Comp.—A sulpho-stannate of copper, iron and sometimes zinc, Cu_2FeSnS_4 or $Cu_2S.FeS.SnS_2$ = Sulphur 29·9, tin 27·5, copper 29·5, iron 13·1 = 100.

Pyr., etc.—In the closed tube decrepitates, and gives a faint sublimate; in the open tube sulphurous fumes. B.B. on charcoal fuses to a globule, which in O F. gives off sulphur, and coats the coal with tin dioxide; the roasted mineral treated with borax gives reactions for iron and copper. Decomposed by nitric acid, affording a blue solution, with separation of sulphur and tin dioxide.

Obs.—Formerly found at Wheal Rock, Cornwall; and at Carn Brea; more recently in granite at St. Michael's Mount; also at Stenna Gwynn, etc.; at the Cronebane mine, Co. Wicklow, in Ireland; Zinnwald, in the Erzgebirge. From the Black Hills, So. Dakota.

Argyrodite. A silver sulpho-germanate, Ag_8GeS_6 or $4Ag_2S.GeS_2$. Isometric, crystals usually indistinct; also massive, compact. H. = 2·5. G. = 6·085–6·111. Luster metallic. Color steel-gray on a fresh fracture, with a tinge of red turning to violet. From the Himmelsfürst mine, Freiberg, Saxony.

Canfieldite. Ag_8SnS_6 or $4Ag_2S.SnS_2$, the tin in part replaced by germanium. Isometric, perhaps tetrahedral; in octahedrons with d (110). G. = 6·28. Luster metallic. Color black. La Paz, Bolivia.

Franckeite. Perhaps $Pb_5Sb_2Sn_2S_{12}$, Groth. Massive. G. = 5·55. Color blackish gray to black. Bolivia.

Cylindrite. Kylindrite. Perhaps $Pb_6Sb_2Sn_6S_{21}$, Groth. H. = 2·5–3. G. = 5·42. Luster metallic. Color blackish lead-gray. Poopó, Bolivia.

IV. HALOIDS.—CHLORIDES, BROMIDES, IODIDES; FLUORIDES.

I. Anhydrous Chlorides, Bromides, Iodides; Fluorides.
II. Oxychlorides; Oxyfluorides.
III. Hydrous Chlorides; Hydrous Fluorides.

The Fourth Class includes the haloids, that is, the compounds with the halogen elements, chlorine, bromine, iodine, and also the less closely related fluorine.

I. Anhydrous Chlorides, Bromides, Iodides; Fluorides.

CALOMEL. Horn Quicksilver. Chlorquecksilber, Quecksilberhornerz *Germ.*

Tetragonal. Axis $\dot{c} = 1·7229$; $001 \wedge 101 = 59°\ 52'$. Crystals sometimes tabular $\| c$; also pyramidal; often highly complex.

Cleavage: a rather distinct; also r(111). Fracture conchoidal. Sectile. H. = 1–2. G. = 6·482 Haid. Luster adamantine. Color white, yellowish gray, or ash-gray, also grayish, and yellowish white, brown. Streak pale yellowish white. Translucent—subtranslucent. Optically +.

Comp.—Mercurous chloride, Hg_2Cl_2 = Chlorine 15·1, mercury 84·9 = 100.

Pyr., etc.—In the closed tube volatilizes without fusion, condensing in the cold part of the tube as a white sublimate; with soda gives a sublimate of metallic mercury. B.B. on charcoal volatilizes, coating the coal white. Insoluble in water, but dissolved by aqua regia; blackens when treated with alkalies.

Obs.—Usually associated with cinnabar. Thus at Moschellandsberg in the Palatinate; at Idria in Carniola; Almaden in Spain; at Mt. Avala near Belgrade in Servia.

Calomel is an old term of uncertain origin and meaning, perhaps from *καλός, beautiful,* and *μέλι, honey,* the taste being sweet, and the compound the *Mercurius dulcis* of early chemistry; or from *καλός* and *μέλας, black.*

Nantokite. Cuprous chloride, Cu_2Cl_2. Granular, massive. Cleavage cubic. H. = 2–2·5. G. = 3·93. Luster adamantine. Colorless to white or grayish. From Nantoko, Chili; New South Wales.

