DESCRIPTIVE CATALOGUE,

&c. &c.

A

DESCRIPTIVE CATALOGUE

OF

THE SIMPLE MINERALS

IN THE

SYSTEMATIC COLLECTION

OF

Trinity College, Dublin.

(J. Apjohn)

DUBLIN:

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PREFACE.

The collection of minerals in the Museum of the University originated with the Rev. William Hamilton, a former Fellow of the College, well known by his elegant and instructive letters on the northern coast of the County of Antrim, his zeal in the study of natural history, and his cruel and lamented death. In 1807, the Museum having been committed to the management of another eminent member of the University, the late Dr. Whitley Stokes, a descriptive Catalogue of the minerals was edited by him, drawn up by the Rev. Walter Stephens, a gentleman, from acquirements and natural taste, well qualified for the task. The arrangement was professedly that of Werner, as given in Brochant's Mineralogy, and the number of specimens described amounted to 1089.

After the lapse, however, of some years, in consequence of the acquisition of several new minerals, and for other reasons specified by him, Dr. Stokes found that a new Catalogue would be indispensable, and this was accordingly published in 1818, as the joint production of himself and the late Dr. Thomas Taylor, so well known as a distinguished botanist. The classification adopted was still that of the school of Freyberg, and the number of minerals described amounted to 1204.

Since that period the mineral department of the University Museum has been much extended. In 1823 the Provost and Board of the University purchased for £500 a valuable cabinet of minerals, the property of the late Hon. George Knox, one of the most zealous and accomplished of Irish mineralogists; and in 1848, Richard Griffith, Esq., a name inseparably connected with the mineral history of Ireland, presented to the College a very large and choice assortment of specimens from his private cabinet, most of which were acquired by him in the course of the numerous visits he has been in the habit of making, on professional or scientific business, to almost every quarter of the British Isles. In addition to these, numerous interesting donations have been since received from other quarters,—I would, in particular, specify a very complete series of meteoric irons presented by Professor Scouler; and the authorities of the College, with their accustomed liberality, have voted the funds necessary for supplying, as far as such could be done, any of the rarer species which might still be wanting. Under these circumstances, and for the purpose of rendering the entire collection fully available for the purposes of instruction, I was directed by the Board to incorporate the whole of the minerals into a systematic series, and prepare a Descriptive Catalogue.

This task, which, for several reasons unnecessary to specify, proved one of much greater difficulty than I had anticipated, has, as far as respects the naming and classifying of the specimens, been for a considerable time completed; but I have delayed till now the printing of the Catalogue, in the hope of being thereby enabled to fill up, by purchase or otherwise, the *lacunæ* still occurring in the collection. This expectation has been but partially realized; but as the wants are not numerous or important, and as, from the activity of mineralogists and chemists, new *species* are being described from day to day, and that, therefore, an absolutely complete collection scarcely admits of being formed, I conceived I would not be justified in any further postponement, the more especially as mineralogy has become an essential part of the curriculum in the School of Engineering, and the Museum is consequently much frequented by students who are perfecting their knowledge of this important department of practical science.

The arrangement adopted in the following pages is, with some unimportant changes, the same with that pursued by Beudant, in his "*Minéralogie*," second edition, 1830. Thus, all known minerals are arranged under thirty-two sections, corresponding to the families of Beudant. Each section comprehends certain genera, and each genus certain species. The sequence of the species, too, is such, that they admit of being resolved into the generic groups of Beudant, but it did not seem of any practical use to distinguish such groups, as Beudant has done, by distinct names, and they have, therefore, been omitted in the Catalogue, but are given in the Table of Contents. A simple inspection of this Table will show that the different Sections include those genera having a common elementary principle, which in some is electro-negative, in others electro-positive, and that each genus includes those species which contain the same electro-negative proximate constituent. Thus the Section *Sulphurides* includes all minerals having sulphur for an element; the genus *Sulphuret*, all species containing sulphur united to a metal; and the genus *Sulphate*, all those containing sulphuric acid in combination with a base. The substitution of the electro-negative for the electro-positive constituent, as a basis for the generic classification of minerals, originated with Beudant, and constituted a most important improvement on the method previously pursued, according to which all the compounds of the same metal were collected into a single group. Isomorphous compounds previously dissociated, are, by the principle of Beudant, generally ranged side by side; and such substances are brought together as satisfy, in some degree, the requirements of a natural arrangement, that is, have a greater general resemblance to each other than to any other known species.

In the carrying out of the classification, the leading features of which have just been sketched, some difficulties arise to which it will be proper to advert. When a compound mineral consists of one electro-positive and two electro-negative constituents, in what genus is it to be placed? Two cases present themselves here, according as the electro-negative constituents exist in equal or unequal atomic quantities. In the latter, which is the more common case, the mineral may, with propriety, be transferred to the genus characterized by the more abundant constituent. Thus arsenical pyrites with excess of sulphur is ranged with the sulphurets; and leucopyrite, or arsenical pyrites with excess of arsenic, with the arseniurets; and the same rule is applicable to the phosphates which contain arsenic, and the arseniates which contain phosphoric acid. In the former, however, there is no such guide, and the mineral may obviously be arbitrarily placed in one or other of two distinct groups.

Again, there are compound minerals whose proximate constituents occur in different sections. This, for example, is the case with red antimony, SbO_3, $2SbS_3$, which is composed of a sulphuret and an oxide; but as the atomic amount of the former exceeds that of the latter, it should, on the principle already explained, be placed among the sulphurets. For the same reason, leadhillite, $PbO, SO_3 + 3(PbO, CO_2)$, will be put amongst the carbonates; caledonite, $3(PbO, SO_3) + 2(PbO, CO_2) + CuO, CO_2$, with the sulphates; mendippite, $PbCl, 2PbO$, with the oxides;

while the distribution of lanarkite, PbO, SO_3 + PbO, CO_2, cupreous sulphate of lead, PbO, SO_3 + CuO, HO, and corneous lead, PbCl + PbO, CO_2, will continue in some degree arbitrary.

Of the entire number of minerals described in the Catalogue, which amounts to 1994, 713 are silicates, that is, are such as constitute but a single genus. Very little advantage can obviously be derived by the student from a classification which will not subdivide this genus into a number of smaller groups or sub-genera. This has accordingly been attempted, upon principles, however, which do not pretend to scientific precision, but which will, I trust, be found to collect together minerals having numerous natural affinities. It will, at all events, if I am not mistaken, prove useful as a guide through this entangled department of mineralogical study.

As respects the descriptions given of the individual specimens, those who consult this Catalogue must not expect them to be such as would supersede all reference to works on the subject of mineralogy. The two characters of highest value in discriminating minerals from each other, namely, the chemical formula and the crystalline system, are, when known, always given; but of other characters such alone are generally referred to as suffice for clearly indicating the specimen described. I may, however, observe, that the actual form is always stated, together with the nature of any associated minerals, that of the gangue to which they are attached, and the locality in which the specimen has been found. In connecting too the compound with the simple forms, the terminology in common use with British mineralogists is employed. Occasionally, however, when the occasion seemed to require it, the more scientific language of Gustavus Rose has been used; and I cannot miss this opportunity of inculcating on the mineralogical student the necessity of making himself familiar, at as early a period as possible, with the beautiful and profound views of this eminent crystallographer. A compendium of his great Treatise on Crystallography has been prefixed by Regnault to his *Cours Élémentaire de Chimie*, which has been translated into English; but, though executed by a master hand, it is far too brief to satisfy the wants of the intelligent student, and preclude the necessity of consulting the original treatise.

Having brought the labour of cataloguing the minerals to a close, it gives me much pleasure to be enabled to say that they constitute a valuable, and, comparatively speaking, a very complete collection. Some of the specimens are not of as showy a nature as those which may be found in other cabinets, but they are all characteristic, and, I trust, correctly named. I may, from experience, add that they are fully adequate to illustrate the most extended course of mineralogical teaching. It is not, I think, too much to expect that the growing taste for chemical and mineralogical studies within the University will be stimulated and extended by the ready access which the students have to this collection, and that it will contribute to the cultivation of the natural sciences, an object in which the heads of the University have for several years manifested an especial interest.

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32, LOWER BAGGOT-STREET.
May 8, 1850.

For the convenience of students in mineralogy the following table is subjoined, which presents an alphabetic list of the chemical elements, with their symbols, and the atomic numbers used in deducing the formulæ for the several mineral species contained in the Catalogue.

SYMBOLS AND ATOMIC WEIGHTS.

Aluminum,	Al	13·7		Copper, .	Cu	31·7	
Antimony,	Sb	129	(SbO_3)	Didymium,	D		
Arsenic, .	As	75	(AsO_3)	Erbium, .	E		
Barium .	Ba	68·5		Fluorine, .	F	18·9	
Bismuth, .	Bi	213	(BiO_3)	Gold, . .	Au	197	($AuCl_3$)
Boron, . .	B	10·9		Glucinum,	G	7	(G_2O_3)
Bromine, .	Br	80		Hydrogen,	H	1	
Cadmium, .	Cd	56		Iodine, . .	I	127	
Calcium, .	Ca	20		Iridium, .	Ir	197	($IrCl_3$)
Carbon, .	C	6		Iron, . .	Fe	28	
Cerium, .	Ce	47		Lanthanum,	La		
Chlorine, .	Cl	35·5		Lead, . .	Pb	103·5	
Chromium,	Cr	26·7		Lithium, .	Li	6·5	
Cobalt, . .	Co	29·5		Magnesium,	Mg	12·7	

Manganese,	Mn	27·7	Silver (*Argentum*),	Ag	108
Mercury, .	Hg	100	Sodium (*Natronium*),	Na	23
Molybdenum,	Mo	4·6 (MoO_3)	Strontium,	Sr	43·8
Nickel, . .	Ni	29·5	Sulphur, .	S	16
Niobium, .	Nb		Tantalum, .	Ta	184 (TaO_3)
Nitrogen, .	N	14	Terbium, .	Te	
Norium, .	No		Tellurium,	Tl	64·2
Osmium, .	Os	99·5 (OsO_4)	Thorium, .	Th	59·5
Oxygen, .	O	8	Tin (*Stannum*)	Sn	59
Palladium,	Pd	53·3	Titanium,	Ti	25
Pelopium, .	Pe		Tugsten (*Wolframium*),	W	95 (WO_3)
Phosphorus,	P	32	Uranium, .	U	60 (U_2O_3)
Platinum, .	Pt	98·6 ($PtCl_2$)	Vanadium,	V	68·5 (VO_3)
Potassium (*Kalium*)	K	39	Yttrium, .	Y	32·2 (YO)
Rhodium, .	R	52·2 (R_2Cl_3)	Zinc, . .	Zn	32·5
Ruthenium,	Ru	52·2	Zirconium,	Zr	33·6 (Zr_2O_3)
Selenium, .	Se	39·5			
Silicium, .	Si	21·3			

ERRATA.

The formulæ of the minerals containing glucina, having been calculated with an erroneous atomic weight, should be altered to the following:

That of beryl, p. 99, to $2G_2O_3, 3SiO_3 + 2(Al_2O_3, 3SiO_3)$.
,, cymophane, p. 143, to $G_2O_3, 3Al_2O_3$.
,, euclase, p. 102, to $3G_2O_3, 2SiO_3 + 3(Al_2O_3, SiO_3)$.
,, leucophane, p. 105, to $6(CaO, SiO_3) + 2G_2O_3, SiO_3 + 2NaF$.
,, phenakite, p. 105, to G_2O_3, SiO_3.

In the formula for mellite, p. 154, for 18HO, substitute 15HO.

In the formula for websterite, p. 205, for SiO_3, substitute SO_3.

In the formula for alum-stone, p. 205, for SiO_3, in both places in which it occurs, substitute SO_3.

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CATALOGUE.

SECTION I.

SILICIDES.

QUARTZ.

FORMULA.—SiO_3.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1. A group of rock crystals, one of which is much larger than the rest.
2. A rock crystal in which the six pyramidal faces are nearly equally developed, while two of the prismatic faces are larger than the rest.
3. Four rock crystals. In specimen *a*, which is from Kerry, the faces of the prism and those of the pyramid are respectively of nearly equal magnitude. In *b*, two of the pyramidal faces are considerably larger than the remaining four; and in *c*, the prism is larger at one end than at the other, and exhibits at the smaller extremity but a single pyramidal plane. In specimen *d*, which is remarkable for its transparency and size, two opposite pyramidal faces are much better developed than the remaining four.
4. Forty-three small rock crystals, whose general shape is that of a short six-sided prism, terminated at each end by a six-sided pyramid. Marmarosche, Transylvania.

5. A rock crystal composed of a short prism, with terminal pyramids, and exhibiting a single plagihedral plane.

6. This specimen of rock crystal is remarkable for the number of secondary planes which it exhibits, being modified at the apex of the pyramid, the edges of the pyramid, and the edges and angles formed by the intersection of the prismatic and pyramidal planes.

7. A rock crystal group, some of the crystals being transparent, others translucent. Dauphinè.

8. In transparent rhombohedral crystals of a slightly yellowish tinge of colour, on quartz resting on calcedony.

9. A large rock crystal which has been subjected to attrition, and having two of the pyramidal faces much smaller than the remaining four.

10. A fragment of rock crystal exhibiting at two points a very brilliant iridescence, and enclosing mica in small particles, of a silver-white and yellowish-white colour. Cape of Good Hope.

11. A large translucent six-sided prism, terminated at one end by a pyramid.

12. A group of pyramidal quartz crystals. Cumberland.

13. A group of quartz crystals similar to the preceding, the pyramids, however, being larger and less transparent. Cumberland.

14. A group of translucent rock crystals, the prisms being pretty long, terminated by pyramids, and dotted over with minute cubes of iron pyrites. Cornwall.

15. In hexagonal pyramids, the faces of which present the appearance of a flight of stairs, being composed of diminishing superimposed laminæ, the adjacent ones differing considerably in area.

16. A six-sided prism of smoke-gray quartz, terminated by a pyramid, with two adjacent faces of the prism very deeply striated in a direction at right angles to the prismatic axis. Cape of Good Hope.

17. An irregular crystal of dark smoke-quartz, terminated by a small pyramid, apparently opaque when seen by reflected, but wine-yellow by transmitted light. Switzerland.

18. Three crystals of smoke-gray quartz. The largest is the least transparent, and of a wine-yellow colour by transmitted light. Also a fine specimen, cut and polished.

19. Smoke-quartz, in the form of a short prism terminated at each end by a pyramid, the pyramidal planes at one extremity being imperfectly developed. From a limestone quarry, Carlow.

20. An amethyst of a perfect violet-blue colour, in the form of a short six-sided prism, terminated by a six-sided pyramid. Brazil. The surfaces of this crystal have been artificially polished.

21. A pyramid of quartz, two of the faces being much smaller than the remaining four, iridescent, and of a pale amethystine-blue colour passing into a clove-brown. Achill Island, Ireland.

22. A group of bluish amethysts in pyramidal crystals, upon fibrous, pearl-white amethyst. Saxony.

23. Common amethyst in six-sided prisms. Kerry Head.

24. Amethyst, in six-sided pyramids, of a pearl-gray colour, passing into pearl-white, nearly transparent, and of a glassy lustre. Achill Island.

25. Two amethysts, cut and polished. Siberia.

26. A group of crystals of translucent quartz, the pyramidal planes being superficially tinged of a rose colour.

27. Rose quartz of a high colour. Ravenstein, Bavaria.

28. Three fragments of milk-white quartz, together with a single specimen of milk-blue quartz, verging towards yellowish-white, cut and polished. Miartok, Greenland.

29. Siderite, or quartz of a blue colour. It exhibits the greasy lustre and conchoidal fracture of common quartz.

30. Siderite. This specimen is quite similar to the preceding.

31. Prase, or quartz of a green colour. This specimen is partly massive, and partly composed of six-sided prisms, having associated crystals of common quartz, the whole resting upon argillaceous schist of a green colour. Cumberland.

32. Prase, of a dark green colour and fibrous structure, exhibiting in the cross fracture a high degree of lustre. Rhode Island, Connecticut.

33. This specimen is composed of two concentric rock crystals, the exterior one being transparent and colourless, the interior of a deep green, apparently from adhering actynolite. The inner crystal exhibits, when viewed in one direction, a very beautiful iridescence. St. Gothard.

34. A rock crystal, partly pearl-gray, partly glass-white, and partly of a wine-yellow colour. Dauphinè.

35. A mass of amorphous quartz, studded on one side with quartz crystals of a yellowish colour. Such are sometimes denominated *false topaz*. Enniscorthy, Ireland.

36. A lump of massive quartz, exhibiting at one side a group of blood-red and nearly opaque pyramidal crystals of the same material. Geier, Saxony.

37. Quartz in short prisms with a terminal pyramid, some of the crystals being of a deep red, others colourless, the whole resting on specular iron ore, which itself adheres to compact hematite. Cumberland.

38. A group of quartz crystals of the usual form, opaque, and of a dark brown colour from superficially adhering peroxide of iron.

39. A group of rock crystals of the ordinary form, iron shot upon the surface, upon fluor spar, with a little adhering sparry iron ore. Annaberg, Saxony.

40. The half of a hollow ball of quartz, whose inner surface is studded with pyramidal crystals of same material, of a brownish-blue colour. To such specimens the term *geode* is sometimes applied.

41. Cat's-eye. Five specimens in rounded pebbles, one being of an amber colour, three milk-white, and the remaining one white, with a tinge of green.

42. Cat's-eye, of a nearly hemispherical form, and yellowish-green shade of colour, cut and polished. Ceylon.

Cat's-eye is probably a variety of calcedony.

43. Ice quartz. This specimen, which is of a pearl-gray, passing into a pearl-white colour, is worked into a semi-ovoidal form, and polished. Its glistening appearance is owing to the numerous fissures by which it is penetrated. Cape Farewell, Greenland.

44. Aventurine quartz, consisting of very small distinct granular concretions, presenting minute facets which powerfully reflect the light incident upon them.

45. Aventurine quartz. In this specimen the reflections are produced by interposed minute laminæ of mica. Greenland.

46. Amorphous, or massive quartz, of a pearl-white colour, and pearly lustre, and composed of distinct granular concretions. Saxony.

47. Amorphous quartz, of a snow-white colour, with some adhering particles of hornblende. Saxony.

48. Massive quartz, in the form of a thick layer, its opposite surfaces being striated in the same direction, and covered with a thin coating of steatite. Cumberland.

