	
50·79	13·14	17·25	12·16	9·60 = 102·94	Knop.
51·15	10·37	17·44	12·04	8·63 = 99·63	Hagemann.

Pyr., etc.—In the closed tube, heated gently, yields water which is neutral; at a higher heat, that which is acid. Heated rapidly it is decomposed with crackling, and the formation of a white cloud which condenses on the walls of the tube. Decomposed by sulphuric acid, giving out fluohydric acid.

Obs.—Incrusts the cryolite of Greenland, being a result of its alteration. The pyramidal planes sometimes have a stair-like appearance, from interrupted combination.

169. THOMSENOLITE. Dimetric Pachnolite *G. Hagemann*, Am. J. Sci., II. xlii. 93, 1866. Thomsenolite *Dana*.

Monoclinic. $I \wedge I$ about 89°; $O \wedge I$ approx. 92° and 88°; $O \wedge 1 = 121° - 124°$, Dana. Prisms slender, a little tapering; I horizontally striated. Cleavage: basal very perfect. Also massive, opal, or chalcedony-like.

H. = 2·5—4. G. = 2·74—2·76, of crystals. Lustre vitreous, of a cleavage-face a little pearly, of massive waxy. Color white, or with a reddish tinge. Transparent to translucent.

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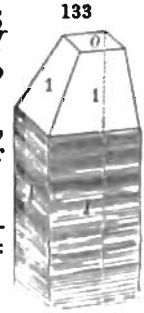


Comp.—2 (Ca, Na) F + Al^2 F^6 + 2 Ḣ, with Ca : Na = 7 : 3 = Fluorine 52·2, aluminum 15·0, calcium 15·4, sodium 7·6, water 9·8 = 100. Analysis: Hagemann (l. c.):

	F	Al	Ca	Na	Ḣ	Si	
Crystals	50·08	14·27	14·51	7·15	9·70	2·0 = 97·71	

The compact afforded Dr. Hagemann a similar result.

Pyr., etc.—Fuses more easily than cryolite to a clear glass. The massive decrepitates remarkably in the flame of a candle. In powder easily decomposed by sulphuric acid.

Obs.—Found with pachnolite on the cryolite of Greenland, and a result of the alteration of cryolite.

The crystals often have an ochre-colored coating, especially the terminal portion; and on this account, and the striated tapering sides, the measurements are only approximations. The mineral

was first noticed by Dr. Julius Thomsen of Copenhagen, the originator of the cryolite industry, after whom it is here named. It differs strikingly from pachnolite in its pearly basal cleavage and its nearly square prisms; and from cryolite in the horizontal striæ of the same and the facility of cleavage. The compact variety, first observed by Dr. Hagemann (to whom the author is indebted for his acquaintance with it), has much of the aspect of chalcedony; it incrusts cryolite or occupies seams or cavities in it, and is covered by the chalky gearksutite; the incrustations are sometimes half an inch or more thick.

169A. HAGEMANNITE. Hagemannite *Shepard*, Am. J. Sci., II. xlii. 246, 1866. Closely resembles in aspect and condition the compact thomsenolite, but passes sometimes into a yellow, opaque, jaspery variety. It incrusts the cryolite, and also constitutes seams ¼ to ½ in. thick. It sometimes traverses a drusy ferruginous pachnolite. It is ochre-yellow to wax-yellow in color, rarely faint greenish, dull, or with only a faintly glimmering lustre, and looks like an iron flint, or the yellow chloropal of Alar, Bavaria. H.=3—3·5. G.=2·59—2·60. Adheres but feebly to the tongue.

Hagemann obtained in an analysis F 40·30, Al 12·06, Fe 5·96, Mg 2·30, Ca 11·18, Na 8·45, Si 7·79, H 10·44. Decrepitates surprisingly in the flame of a candle.

The analysis corresponds to the atomic ratio for F, Si, (Al, Fe), (Mg, Ca, Na), 4 : 1 : 1 : 2. Taking 2 F for the Si, to make SiF^2, it leaves only 2 F for the bases. No probable formula can be deduced. Excluding the Si, Mg, Fe, the composition is that of thomsenolite.

170. GEARKSUTITE.

Earthy, kaolin-like in aspect.

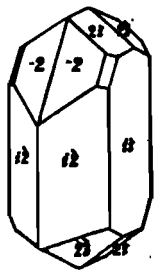
H.=2. Lustre dull. Color white, opaque.

Comp.—$Ca^3F+Al^3F^3+4\dot{H}$, or essentially like that of arksutite, excepting the water and the presence of but little soda. Analysis: G. Hagemann (private contrib.):

F 41·18 Al 15·52 Ca 19·25 Na 2·46 $\dot{H}$ 20·22.

Obs.—Occurs with the Greenland cryolite, and is one of the results of its alteration. The author is indebted for his knowledge of the mineral to Dr. Hagemann. The underlying material is compact thomsenolite. At the request of Dr. Hagemann, it is named by the author from *γῆ*, *earth*, and *arksutite*, alluding to its earthy aspect.

171. PROSOPITE. Prosopit *Scheerer*, Pogg., xc. 315, 1853; xcii., 612, ci. 361.



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Altenberg.

Monoclinic. $I \wedge I = 115° 14'$; $i\text{-}2 \wedge i\text{-}2 = 76° 15'$, $-2 \wedge -2 = 133° 30'$, $2\text{-}2 \wedge 2\text{-}\breve{i} = 116° 30'$, $2\text{-}3 \wedge 2\text{-}3 = 120° 56'$. Only in imbedded crystals.

H.=4·5. G.=2·890—2·898. Lustre weak. Colorless, white, or grayish.

Comp.—Analysis by Scheerer (Pogg., ci. 361, 385):

	SiF^3	$\dot{A}l$	$\dot{M}n$	$\dot{M}g$	$\dot{C}a$	$\dot{K}$	$\dot{H}$
Altenberg	10·71	42·68	0·31	0·25	22·98	0·15	15·50=92·58.

The loss of 7·42 p. c. is regarded by Scheerer as proving that 5·50 p. c. of the oxygen is replaced by fluorine; the mineral is thence regarded by him as consisting of $\frac{1}{2}SiF^3$, 6 $\dot{A}l$, 1 $\dot{C}a$, 5 CaF, 12 $\dot{H}$, or, differently arranged, $\frac{1}{2}SiF^3$, 1 $\dot{A}lF^3$, 5 $\dot{A}l$, 2 Ca F, 4 $\dot{C}a$, 12 $\dot{H}$.

Pyr., etc.—In the glass tube affords water and fluorid of silicon. Decomposable by sulphuric acid.

Obs.—Occurs at the tin mines of Altenberg, in crystals, part of which are a kind of kaolin, and others, according to observations by G. J. Brush (Am. J. Sci., II. xxv. 411), cleavable violet fluor, and others still fluor partly kaolinized.

Also found at the Schlackenwald tin mines; but Scheerer infers, without an analysis, that the crystals from this place (Pogg., xcii. 612) are a phosphate with fluorid, and he gives the hypothetical formula $(\dot{R}^3\dot{P}, R F) Al F^3 + y\dot{H}$.

The crystals are closely like datolite in form, as shown by the author in the last edition of this work (p. 502). Deacloizeaux has stated that *optically* they are triclinic.

It is yet doubtful whether unaltered prosopite has been described or seen.

Named from *προσωπεῖον*, a mask, in allusion to the deceptive character of the mineral.