Marshite. Cuprous iodide, Cu_2I_2. Isometric-tetrahedral. Color oil-brown. Broken Hill mines, New South Wales.

Halite Group. $\overset{I}{R}Cl$, $\overset{I}{R}Br$, $\overset{I}{R}I$. Isometric.

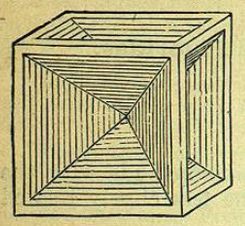
Halite	NaCl	**Embolite**	Ag(Cl,Br)
Sylvite	KCl	**Bromyrite**	AgBr
Sal Ammoniac	$(NH_4)Cl$	**Iodobromite**	Ag(Cl,Br,I)
Cerargyrite	AgCl	**Miersite**	AgI

The HALITE GROUP includes the halogen compounds of the closely related metals, sodium, potassium, and silver, also ammonium (NH_4). They crystallize in the isometric system, the cubic form being the most common. Sylvite and sal-ammoniac are plagihedral, and the same may be true of the others.

HALITE. Common or Rock Salt. Steinsalz, Bergsalz *Germ.*

Isometric. Usually in cubes; crystals sometimes distorted, or with cavernous faces. Also massive, granular to compact; less often columnar.

634.



Cleavage: cubic, perfect. Fracture conchoidal. Rather brittle. H. = 2·5. G. = 2·1–2·6; pure crystals 2·135. Luster vitreous. Colorless or white, also yellowish, reddish, bluish, purplish. Transparent to translucent. Soluble; taste saline. Refractive index 1·5442 Na. Highly diathermanous.

Comp.—Sodium chloride, NaCl = Chlorine 60·6, sodium 39·4 = 100. Commonly mixed with calcium sulphate, calcium chloride, magnesium chloride, and sometimes magnesium sulphate, which render it liable to deliquesce.

Pyr., etc.—In the closed tube fuses, often with decrepitation; when fused on the platinum wire colors the flame deep yellow. Added to a salt of phosphorus bead which has been saturated with oxide of copper, it colors the flame a deep azure-blue. Dissolves readily in three parts of water.

Diff.—Distinguished by its solubility (taste), softness, perfect cubic cleavage.

Obs.—Common salt occurs in extensive but irregular beds in rocks of various ages, associated with gypsum, polyhalite, anhydrite, carnallite, clay, sandstone, and calcite; also in solution forming salt springs; similarly in the water of the ocean and salt seas.

The principal salt mines of Europe are at Stassfurt, near Magdeburg; Wieliczka, in Poland; at Hall, in Tyrol; and along the range through Reichenthal in Bavaria, Hallein in Salzburg, Hallstadt, Ischl, and Ebensee, in Upper Austria, and Aussee in Styria; in Hungary, at Marmoros and elsewhere; Transylvania; Wallachia, Galicia, and Upper Silesia; Vic and Dieuze in France; Valley of Cardona and elsewhere in Spain; Bex in Switzerland; and Northwich in Cheshire, England. At the Austrian mines, where it contains much clay, the salt is dissolved in large chambers, and the clay thus precipitated. After a time the water, saturated with the salt, is conveyed by aqueducts to evaporating houses, and the chambers, after being cleared out, are again filled.

Salt also occurs, forming hills and covering extended plains, near Lake Urumia, the Caspian Sea, etc. In Algeria; in Abyssinia. In India in enormous deposits in the Salt Range of the Punjab. In China and Asiatic Russia; in South America, in Peru, and at Zipaquera and Nemocon, the former a large mine long explored in the Cordilleras of U. S. of Colombia; clear salt is obtained from the Cerro de Sal, San Domingo.