49. Massive quartz, of a flesh-red colour, and something of a columnar structure, with adhering chlorite, and some interspersed particles of iron pyrites. Cumberland.

50. Globular quartz. This specimen, which is nearly spherical, is studded at all points with nearly opaque roughened pyramids of the same substance. Knockmahon, County Waterford.

51. Agglutinated quartz; two specimens. In these the siliceous grains are held together by being imbedded in secondary rhombohedrons of calcareous spar. Fontainbleau.

52. Massive quartz, exhibiting on the surface several pseudomorphous crystals of the same material, having the cubic form. Cornwall.

53. Pseudomorphous quartz; two specimens. On *a* there are several regular octahedrons, while the surface of *b* is indented with the casts of cubic crystals of fluor spar, one of which still remains. The locality of the former is unknown; the latter is from Cumberland.

54. Haytorite. This specimen appears to be nothing but a stalactitic variety of quartz, of a reddish-brown colour, and slightly translucent. Haytor mine, Devonshire.

55. Siliceous sinter. This is composed of minute interlaced and adhering siliceous threads. Iceland.

56. Siliceous sinter. This specimen is snow-white, friable, and has a distinctly laminar structure. From a hot spring at Santa Fiora, Tuscany.

57. Siliceous sinter. Composed of several successive siliceous deposits, each stratum exhibiting, in its cross fracture, a coarse, fibrous structure. Iceland.

58. Nectic quartz, or floatstone. Of a pearl-gray colour, passing in the interior into pearl-white, friable, and of a finely granular structure. Floats on water, whence its name. From the chalk of St. Omer, near Paris.

59. Nectic quartz. Same as preceding specimen. St. Omer.

60. Polishing slate. Composed of thin and brittle siliceous laminæ, some being white, and some of a cream-yellow colour.

CALCEDONY.

Composition same as that of Quartz.

NOT FOUND IN CRYSTALS.

61. Mammillar and botryoidal, with smooth surface, and of a pearl-gray colour, verging towards milk-white, with some particles of adhering wacké. Disko Island, Greenland.

62. Mammillar, and of a pearl-gray colour with a tinge of blue.

63. Mammillar, of a yellowish tinge, and composed of two superimposed siliceous deposits.

64. This specimen, which is nearly of the same colour as the preceding, presents upon its mammillar surface the facets of numerous minute rock crystals.

65. Yellowish gray, and of a dendritical, ramified, stalactitical shape.

66. Mammillar on the surface, and of a dark yellowish-gray colour.

67. Partly yellowish-gray, and partly yellowish-brown, striped on the surface, and undulating. East Indies.

68. Of a mammillar surface, and sky-blue colour, and exhibiting the facets of pseudomorphous cubes on its upper surface. Trystian, Transylvania.

69. Grayish-blue, passing into sky-blue, with veins of a yellowish-white tinge. The surface layers may be considered as constituting a kind of onyx. Antigua.

70. Plasma, of a light grass-green colour, and flat conchoidal fracture.

71. Chrysoprase, or green calcedony, of an apple-green colour, and exhibiting the splintery fracture. Rosemutz, Siberia.

72. Chrysoprase. Polished, and traversed by a seam of honey-yellow hornstone. Rosemutz, Siberia.

73. Carnelian, or red calcedony. Botryoidal, and of a blood-red colour on the surface, passing internally into yellowish-red, with intermixed particles of cacholong of a fortication-like outline, and small cavities partly filled by some dark mineral substance. Cape of Good Hope.

74. Carnelian. A nodule of a blood-red colour, and flat conchoidal fracture. Brazil.

75. Carnelian. Two specimens, cut and polished as ring stones, the smaller being blood-red, the larger red with an amber tinge.

76. Carnelian. Cut and polished, of a honey-yellow colour, with circular spots on one side of a deeper tinge.

77. Cacholong. Of an opaque pearl-white colour, resting upon, and interposed between layers of gray calcedony. Iceland.

78. Cacholong. In seams of a cream-yellow colour, and with interposed laminæ of quartz.

AGATE.

[*Composed of Layers of Calcedony of different Colours. When Jasper is also present, the Specimen is called an Agate Jasper.*]

79. Moss agate. Colour milk-white, with blood-red dendritic delineations. To such specimens as these the term St. Stephen's stone is sometimes applied. Arabia.

80. Moss agate. In this specimen, which is cut and polished, the dendritic delineations are partly gray, partly brown, and partly black. Germany.

81. Moss agate. Two specimens, cut and polished, of a pearl-gray colour, with hair-brown dendritic delineations. Such agates are commonly called mocha stones. Germany.

82. Moss agates. Nine specimens, cut and polished, of the same nature with the preceding, and which are, therefore, mocha stones.

83. Onyx. In this specimen, on its polished face, various substances may be distinguished,—jasper, an amethystine quartz of a bluish colour, and alternate layers of brown and opaque-white calcedony, the latter constituting the onyx. Cape of Good Hope.

84. Onyx. This specimen, which is cut and polished on two opposite surfaces, is composed, in its middle part, of a bluish amethystine quartz, encompassed by a band of pale, yellowish-white calcedony, graduating into a yellowish-brown, and terminating in a tunic of dark red cornelian. East Indies.

85. Onyx. In this lamina numerous circular spots are exhibited, composed within of pale yellowish-white calcedony, and externally of same and a reddish-brown calcedony, which, combined, constitute the onyx. The centres

of several of the spots are fistulous, and penetrated by some material of a dark colour. East Indies.

86. Onyx. In this there are alternate bands of bluish-gray and brownish-red calcedony, with, in several places, spots of the latter. East Indies.

87. Sardonyx. Three specimens, cut and polished. The two smaller are composed of blood-red and opaque-white calcedony; the larger one of blood-red and a less opaque calcedony, these being separated by a number of thin and nearly transparent layers of the same material.

88. Striped agate. This beautiful specimen is rendered remarkable by the central layers, which are of a grass-green colour.

89. Striped agate. In this specimen may be recognised, along with laminæ of red and white calcedony, seams of hornstone and amethystine quartz. Rocklitz, Saxony.

90. Striped agate. Same as preceding, and from the same locality. Cut and polished.

91. Striped agate. Consisting of bluish-white and smoke-gray calcedony in alternate layers, with quartz in the centre. Scotland.

92. Striped agate. Composed of bluish-white encompassing pearl-white and nearly opaque calcedony, with a nucleus of bluish amethystine quartz. Saxony.

93. Striped agate. Similar to the preceding, and with a triangular nucleus of amethyst. Saxony.

94. Striped agate. Composed of layers of reddish-brown, flesh-red, and milk-white calcedony, none of which possess much translucency, encompassed by a tunic of greyish quartz. In the outlines exhibited by the successive layers, this specimen approaches to what is called *fortification* agate. Bohemia.

95. Striped agate. The layers are of an Isabella-yellow, opaque-white, and liver-brown colour, and the specimen exhibits, on its polished surface, the angular outlines characteristic of the *fortification* varieties.

96. Striped agate. This also, from the outline exhibited by the section of its laminæ, is of the *fortification* variety. The calcedonic layers are reddish-brown, bluish-gray, and milk-white, and they enclose a nucleus of quartz. Dundee, Scotland.

97. Fortification agate. Cut and polished. Composed of layers of bluish-white and smoke-gray calcedony. Montrose, Scotland.

98. Ruin agate. The laminæ of the different fragments which compose this specimen are of various colours, and some of them, from their opacity, approach more to jasper than calcedony. Amethyst is also present, and dots of an opaque white calcedony or jasper are distributed through the quartzy material, which acts as cement. Kunersdorf, Saxony.

99. Ruin agate. This also includes jasper, and the material which cements the fragments together is bluish quartz.

100. Fortification agate. Composed of red, white, yellowish, and blue calcedony. Oberstein, Palatinate.

101. Ruin agate. Polished on one side, and composed of fragments having a tile-red, a reddish-brown, and an opaque-white colour, with some common and amethystine quartz.

102. Ruin agate. Composed of very small fragments of a tile-red, milk-white, and violet-blue colour, with intermixed amethystine quartz.

103. Agate jasper. This specimen is composed of red jasper, blue calcedony, and quartz.

104. Agate jasper. Composed of clove-brown jasper, grayish calcedony, and light-reddish quartz.

105. Agate jasper. Consists principally of a reddish-brown jasper, with some dots of a bluish-white calcedony, and a little quartz.

JASPER.

Composition nearly the same as that of Calcedony.

DOES NOT OCCUR IN CRYSTALS.

106. Composed of blood-red and Isabella-yellow jasper, without any calcedony. East Indies.

107. Of a blood-red colour, varied with a little white. Arthur's Seat, Edinburgh.

108. Of a cinnabar-red colour, compact structure, and conchoidal fracture. External surface cellular. British Guiana.

109. Of a reddish-brown colour, having attached to it blood-red and leek-green opal. Tolkabanya, Hungary.

110. Of a blood-red colour, with stripes of brownish-black. Ceylon.

111. Of a light blood-red, with intermixed calcedony. Scotland.

112. Of a liver-brown colour, enclosing a seam of a leek-green colour. Siberia.

113. Of a blood-red and Isabella-yellow colour, with interspersed bluish quartz.

114. Of a perfect Isabella-yellow colour, and somewhat slaty fracture. Tyrol.

115. The greater part of this specimen is of an Isabella-yellow colour, but a portion of it is cinnabar-red, passing into tile-red. Egypt.

116. This specimen exhibits the flat conchoidal fracture, with circular concentric striæ. Its colour is reddish-brown verging into lavender-blue.

117. Of a yellowish-green colour, with greyish-green spots. Cape of Good Hope.

118. Of an olive-green colour.

119. Heliotrope or sunstone. A jasper of a bluish-green colour, with interspersed small red spots. East Indies.

120. Riband jasper. Liver-brown passing into tile-red, with leek-green stripes. Orsk, Siberia.

121. Riband jasper. Composed of successive layers of a brownish-red, leek-green, and blood-red colour. Saxony.

122. Riband jasper. Composed of narrow stripes of a liver-brown, Isabella-yellow, brownish-red, and yellowish-green colour. Saxony.

123. Riband jasper. Of a reddish-brown colour, with some greenish-white stripes. Saxony.

124. Ferriferous jasper. In very narrow stripes of a reddish-brown and chestnut-brown colour, with thin seams of steel-grey magnetic iron ore. Cape of Good Hope.

125. Ferriferous jasper. Of a tile-brown colour, passing into chestnut, with seams of magnetic iron ore, and same interspersed through some of the siliceous layers.

126. Egyptian jasper. Varied with different shades of brown and ochre-yellow. Egypt.

127. Egyptian jasper. Of different shades of brown, with a little white. Egypt.

128. Egyptian jasper. Tile-red passing into cinnabar-red, with a reddish-white nucleus. Egypt.

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129. Porcelain jasper. Of a perfect lavender-blue colour. Neighbourhood of Carlsbad, Bohemia.

130. Porcelain jasper. Pearl-gray passing into lavender-blue, with tile-red spots. Neighbourhood of Carlsbad, Bohemia.

FLINT.

This term is restricted to those nodular siliceous masses found in the Chalk formation, and which are now known to be of organic origin.

131. A fragment of a mass of flint, of an ellipsoidal form, including a nucleus of indurated chalk, and invested with a thin film of the same material.

132. Of a globular form, and smoke-gray colour, with grayish-white spots, and an external coating of a yellowish-white siliceous substance.

133. A hollow ball including a mass of spongiform silex, and lined within and without with a thin film of chalk. Antrim.

134. Colour dark, passing into reddish-brown, the surface layer being grayish-white, and covered with a thin coating of chalk. Poland.

135. Of a bluish-gray colour, and remarkable for its very flat conchoidal fracture.

136. Of a dark smoke colour, with crystals of celestine scattered over its upper surface. Menden, Paris.

137. Two specimens of silicified echinus; the larger from the island of Rugen, in the Baltic.

138. Of an Isabella-yellow colour, mixed with red and yellowish brown, and exhibiting in its section something of the radiated structure. Saxony.

139. Colour pale yellowish-gray, mixed with yellowish-

white, with a thin covering of grayish-white chalk. Apparently a silicified alcyonium. Wiltshire.

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140. Buhrr stone. Colour yellowish white, texture cellular, the larger cavities being tinged yellowish-red with peroxide of iron. Neighbourhood of Paris, where it is wrought in quantity for the manufacture of millstones.

HORNSTONE.

Resembles Flint, but is more brittle, and has a greater tendency to the splintery fracture.

141. Of a bluish-gray colour, with faint parallel streaks, and approaching flint in its conchoidal fracture. Queen's County.

142. Of a grayish-black colour, with adhering brown crystalline limestone. Milltown, Dublin.

143. Of a light liver-brown colour and splintery fracture, containing nodules of yellowish mammillar calcedony. Euganean Mountains, Italy.

144. Of a flesh-red colour, intermixed with green spots of chlorite. Dunbar, Scotland.

145. Bluish-gray, with some common quartz, and penetrated by small particles of galena. Donatus silver mine, Freyberg.

146. Hornstone porphyry. The base is hornstone of a red colour, and the imbedded crystals are yellowish-white calcareous spar. Aberdeen.

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147. Lydian-stone. Colour black, with something of the granular texture. Queen's County.

148. Lydian-stone. Of a black colour, schistose texture, and fine splintery fracture, intermixed with veins of common quartz. Hoff in Bareuth.

149. Wood-stone or silicified wood. Of a hair-brown colour, and exhibiting very distinct circular lines.

150. Wood-stone. Of a hair-brown colour, with numerous lines of a lighter colour, radiating from the centre.

151. Wood-stone. Grayish-black spotted with white, and compact on the transverse section, but exhibiting externally the fibrous structure. Chemnitz, Saxony.

152. Wood-stone. Two specimens cut and polished so as to show, the one a transverse, the other a longitudinal section.

153. Wood-stone. Partly a slaty fibrous mass of a hair-brown colour, striped with white; chiefly in the form of separated snow-white fibres of a silky aspect, and glistening lustre. Van Dieman's Land.

OPAL.

SiO_3, *in combination with Water, the amount of the latter being variable.*

DOES NOT OCCUR IN CRYSTALS.

154. Hyalite or transparent opal. In transparent mammillar concretions. Frankfort on the Maine.

155. Hyalite. In irregular detached wrinkled masses, nearly colourless and transparent. Mexico.

156. Hyalite. In colourless, detached, and perfectly transparent globules, some of which are iridescent, on partially decomposed stalactitical mesotype, imbedded in reddish-brown basalt, with grains of augite. Baden.

157. Hyalite. Of a pearl-gray colour, with some patches of a reddish-brown, in globular mammillary shapes, possessing a high degree of glassy lustre, on basaltic porphyry. Frankfort on the Maine.

158. Opal. Milk-white, passing into bluish-white, with some iridescent play of colours. Czervenitza, Hungary.

159. Opal. Of a wax-yellow colour, and flat conchoidal fracture; on hornstone porphyry. Tilkabanya, Hungary.

160. Precious opal. Two small detached specimens, reflecting fire-red, sky-blue, and emerald-green colours. South America.

161. Precious opal. Milk-white, presenting in stripes the various prismatic colours; in clay porphyry. Czervenitza, Hungary.

162. Precious opal. Of a milk-blue colour, verging from sky-blue to violet-red and emerald-green; in iron-shot clay porphyry. Czervenitza, Hungary.

163. Precious opal. Of a bluish-gray colour, reflecting various shades of red, blue, and green; on a porphyritic trap rock.

164. Precious opal. Of a milk-blue tinge, and reflecting fire-red, pink, sky-blue, and emerald-green colours. Karchan, Hungary.

165. Precious opal. Disseminated in small particles through clay porphyry, and rendering the various prismatic colours. Czervenitza, Hungary.

166. Precious opal. Of a honey-yellow colour, cut and polished for a ring-stone. Mexico.

167. Common opal. Of a yellowish-brown colour, striped with yellowish-white, and superimposed upon a lamina of transparent opal of a greenish tinge. Chimborazo.

168. Common opal. Of a wax-yellow colour passing into reddish-yellow, translucent, and decomposing externally into a yellowish-white clay. Hungary.

169. Common opal. Of a yellowish-white colour, translucent on the edges, and exhibiting very distinctly the flat conchoidal fracture.

170. Common opal. Of a pale yellowish-white colour, and cloudy appearance; translucent at the edges, except on one side, where it is opaque, and adheres slightly to the tongue. Georgia.

171. Common opal. Of a colophony-brown colour, and flat conchoidal fracture, translucent on the edges, and decomposing on the surface into a yellowish-brown clay. Chimborazo, South America.

172. Semi-opal Of a yellowish-white colour, and waxy lustre, translucent on the edges, and exhibiting a sharp-edged uneven fracture.

173. Semi-opal. Of a dull white colour, and waxy lustre, and penetrated by small cavities. Madeira, where it occurs in strata.

174. Semi-opal. Of a brown colour, spotted with yellowish-white. Tilkabanya, Hungary.

175. Wood opal. Of a honey-yellow, yellowish-brown, and yellowish-white colour, with a stripe of milk-white. Iceland.

176. Wood opal. Of a brown colour, and retaining much of the woody structure. Nursohl, Hungary.

177. Wood opal. Of a colophony-brown in the centre, passing gradually, towards the margin, into a yellowish-brown and Isabella-yellow. Tokay, Hungary.

178. Tabasheer. In irregular particles of a bluish-white colour, and adhering strongly to the tongue. Thrown into water, they evolve air, and become highly translucent. From the joints of bamboos grown in the Ranghar hills, province of Behar, 150 miles west of Calcutta.

179. Hydrophane.

180. Menilite. A large uniform mass with smooth surface,

and of a slate-blue colour, with adhering particles of adhesive slate. Menil Montant, near Paris.

181. Menilite. A uniform mass, smaller than the preceding, and of a lighter colour, imbedded in adhesive slate. Menil Montant.

182. Three small detached masses, of a gray colour, and imbedded in adhesive slate. Menil Montant.

SILICATES.

SINGLE ALUMINOUS SILICATES (ANHYDROUS.)

ANDALUSITE.

FORMULA.—$4Al_2O_3$, $3SiO_3$. (*Erdman.*) *Usually, however, contains in addition a little Peroxide of Iron, and traces of Lime and Magnesia.*

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

183. A large right rhombic prism, whose angles differ little from 90°, with a smaller crystal attached in an oblique position, both being invested on the lateral faces with silver-white and pinchbeck-coloured mica. Andalusia.