In the United States, salt has been found in large amount in central and western New York. Salt wells had long been worked in this region, but rock salt is now known to exist over a large area from Ithaca at the head of Cayuga Lake, Tompkins Co., and Canandaigua Lake, Ontario Co., through Livingston Co., also Genesee, Wyoming, and Erie Cos. The salt is found in beds with an average thickness of 75 feet, but sometimes much thicker, and at varying depths from 1000 to 2000 feet and more; the depth increases southward with the dip of the strata. The rocks belong to the Salina period of the Upper Silurian. Salt has also been found near Cleveland, Ohio, associated with gypsum; in Washington Co., West Virginia, in the Holston and Kanawha valleys; in Kansas; at Petite Anse, Louisiana; along the Rio Virgin in Lincoln Co., Nevada, in extensive beds of great purity; in Utah, near Nephi, Juab Co., and Salina, Sevier Co.; in Arizona, on the Rio Verde, with thenardite, etc.; in California, San Diego Co.

Brine springs are very numerous in the Middle and Western States. Vast lakes of salt water exist in many parts of the world. The Great Salt Lake in Utah is 2,000 square miles in area; L. Gale found in this water 20·196 per cent. of sodium chloride. The Dead and Caspian seas are salt, and the waters of the former contain 20 to 26 parts of solid matter in 100 parts. Sodium chloride is the prominent salt present in the ocean.

Huantajayite. 20NaCl + AgCl. In cubic crystals and as an incrustation. H. = 2, not sectile. Color white. From Huantajaya, Tarapaca, Chili.

SYLVITE.

Isometric-plagihedral. Also in granular crystalline masses; compact. Cleavage: cubic, perfect. Fracture uneven. Brittle. H. = 2. G. = 1·97–1·99. Luster vitreous. Colorless, white, bluish or yellowish red from inclusions. Soluble; taste resembling that of common salt, but bitter.

Comp.—Potassium chloride, KCl = Chlorine 47·6, potassium 52·4 = 100. Sometimes contains sodium chloride.

Pyr., etc.—B.B. in the platinum loop fuses, and gives a violet color to the outer flame. Dissolves completely in water. Heated with sulphuric acid gives off hydrochloric acid gas.

Obs.—Occurs at Vesuvius, about the fumaroles of the volcano. Also at Stassfurt; at Leopoldshall (*leopoldite*); at Kalusz in Galicia.

Sal Ammoniac. Ammonium chloride, NH_4Cl. Observed as a white incrustation about volcanoes, as at Etna, Vesuvius, etc.

CERARGYRITE. Silberhornerz, Hornsilber *Germ.* Horn Silver.

Isometric. Habit cubic. Twins: tw. pl. *o*. Usually massive and resembling wax; sometimes columnar; often in crusts.

Cleavage none. Fracture somewhat conchoidal. Highly sectile. H. = 1–1·5. G. = 5·552. Luster resinous to adamantine. Color pearl-gray, grayish green, whitish to colorless, rarely violet-blue; on exposure to the light turns violet-brown. Transparent to translucent. Index, $n_y = 2·0611$ Na.

Comp.—Silver chloride = Chlorine 24·7, silver 75·3 = 100. Some varieties contain mercury.

Pyr., etc.—In the closed tube fuses without decomposition. B.B. on charcoal gives a globule of metallic silver. Added to a bead of salt of phosphorus, previously saturated with oxide of copper and heated in O.F., imparts an intense azure-blue to the flame. Insoluble in nitric acid, but soluble in ammonia.

Obs.—Occurs in veins of clay slate, accompanying other ores of silver, and usually only in the higher parts of these veins. It has also been observed with ocherous varieties of brown iron ore; also with several copper ores, calcite, barite, etc.; upon stibiconite.

The largest masses are brought from Peru, Chili, and Mexico, where it occurs with native silver. Also once obtained from Johanngeorgenstadt and Freiberg; Andreasberg (earthy var., *Buttermilcherz*); occurs in the Altai; at Kongsberg in Norway; in Alsace.

In the U. S., in Colorado, near Leadville, Lake Co.; near Breckenridge Summit Co., and elsewhere. In Nevada, near Austin, Lander Co.; at mines of Comstock lode. In Idaho, at the Poorman mine, in crystals; also at various other mines. In Utah, in Beaver, Summit and Salt Lake counties.

Named from κέρας, *horn*, and ἄργυρος, *silver*.

Embolite. Silver chloro-bromide, Ag(Br,Cl), the ratio of chlorine to bromine varying widely. Usually massive. Resembles cerargyrite, but color grayish green to yellowish green and yellow. Abundant in Chili, less so elsewhere.

Bromyrite. Silver bromide, AgBr. G. = 5·8–6. Color bright yellow to amber-yellow; slightly greenish. From Mexico; Chili; Huelgoet in Brittany.

Iodobromite. 2AgCl.2AgBr.AgI. Isometric; *o* with *a*. G. = 5·713. Color sulphur-yellow, greenish. From near Dernbach, Nassau.

Miersite. Silver iodide, AgI, crystallizing in the isometric system; probably tetrahedral like marshite (p. 317). In bright yellow crystals from the Broken Hill Silver Mines, New South Wales.

Cuproiodargyrite. A copper-silver iodide, occurring as a sulphur-yellow incrustation at Huantajaya, Peru.

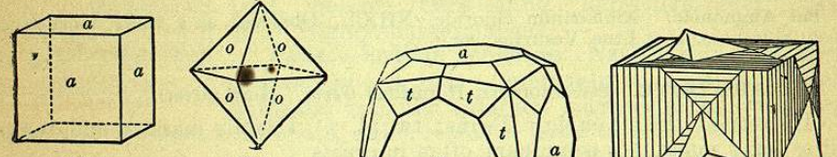
Iodyrite. Silver iodide, AgI. Hexagonal-hemimorphic (Fig. 211, p. 71); usually in thin plates; pale yellow or green. G. = 5·6–5·7. From Mexico, Chili, etc. Lake Valley, Sierra Co., New Mexico.

Fluorite Group. $\overset{II}{R}F_2, \overset{II}{R}Cl_2$.

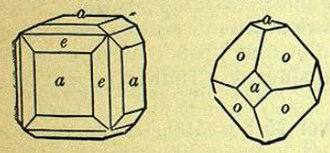
The species here included are Fluorite, CaF_2, and the rare Hydrophilite, $CaCl_2$. Both are isometric, habit cubic.

FLUORITE or FLUOR SPAR. Flussspath *Germ.*

635. 636. 639. 640.



637. 638



Isometric. Habit cubic; less frequently octahedral or dodecahedral; forms *f* (310), *e* (210) (fluoroids) common; also the vicinal form ζ (32·1·0 ?), producing striations on *a* (Fig. 640); hexoctahedron *t* (421) also common with the cube (Fig. 639). Cubic crystals sometimes grouped in parallel position, thus forming a pseudo-octahedron. Twins: tw. pl. *o*, commonly penetration-twins (Fig. 640). Also massive; granular, coarse or fine; rarely columnar; compact.

Cleavage: *o* perfect. Fracture flat-conchoidal; of compact kinds splintery. Brittle. H. = 4. G. = 3·01–3·25; 3·18 cryst. Luster vitreous. Color white, yellow, green, rose- and crimson-red, violet-blue, sky-blue, and brown; wine-yellow, greenish blue, violet-blue, most common; red, rare. Streak white. Transparent—subtranslucent. Sometimes shows a bluish fluorescence. Phosphoresces when heated (p. 191). Refractive index: $n_y = 1{\cdot}4339$ Na.

Comp.—Calcium fluoride, CaF_2 = Fluorine 48·9, calcium 51·1 = 100. Chlorine is sometimes present in minute quantities.

Var.—1. *Ordinary;* (*a*) cleavable or crystallized, very various in colors; (*b*) fibrous to columnar, as the Derbyshire blue-john used for vases and other ornaments; (*c*) coarse to fine granular; (*d*) earthy, dull, and sometimes very soft. *Chlorophane* yields a green phosphorescent light.

Pyr., etc.—In the closed tube decrepitates and phosphoresces. B.B. in the forceps and on charcoal fuses, coloring the flame red, to an enamel which reacts alkaline on test paper. Fused in an open tube with fused salt of phosphorus gives the reaction for fluorine. Treated with sulphuric acid gives fumes of hydrofluoric acid which etch glass.

Diff.—Distinguished by its crystalline form, octahedral cleavage, relative softness (as compared with certain precious stones, also with the feldspars); etching power when treated with sulphuric acid. Does not effervesce with acid like calcite.