184. In large and very distinct right rhombic prisms, of a greenish-gray colour; on granite. Wicklow.

185. A group of five crystals, similar to preceding, with adhering silvery talc.

186. In this specimen there are several crystals, some of which are reddened with peroxide of iron on the surface,

the whole being imbedded in quartz resting upon mica. Tyrol.

187. The crystals in this specimen are extremely regular, and are imbedded in a granite abounding in mica. Wicklow.

188. A group of compressed rhombic prisms, cohering, and imbedded in a rock chiefly composed of quartz and mica. Glendalough, Wicklow.

CHIASTOLITE.

This is probably but a variety of Andalusite.

189. Three separate prisms, the smaller of which well illustrates on its cross section the tesselated appearance often exhibited by this mineral, arising from the crucial arrangement of the light-coloured crystals of chiastolite, in a schistose gangue of a dark colour. The specimen just referred to is from Stirling, North America.

190. Numerous prisms, of a dark slate colour, irregularly distributed on the surface of mica slate. Killiney Bay.

191. In slender prisms of a pearl-gray colour, several of which intersect at an acute angle; in clay slate. Bareuth.

KYANITE.

FORMULA.—$3Al_2O_3$, $2SiO_3$. (*Arfwedson*).

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

192. In flat four-sided prisms of a sky-blue colour, with yellowish spots, imbedded in silvery mica of a reddish tinge, and accompanied by two adhering crystals of grenatite. St. Gothard.

193. In flat four-sided prisms of a sky-blue colour, mixed

with pearl-white, imbedded in silver-white scaly mica, and accompanied by some dots of hyacinth-red grenatite. St. Gothard.

194. In broad lamellar crystals of a sky-blue colour, passing into sapphire-blue; upon greenish talc slate. Pyrenees.

195. In lamellar crystals, similar to those of the preceding specimen, with adhering quartz, and dark bronze-coloured mica. Massachusets.

196. A mass composed of thin lamellæ, of a golden-yellow colour, passing, in a few places, into pearl-white (Rhætizite); imbedded in white and yellowish quartz, covered on one side by glistening copper-coloured mica. Tyrol.

197. In numerous flat prismatic crystals of a bluish-gray colour, traversing quartz. Altnopastic, Donegal.

198. An aggregate of wavy, thin, lamellar crystals of a dull white colour, and pearly lustre. The variety called Rhætizite by Werner. Pfitch, Tyrol.

SILLIMANITE.

FORMULA.—$3Al_2O_3$, $2SiO_3$. (*Connel.*) *The same as that of Kyanite.*

CRYSTALLINE SYSTEM, PROBABLY THE DOUBLY OBLIQUE PRISMATIC.

199. In four-sided prisms of a clove-brown colour, exhibiting a very distinct cleavage transverse and oblique to the axis; imbedded in grayish quartz. Chester, Connecticut.

GRENATITE.

Formula *not determined ; its constituents, however, are :— Silex, Alumina, and Peroxide of Iron.*

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

200. A twin crystal of a reddish-brown colour, composed of two rhombic prisms, with the acute lateral edges truncated, and placed with their axes at right angles.

201. In rhombic prisms of a dark red colour, imbedded in mica slate. Glenmalur, Wicklow.

202. In six-sided prisms of a dark hair-brown colour, intersecting at an acute angle; imbedded in ash-gray mica slate. State of Maine.

BUCHOLZITE.

Formula.—Al_2O_3, SiO_3.

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

203. This specimen, which scarcely includes any foreign matter, breaks into slender four-sided prisms, highly translucent, and exhibiting a sub-silky lustre.

BAMLITE.

Formula.—$2Al_2O_3$, $3SiO_3$. (*Erdman.*)

NOT FOUND IN CRYSTALS.

204. Translucent, and of a greenish colour ; upon quartz. Bamle, Norway.

SINGLE ALUMINOUS SILICATES (HYDROUS).

HALLOYSITE.

FORMULA.—$3Al_2O_3$, $4SiO_3 + 12HO$.

DOES NOT OCCUR IN CRYSTALS.

205. A white, rounded mass, dotted with yellow over the surface. Adheres strongly to the tongue, and when immersed in water evolves air, and becomes slightly translucent. Liege.

LENZINITE.

FORMULA.—Al_2O_3, $SiO_3 + 4HO$.

NOT FOUND IN CRYSTALS.

206. Light, porous, adheres to the tongue, and of a yellowish-white colour. Koll, Eifel.

SEVERITE.

FORMULA.—Al_2O_3, $2SiO_3 + 6HO$ (*Pelletier*).

DOES NOT OCCUR CRYSTALLIZED.

207. A mass composed of granular, distinct concretions, of an opaque-white colour, friable, and including imbedded particles of yellowish common clay. Sèvres, France.

PHOLERITE.

FORMULA.—Al_2O_3, $SiO_3 + 2HO$ (*Guillemin*).

OCCURS IN MINUTE NACREOUS SCALES, BUT NOT IN DISTINCT CRYSTALS.

208.

KOLLYRITE.

FORMULA.—$3Al_2O_3$, $SiO_3 + 15HO$. (*Berthier.*)

NOT FOUND IN CRYSTALS.

209. Colour white, and possessing some degree of translucency, with a vitro-resinous lustre, stained brownish-yellow on the surface by peroxide of iron. Bavaria.

SCARBROITE.

FORMULA.—$5Al_2O_3$, $SiO_3 + 3HO$.

NOT FOUND CRYSTALLIZED.

210. Of a pure white colour, adheres to the tongue, and may be polished by the nail ; on greenstone. Scarborough, Yorkshire.

ALLOPHANE.

FORMULA.—$3Al_2O_3$, $2SiO_3 + 18HO$. (*Stromeyer*). *Coloured by a little Carbonate of Copper.*

NOT FOUND IN CRYSTALS.

211. In small, greenish-white, hollow, mammillary masses, lining irregular cavities, and in several places dotted over with the blue carbonate of copper. Some of the little balls, when broken across, exhibit considerable translucency, and the glassy fracture.

CIMOLITE.

FORMULA.—Al_2O_3, $3SiO_3 + 3HO$. (*Klaproth*).

NOT FOUND CRYSTALLIZED.

212.

WOERTHITE.

FORMULA.—$6Al_2O_3, 5SiO_3 + 3HO$. (*Hess.*)

NOT FOUND IN DISTINCT CRYSTALS.

213. A triangular fragment, translucent, and of a grayish-white colour, some spots being of a quartzy-blue. Upon the surface of fracture numerous minute shining facets are visible, and some long acicular prisms. Petersburg.

KAOLIN.

The white Earths thus denominated, and which are the results of the decomposition of Felspar, in composition approximate to the Formula $3Al_2O_3, 4SiO_3 + 6HO$.

NOT CRYSTALLIZED.

214. Of a reddish-white colour. Schneeberg, Saxony.

POTTER'S CLAY.

Some of these are as white as the Kaolins, and do not essentially differ from them in composition, though they have generally a different origin.

215. Of a pure white colour, and contains some laminæ of selenite. La Tolfa, Italy.

216. Reddish and yellowish-white, with streaks of brownish-yellow. Newhaven.

217. Of a light smoke-gray colour. From near Clonmel.

218. Of a pearl-gray colour, passing into ash-gray, and soft to the touch.

219. Of a pearl-gray colour and earthy fracture, and adhering very strongly to the tongue.

220. Of a smoke-gray colour, and adhering strongly to the tongue.

FIRE CLAY.

This variety, which is always found in association with Coal, besides Silex and Alumina, usually contains a little Peroxide of Iron.

221. In powder of an ash-gray colour. Coal Island, Dungannon.

FULLER'S EARTH.

Its constituents are:—Silex, Alumina, and Water, with traces of Magnesia and Lime.

DOES NOT OCCUR IN CRYSTALS.

222. Of a light-brown colour, inclining to olive-green, soft, unctuous, and not adhering to the tongue. Hampshire.

LITHOMARGE.

Composed of Silex, Alumina, Peroxide of Iron, and Water, in proportions which are not definite. Sometimes includes a little Potash.

ONLY FOUND MASSIVE, OR IN PSEUDOMORPHOUS CRYSTALS.

223. Of a lavender-blue colour, spotted with flesh-red. Larne, Antrim.

BOLE.

Composed of Silex, Alumina, Peroxide of Iron, and Water, traces of Lime and Magnesia.

AMORPHOUS.

224. Of a red colour and earthy texture. May be scraped by the nail. Giant's Causeway.

MOUNTAIN SOAP.

Composition similar to that of Bole.

AMORPHOUS.

225. A rounded coherent mass of a bluish-black colour. Adheres slightly to the tongue, and leaves a black streak when drawn along paper. Kusterchutz, Mittelgebirge.

MOUNTAIN MEAL.

Silex, 79; *Alumina*, 5; *Peroxide of Iron*, 3; *Water*, 12.

AMORPHOUS.

226. Of a white and yellowish-white colour, and a slaty texture; friable, and so light as to float on water. Santa Fiora, Tuscany. Used by Fabbroni for making a very light kind of brick.

DOUBLE ALUMINOUS SILICATES WITHOUT AN ALKALI (ANHYDROUS).

EPIDOTE.

Under this name are classed three or four distinct Minerals, all of which, however, are represented by the general Formula $3RO, SiO_3 + 2\,(M_2O_3, SiO_3)$; R, *representing Iron or Calcium, and* M, *Aluminum, Iron, or Manganese.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

227. This specimen of the gray variety of epidote, usually called *zoisite*, in which R represents calcium, occurs in aggregated prisms of a gray colour, passing into leek-green, and without any terminal pyramidal planes; with adhering yellowish-white felspar, and a few laminæ of mica. The prisms are striated longitudinally, and possess, in a high degree, the glassy lustre. Franconia.

228. An aggregate of numerous brown prismatic crystals, confusedly dispersed, and striated in the direction of the prismatic axis. Pfitch, Tyrol.

229. This specimen of epidote proper, sometimes, from its green colour, called pistacite or thallite, and in which RO, and M_2O_3 represent partially the protoxide and peroxide of iron, occurs in large, oblique, four-sided prisms, of a bottle-green colour; upon magnetic iron ore. Arendal, Norway.

230. Thallite. Of a pistachio-green colour, and in the form of a six-sided prism, acuminated by three planes, resting on a fragment of a large crystal of the same mineral, imbedded in granular epidote, of similar colour, accompanied by a little reddish-white calcareous spar. Arendal, Norway.

231. Thallite. An aggregate of slender four-sided oblique prisms, of a leek-green colour, some being plane, and others bevilled on the ends. Bourdrisin.

232. Magnanesian epidote, or piemontischer braunstein, of Werner, in which M_2O_3 is principally represented by the sesquioxide of manganese. It presents small prismatic crystals of a reddish-brown colour, with associated quartz, and a little white asbestos. St. Marcel, Aosta, Piedmont.

233. Manganesian epidote. An amorphous specimen, from the same locality as preceding.

234. Epidote. Composed of minute imperfectly developed prismatic crystals, of a light green colour, and glassy lustre. Donegal.

235. Bucklandite, or black epidote. In six-sided prisms of a jet black colour and metallic lustre, with dihedal terminations, imbedded in vesicular lava. In this mineral, according to Rose, RO represents the protoxide, and

M_2O_3, the peroxide of iron. Lake of Laach, on the Rhine.

GEDRITE.

FORMULA.—$3FeO, SiO_3 + Al_2O_3, 2SiO_3$; *the* FeO *being partially replaced by a little Magnesia and Lime.* (*Dufrénoy.*)

CRYSTALLINE SYSTEM NOT KNOWN.

236. A crystalline mass of a clove-brown colour, and possessing a fibrous radiated structure. Gèdre, in the Pyrenees.

VESUVIAN.—IDOCRASE.

FORMULA:—$3RO, SiO_3 + M_2O_3, SiO_3$; *or same as that of Garnet,* RO *being Lime, sometimes partially replaced by Magnesia and the Protoxides of Iron and Manganese; and* M_2O_3, *Alumina and Peroxide of Iron.*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

237. In right square prisms, terminated by pyramids whose apices are truncated, having a splendent lustre, and light brown colour; crystallized in the cavities of a stone chiefly composed of mica.

238. In flat prisms of a hyacinth-yellow, verging towards leek-green, with crystals of bluish calcareous spar. Fassa, Tyrol.

239. A large four-sided prism, of a liver-brown colour passing into oil-green, whose lateral and terminal edges are replaced by planes. This is the variety of idocrase called egeran. Eger, Bohemia.

240. A right square prism, whose lateral edges are replaced by tangent planes, and terminated by a pyramid whose axis is truncated; rough upon its surface, and of a brownish hue, highly translucent beneath, and of an olive-green colour.

241. Two attached crystals of a brownish-black colour,

whose lateral and terminal edges are modified by numerous planes, and in which fire-red spots are visible by reflected light. Locana, Piedmont.

242. Two right square prisms, of an olive-green colour, terminated by pyramids whose planes are set on the terminal edges of the prisms, and whose apices are truncated. The prismatic faces are striated longitudinally, and the pyramidal termination of the larger specimen is highly iridescent. Piedmont.

243. In right square prisms of a pistachio-green colour, terminated by pyramids whose planes are unequally developed. The prismatic faces are striated longitudinally, and the crystals rest upon green massive Vesuvian. Tyrol.

244. Of a light olive-green colour, partly massive and partly crystalline. Ala, Piedmont.

245. In aggregated prisms of a hair-brown colour, and striated longitudinally; on greenish-white crystalline limestone. Derryloaghan, Donegal.

246. In short prisms, striated longitudinally, and of an emerald-green colour, passing into sky-blue, with botryoidal calcareous spar, and fluor spar, of a light amethystine colour, all imbedded in grayish-white quartz. Smoland, Norway.

GARNET.

GENERAL FORMULA:—$3RO, SiO_3 + M_2O_3, SiO_3$; *or same as that of Idocrase; in which* RO *may be in whole, or part, Lime, Magnesia, Protoxide of Iron, or Protoxide of Manganese, and* M_2O_3, *Alumina, or Peroxide of Iron.*

CRYSTALLINE SYSTEM, THE REGULAR.

247. A large rhombic dodecahedron, of a dark columbine-red colour, and coated on the surface with pale-greenish talc. Elythal, Tyrol.

248. Common garnets in rhombic dodecahedrons, one of which exhibits truncated edges, associated with quartz, crystals of hornblende, and epidote, on a schistose rock composed of felspar and hornblende. Narksak, Greenland.

249. Two small common garnets, of a reddish colour, in the form of rhombic dodecahedrons, with a little adhering hornblende and granular quartz.

250. Twelve opaque garnets, of a dark colour, and some of which, having smooth surfaces, exhibit the metallic lustre; in the form of rhombic dodecahedrons, all whose edges are truncated. These specimens illustrate the variety to which the term *Melanite* is applied. Frescati, Rome.

251. A dodecahedron with unequal planes, of a violet-red colour. Greenland.

252. This is the variety called the *grossular*, from its gooseberry-green colour. The edges of the crystals being truncated, it exhibits at once the faces of the ikositetrahedron and the rhombic dodecahedron.

253. A mass of cohering crystals, of an olive-green colour, chiefly in the form of the ikositetrahedron. Tufelstein, Saxony.

254. In globular forms, of a sisken-green colour, with adhering deep leek-green epidote; upon talc slate, containing imbedded grains of magnetic iron ore. Ala, Piedmont.

255. In transparent dodecahedrons, of a yellowish-green colour; on mussite, containing minute scattered particles of magnetic iron ore. Mussa, Piedmont.

256. Numerous very regular dodecahedrons, of a honey-yellow colour, passing into colophony-brown; on iron-shot quartz. The faces of these crystals are striated parallel to the short diagonal, and they are, therefore, of the

variety called by mineralogists *Aplome.* Bristenbrurn, Saxony.

257. Several transparent and highly modified crystals, of a honey-yellow colour, with interspersed crystallized talc of a high lustre and light green colour.

258. In very clear crystals, of a cinnamon-red colour, and which exhibit the faces of both the rhombic dodechahedron, and ikositetrahedron, with light-green crystallized talc, on massive talc of a yellowish-gray tinge. This is the variety sometimes called cinnamon-stone. Ala, Piedmont.

259. Four reddish-brown, passing into blood-red, crystals, of the ikositetrahedral form, and with rough and channelled surfaces. North America.

260. Several detached ikositetrahedral crystals, of a violet-red colour, and somewhat rounded by attrition. Specimens such as these are sometimes called *Syrian* garnets.

261. Twelve detached ikositetrahedrons, of a violet-red colour.

262. Fragments of garnet, of a deep violet-red colour, exhibiting a laminated structure, and conchoidal fracture. Greenland.

263. In hyacinth-red ikositetrahedral crystals, accompanied by light-green lamellar talc, and some tabular crystals of Adularia; upon massive garnet and quartz. Piedmont.

264. In small rounded ikositetrahedrons, of a violet-red colour, passing into hair-brown; imbedded in mica slate of a yellowish-white tinge. Saxony.

265. In brownish-red dodecahedrons, imbedded in a rock composed of hornblende and mica. Tyrol.

266. In crystals of a dark reddish-brown colour, some being dodecahedrons, with their edges truncated; some combi-

nations of the dodecahedron and ikositetrahedron; imbedded in a greenish-gray schistose rock, including crystals of yellow felspar. Durham.

267. Of a hyacinth-red colour, and glassy lustre, partly granular, and partly in small dodecahedrons, mixed with granular coccolite of a leek-green colour, and pearl-gray limestone. Arendahl, Norway.

268. A mass of coherent, angular, distinct concretions, of a colophony-brown colour, and highly iridescent, with small imbedded particles of yellowish-green transparent coccolite. This variety of garnet is called colophonite. New York.

269. A mass of colophonite, similar to the preceding specimen, but of a colour between honey-yellow and hair-brown, and not iridescent on the surface. Saratoga, New York.

270. Granular common garnet, of a hyacinth-red colour, with imbedded globular grains of coccolite, of a greenish-black hue. Lake George, New York.

271. Massive garnet, of a reddish-brown colour. Norway.

272. Massive garnet, of a cinnamon-red colour, with intermixed quartz. Kilranelagh, Wicklow.

PYROPE.