Obs.—Sometimes in beds, but generally in veins, in gneiss, mica slate, clay slate, and also in limestones, both crystalline and uncrystalline, and sandstones. Often occurs as the gangue of metallic ores, especially of lead. In the North of England, it is the gangue of the lead veins, which intersect the coal formation in Northumberland, Cumberland, Durham, and Yorkshire. In Derbyshire it is abundant, and also in Cornwall, where the veins intersect metamorphic rocks. The Cumberland and Derbyshire localities especially have afforded magnificent specimens. Common in the mining district of Saxony; fine near

Kongsberg in Norway. In the dolomites of St. Gothard occurs in pink octahedrons. Rarely in volcanic regions, as in the Vesuvian lava.

Some localities in the U. S. are, Trumbull, Conn. (*chlorophane*); Muscolonge Lake, Jefferson Co., N. Y., and Macomb, St. Lawrence Co., both in very large sea-green cubes; Franklin Furnace, N. J.; Amelia Court House, Va.; Gallatin Co., Ill.; St. Louis, Mo.

Hydrophilite. Chlorocalcite. Calcium chloride, $CaCl_2$. In white cubic crystals or as an incrustation at Vesuvius.

The following are from Vesuvius: **Chloromagnesite**, $MgCl_2$; **Scacchite**, $MnCl_2$; **Chloralluminite**, $AlCl_3 + xH_2O$; **Molysite**, $FeCl_3$.

Sellaite. Magnesium fluoride, MgF_2. In prismatic tetragonal crystals. H. = 5. G. = 2·97–3·15. Colorless. From the moraine of the Gebroulaz glacier in Savoy.

Lawrencite. Ferrous chloride, $FeCl_2$. Occurs in meteoric iron.

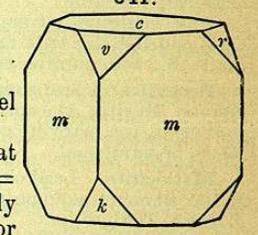
Cotunnite. Lead chloride, $PbCl_2$. In acicular crystals (orthorhombic) and in semi-crystalline masses. Soft. G. = 5·24. Color white, yellowish. From Vesuvius; also Tarapaca, Chili.

Tysonite. Fluoride of the cerium metals, $(Ce,La,Di)F_3$. In thick hexagonal prisms, and massive. Cleavage: *c* perfect. H. = 4·5–5. G. = 6·15. Color pale wax-yellow, changing to yellowish and reddish brown. From the granite of Pike's Peak, El Paso Co., Colorado.

CRYOLITE. Eisstein *Germ.*

Monoclinic. Axes $\dot{a} : \dot{b} : \dot{c} = 0{\cdot}9663 : 1 : 1{\cdot}3882$; $\beta = 89° 49'$.

641.



mm''',	110 ∧ $1\bar{1}0$ = 88° 2′.	*ck*,	001 ∧ $\bar{1}01$ = 55° 17′.
cm,	001 ∧ 110 = 89° 52′.	*cr*,	001 ∧ 011 = 54° 14′.
cv,	001 ∧ 101 = 55° 2′.	*cp*,	001 ∧ 111 = 63° 18′.

Crystals often cubic in aspect and grouped in parallel position; often with twin lamellæ. Massive, cleavable.

Cleavage: *c* most perfect, also *m*, *k* ($\bar{1}01$) somewhat less so. Fracture uneven. Brittle. H. = 2·5. G. = 2·95–3·0. Luster vitreous to greasy; somewhat pearly on *c*. Colorless to snow-white, sometimes reddish or brownish to brick-red or even black. Transparent to translucent.

Comp.—A fluoride of sodium and aluminium, Na_3AlF_6 or $3NaF.AlF_3$ = Fluorine 54·4, aluminium 12·8, sodium 32·8 = 100. A little iron sesquioxide is sometimes present as impurity.

Pyr., etc.—Fusible in small fragments in the flame of a candle. B.B. in the open tube heated so that the flame enters the tube gives off hydrofluoric acid, etching the glass. In the forceps fuses very easily, coloring the flame yellow. On charcoal fuses easily to a clear bead, which on cooling becomes opaque; after long blowing, the assay spreads out, the fluoride of sodium is absorbed by the coal, a suffocating odor of fluorine is given off, and a crust of alumina remains, which, when heated with cobalt solution in O.F., gives a blue color. Soluble in sulphuric acid, with evolution of hydrofluoric acid.