Formula uncertain, but contains, in addition to the usual constituents of Garnet, the Oxide of Chrome, and a trace of Yttria.

CRYSTALLINE SYSTEM, THE REGULAR.

273. In loose rounded grains of a blood-red colour, detached from serpentine. Bohemia.

274. In rounded grains of a pale blood-red colour, imbedded in serpentine. Zoblitz, Saxony.

DICHROITE.

FORMULA.—$3(MgO, FeO), 2SiO_3 + 3Al_2O_3, SiO_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

275. A rolled flattened pebble, of a sapphire-blue colour in the direction of the prismatic axis, and of an amber-yellow in all directions at right angles to it. Ceylon.

276. Of a dark, plum-blue, passing into sapphire-blue; imbedded in grayish-white quartz. Norway.

TAUTOLITE.

Composed of Silex, Protoxide of Iron, Magnesia, and Alumina.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

277.

LIGURITE.

FORMULA.—$Al_2O_3, 3SiO_3 + 9\{(CaO, MgO, FeO), SiO_3\}$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

278.

BOLTONITE.

FORMULA.—$Al_2O_3, 3SiO_3 + 8\{(MgO, FeO)_2, SiO_3.\}$

CRYSTALLINE SYSTEM, PROBABLY THE DOUBLY OBLIQUE PRISMATIC.

279. In crystalline nodules of a wax-yellow colour, and highly translucent, associated with a few crystals of pleonaste, the whole being imbedded in white crystalline limestone. Bolton, Massachusets.

GREEN DIALLAGE.—SMARAGDITE.

Haidinger considers it as composed of alternate laminæ of green Hornblende and Augite.

NOT FOUND IN DISTINCT CRYSTALS.

280. Texture lamellar, colour grass-green; in felspar, with reddish-gray quartz. Sualpi, Carinthia.

THULITE.

FORMULA.—$3RO, SiO_3 + 2(Al_2O_3, SiO_3)$. RO *being chiefly Lime and Magnesia.*

CRYSTALLINE SYSTEM, PROBABLY THE OBLIQUE PRISMATIC.

281. In rose-red, lamellar, distinct concretions, imbedded, along with some hair-brown crystals of tourmalin, in common gray quartz. Tellemarken, Norway.

BREISLAKITE.

Contains Silex, Alumina, and Oxide of Iron, but its complete analysis has not been made.

CRYSTALLINE SYSTEM NOT KNOWN.

282. In greenish-white capillary prisms, accompanied by mellilite of a colophony-brown colour; on the surface of a compact greenstone. Capo Di Bove, near Rome.

ANORTHITE.

FORMULA.—$3(CaO, MgO), 2SiO_3 + 3(Al_2O_3, Fe_2O_3), 2SiO_3$; *a trace of Alkali is also usually present.*

283. In flattened transparent prisms of a vitreous lustre, with augite, both being imbedded in a rock chiefly composed of olivine and mica. Vesuvius.

Biotine and indianite are said by Dana to be but varieties of anorthite.

284. In highly translucent fractured crystals of a glassy lustre, associated with augite, and black mica in hexahedral tables; in a stone principally composed of mica and olivine.

285. Massive, and in four-sided prisms, with planes replacing the lateral edges, white, and yellowish-white, accompanied by yellowish-green augite, and mica of the same colour. Vesuvius.

286. In prisms of a dull white colour, translucent, and rough upon the surface, in a rock whose chief constituents are olivine and mica of a green colour. Vesuvius.

This is the biotine of Monticelli.

GEHLENITE.

$$3\{3(CaO, MgO, FiO), SiO_3\} + 3(Al_2O_3, F_2O_3), SiO_3.$$

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

287. In right rectangular prisms of a pale leek-green colour, sprinkled over with a thin coating of a white material not calcareous. Fassa, Tyrol.

288. In right square prisms of a yellowish-green colour, imbedded in calcareous spar. Salzburgh, Tyrol.

289. An aggregate of very distinct right rectangular and right square prisms. Tyrol.

DOUBLE ALUMINOUS SILICATES WITHOUT AN ALKALI (HYDROUS).

FAHLUNITE.

FORMULA.—$3(MgO, FeO, MnO), 2SiO_3 + 3\{(Al_2O_3, Fe_2O_3), SiO_3\} + 6HO$. *Wachtmeister has since found in it traces of Lime, Potash, and Fluorine.*

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

290. In irregular nodules, some of which may be viewed as six-sided prisms, of a brownish-black colour, giving a white streak, and showing the conchoidal fracture; imbedded in a greenish-gray chloritic or talcose slate. Fahlun.

HYDROUS IOLITE.

FORMULA.—$3\{(MgO, FeO), 2SiO_3\} + 3(Al_2O_3, SiO_3) + 4HO$, *or nearly the same with Dichroite, from which it only differs by including Water.*

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

291. In six-sided prisms of a dark greenish-brown colour, imbedded in a mass composed of quartz and magnetic pyrites. Bodenmais, Bavaria.

CHLOROPHYLLITE.

FORMULA.—$3(MgO, FeO, MnO), 2SiO_3 + 3(Al_2O_3, SiO_3) + 3HO$.

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

292. In lamellar masses, of a greenish colour and pearly aspect, composed of right prisms whose axes are at right angles to the plates formed by the general mass of the mineral. The crystals give, by cleavage parallel to their

bases, thin laminæ, which are destitute of elasticity. Haddam, Connecticut.

The esmarkite of Erdman appears to be the same with this mineral.

CLINTONITE.

FORMULA.—$3\{(MgO, CaO, FeO), 2(Al_2O_3, SiO_3)_2\} + HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

293. An aggregate of lamellar prisms, of a reddish-brown colour and metallic lustre, with a foliated structure like mica, the laminæ, however, being scarcely flexible; associated with large crystals of gray spinel, and some condrodite, the whole being attached to white sparry limestone. Amity, Orange Co., New York.

The xanthophyllite of Rose is probably identical with this mineral.

PENNINE.

FORMULA.—$3(MgO, FeO), 2SiO_3 + Al_2O_3, 2SiO_3 + 7(MgO, HO)$. (*Schweizer.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

294. In long six-sided prisms of a dark colour, whose lateral faces are irregular, and striated at right angles to the prismatic axis, and which are terminated by a smooth hexagonal plane, having a lustre approaching the metallic; in a chloritic rock apparently composed, in the main, of pennine and idocrase. Zermatt, Pennine Alps.

PYRALLOLITE.

Assuming the Alumina to perform the acid function, the Formula derivable from Nordenskiold's Analysis will probably be $(MgO, CaO, FeO, MnO), (SiO_3, Al_2O_3) + xHO$. *This mineral would probably be better placed with the simple Silicates abounding in Magnesia.*

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

295. Occurs as a coating composed of imperfectly developed prisms, of a yellowish-green colour, and soft enough to be scratched by the nail, on the surface of a rock composed of limestone and felspar, with imbedded particles of a greenish augite. This mineral is remarkable for first blackening under the blowpipe flame, and subsequently forming a white enamel, a property from which it derives its name. Pargas, Finland.

PYROPHYLLITE.

FORMULA.—$(MgO, FeO), 3SiO_3 + 3(Al_2O_3, SiO_3) + 3HO$.

NOT FOUND IN DISTINCT CRYSTALS.

296. A foliated mass of a yellowish-white colour, pearly lustre, and radiated structure, strongly resembling talc. Spa.

CHONIKRITE.

$5\{(3MgO, CaO, FeO), SiO_3\} + 3Al_2O_3, 2SiO_3 + 9HO$. *Berzelius believes it to be a mixture.*

DOES NOT OCCUR IN CRYSTALS.

297. Of a white colour, intermixed with pyrosklerite. Portoferrajo, Elba.

STEATITE.

FORMULA.—$2(3MgO, 2SiO_3) + Al_2O_3, SiO_3 + 10HO$.

DOES NOT OCCUR CRYSTALLIZED.

298. Of a grayish-white colour, spotted with some purplish-white, scratched by the nail, and having a soapy feel. Lizard Point, Cornwall.

CHLORITE.

FORMULA.—$3(MgO, FeO), SiO_3 + A_2O_3, SiO_3 + 2(MgO, 2HO)$. (*Varrentrap.*) *Dana considers the Prasilite of Thomson, and Leuchtenbergite of A. Komonen, as varieties of Chlorite.*

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

299. A mass of a dark leek-green colour, composed of adhering minute micaceous scales. Isle of Bute.

300. In minute scales of a colour intermediate between grass-green and olive-green, with amianthus; on calcareous spar.

301. Of a leek-green colour, inclining to pistachio-green; massive; on common quartz. Howth.

302. Of a dark leek-green colour, partly massive, with a lamellar structure, and partly in six-sided prisms, accompanied by copper pyrites. Cornwall.

GREEN EARTH.

This Substance, of which there are many varieties, is classed with Chlorite, although, in addition to the constituents of this latter mineral, it sometimes contains an Alkali.

DOES NOT OCCUR IN CRYSTALS.

303. Of a bluish-green colour, imbedded with nodules of calcedony and calcareous spar in trap. Pentland Hills.

304. In six-sided prisms with dihedral summits, which are

obviously pseudomorphs of augite, imbedded in a brownish trap. Fassa, in the Tyrol.

305. Of a deep grass-green colour. Monte Baldo, Verona.

CHLORITOID.

FORMULA.—($3FeO, SiO_3 + 3Al_2O_3, SiO_3$.) (*From an analysis by Erdman*). *Bonsdorf found in it 29 per cent. of Water. Masonite, referred by Jackson to Hornblende, is considered by Dana as a variety of this mineral.*

NOT FOUND IN CRYSTALS.

306. Of a dark green colour, and curved foliated structure. Koroibrod, Ural.

PRASEOLITE.

Composed of Silex, Alumina, Magnesia, the Protoxide of Iron, and Water.

CRYSTALLINE SYSTEM NOT DETERMINED.

307. In rounded crystalline concretions of a green colour; imbedded in quartz, with adhering mica. Brakke, Brevig, Norway.

PYROSKLERITE.

FORMULA.—$2\{3\ (MgO, FeO), SiO_3 + (Al_2O_3, Cr_2O_3)\ SiO_3 + 5HO$. (*From an analysis by Erdman.*)

CRYSTALLINE SYSTEM NOT DETERMINED.

308. Massive, and of a green colour, accompanied by white chonikrite. Porto Ferrajo, Elba.

OTTRELITE.

FORMULA.—$3(FeO, MnO,)\ 2SiO_3 + 2(Al_2O_3, SiO_3,) + 3HO$. (*From an analysis by Damour.*)

NOT FOUND IN DISTINCT CRYSTALS.

309. In rounded brilliant plates, of a grayish-green colour; imbedded in clay slate. Ottræz, on the borders of Luxembourg.

MALTHACITE.

Composed of Silex, 50·2; *Alumina,* 10·7; *Peroxide of Iron,* 3·1; *Water,* 35·8.

AMORPHOUS.

310. Three small masses, of a yellowish colour, waxy lustre, and uneven fracture, with some attached crystals of arsenical pyrites. Bautzen, Saxony.

PIMELITE.

This mineral is usually described as a Clay, coloured by Oxide of Nickel, of which Klaproth found 15·62 *per cent.*

311. A tolerably hard stone of a crystalline structure, which is tinged of an apple-green colour by oxide of nickel. Siberia.

WOLKONSKOITE.

A Clay, coloured with about 30 *per cent. of the green Oxide of Chrome.*

312. A small laminar specimen, of a dark bluish-green colour, which polishes when rubbed with the nail, and exhibits a subconchoidal fracture. Siberia.

HYDROUS MICA.

EMPYRICAL FORMULA.—$9SiO_3 + 3(Al_2O_3, Mn_2O_3) + 10(FeO, CaO, MgO) + 18HO$. (*From an analysis by Morin.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

313.

KARPHOLITE.

FORMULA.—$3(MnO, FeO), SiO_3 + 2(Al_2O_3, SiO_3) + 4HO$. (*From an analysis by Stromeyer.*) *Includes, also, a little Fluorine.*

CRYSTALLINE SYSTEM NOT KNOWN.

314. In radiated tufts, constituting a stratum, having a columnar structure, and straw-yellow colour; on a granite chiefly composed of quartz and mica. Tin mines of Shlackenwald, Bohemia.

BREWSTERITE.

FORMULA.—$5\{(BaO, SrO), SiO_3\} + 3(2Al_2O_3, 5SiO_3) + 25HO$. (*Connel.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

315. Partly massive, and partly in grayish six-sided prisms of a pearly lustre, terminated by three faces very nearly in the same plane. Strontian, Argyleshire.

316. An aggregate of very clear six-sided prisms, with flat trihedral terminations, and possessing, in a high degree, the pearly lustre, with interposed vein of calcareous spar. Strontian.

STILBITE.

FORMULA:—$CaO, SiO_3 + Al_2O_3, 3SiO_3 + 6HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

317. In flat rectangular prisms, whose larger faces possess the pearly lustre, and all whose terminal angles are replaced by the planes of the primitive octahedron, with some interposed heulandite of a more vitreous appearance; on brown wackè.

318. In thin lamellar crystals, on amygdaloidal trap. Skye.

319. In large lamellar, and also in small and less transparent divergent prisms. Skye.

320. In wedge-shaped prisms, highly lustrous on two opposite faces, and perfectly transparent; on amygdaloid, containing some nodules of green earth. Greenland.

321. In transparent crystals, which seem to be aggregates of several flattened prisms, accompanied by chabasie; on amygdaloidal trap. Ballintoy, County Antrim.

322. In crystals similar to those of specimen 316, but much less transparent, with some acicular prisms of natrolite on the under surface. Greenland.

323. The crystals are here so aggregated as to produce externally the mammillary appearance. Ferroe Islands.

324. In this specimen the crystals are arranged as in the preceding one, but present less of the mammillary outline on the surface. Ferroe Islands.

325. In thin lamellar crystals, associated with some diverging prisms of natrolite. Ferroe Islands.

HEULANDITE.

$3(CaO, SiO_3) + 4(Al_2O_3, 3SiO_3) + 18HO$. ($21HO$ *in some specimens.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

326. In small, aggregated, highly translucent prisms, accompanied by a few imperfect crystals of chabasie; on trap. Ballintoy, County Antrim.

327. In oblique prisms of a tile-red colour, passing into cinnabar-red, and exhibiting on the terminal plane a high degree of pearly lustre; on greenstone. Dunbarton.

328. In lamellar curved crystals of a red colour; on basalt.

329. In perfectly white, oblique rectangular prisms, whose acute terminal edges and obtuse angles are replaced by planes; on compact trap. Osterde, Ferroe.

PARASTILBITE.

FORMULA.—$3CaO, 2SiO_3 + 3(Al_2O_3, 3SiO_3) + 15HO$.

CRYSTALLINE SYSTEM, PROBABLY THE OBLIQUE PRISMATIC.

330. In oblique rhombic prisms of a pearl-white colour, and nearly opaque; on schist, near its junction with granite. Kilkeel, County Down.

SCOLEZITE.

FORMULA.—$CaO, SiO_3 + Al_2O_3, SiO_3 + 3HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

331. In nodules composed of very slender rhombic prisms, with pyramidal terminations; imbedded in amygdaloidal trap. Island Magee.

LAUMONITE.

FORMULA.—$3CaO, 2SiO_3 + 4(Al_2O_3, 2SiO_3) + 18HO$. (*Gerhardt.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

332. In masses composed of oblique rhombic prisms, which, though originally transparent, have become nearly opaque, and assumed a pearl-white colour. Huelgoet, Lower Brittany.

333. In whitish translucent crystalline masses, composed of rhombic prisms, some of which, by exposure, have separated, and acquired opacity; on clay slate. Brittany.

334. Massive, and crystallized in subtransparent oblique rhombic prisms; on a brown decomposing trap. Skye.

PREHNITE.

Formula.—$2CaO, SiO_3 + Al_2O_3, SiO_3 + HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

335. In globular masses of a light yellow colour, with a tinge of green, and composed of diverging prismatic crystals; on trap.

336. Botryoidal on the surface, which is composed of the edges of lenticular crystals of a pale apple-green colour, and exhibiting, when broken, a radiated fibrous structure. Fassa, Tyrol.

337. A mammillary mass, of a light yellow colour, with a very slight tinge of green, on the surface of which the terminations of its component prisms are distinctly shown, and which appear to be rhombs, approaching very closely to squares. Kilpatrick, Scotland.

338. In curved lenticular masses, of a light green hue, passing on the lower surface into apple-green, and exhibiting on their surfaces the lateral planes of the rhombic prisms which compose them; on greenstone. Fassa, Tyrol.

339. Massive, and composed of irregularly aggregated, four-sided prisms, of an apple-green colour, polished on the under surface. Cape of Good Hope.

340. In globular masses of a yellowish-green colour, and fibrous radiated structure, with accompanying natrolite. Dunbartonshire.

GILBERTITE.

FORMULA.—$3(CaO, MgO, FeO,) 2SiO_3 + 10(Al_2O_3, SiO_3) + 6 HO$. (*From an analysis by Lehunt.*)

CRYSTALLINE SYSTEM NOT KNOWN.

341. In plates irregularly disposed, of a yellowish-white colour, and silky lustre. Stonagwyn Lode, Cornwall.

GLOTTALITE.

FORMULA.—$3CaO, 2SiO_3 + Al_2O_3, SiO_3 + 9HO$. (*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM, THE REGULAR.

342.

HURONITE.

FORMULA.—$3(CaO, FeO, MgO), 2SiO_3 + 4(Al_2O_3, SiO_3) + 3HO$. (*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM NOT KNOWN.

343.

ÆDELFORS RED ZEOLITE.

FORMULA.—$CaO, SiO_3 + Al_2O_3, 3SiO_3 + 4HO$. (*Retzius.*) *It is probably a Stillite.*

CRYSTALLINE SYSTEM NOT KNOWN.

344. In aggregated and irregularly scattered prisms, of a wine-yellow colour, accompanied by a little natrolite, and a few crystals of chabasie; on compact greenstone. Ædelfors, Smoland.

KIRWANITE.

Formula.—$2\{2(FeO, CaO), SiO_3\} + Al_2O_3, 3SiO_3 + 2HO$.
(*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM NOT KNOWN.

345. In dark olive-green nodules, composed of diverging fibres; imbedded in basalt. Kilkeel, County Down.

346. In nodules of an olive-green colour, composed of indistinct, irregularly aggregated prisms. Kilkeel, County Down.

STELLITE.

Formula.—$5\{3(CaO, MgO, Fe,) 2SiO_3\} + Al_2O_3, SiO_3 + 6HO$. (*From an Analysis by Thomson.*)

CRYSTALLINE SYSTEM NOT DETERMINED.

347.

ZEUXITE.

Empyrical Formula.—$10SiO_3 + 8Al_2O_3 + 11(FeO, CaO) + 8HO$. (*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM NOT KNOWN.

348.

PLINTHITE.

Silex, 30·88, *Alumina*, 20·76, *Peroxide of Iron*, 26·16, *Lime*, 2·6, Aq. 19·6. (*Thomson.*)

NOT CRYSTALLIZED.

349. Of a brick-red colour, and earthy texture, opaque, and not adhering to the tongue; can scarcely be considered as anything but an indurated ochre. Antrim.

350. This specimen is, in all respects, similar to the preceding one.

WITHAMITE.

Composition not determined.

CRYSTALLINE SYSTEM UNKNOWN.

351. Massive, and in nodules composed of minute carmine-red crystals; imbedded in compact reddish trap. Glenco, Scotland.

ERINITE.

FORMULA:—(FeO, CaO), $3SiO_3 + 2Al_2O_3$, $3SiO_3$ + 16HO. (*From an analysis by Thomson.*)

NOT CRYSTALLIZED.

352. In a green nodule, capable of being scratched by the nail, and traversed by fissures, apparently produced by drying. This can scarcely be considered as a distinct mineral species. It occurs imbedded in amygdaloidal trap at Ballintoy, County Antrim.

RHODALITE.

FORMULA:—(Al_2O_3, Fe_2O_3,) $4SiO_3$ + 8HO. (*From an analysis by Thomson.*) *It also contains a little Oxide of Manganese, and appears to be a Zeolite in a state of decomposition.*

NOT FOUND CRYSTALLIZED.

353. In nodules, some white, some of a rose-red colour, easily scratched by the nail, and quite opaque; imbedded in a brown amygdaloid. Antrim.

354. This was purchased as a massive rhodalite. It appears to be nothing but a lump of mouldering natrolite. Ballintoy, Antrim.

NEPHRITE.

FORMULA *of the Chinese variety:*—Al_2O_3, $3SiO_3 + 9\{3(MgO, CaO), 2SiO_3\} + 3HO$. *With the Alumina there is associated a trace of Oxide of Chrome.*

DOES NOT OCCUR CRYSTALLIZED.

355. Of a clear white colour, with a tinge of bluish-green, and highly translucent. These are portions of ornaments for the person, taken from a lady's bedchamber, on the occasion of the storming of a town during the recent Chinese war.

356. Of a leek-green colour, and highly translucent; cut and polished. Turkey.

357. Of a grass-green colour, clouded with dark green, and containing imbedded particles of magnetic iron-ore; cut and polished. Italy.

358. Of a grayish-green colour, and iron-shot on one surface. Cape of Good Hope.

359. Of a yellowish-green colour, passing into smoke-gray, and possessing a fine slaty texture. Ochsenkopf, Saxony.

360. A fragment of a smooth and rounded nodule, of a grayish-green colour. New Zealand.

361. Of a pale leek-green colour, passing into yellowish green, with imbedded grass-green smaragdite, and a little silver-white mica. Geneva.

DOUBLE ALUMINOUS SILICATES, CONTAINING AN ALKALI (ANHYDROUS).

GABBRONITE.

Its components are :—Silex, 54; *Alumina*, 24; *Potash*, 4; *Soda*, 17·25; *Magnesia*, 1·5; *Protoxide of Iron*, 1·25. (*John.*)

NOT FOUND IN CRYSTALS.

362. Structure, foliated; colour, yellowish-green; translucent on the edges, and hard enough to scratch glass; accompanied by heulandite on the upper surface. Stavern, Norway.

SAUSSURITE.

It consists of Silex, 44; *Alumina*, 30; *Lime*, 4; *Peroxide of Iron*, 12·5; *Soda*, 6; *Potash*, 0·25. (*Saussure.*)

OCCURS ONLY IN IMPERFECT CRYSTALS, WHICH, HOWEVER, CLEAVE PARALLEL TO THE FACES OF A RHOMBIC PRISM.

363. Colour, white, passing into greenish-white, translucent on the edges, with intermixed light green laminar diallage. Geneva.

MARGARITE.

Composed of Silex, 37; *Alumina*, 40·5; *Oxide of Iron*, 4·5; *Lime*, 8·96; *Soda*, 1·24; *Water*, 1. (*Du Menil.*)

CRYSTALLINE SYSTEM, EITHER THE RHOMBOHEDRAL, OR RIGHT PRISMATIC.

364. In thin and very fissile crystalline hexagonal laminæ, of a pearly lustre, translucent, and rather brittle. Pfitschthal, Tyrol.

NACRITE.

The results of analysis are too discordant to admit of the composition being fixed. (See *Dana*, p. 529.) *Some minerals described under this name contain no Alkali.*

CRYSTALLINE SYSTEM NOT KNOWN.

365. In minute scales, or fibres, of a white colour, and dull pearly lustre, some of them exhibiting on the surface of the mineral a stellate arrangement; on granite. From Schlackkenwald, Bohemia.

LEPIDOMELANE.

FORMULA.—$3\{(Al_2O_3, Fe_2O_3), SiO_3\} + 2\{3(FeO, KO), 2SiO_3\}$. (*From an analysis by Sotman.*)

CRYSTALLINE SYSTEM, EITHER THE RHOMBOHEDRAL OR RIGHT PRISMATIC.

366

LEUCITE.

FORMULA.—$3KO, 2SiO_3 + 3(Al_2O_3, 2SiO_3)$.

CRYSTALLINE SYSTEM, THE REGULAR.

367. In very regular ikositetrahedrons, rendered opaque on the surface by a thin deposit of earthy matter, but translucent beneath this, and exhibiting the conchoidal fracture.

368. In ikositetrahedrons, dull upon the surface, imbedded in amygdaloidal lava, along with crystals of augite and olivine. Vesuvius.

ANDESIN.

FORMULA.—*The same as that of Leucite, the Potash of the latter being replaced by Soda and Lime.*

CRYSTALLINE SYSTEM, PROBABLY THE DOUBLY OBLIQUE PRISMATIC.

369.

HERSCHELITE.

A variety of Phillipsite. (Damour.)

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

370. In hexahedral translucent tables, about the $\frac{1}{20}$th of an inch in thickness, along with phillipsite.

NEPHELINE.

FORMULA.—$2(NaO, KO), SiO_3 + 2(Al_2O_3, SiO_3)$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

371. In minute white granular crystals, with some distinct prisms, apparently six-sided, and associated with a little vesuvian and mica. Vesuvius.

372. Partly massive and partly crystallized, in pearl-white prisms; imbedded in a rock composed of massive nepheline and mica. Vesuvius.

373. In transparent six-sided prisms; on a lava including silvery mica. Monte Somma. Vesuvius.

374. Three or four crystals, accompanied by crystallized hornblende, and brown dodecahedral garnet, all being imbedded in a micaceous lava. Vesuvius.

375. In numerous imperfect crystals, associated with garnet and vesuvian, in a volcanic matrix. Vesuvius.

ELÆOLITE.

Scheerer has shown that this mineral is identical with Nepheline.

376. Of a leek-green colour, with a tinge of blue, a greasy lustre, and showing a double cleavage; on felspar. Norway.

377. Of a grayish-green colour, with tinge of blue; imbedded in gray felspar, and accompanied by hornblende. Norway.

378. Of a yellowish-red colour, greasy lustre, and flat conchoidal fractures; in coarse granite, and accompanied by irregular crystals of pitch-black hornblende. Norway.

CANCRINITE.

Breithaupt has shown that this mineral is merely a variety of Davyne, which will be next described.

379. In reddish prisms, apparently hexahedral, having a glassy lustre, and with dark striæ parallel to the axis. From Miask, in the Ural.

DAVYNE.

The Formula of this Mineral is the same as that of Nepheline, with the exception of its containing a minute quantity of Chloride of Calcium, not found in the latter (Mitscherlich), so that Nepheline, Elæolite, Cancrinite, and Davyne, are but varieties of the same species.

380. A very distinct and transparent six-sided prism, with two large terminal planes, and the edges made by one of these with the faces of the prism replaced by secondary facets; in vesicular lava. Vesuvius.

GIESECKITE.

Tamnean proposes to unite this mineral with Nepheline and Elæolite, but this view does not appear at all supported by the analysis of Stromeyer, whose results are (neglecting a little Water which is probably not essential) represented by the Formula (MgO, FeO, MnO, KO), $SiO_3 + 2\ (Al_2O_3, SiO_3)$.

CRYSTALLINE SYSTEM, PROBABLY THE RHOMBOHEDRAL.

381. Three detached, regular, six-sided prisms, opaque, and of a grayish-green colour, passing into leek-green. Greenland.

382. In six-sided prisms of a leek-green colour, imbedded in a greenish-gray clay porphyry. Greenland.

PINITE.

FORMULA.—(KO, MgO, FeO), $SiO_3+Al_2O_3$, SiO_3. (*From an analysis by Gmelin.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

383. Three detached prisms, the two larger being of a brown colour, and having twelve lateral faces, the smallest of a green colour, and with but ten lateral planes. Auvergne.

384. In twelve-sided prisms of a reddish-brown colour, passing into leek-green, and having a single terminal edge replaced by a plane. Schneeberg, Saxony.

385. In six-sided prisms of a green colour, whose lateral edges are replaced by secondary planes; in decomposing granite. Auvergne.

SPODUMENE.

FORMULA.—3(NaO, LiO), $4SiO_3+4(Al_2O_3, 2SiO_3)$. (*Berzelius.*)

CRYSTALLINE SYSTEM NOT DETERMINED, BUT PROBABLY THE OBLIQUE PRISMATIC.

386. In flat four-sided prisms of a pearl-gray colour, and lamellar fracture, with imbedded particles of transparent quartz, and some minute scales of mica. Utoe, Sudermanland, Sweden.

387. In oblique rhombic prisms of a greenish-yellow colour, and somewhat rough upon the surface; in granite. Killiney, Dublin.

388. In large lamellar prisms of an opaque yellowish-white colour, and inferior translucency, with adhering granite. Massachusets.

389. This specimen resembles the preceding one, its component crystals, however, being more translucent. It is from the same locality.

390. In flat prisms of a pale apple-green colour, with adhering quartz and reddish felspar. Utoe, Sweden.

391. In long, yellowish-green, prismatic crystals, some of which are iron-shot on the surface; in granite. Killiney.

392. In oblique four-sided prisms of a light green colour, imbedded in granite, and accompanied by a few irregular brown garnets. Killiney, Dublin.

KILLINITE.

FORMULA.—$RO,\ 2SiO_3 + 3(Al_2O_3,\ SiO_3) + 2HO$. (*Mallet.*) RO *being a mixture of the Potash with Protoxide of Iron, and a little Lime and Lithia.*

CRYSTALLINE SYSTEM, PROBABLY THE OBLIQUE PRISMATIC.

393. In oblique four-sided prisms, of a colour between siskin and pistachio-green; in granite. Killiney.

394. In four-sided prisms of a greenish-brown colour; in granite. Killiney.

395. In greenish-brown prisms, imbedded in a granite abounding in felspar. Killiney.

PETALITE.

FORMULA.—$3(NaO,\ LiO),\ 4SiO_3 + 4(Al_2O_3,\ 4SiO_3)$. (*Berzelius.*)

CRYSTALLINE SYSTEM, PROBABLY THE OBLIQUE PRISMATIC.

396. Massive, translucent, and showing a tendency to cleave into oblique four-sided prisms; in a rock composed of quartz and mica. Utoe, Sweden.

397. Of a pearl-gray colour, and fine lamellar texture. Utoe, Sweden.

OLIGOCLASE.

FORMULA.—$NaO, SiO_3 + Al_2O_3, 2SiO_3$. (*Abich.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

398. A lamellar mass of a snow-white colour, having, in some places a reddish tinge, and resolvable, by cleavage, into prisms which exhibit, on two opposite faces, a lustre between vitreous and pearly. Ytterby, Sweden.

COUZERANITE.

FORMULA.—$(CaO, MgO, KO, NaO), SiO_3+2(Al_2O_3, SiO_3)$. *Kobell suggests that it may be identical with Labradorite.*

CRYSTALLINE SYSTEM, PROBABLY THE OBLIQUE PRISMATIC.

399. In green prisms having a rough and glistening surface; in friable granular limestone of a yellow colour. Couzeran, Pyrenees.

AMPHODELITE.

FORMULA.—$3(CaO, MgO, FeO), SiO_3 + 3(Al_2O_3, SiO_3)$. (*Nordenskiold.*) *But if Breithaupt be right in considering this mineral the same with Latrobite, it must also contain Potash.*

CRYSTALLINE SYSTEM, THE OBLIQUE RHOMBIC.

400. Massive, and of a rose-red colour, intermingled with a green mineral of a fibrous structure and waxy lustre. North America.

401. Massive, and of a pink colour, with green coccolite, calcareous spar, and copper pyrites. Tunaberg, Sweden.

SCAPOLITE.

Formula.—3(CaO, NaO), 2SiO3 + 2(Al_2O, SiO_3). (*Hartwell.*) *All the varieties of the mineral, however, do not seem to have precisely this composition.*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

402. In gray four-sided prisms, with low pyramids, whose faces are set upon the angles of the prisms; in hornblende rock. Arendahl, Norway.

403. In slender rounded prisms of a gray colour and dull pearly lustre, and without pyramidal terminations; on a compact felspathic rock. Arendahl, Norway.

404. In long aggregated prisms, without pyramids, yellowish-white and opaque on the surface. The larger mass is intersected nearly at right angles by two others of smaller size.

405. In baccillar distinct concretions of a yellowish-white colour, imbedded in smoke-gray common quartz, and accompanied by scales of silver-white mica. Arendahl, Norway.

406. In lamellar aggregated prisms, translucent, and of a grayish-white colour. Bolton, Massachusets.

407. In right square prisms without pyramidal terminations, red externally, and light yellowish-green within; on hornblende rock. Norway.

408. In four-sided prisms of a flesh-red colour, indistinctly terminated by low pyramids whose faces are set on the angles of the prism, with crystals of hornblende, black coccolite, and green epidote. Neskil Muller.

409. The greater portion of a large right square prism with low pyramid, yellowish-gray on the surface, and passing internally into black, with imbedded crystals of titanite. Arendahl, Norway.

410. In long four-sided prisms of an ash-gray colour and glistening lustre, penetrated by a talcose mica; on smoke-gray quartz, with adhering silvery mica. Arendahl, Norway.

NUTTALITE.

A variety of Scapolite.

411. In aggregated prisms, somewhat curved, and of a light bluish-brown colour; in a rock principally composed of quartz, and including a little epidote and calcareous spar. Lewis County, New York.

MEIONITE.

A transparent variety of Scapolite.

412. In translucent square prisms, truncated on the lateral edges, and with terminal pyramids; on a rock composed of mica and felspar. Vesuvius.

413. In short prisms, some white and opaque on the surface, some entirely transparent; in limestone. Vesuvius.

ARKTIGITE.

A variety of Scapolite.

414. Massive, and of an Isabella-yellow colour, and foliated structure. Greenland.

EKEBERGITE.

A variety of Scapolite.

415. Massive, of a pale green colour, and a glassy lustre, passing into waxy, accompanied by particles of massive leek-green epidote. Sweden.

BARSOWITE.

A variety of Scapolite.

416. Massive and snow-white, with one tolerably distinct cleavage, accompanied by blue corundum. Piedmont.

PORCELAIN SPAR.

FORMULA.—$4\{(CaO,NaO), SiO_3\} + 3Al_2O_3, 2SiO_3$. (*From an analysis by Fuchs.*)

CRYSTALLINE SYSTEM NOT KNOWN.

417. In lamellar masses of a white colour, and exhibiting on the cleavage surfaces a pearly lustre; accompanied by quartz and mica. Fahlun.

SOMMERVILLITE.

This substance, Mellilite and Humboldtilite, are but varieties of the same mineral. Breithaupt has shown the identity of the two first with Gehlenite, and Damour and Descloiseaux are considered to have done the same for the third, having shown Humboldtilite to be a Mellilite. It is difficult to reconcile the results of published analyses with these views, and the Sommervillite, Mellilite, and Humboldtilite are placed in this sub-section, and not with Gehlenite, in consequence of the considerable per centage of the Alkalies which they include. FORMULA.—$Al_2O_3, SiO_3 + 2\{3(CaO, MgO, NaO, KO), SiO_3\}$. (*From an analysis by Damour.*)

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

418. In four-sided square prisms with truncated edges, and of a pistachio-green colour, accompanied by octahedral crystals of pleonaste, some nepheline, and hexagonal plates of yellowish-green mica; in lava. Vesuvius.

MELLILITE.

Breithaupt refers this mineral to Gehlenite.

419. In right square prisms, red externally, and of an orange tinge when broken across, accompanied by minute particles of nepheline; in compact lava. Capo Di Bove, Rome.

420. In minute reddish crystals, accompanied by nepheline; on compact lava. Capo Di Bove, Rome.

HUMBOLDTILITE.

Damour and Descloiseaux have shown this to be identical with Mellilite.

421. In right square prisms, translucent internally, and of a honey-yellow colour, but dotted over the surface with a white powder, which renders them opaque; on vesicular lava. Vesuvius.

RAPHILITE.

FORMULA.—$10\{(CaO, FeO, MgO), SiO_3\}+Al_2O_3, 2SiO_3$. (*From an analysis by Thomson.*) *Dana regards it as a variety of Hornblende.*

CRYSTALLINE SYSTEM NOT KNOWN.

422. In aggregated acicular prisms, of a grayish-white colour, with tinge of blue; on felspar containing mica, and associated with calc-spar. Upper Canada.

VIOLAN.

Not analyzed.

AMORPHOUS.

423.

WICHTINE.

FORMULA.—$3\{(FeO, CaO, MgO, NaO), SiO_3\}+(Al_2O_3, FeO_3), SiO_3$. (*From an analysis by Laurent.*)

CRYSTALLINE SYSTEM, NOT KNOWN.

424. Of a compact structure, black colour, and flat conchoidal fracture. Wichty, Finland.

FELSPAR.