Diff.—Distinguished by its extreme fusibility, and its yielding hydrofluoric acid in the open tube. Also by its cleavages (resembling cubic cleavage) and softness.

Obs.—Occurs in a bay in Arksukfiord, in West Greenland, at Ivigtut (or Evigtok), about 12 m. from the Danish settlement of Arksuk, where it constitutes a large bed in a granitic vein in a gray gneiss. Cryolite and its alteration products, pachnolite, thomsenolite, prosopite, etc., also occur in limited quantity at the southern base of Pike's Peak, El Paso county, Colorado, north and west of Saint Peter's Dome.

Named from κρύος, *frost*, λίθος, *stone*, hence meaning *ice-stone*, in allusion to the translucency of the white cleavage masses.

Chiolite. $5NaF.3AlF_3$. In small pyramidal crystals (tetragonal); also massive granular. H. = 3·5–4. G. = 2·84–2·90. Color snow-white. From near Miask in the Ilmen Mts.; also with the Greenland cryolite.

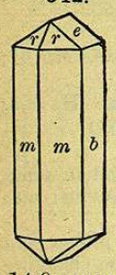
Hieratite. A fluoride of potassium and silicon. In grayish stalactitic concretions; isometric. From the fumaroles of the crater of Vulcano.

II. Oxychlorides, Oxyfluorides.

ATACAMITE.

Orthorhombic. Axes $\breve{a} : \bar{b} : \dot{c} = 0{\cdot}6613 : 1 : 0{\cdot}7515$.

642.



mm'', $110 \wedge 110 = 66° 57'$. rr''', $111 \wedge 1\bar{1}1 = 52° 48'$.
ee', $011 \wedge 0\bar{1}1 = 73° 51'$. mr, $110 \wedge 111 = 36° 16\frac{1}{2}'$.

Commonly in slender prismatic crystals, vertically striated. In confused crystalline aggregates; also massive, fibrous or granular to compact; as sand.

Cleavage: $\bar{b}$ highly perfect. Fracture conchoidal. Brittle. H. = 3–3·5. G. = 3·75–3·77. Luster adamantine to vitreous. Color bright green of various shades, dark emerald-green to blackish green. Streak apple-green. Transparent to translucent.

Comp.—$Cu_2ClH_3O_3$ or $CuCl_2.3Cu(OH)_2$ = Chlorine 16·6, copper 14·9, cupric oxide 55·8, water 12·7 = 100.

Pyr., etc.—In the closed tube gives off much water, and forms a gray sublimate. B.B. on charcoal fuses, coloring the O.F. azure-blue, with a green edge, and giving two coatings, one brownish and the other grayish white; continued blowing yields a globule of metallic copper; the coatings, touched with the R.F., volatilize, coloring the flame azure-blue. In acids easily soluble.

Obs.—Originally from Atacama in the northern part of Chili; also found elsewhere in Chili and Bolivia; with malachite at Wallaroo in S. Australia; at St. Just in Cornwall. In the U. S., with cuprite, etc., at the United Verde mine, Jerome, Arizona.

Percylite. A lead-copper oxychloride, perhaps $PbCuO_2H_2Cl_2$. In sky-blue cubes. From Sonora, Mexico; Atacama; Bolivia, etc. *Boleite* from Boleo, near Santa Rosalia, Lower California, is a percylite containing a little silver. *Cumengite* is the same in crystals appearing to be tetragonal.

Matlockite. Lead oxychloride, Pb_2OCl_2. In tabular tetragonal crystals. G. = 7·21. Luster adamantine to pearly. Color yellowish or slightly greenish. From Cromford, near Matlock, Derbyshire.

Mendipite. $Pb_3O_2Cl_2$ or $PbCl_2.2PbO$. In fibrous or columnar masses; often radiated. H. = 2·5–3. G. = 7–7·1. Color white. From the Mendip Hills, Somersetshire, England; near Brilon, Westphalia.

Laurionite. $PbClOH$ or $PbCl_2.Pb(OH)_2$. In minute prismatic colorless crystals (orthorhombic), in ancient lead slags at Laurion, Greece. **Fiedlerite**, associated with laurionite, is probably also a lead oxychloride; in colorless monoclinic crystals.

Penfieldite. Pb_3OCl_2 or $PbO.2PbCl_2$. In white hexagonal crystals. Laurion, Greece.

Daviesite. A lead oxychloride of uncertain composition. In minute colorless prismatic crystals (orthorhombic), from the Mina Beatriz, Sierra Gorda, Atacama.

Schwartzembergite. Probably $Pb(I,Cl)_2.2PbO$. In druses of small crystals; also in crusts. G. = 6·2. Color honey-yellow. Desert of Atacama.

Fluocerite. $(Ce,La,Di)_2OF_4$. Hexagonal. H. = 4. G. = 5·7–5·9. Color reddish yellow. From Österby in Dalarne, Sweden.

Nocerite. Perhaps $2(Ca,Mg)F_2(Ca,Mg)O$(?). In white hexagonal acicular crystals from bombs in the tufa of Nocera, Italy.

Daubreeite. An earthy yellowish oxychloride of bismuth. From Bolivia.

III. Hydrous Chlorides, Hydrous Fluorides, etc.

CARNALLITE.

Orthorhombic. Crystals rare. Commonly massive, granular.

No distinct cleavage. Fracture conchoidal. Brittle. H. = 1. G. = 1·60. Luster shining, greasy. Color milk-white, often reddish. Transparent to translucent. Strongly phosphorescent. Taste bitter. Deliquescent.

Comp.—$KMgCl_3.6H_2O$ or $KCl.MgCl_2 + 6H_2O$ = Chlorine 38·3, potassium 14·1, magnesium 8·7, water 39·0 = 100.

Obs.—Occurs at Stassfurt, in beds, alternating with thinner beds of common salt and kieserite.

DOUGLASITE, associated with carnallite, is said to be $2KCl.FeCl_2.2H_2O$.

Bischofite. $MgCl_2 + 6H_2O$. Crystalline-granular; colorless to white. From Leopoldshall, Prussia.

Kremersite. $KCl,NH_4Cl.FeCl_2 + H_2O$. In red octahedrons. From Vesuvius.

Erythrosiderite. $2KCl.FeCl_3.H_2O$. In red tabular crystals. Vesuvius.

Tachhydrite. $CaCl_2.2MgCl_2 + 12H_2O$. In wax- to honey-yellow masses. From Stassfurt.

Fluellite. $AlF_3 + H_2O$. In colorless or white rhombic pyramids. From Stenna Gwyn, Cornwall.

Prosopite. $CaF_2.2Al(F,OH)_3$. In monoclinic crystals, or granular massive. H. = 4·5. G. = 2·88. Colorless white, grayish. From Altenberg, Saxony; St. Peter's Dome near Pike's Peak, Colorado.

Pachnolite and **Thomsenolite**, occurring with cryolite in Greenland and Colorado, have the same composition, $NaF.CaF_2.AlF3 + H_2O$. Both occur in monoclinic prismatic crystals; prismatic angle for pachnolite, 98° 36′, crystals twins, orthorhombic in aspect. For thomsenolite, 89° 46′, crystals often resembling cubes (m, c), also prismatic; distinguished by its basal cleavage; also massive.

Gearksutite. $CaF_2.Al(F,OH)3.H_2O$. Earthy, clay-like. Occurs with cryolite.

Ralstonite. $(Na_2,Mg)F_2.3Al(F,OH)_3.2H_2O$. In colorless to white, isometric, octahedrons. H. = 4·5. G. = 2·56–2·62. With the Greenland cryolite.

Tallingite. A hydrated copper chloride from the Botallack mine, Cornwall; in blue globular crusts.

Footeite. A hydrous oxychloride of copper occurring in deep blue prismatic crystals (monoclinic) at the Copper Queen mine, Bisbee, Arizona.

Yttrocerite. $(Y,Er,Ce)F_3.5CaF_2.H_2O$. Massive-cleavable to granular and earthy. H. = 4–5. G. = 3·4. Color violet-blue, gray, reddish brown. From near Falun, Sweden, etc.