Formula.—$KO, SiO_3 + Al_2O_3, 3SiO_3$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

425. A six-sided prism, with a dihedral summit, of a yellowish-white colour, and rough upon the surface, with adhering particles of quartz and silver-white mica.

426. A pair of adhering rectangular prisms, each of which is acuminated by four unequal planes; of a reddish colour, with attached particles of mica. Bovino.

427. A tabular mass of a yellowish-gray colour, with adhering particles of quartz and mica. County Dublin.

428. A milk-white six-sided prism, with dihedral summit, accompanied by prisms of tourmalin, in a granite abounding in mica. Seven Churches, Wicklow.

429. In white prisms, accompanied by dark brown rock-crystal, and a few minute scales of white mica. Carlsbad, Bohemia.

430. A rectangular prism, with a second adhering to it in an oblique position, both being of a flesh-red colour, scarcely translucent, and having a partial coating of scales of mica. Bovino, Italy.

431. A six-sided prism, cracked transversely to its axis; flesh-red, and imbedded in granite containing massive felspar of the same colour. Lough Bray, Wicklow.

432. Of a gray colour, with a tinge of blue; massive, and possessed in some places of cleavages conducting to an oblique four-sided prism.

433. Common felspar of a yellow colour, accompanied by quartz and large plates of silver-white mica. Massachusets.

434. Two crystals, each a six-sided prism with a dihedral

summit, the larger one being a twin crystal, or composed of two so associated that their prismatic axes are parallel; in decomposed granite. Carlsbad, Bohemia.

435. A twin crystal, of an Isabella-yellow colour, the component ones being flat six-sided prisms with dihedral terminations, and combined by their best-developed lateral planes. St. Just, Cornwall.

436. Partly massive, and partly in six-sided prisms with a single terminal plane; of a flesh-red colour; with accompanying crystals of dark green hornblende. Norway.

437. Compact, and of a pearl-gray colour, with some imbedded chlorite. Savinleken, Saxony.

438. Massive, with a foliated fracture, and of a beautiful apple-green colour. This is the variety of felspar known under the name of Amazon stone. Catherinberg, Siberia.

439. In indistinct prisms, of a bluish-green colour, accompanied by quartz and silvery talc.

440. External surface yellowish-red, mottled with green; and exhibiting fine yellowish-red lines, and some imbedded scales of golden mica. Greenland.

441. A columnar mass, ochre-red externally, and of a deep green dotted with yellow, on its fractured surfaces. Greenland.

442. A laminar mass, of a pure Isabella-yellow colour. Greenland.

443. Of a perfect pearl-white colour, traversed by veins of yellowish white. Island of Allimatok, Greenland.

444. Of a dark-gray colour, streaked with yellowish-white, and with iridescent spots of a metallic lustre.

445. Of a milk-white colour, with metallic iridescence. Kangak, Greenland.

ADULARIA.

This name is applied to the transparent, or highly translucent crystals of Felspar which occur in such perfection in the elevated districts of Savoy. Adula is one of the highest peaks of St. Gothard.

446. A fragment of a large crystal, cut and polished. It is translucent and iridescent in a high degree. St. Gothard.

447. A lamellar mass of a white colour, with a tinge of bluish-green; highly iridescent. St. Gothard.

448. In six-sided prisms, with dihedral terminations; of a white colour, with a nearly perceptible tinge of green; translucent, and iridescent on the terminal planes. Dauphinè.

449. The largest crystal of the group has a general resemblance to a rhombohedron, but is bounded by curved trapezoidal surfaces. Some of the smaller crystals are oblique rhombic prisms, the acute angles of which are acuminated by three planes, which are smooth and lustrous, while the faces of the prisms are destitute of polish; accompanied by white and greenish-white lamellar talc. Traversalla, Piedmont.

450. In oblique rhombic prisms, perfectly white, and highly translucent, with byssolite; on a rock composed of quartz, felspar, and talc.

451. A crystalline mass, composed of parallel prisms whose terminal planes are deeply channelled in a single direction; translucent, and iridescent. St. Gothard.

452. Colourless crystals, tinged green on the surface by a deposit of chlorite, and exhibiting the forms of oblique rhombic prisms, some of which are so deeply bevilled at the two ends as to resemble a rectangular octahedron. St. Gothard.

453. In rhombic prisms, tinged on the surface of a yellow colour by oxide of iron, and having the terminal planes deeply sulcated in the direction of the long diagonal; on decomposing granite. Ceylon.

454. In flat six-sided tables, terminated by an oblique dihedral summit; of a pure white colour, and a lustre intermediate between vitreous and pearly; on gneiss. Dauphinè.

455. In glass-white flat crystals, presenting numerous facets; accompanied by rock crystal, and wine-yellow lenticular calcareous spar; on gneiss. Zillerthal, Tyrol.

456. In translucent six-sided prisms, of a glassy lustre, some being terminated by a single plane, others by two; with interposed and overlying chlorite; on a granite containing but little quartz or mica. Zillerthal, Tyrol.

457. Fourteen small specimens of a chatoyant adularia, cut into the lenticular form, and polished. Such, from the peculiar play of the light which they reflect, are called moon-stones. Ceylon.

458. A twin crystal; rough on its lateral faces, and exhibiting a distinct cleavage parallel to the base of an oblique prism.

459. In translucent rhombic prisms, dotted over with leek-green lamellar chlorite; accompanied by grass-green sphene, in flat four-sided prisms. St. Gothard.

460. A twin crystal, penetrated by lamellar chlorite. St. Gothard.

MURCHISONITE.

A variety of Felspar.

461. In detached crystals, iron-shot on the surface, in the largest of which the form of the rectangular octahedron may be traced. Arran.

LEELITE.

A massive variety of Felspar.

462. Of a flesh-red colour and waxy lustre, translucent on the edges. Sala, Sweden.

VARIOLITE.

A dark-green variety of massive Felspar, containing imbedded globules of a lighter colour.

463.

AVANTURINE FELSPAR.

This is a variety of Felspar which includes numerous imbedded facets of Mica, and acts upon light in a manner similar to Quartz Avanturine. It is also called Sunstone.

464. A polished lamina, composed of light-green translucent felspar, with a little transparent quartz, and containing numerous imbedded scales of silver-white mica. Greenland.

465. A polished fragment, partly flesh-red, partly bluish-gray, and containing numerous imbedded minute scales of golden-coloured mica; from a vein in granular granite. Kangak, Greenland.

466. Of a bright leek-green colour, with numerous imbedded irregular facets of a silver-white mica.

GRAPHIC GRANITE.

In this the Mica is nearly wanting; and the Felspar is so disposed in relation to the Quartz, that their lines of contact present, on the surface of fragments cut in particular directions, outlines resembling Hebrew letters.

467. In this specimen the felspar is yellowish-red, and the quartz of a dark colour. Portsoy, Scotland.

468. In this specimen the felspar is a white adularia, and the quartz is colourless and transparent. Portsoy, Scotland.

NAPOLEONITE.

The form of Felspar which occurs in the orbicular Syenite of Corsica.

469. Of a pearl-gray colour, associated with quartz, and granular leek-green hornblende; and constituting the external tunic of the nodular masses occurring in Corsican granite. Corsica.

470. In this specimen of orbicular syenite, the Napoleonite is nearly opaque, and the hornblende of a very dark-green colour. Corsica.

ALBITE.

Formula.—$NaO, SiO_3 + Al_2O_3, 3SiO_3$.

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

471. In perfectly white and distinct prismatic crystals, dotted over with chlorite. Greiner, Tyrol.

472. Of a perfect pearl-white colour, and lamellar and slightly radiated texture, with adhering bluish-gray quartz.

473. An opaque, white, crystalline mass, composed of oblique four-sided prisms; one of them being terminated by an oblique pyramid, the apex of which is replaced by a pair of triangular faces resting on the lesser faces of the pyramid; rough, and of a yellowish colour. The terminal planes, prismatic and pyramidal, are distinguished by a pearly lustre. Mourne Mountains, County Down.

474. A smaller crystalline mass, in all respects similar to the preceding. Mourne Mountains, County Down.

N. B. The Mourne felspar is generally considered albitic; but as the two preceding specimens have been found to contain potash as well as soda, they should probably be rather viewed as varieties of pericline. Pericline and albite, however, are at present considered as mere varieties of the same mineral.

PERICLINE.

FORMULA.—(NaO, KO) $SiO_3 + Al_2O_3$, 3 SiO_3.

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

475. In modified, oblique, four-sided prisms; translucent, and partially invested with a thin yellowish-green coating, attached to a decomposing greenstone. Norway.

476. In oblique four-sided prisms, some of which are twin crystals. Norway.

477. In milk-white four-sided prisms, with oblique secondary planes on the acute lateral edges, and others on the terminal angles corresponding to the acute lateral edges; accompanied by crystals of calcareous spar. Greiner, Tyrol.

ADINOLE.

This, according to Von Kobel, is a massive Albite mixed with Quartz.

478.

RYACOLITE.

FORMULA.—NaO, $SiO_3 + Al_2O_3$, SiO_3.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

479. A mass of small white prisms, of a glassy lustre, with imbedded prisms of hornblende, and a few minute garnets. Vesuvius.

480. An almost granular mass of small glassy crystals, with minute imbedded crystals of hornblende. Vesuvius.

GLASSY FELSPAR.

This is a true Felspar, but is sometimes confounded with Ryacolite.

481. In oblique four-sided prisms, one of which is apparently rhombic; of a grayish-yellow colour, a lustre between vitreous and pearly, and with a very distinct cleavage parallel to the base; in grayish-white porphyry. Drakenfels, west side of the Rhine.

482. In flat crystals, of a pearl-gray colour, imbedded in wacké containing globular particles of mesotype. Kayserstuhl, Baden.

483. Lamellar, with conchoidal fractures, and of a colour partly yellow and partly bluish-black; on trap. Donegal.

LABRADOR FELSPAR.

Formula.—(NaO, CaO), $SiO_3 + Al_2O_3$, SiO_3. (*Abich.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

484. Of a dark-gray colour, mixed with lighter gray, and at some points a beautiful azure-blue; accompanied by a little schiller spar. Ingermanland.

485. Of a smoke-gray colour, mixed with yellowish-gray, and reflecting an azure-blue with a tinge of green. Labrador.

486. Of a pearl-gray colour, with intermixture of brown and red; reflecting sky-blue with a tint of green. Greenland.

487. On the polished face of this specimen may be distinguished the rhomboidal outlines of the labradorite, which is of a gray colour, and the black hornblende which is interposed between them. Labrador.

488. This specimen reflects a great variety of colours,—azure-blue, green, and golden-yellow; and in it are imbedded some particles of magnetic iron ore. Mineral dealers denominate specimens of this description, Geographical Labradorite.

489. Of a gray colour, reflecting azure-blue and golden-yellow with a tinge of green.

490. Of a gray colour, with seams of yellowish-white, and with imbedded particles of magnetic iron ore; reflects, at a particular angle, a bluish-green in parallel lines. Greenland.

491. Of an Isabella-yellow colour, and reflecting blue of a very light tinge. Greenland.

TACHYLITE.

FORMULA.—$9(RO, SiO_3) + 3Al_2O_3, SiO_3$; RO *being a mixture of Lime, Magnesia, Protoxide of Iron, Potash, and Soda.* (*From an analysis by Gmelin.*)

NOT FOUND IN CRYSTALS.

492. In massive nodules of a velvet-black colour, vitreous lustre, and conchoidal fracture; the surface of the nodules being slightly pitted, and traversed by numerous reddish-brown lines. Meinzersichen, Hesse.

OBSIDIAN.

This substance varies much in composition, and can scarcely be considered as a distinct mineral species, being nothing but Lava fused and rapidly cooled. It, however, always includes Silex, Alumina, Protoxide of Iron, the fixed Alkalies, Potash, and Soda, and often, in addition, Lime and Magnesia.

DOES NOT OCCUR IN CRYSTALS.

493. Of a dark-brown colour, and conchoidal fracture; translucent on the edges. Island of Ascension.

494. Of a jet-black colour, scarcely translucent, and with striæ like those of the pecten on the surface of fracture. Iceland.

495. Of a dark plum-blue colour, translucent, and with a flat conchoidal fracture. Hecla, Iceland.

496. Jet-black, and not translucent on the edges. Hecla, Iceland.

497. Of a pitch-black colour, with much lustre, and a conchoidal fracture; in veins through a gray lava. Vesuvius.

498. Of a dark smoke-gray colour, with imbedded small crystals of glassy felspar, mixed with iron-shot clay and adhering small particles of ash-gray pearlstone. Hungary.

499. Of a yellowish-gray colour, vesicular, and having its cavities lined with a bluish-white hydrophane. This specimen is intermediate in character between pumice and obsidian. Glinich, Hungary.

500. Three fragments of an oil-green colour, and chatoyant lustre; cut and polished for ring-stones. Real del Monte, Mexico.

MAREKANITE.

A variety of Obsidian.

501. Three globular pieces, one of a dark ash-gray, the remaining two of a hair-brown colour; the former being translucent, the latter opaque. Marekan, Kamtschatka.

502. Three globules of an ash-gray colour, and highly translucent. Marekan, Kamtschatka.

PEARLSTONE.

A variety of Obsidian.

503. Two globular concretions of a gray colour and pearly lustre. Tokay, Hungary.

504. A mass of an ash-gray colour and dull pearly aspect, composed of irregularly rounded concretions. This specimen appears intermediate between obsidian and true pitchstone. Tokay, Hungary.

PITCHSTONE.

A variety of Obsidian distinguished by its vitreous lustre, and, generally, by a splintery fracture.

505. Of a pitch-black colour. Isle of Arran, Scotland.

506. Of a dark olive-green colour, translucent, and with smooth conchoidal fracture. Isle of Arran, Scotland.

507. Of a velvet-black colour, and containing a few imbedded crystals of glassy felspar. Meissen, Saxony.

508. Of a brownish-black colour with a tinge of green, and containing numerous imbedded crystals of glassy felspar. Fracture, small conchoidal. Meissen, Saxony.

509. Of a lamellar structure, oil-green colour, and greasy lustre; translucent on the edges. Newry, County Down.

510. Of an Isabella-yellow colour, mixed with leek-green; flat conchoidal fracture, and waxy lustre. Meissen, Saxony.

511. In the form of a triangular prism, with one of the lateral edges replaced by a single plane; of a light-green colour, with streaks of yellow internally, and greenish-brown outside. Corygills, Arran.

512. Of a red colour with spots of gray, and translucent on the edges. Meissen, Saxony.

513. Composed of numerous nodules of a brown colour, greasy lustre, and small conchoidal fracture; with interposed particles of a yellowish felspar. Euganean Mountains, Italy.

514. Of a dark colour, with tinge of green, a waxy lustre, and small conchoidal fracture. Corygills, Arran.

515. Of a dark colour and pitchy lustre, destitute of translucency, and containing numerous imbedded crystals, and small globular masses of felspar. Sandy Brae, Antrim.

PUMICE.

This may be considered as a vesicular Obsidian.

516. Of a gray colour and pearly lustre, accompanied by obsidian. Meissen, Saxony.

517. Of a light-gray colour and silky lustre; light enough to float in water. Lipari Isles.

518. Of a pearl-gray colour, asbestiform texture, and high degree of silky lustre. Procida.

519. Of a brown colour, fibrous texture, and slightly silky lustre; with some imbedded crystals of glassy felspar; floats on water. Astrunni.

520. Of a dull brown colour, and highly vesicular; floats on water. Found on the ice off Cape Farewell, Greenland.

DOUBLE ALUMINOUS SILICATES CONTAINING AN ALKALI (HYDROUS).

AGALMATOLITE.

FORMULA.—(CaO, FeO, MnO, KO), $SiO_3 + 2Al_2O_3$, SiO_3 + HO. (*From an analysis by John; but it varies somewhat in composition.*)

NOT FOUND CRYSTALLIZED.

521. Colour greenish-gray; fracture, fine splintery; strongly translucent on the edges, and iron-shot on the surface. China.

522. Of a pale-yellow colour, with a tinge of oil-green; translucent, and perforated on the edge by numerous holes.

PYRARGILLITE.

FORMULA.—$2\{(FeO, MgO, KO, NaO)\}\ SiO_3, +3\ Al_2O_3, 2\ SiO_3+9HO$. (*From an analysis by Nordenskiold.*)

CRYSTALLINE SYSTEM NOT KNOWN.

523. Massive, of a lamellar structure, considerable lustre, and bluish-black colour; in granite destitute of mica, and containing imbedded garnets of a red colour and rounded form. Helsingfors, Finland.

ROSITE.

FORMULA.—$7(R_2O_3, SiO_3)+4(KO, CaO, MgO), 3SiO_3+7HO$; R_2O_3 *being* Al_2O_3, *a little of which is replaced by* Mn_2O_3 (*From an analysis by Svanberg.*)

CRYSTALLINE SYSTEM NOT KNOWN.

524. In small rounded grains, without distinct crystallization, and of a colour varying from a faint rose-red to a brownish-red; fracture foliated, with a shining surface; in white and highly crystalline limestone, also containing numerous grains of green steatite. Aker, Sweden.

WEISSITE.

FORMULA.—$5\{2(MgO, FeO, KO, NaO), SiO_3\}+7(Al_2O_3, 2SiO_3)+6HO$. *Occurs only massive.* (*From an analysis by Wachtmeister.*)

525.

GIGANTOLITE.

The Formula given by Trolle Wachtmeister is RO, SiO_3 + M_2O_3, SiO_3 + HO; RO *representing a mixture of Magnesia, Protoxide of Manganese, Potash, and Soda; and* M_2O_3 *a mixture of Alumina and Peroxide of Iron. If this be correct, Gigantolite and the Mesotypes have very nearly the same Formula.*

CRYSTALLINE SYSTEM, PROBABLY THE RHOMBOHEDRAL.

526. Fragments of large crystals, having a lamellar structure, and a colour between greenish and dark steel-gray; lustre intermediate between vitreous and waxy; in a granite with felspar of a flesh-red colour. Tamela, Finland.

ANALCIME.

FORMULA.—$3NaO, 2SiO_3 + 3(Al_2O_3, 2SiO_3) + 6HO$.

CRYSTALLINE SYSTEM, THE REGULAR.

527. In numerous and very perfect ikositetrahedrons, of a glassy lustre, accompanied by several wine-yellow rhombohedrons of calcareous spar; on trap. Port Stewart.

528. In white, translucent, and regular ikositetrahedrons, accompanied by yellowish-brown natrolite; in a decomposing trap. Antrim.

529. A mass of aggregated ikositetrahedral crystals, of a light flesh-red colour. Fassa, Tyrol.

530. A group of bluish and perfectly transparent ikositetrahedrons; on a basaltic rock containing imbedded nodules of a greenish lithomarge. Dunbarton.

531. Partly in bluish ikositetrahedral crystals, and partly massive; imbedded in a porous greenstone. Cyclopean Islands, near Catania, Sicily.

532. Numerous ikositetrahedral crystals, tolerably clear, and accompanied by a couple of amber-coloured crystals of calcareous spar exhibiting the impressions of crystals of analcime, which must have been once imbedded in them; on an earthy trap. Port Stewart.

533. In perfectly opaque and snow-white ikositetrahedral crystals, of a pearly lustre; accompanied by a crystal of calcareous spar, and resting upon white and yellowish-white mesotype; on wackè of a greenish-gray colour· Toeplitz, Bohemia.

HARMOTOME.

FORMULA.—$3(BaO, KO), 2SiO_3 + 4(Al_2O_3, 2SiO_3) + 18HO$.
(*Kobel and Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

534. In pearl-gray rectangular prisms, with four terminal planes set upon the lateral edges. The crystals are generally twins, intersecting at right angles, and so as to have a common prismatic axis; accompanied by quartz and a little calcareous spar. Andreasberg, Hartz.

535. In pearl-gray right rectangular prisms, acuminated by four planes set upon the lateral edges, and associated in a rectangular position, so as to constitute twin crystals. Andreasberg, Hartz.

PHILLIPSITE.

FORMULA.—$3(KO, CaO), 2SiO_3 + 4(Al_2O_3, 2SiO_3) + 18HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

536. In minute, transparent, rectangular prisms, modified like those of harmotome on the terminal edges and angles; in gray lava. Capo Di Bove, Rome.

N. B. This is the mineral usually called Gismondine.

537. In rectangular, four-sided prisms, acuminated, of a pearl-gray colour, and waxy lustre; lining small cavities in a greenish-gray volcanic rock, containing imbedded crystals of black augite. Vesuvius.

538. In pearl-white six-sided prisms, with dihedral summits, some of the crystals being crossed, but not exactly at an angle of 90°; in amygdaloidal basalt. Causeway, Antrim.

539. Partly in pearl-white prisms, similar to those of preceding specimen, partly in crystalline globules imbedded in amygdaloidal basalt. Causeway, Antrim.

540. In minute flesh-red crystals, accompanied by some balls of scoulerite; on amygdaloidal basalt of a reddish-brown colour. Island Magee.

MORVENITE.

This is merely a highly translucent variety of Harmotome, and having the acuminating planes of considerable size.

541. In colourless and transparent rectangular prisms, terminated by pyramids whose faces are set on the terminal edges, and do not entirely remove the terminal face of the prism; accompanied by ordinary harmotome, and resting upon calcareous spar. Strontian, Argyleshire.

THOMSONITE.

FORMULA.—$3(CaO, NaO, KO), SiO_3 + 3 (Al_2O_3, SiO_3) + 7HO$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

542. A baccillar concretion of numerous long and slender right rectangular prisms, of a pearl-white colour and silky lustre; adhering to grayish-green and reddish-brown wackè. Scotland.

543. A mass of divergent prisms, of a pearl-white colour and silky lustre; constituting a baccillar concretion, on a gray, compact basalt. Kilpatrick.

COMPTONITE.

Rammelsberg has shown that this mineral is a Thomsonite.

544. In transparent, right square or rectangular prisms, some of which have the lateral edges truncated; upon a greenish-gray trap, and accompanied by a nearly granular phillipsite of a yellow colour.

SCOULERITE.

Exact composition not known.

DOES NOT OCCUR IN DISTINCT CRYSTALS.

545. In small, rough, spherical balls of a cream-yellow colour; on mesole. Portrush.

EDINGTONITE.

Its exact analysis has not been made.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

546.

SPHÆROSTILBITE.

FORMULA.—(CaO, NaO) $SiO_3 + Al_2O_3$, $3SiO_3 + 6HO$. *It therefore differs from Stilbite merely in having a little of the Lime replaced by Soda.*

CRYSTALLINE SYSTEM, NOT ASCERTAINED.

547. In spherical concretions with lenticular edges, reddish externally, colourless, highly translucent on the fractured surface, and presenting a lamellar and radiated structure; on a brown amygdaloidal trap. M'Gilligan, Co. Londonderry.

548. In dull white spherical concretions, transparent when fractured, and having a radiated structure; accompanied by bluish mesole, on which it rests, and apophyllite; on basalt. Island of Skye.

HYPOSTILBITE.

FORMULA.—(CaO, NaO), $SiO_3 + Al_2O_3$, $2SiO_3 + 6HO$.
(*From an analysis by Beudant*).

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

549. A crystalline mass of a white colour, with, in some places, a faint tinge of red, and exhibiting on one surface a number of minute prisms of a pearl-white colour, and considerable lustre. Island of Skye.

N. B.—This mineral does not appear to be the same with the hypostilbite of Beudant, as, by a recent analysis, its formula is, $3\{(CaO, NaO ?), 2SiO_3\} + 2(Al_2O_3, SiO_3) + 14HO$.

EPISTILBITE.

The Formula which results from the analysis by Rose is (CaO, NaO) $SiO_3, + Al_2O_3$, $3SiO_3 + 4HO$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

550. Numerous flat and highly translucent prisms, with a dull vitreous lustre on the small, and a pearly lustre on the larger faces; on a brown amygdaloidal trap, containing pyriform globules of analcime. Island of Skye.

NATROLITE.

The Formula is NaO, $SiO_3 + Al_2O_3$, $SiO_3 + 2HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

551. In highly translucent rhombic prisms, whose angles differ little from 90°, terminated by pyramids whose faces are set upon the lateral planes of the prisms. Auvergne.

552. In slender glassy prisms, with terminating pyramids of the same form with those of preceding specimen. A single group of the crystals has a stellate arrangement; on decomposing greenstone. Auvergne.

553. In a layer of a flesh-colour on the surface, and composed of white, divergent, acicular crystals, translucent, except near the surface, where they appear to be nearly opaque; on a decomposing amygdaloidal trap. M'Gilligan, County Londonderry.

554. Composed of snow-white radiated tufts of slender prismatic crystals, with a little adhering stilbite. Ferroe Islands.

555. In radiated tufts of slender prismatic crystals of a flesh-red colour, attached to a porphyrite trap containing reddish imbedded crystals of felspar. Dunbarton.

556. This specimen is composed of two diverging groups of snow-white glassy prisms, without pyramidal terminations, whose axes intersect nearly at a right angle. Ferroe Islands.

557. In two tufts composed of slender rhombic prisms, approaching very close to square prisms, the crystals of one group being terminated by pyramids whose faces rest upon the planes of the prism, accompanied by chabasie and sphærostilbite; on grayish amygdaloidal trap. Greenland.

558. Of a dull-white colour, and fibrous radiated structure. Vicinity of Belfast.

559. Colour, snow-white on the surface of fracture; structure, fine saccharoidal. Glenarm, County Antrim.

N. B.—This mineral has been described as a distinct species by Dr. Thomson, under the name of lehuntite.

MESOLITE.

This mineral is composed of one atom of Natrolite, plus three of Scolezite. (*Rose.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

560. In slender glassy prisms of the same form with those of natrolite, several of which are terminated by pyramids. Some of the crystals are white, others white with a tinge of red. Down Hill, County Derry.

561. Nearly massive, with a fibrous structure, and pure white colour, and in numerous acicular glassy prisms lining the surface of a cavity in same mineral, with adhering ochry trap. Giant's Causeway.

POONAHLITE.

Formula.—$2(CaO, SiO_3)+3(Al_2O_3, SiO_3)+8HO$. (*C. Gmelin.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

562. In long acicular prisms, translucent, and of a pale white colour, associated with and imbedded in greenish lustrous right square prisms of apophyllite, terminated by pyramids whose faces belong to an octahedron of a different class from that of the prisms Poonah, Hindostan.

MESOLE.

Formula.—$3(CaO, NaO), 2SiO_3+3(Al_2O_3, SiO_3)+8HO$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

563. Globular concretions, yellowish-brown externally, and which consist of diverging lamellar crystals, having a pearly lustre, accompanied by tolerably clear analcime,

both being imbedded in a decomposing trap of a brown colour. Antrim.

564. Numerous globular concretions, composed of transparent lamellæ, having a divergent disposition and silky lustre; on a coarse greenstone, including crystals of hornblende. Portrush.

MESOLITINE.

FORMULA.—$2\{(CaO, NaO), SiO_3\} + 2Al_2O_3, SiO_3 + 5HO$.

CRYSTALLINE SYSTEM NOT KNOWN.

565. Of a brick-red colour, partly granular, and partly in small spherical concretions of a lamellar and divergent structure. Newtown Crumlin, County Antrim.

566. Composed of small rounded concretions of a white colour, with slight tinge of red, and a finely lamellar radiated structure. M'Gilligan, County Derry.

HARRINGTONITE.

FORMULA.—$3(CaO, NaO), 2SiO_3 + 3(Al_2O_3, SiO_3) + 6HO$ (*Thomson*), *which is nearly the same as that for Mesole. A more recent analysis makes it identical with Mesolitine.*

NOT FOUND CRYSTALLIZED.

567. Colour white; structure compact and earthy. Corncastle, County Antrim.

BREVICITE.

The Formula deducible from the analysis by Sonden is the same as that of Mesole.

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

568. In rough glassy prisms of little lustre, and which appear to be of the right rectangular form, and without

acuminating planes. From a trachytic rock at Brevig, Norway.

CHABASIE.

FORMULA.—$3(CaO, NaO, KO), 2SiO_3 + 3(Al_2O_3, 2SiO_3) + 18HO$. (*Berzelius.*) *Its composition would seem not to be constant, for, according to Rammelsberg, some varieties are represented by the more simple Formula* $(CaO, NaO, KO), SiO_3 + Al_2O_3, 2SiO_3 + 6HO$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

569. In large pearl-white rhombohedrons, resting on smaller ones of a grayish-white colour, and more transparent, accompanied by two large corroded prisms of calcareous spar; on an amygdaloidal wacké, containing a few minute crystals of black augite. Toeplitz, Bohemia.

570. In numerous and very perfect glassy rhombohedrons, constituting a crystalline coating on the surface of a brown amygdaloidal trap.

571. In translucent rhombohedrons, several of which have their lateral angles replaced; on a brown amygdaloid. Antrim.

572. Rhombohedrons similar to those of preceding specimen; in basalt. Greenland.

573. Numerous rhombohedrons of a slightly reddish tinge, and of diminished lustre, in consequence of deep and irregular striæ on their surfaces; on a brownish basalt. Greenland.

574. In pearl-white rhombohedrons, attached to a depression in an amygdaloidal wacké, containing a few imbedded crystals of black augite. Toeplitz, Bohemia.

LEVYNE.

This mineral is now considered, on the authority of Brooke and Tamneau, to be a mere variety of Chabasie.

575. In small modified rhombohedrons, sub-transparent, exceedingly brittle, and of a glassy lustre, accompanied by a fibrous mesotype, and a single crystal of chabasie; in amygdaloidal basalt. Island of Skye.

HYDROLITE.

This mineral Tamneau has shown to be identical with Chabasie.

576. In flat, six-sided prisms, terminated by six-sided pyramids, whose apices are deeply truncated, translucent, of a glassy lustre, and a yellowish-red colour; in an amygdaloidal trap. Larne, Antrim.

577. In translucent, colourless, glassy crystals, some of which exhibit distinctly the faces of a tabular six-sided prism, terminated at each end by a six-sided pyramid; in the cavities of an amygdaloidal trap.

578. In very low, six-sided prisms, whose terminal edges are replaced by planes, which, however, do not entirely remove the terminal faces of the crystals. Colour, light flesh-red; lustre, vitreous. In red amygdaloidal trap. Island Magee, Antrim.

PHACOLITE.

FORMULA.—$3\{(CaO, NaO, KO), SiO_3\} + 2(Al_2O_3, SiO_3) + 9HO$. (*Anderson.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

579. In numerous highly translucent crystals, which appear to be flattened hexangular dodecahedrons, whose planes are more or less rounded; on trap. Bohemia.

580. In this specimen there are two large hexangular dodecahedrons, with faces much channelled, and the alternate lateral edges bevilled by a pair of planes; accompanied by a pearl-gray botryoidal steatite; on brown trap. M'Gilligan.

581. Several hexangular dodecahedrons, in all respects similar to those of specimen 579; in a red trap, accompanied by steatite. M'Gilligan.

ANTRIMOLITE.

FORMULA.—$3\{(CaO, KO), SiO_3\} + 5(Al_2O_3, SiO_3) + 15HO$. (*Thomson.*)

CRYSTALLINE SYSTEM NOT KNOWN.

582. A cup-shaped mass, composed, on the concave surface, of very fine and white fibres of a silky lustre, accompanied by a few clear crystals of chabasie, and some wine-yellow calcareous spar. Giant's Causeway, Antrim.

CHALILITE.

FORMULA.—$3\{(CaO, NaO), SiO_3\} + 2(2Al_2O_3, SiO_3) + 12HO$. (*Thomson.*)

OCCURS MASSIVE.

583. A mass of a deep reddish-brown colour, and compact structure, very feebly translucent on the edges; scratches glass with facility. Tirdree Hill, County Antrim.

CLUTHALITE.

Thomson's analysis gives for empirical formula $10SiO_3 + 5(Al_2O_3, Fe_2O_3), + 2(NaO, MgO) + 10HO$.

CRYSTALLINE SYSTEM NOT KNOWN.

584. A congeries of imperfect crystals, with rough surfaces of a flesh-red colour, and but feebly translucent on the

edges; accompanied by analcime; in amygdaloid. Kilpatrick Hills, near Dumbarton.

585. In flesh-red rough crystalline concretions, accompanied by white and irregularly crystallized analcime. Port Glasgow, Scotland.

FAUJASITE.

FORMULA.—$3\{(CaO, NaO), 2SiO_3\} + 3Al_2O_3, 4SiO_3 + 24HO$. *(From an analysis by Damaur.)*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

586. In transparent, square octahedrons of a brown colour; in trap, the cavities of which are lined with mesole. Kaisersthal.

VERRUCITE.

FORMULA.—$4\{(CaO, NaO), SiO_3\} + 3Al_2O_3, 2SiO_3 + 8HO$.

CRYSTALLINE SYSTEM NOT KNOWN.

587. In rounded globules, rough on the surface, of a compact structure, and reddish-brown colour. Antrim.

DOUBLE ALUMINOUS SILICATES INCLUDING FLUORINE, CHLORINE, BORON, PHOSPHORUS, OR SULPHUR.

MICA.

There are three kinds of Mica; that which includes Potash, but no Magnesia; that which includes Magnesia and Potash; and that which includes Potash and Lithia, but no Magnesia. The latter constitutes the very distinct species known under the name of Lepidolite. The Magnesian Micas are usually represented as uniaxal; the Potash Micas as biaxal; but this criterion cannot be relied upon, as some Magnesian Micas are found to have two optic axes. The Formulæ given by Rose are, for the uniaxal:—$3(KO, MgO, FeO), SiO_3 + (Al_2O_3, Fe_2O_3), SiO_3$. *For the biaxal:*—$KO, SiO_3 + 4\{(Al_2O_3, Fe_2O_3), SiO_3\}$. *But with these formulæ some analyses scarcely admit of being reconciled, and they do not include Fluorine, though it is a constant constituent of every variety of Mica.*

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL, OR THE OBLIQUE PRISMATIC.

588. In oblique rhombic prisms of a brownish-black colour, readily splitting into thin elastic leaves of an amber-yellow by transmitted light. Orange County, New York.

589. An irregular lamina, partly of a silver-white, partly of a dark-brown colour, and fissile in a high degree. Greenland.

590. Three very thin laminæ, nearly colourless, and possessed of a high degree of lustre; cut into rectangles. Siberia.

591. A thick, circular lamina, of a perfect silver-white colour, with quartz and a little felspar on the circumference.

592. A thick, triangular lamina, of a silver-white colour, with a tinge of yellow. North America.

593. An irregular mass of a dark-gray colour, inclining to brown, and composed of plates arranged in various directions, and having, in many places, a curved or undulating outline, with adhering quartz and a little felspar.

594. Several hexagonal laminæ of a silver-white colour. Lough Bray, Wicklow.

595. An aggregate of numerous distinct concretions, of a curved lamellar structure, dark-brown colour, and silvery lustre, in some parts stained red by the peroxide of iron. Saxony.

596. In small scales, partly of a golden-yellow, and partly of a pearl-white colour, imbedded in granular iron-shot quartz. Carrick, Cumberland.

597. Of a very dark brown colour, approaching to black, opaque, except in very thin laminæ, when it appears of an oil-yellow by transmitted light. Siberia.

598. In very regular six-sided prisms, of a dark-brown colour on the lateral, and silver-white and iridescent on the terminal faces; in granite. Middletown, Connecticut.

599. Of a silver-white colour, passing into greenish-yellow, and, at certain points, reflecting a distinct emerald-green, accompanied by botryoidal carbonate of lime, and a little felspar. Greenland.

600. In tabular, iron-shot, six-sided prisms, composed of silver-white laminæ, and accompanied by crystals of quartz sprinkled over with circular red dots, and a little

tourmalin of a velvet-black colour. Shlackenwald, Bohemia.

601. A large and very fissile lamina, of a copper-red colour and metallic lustre, with, towards its centre, some curved pearl-white lamellæ. Oxbow, Louis County, New York.

FUCHSITE.

This is the green variety of Mica, containing about four per cent. of Oxide of Chrome, to which it owes its colour.

602. In minute scales of an emerald-green colour and brilliant lustre, accompanied by reddish-brown calcareous spar; in pink-coloured quartz. Finmark.

603. This is a specimen of mica slate, including fuchsite instead of common mica. It contains, on the under side, a few greenish crystals of kyanite. Pfitsch, Tyrol.

LEPIDOLITE.

FORMULA.—$(K, Na, Li)\ F + (Al_2O_3, Mn_2O_3), 2SiO_3$. (*Rose.*)

CRYSTALLINE SYSTEM, THE RIGHT, OR THE OBLIQUE PRISMATIC.

604. A coarsely granular mass of a rose-red colour, exhibiting numerous lamellæ of irregular outline, and of a lustre between pearly and metallic. Moravia.

605. A coarsely granular lump of a dark lilac, verging towards violet, and exhibiting numerous shining facets, some of which appear to be hexangular; in coarse granite. Moravia.

606. Of a lighter lilac-colour than preceding specimen, and exhibiting larger facets. Moravia.

TOPAZ.

FORMULA.—$2Al_2F_3 + 5(Al_2O_3, SiO_3)$. *Forchhammer.*

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

607. A right-rhombic prism, of a wine-yellow colour, presenting the following secondary planes:—1st. A pair of planes bevilling the acute lateral edges. 2nd. Two separate sets of four planes replacing the terminal edges of the prisms, and corresponding to two rhombic octahedrons, differing merely in the magnitude of the principal axis. 3rd. A pair of planes replacing the acute terminal edges of the primitive octahedron. 4th. Four acuminating planes, slightly developed, and which replace the edges of combination of the planes of the horizontal prism and of principal octahedron. Schneckenstein, Saxony.

608. In this specimen there is one wine-yellow topaz of tolerable size, and several smaller ones of less transparency, and without colour. The form of the larger topaz is precisely the same with that of preceding specimen, with the exception that the planes which bevil the acute lateral angles are of greater relative magnitude. In topaz rock. Schneckenstein, Saxony.

609. A transparent and colourless rhombic crystal, which is modified exactly as the two preceding specimens; in granite. Mourne Mountains, County Down.

610. Three transparent crystals of a glassy lustre, and generally of the same form with those already described; in granite. Mourne Mountains, County Down.

611. Two nearly colourless and transparent right-rhombic prisms, with a dihedral termination, arising from the presence of the planes of a horizontal prism; also with the acute lateral edges bevilled, and a pair of small planes set upon the acute solid angles. Siberia.

612. Seven crystals, of a deep wine-yellow colour, in all of which may be recognised the faces of the primitive octahedron, of the corresponding vertical prism, and planes also produced by the bevilling of the acute lateral edges.

613. Three detached crystals; one of a light wine-yellow, and the others of a rose-red colour. The extremity of the former is bevilled by the planes of a horizontal prism resting on the acute lateral edges; the latter are acuminated by the faces of the primitive octahedron. Brazil.

614. In irregular crystals, translucent, and of a yellowish-green colour; accompanied by magnetic pyrites, a little copper pyrites, and the chlorophane variety of fluor spar. Trumbul, Connecticut.

615. Eight rolled pieces, of a greenish-white colour.

616. Four rolled pieces, of a white colour, inclining to bluish-white. Botany Bay.

617. A pebble of perfectly transparent and colourless topaz, cut and polished on two opposite surfaces. This specimen illustrates well the subconchoidal fracture of the mineral.

618. Topaz rock, including small, transparent, and colourless topazes, quartz, and lithomarge, which is partly yellow, partly white, and partly of a greenish-white colour. Schneckenstein, Saxony.

PYCNITE.

This is usually considered to be a variety of Topaz, but in composition it is somewhat different, having for Formula $2Al_2F_3 + 4Al_2O_3, 5SiO_3$. (*Forchhammer.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

619.

SCHORLITE.

A variety of Topaz.

620. Numerous short, cohering prisms, of a yellow colour with tinge of red; translucent, and without acuminating planes; accompanied by dark-brown mica. Altenberg, Saxony.

PYROPHYSSALITE.

A coarse and nearly opaque variety of Topaz.

621. Colour white, translucent, and with cleavages conducting to a rhombic prism.

622. A rough, six-sided prism, of a light apple-green colour, with some scales of silvery mica adhering to its lateral planes. Finbo, Finland.

SODALITE.

FORMULA.—$5(2NaO,\ SiO_3) + 5(2Al_2O_3,\ SiO_3) + 2NaCl$.
(*From an analysis by Arfwedson.*)

CRYSTALLINE SYSTEM, THE REGULAR.

623. In rounded crystals of a glassy lustre, presenting in a few places, and not very distinctly, the faces of the rhombic dodecahedron; accompanied by slender prisms of black augite, light cinnamon-coloured garnets, and a few crystals of a green vesuvian in eight-sided prisms, all of whose terminal edges are replaced by small planes. Vesuvius.

624. In crystalline concretions, having a dodecahedral cleavage, a greenish colour, and a lustre between vitreous and resinous; accompanied by endialyte and arfwedsonite. Kangerdluarsuk, Greenland.

TOURMALINE.—SCHORL.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

The term Schorl is generally applied to dark-coloured and nearly opaque specimens, which are destitute of, or possess but little lustre. The composition of all Tourmalines cannot be expressed by the same Formula. Herman divides them into three groups: the black (Schorl), the colourless (Achroite), and the red (Rubellite), and assigns to these the following Formulæ.

Schorl.—$3RO, 2BO_3 + 3Al_2O_3, 2SiO_3$, *in which* RO *is a mixture of Magnesia, Protoxide of Iron, Lithia, and Soda.*

Achroite.—$3RO, 2BO_3 + 9(Al_2O_3, SiO_3)$, RO *being Soda, Lithia, Magnesia, and the Protoxide of Manganese.*

Rubellite.—$2(3RO, BO_3) + 9(Al_2O_3, SiO_3)$, RO *being Soda, Lithia, Protoxide of Manganese, and Magnesia; the Manganese being in excess as respects the Magnesia.*

625. Numerous short prisms, of a black colour and considerable lustre, striated longitudinally; in pearl-gray quartz. Upland, Sweden.

626. A mass of slender prisms, of a black colour and considerable lustre, stellularly arranged, with a little interposed quartz and clay.

627. A large, prismatic crystal, of a dark-brown colour, channelled parallel to its axis; accompanied by bluish quartz and opaque white felspar. Killiney, Co. Dublin.

628. In long, slender, black prisms of several sides, disseminated through granite, and accompanied, on the under surface of the specimen, with a couple of crystals of yellowish-white beryl. Stillorgan, County Dublin.

629. In short and thick sulcated prisms, of a dark colour; imbedded in granite not containing any mica. Stillorgan, County Dublin.

630. In black prisms, variously aggregated, attached to quartz. St. Gothard.

631. In dark-brown prisms of eight sides, acuminated by planes of the primitive rhombohedron; attached to a rock composed of quartz and a talcose mica. Monroe, Connecticut.

632. In long, dark-green, triangular prisms, with rounded faces, and divided tranversely to the axis by veins of quartz; in green schistose talc. Tyrol.

633. A few large prisms, with about eight lateral faces, of a dark colour, and smooth and lustrous surfaces; imbedded in a rock composed of quartz, mica, and schorl. Greenland.

634. A large, eight-sided prism, of a black colour, acuminated by three planes, one being much larger than the other two, and which correspond to the faces of the primitive rhombohedron. Abo, Finland.

635. Three elongated crystals, of a perfect black colour, with numerous lateral planes, but presenting a general resemblance to rounded triangular prisms with channelled surfaces. St. Gothard.

636. A prism with nine sides, of a brownish-black colour, acuminated by three planes, the apex of acumination being truncated. Bodenmais, Bavaria.

637. A prism of precisely the same shape with preceding, but of a darker colour, and having a higher lustre.

638. In triangular prisms, with curved and striated faces, and of a velvet-black colour, one of the crystals being acuminated by three planes, and having the apex of the pyramid deeply truncated; accompanied by quartz. Sweden.

639. In thin, striated prisms, of a velvet-black colour; in granular quartz. Abo, Finland.

640. Massive, and crystallized in low, six-sided prisms, some of which are acuminated by three, others by six planes. Alston, Cornwall.

641. An irregular, channelled prism; green externally, and enclosing a smaller one of a red colour (rubellite); in granite. North America.

642. In striated prisms, some of which are six-sided; of an asparagus-green colour, accompanied by others of a deep amber shade; in a coarse granite. Elba.

643. In transparent, six-sided prisms, acuminated by three planes; of a pale sea-green colour; in granular, pearl-white dolomite. St. Gothard.

644. In leek-green prisms, some of which are curved; accompanied by a little rubellite of a pale rose-red; in yellowish quartz. Massachusets.

645. Three detached crystals; one of a colour between hair-brown and wine-yellow, the others of a greenish-blue. The smaller of the two latter is a nine-sided prism; the others, three-sided prisms, with curved and striated surfaces.

646. Several prisms of a leek-green colour, contorted, and intersected transversely by numerous very thin seams of quartz; accompanied by a little rose-red rubellite; in a rock composed of quartz and felspar.

INDICOLITE.

Tourmaline of a blue colour.

647. Of an indigo-blue colour, and nearly granular; dispersed through a rock composed of quartz and felspar. Utoe, Sweden.

RUBELLITE.

Tourmaline of a red colour.

648. An irregular prism of rubellite, with deep and numerous striæ parallel to the axis, and of a light cochineal-red colour. Peru.

649. In translucent prisms, of a peach-blossom-red colour; generally of a rounded, nearly cylindric form, with the exception of one which is flat and transparent; accompanied by a little indicolite of a bluish-green colour, and imbedded in lamellar albite. Massachusets.

AXINITE.

FORMULA.—$3(CaO, MgO), 2(SiO_3, BO_3) + 2\{(Al_2O_3, Fe_2O_3, Mn_2O_3), (SiO_3, BO_3)\}$.

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

650. In numerous flat, doubly oblique, four-sided prisms, several of which have an obtuse edge replaced by a single oblique plane. Colour, pale yellowish-brown, with, in the case of a few of the crystals, a tinge of violet; accompanied by byssolite and crystals of albite. Dauphiné.

651. In flat, doubly oblique prisms of a hair-brown colour, with tinge of violet; accompanied by crystallized felspar of a yellowish-white colour, with a little byssolite, and resting upon a mass of common hornblende. Dauphiné.

652. In prisms of same shape and colour as preceding specimen, resting on a chloritic clay slate, containing crystallized albite on its under surface. Dauphiné.

653. In large, flat axiform crystals of a colour intermediate between brown and violet, accompanied by calcareous spar, and baccillar greenish-yellow thallite. Bourg D'Oisans, Dauphiné.

SORDAWALITE.

FORMULA.—$2\{2(CaO, MgO), SiO_3\} + Al_2O_3, 2SiO_3 + 2HO$. (*From an analysis by Nordenskiold.*) *In this, however.* 2·68 *per cent. of Phosphoric Acid is neglected.*

NOT FOUND IN CRYSTALS.

654. A laminar and slightly magnetic mass of a jet-black colour, pitchy lustre, and conchoidal fracture; on an indurated slate. Sordawala, Finland.

655. Colour pitch-black, constituting a coating about one-twentieth of an inch in thickness, on a matrix principally composed of copper pyrites; attracts the magnetic needle. Finland.

LAPIS LAZULI.

The composition of this mineral has not been reduced to a formula. Its principal constituents are Silex, Alumina, and Soda, but it also includes a little Lime, a trace of Iron and Sulphur, partly as a Sulphuret, and partly as a Sulphate.

CRYSTALLINE SYSTEM, THE REGULAR.

656. Of a dark azure-blue colour, passing into indigo-blue, polished on one side, and containing disseminated common pyrites. Persia.

657. A nearly circular piece, cut and polished, presenting two different shades of azure-blue, intersected by a vein of yellowish-white carbonate of lime, and containing numerous particles of disseminated pyrites. Siberia.

658. A polished lamina, exhibiting blue dots of two different depths of tinge, intermixed with yellowish-white granular quartz and particles of pyrites. Siberia.

659. A mass of an azure-blue colour, intimately mixed with white carbonate of lime, and disseminated iron pyrites. Bucharia.

660. A thin, polished lamina of an azure-blue of two shades, intimately mixed with yellowish-white quartz and iron pyrites. Siberia.

HAUYNE.

The formula of this mineral, as given by Rammelsberg, is $3\{(NaO, CaO), SO_3\} + 3CaO, 2SiO_3 + 4(Al_2O_3, SiO_3)$.

CRYSTALLINE SYSTEM, THE REGULAR.

661. In small crystals of a sky-blue colour, exhibiting the faces of the rhombic dodecahedron, accompanied by olive-green vesuvian; in a rock composed of glassy felspar and mica. Vesuvius.

662. In minute crystals of a sky-blue colour, imbedded in glassy felspar. Campo Di Bove, Rome.

663. In grains of an azure-blue colour, accompanied by augite and some laminæ of mica; in yellowish-gray limestone. Vesuvius.

SPINELLANE.

This is considered to be a variety of Hauyne.

664. In crystals of a dark ash-gray colour, translucent, and presenting (some of them) rhombic faces; in glassy felspar. Laach, on the Rhine.

HELVIN.

FORMULA.—$3(MnO, MnS) + 3MnO, 2SiO_3 + 2\{(G_2O_3, Al_2O_3, F_2O_3), SiO_3\}$. (*Rose.*)

CRYSTALLINE SYSTEM, THE REGULAR.

665. In small, translucent crystals of a wax-yellow colour, and which are either octahedrons or tetrahedrons whose

angles are truncated; accompanied by colourless fluor spar, in crystals which affect the form of the triakis-octahedron. Bruder Lorowz Mine, Schwarzenberg, Saxony.

ALUMINOUS SILICATES, INCLUDING THE RARER EARTHS.

BERYL.

FORMULA.—$(Al_2O_3, G_2O_3), 3SiO_3$. (*From an analysis by Berzelius.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

666. A six-sided prism of a light sea-green colour, the terminal planes being rough, and the lateral partially covered with scales of a golden-yellow tinge. Siberia.

667. Two six-sided prisms of a sea-green colour tinged with blue, the larger having a perfect terminal plane at one extremity, the smaller at both. The larger, too, is broken in a direction transverse to its axis, and has imbedded in its lateral planes several particles of yellowish-white felspar. Mourne Mountains, County Down.

668. Two six-sided prisms of a green colour, with a tinge of blue, having, at one extremity, a single perfect terminal plane, and the solid angles composed of small wedge-like pieces nearly opaque, and which meet the subjacent portion of the prism in planes corresponding to the faces of a hexagonal dodecahedron of a different class from that of the prism.

669. Two six-sided prisms of a greenish-blue colour, with perfect terminal planes at a single extremity. The thicker has its lateral edges replaced generally by one, the thinner by two planes, and both present, upon the solid angles, the opaque wedge-like pieces noticed in No. 668.

670. Nine six-sided prisms of aqua-marine, whose terminal edges and solid angles are modified as follows:

a and *b* by planes on all the terminal edges and the solid angles, conducting to two hexagonal dodecahedrons of different classes.

c on four edges and five angles.

d on four edges and six angles.

e on four edges and four angles.

f on six edges and four angles.

g on five edges and six angles.

h on one edge and five angles.

i on one edge and six angles.

N. B. All these crystals, but *a* and *b*, are exceptions to the laws of symmetry.

671. A six-sided prism of a light sea-green colour, with a perfect terminal plane at one extremity, and three of the lateral planes larger than the rest; imbedded in granite containing opaque-white, crystallized felspar, and rock crystals of a clove-brown colour. Mourne Mountains, County Down.

672. Three crystals of a sea-green colour, one of which is a regular six-sided prism, exhibiting three flaws in directions transverse to the axis; in granite containing crystallized felspar and clove-brown rock crystal. Mourne Mountains, County Down.

673. Three sea-green crystals, the larger consisting of two smaller ones placed parallel to each other, the second being connected with this in a diagonal position, and the third a detached crystal. They are all six-sided prisms, with perfect terminal planes, and the edges and angles do not exhibit any secondary facets. In granite containing crystallized felspar, and smoke rock crystals. Mourne Mountains, County Down.

674. In six-sided prisms of a sea-green colour, the terminal planes being, with a single exception, rough, and of inferior lustre; in granite, with clove-brown rock crystal. Mourne Mountains, County Down.

675. Transparent, and nearly destitute of colour, cut and polished. Siberia.

676. A prismatic mass of an amber-yellow colour, and apparently composed of five distinct six-sided prisms, attached to each other by their lateral planes. Siberia.

677. A six-sided prism, with one nearly perfect terminal plane, translucent, and of a white colour, with very slight tinge of green. County Dublin.

678. Four elongated, greenish-white, six-sided prisms, in two of which only perfect terminal planes are observable; imbedded in dark pearl-gray common quartz. Ravenstein, Bavaria.

679. A large, imbedded, six-sided prism, translucent on the edges, and of a white colour, with slightly greenish tinge; in granite. Dalkey, County Dublin.

EMERALD,

Beryl of a green colour.

680. Three crystals which are six-sided prisms, whose lateral edges are truncated, highly translucent, and having, the smaller a grass-green, the remaining two an emerald-green colour. The smaller is from China, the remaining two from Peru.

681. Of an emerald-green colour, cut and polished. Peru.

EUCLASE.

FORMULA.—(Al_2O_3, G_2O_3), SiO_3. (*From an analysis by Berzelius.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

682. Three small specimens; *a* being of an apple-green colour, verging towards bottle-green, and in form nearly a triangular prism; *b* being of the same form, but nearly destitute of colour; and *c* a prism with six sides, of a wine-yellow, when looked at in one direction, and, in the rectangular direction, of a very light sapphire-blue colour. The two first crystals may be viewed as the halves of the primitive rhombic prism; the third, as the half of the same prism, having all its lateral edges truncated.

683. In rounded grains of a bottle-green colour, and perfectly transparent; accompanied by pink fluor, in a rock composed of compact fluor and yellowish-white calcareous spar. Ersby, Finland.

ALLANITE.

FORMULA.—3(3RO, SiO_3) + 2(Al_2O_3, SiO_3). *Scheerer.* RO *representing various isomorphous bases, as Lime, and the Protoxide of Iron, Cerium, and Lanthanum. This also represents the composition of Cerine and Orthite, which are but varieties of Allanite.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

684. Massive, of a pitch-black colour, and nitro-resinous lustre; imbedded in a rock composed of quartz and felspar. Tindingen, South Greenland.

685. In rhombic prisms of a compact structure, conchoidal fracture, and pitch-black colour; imbedded in granite. Kakasocissiak Island, Greenland.

CERINE.

A variety of Allanite.

686. Of a lead-gray colour, intimately mixed with greenish-gray actynolite. Bastnaes, near Rhydderhyttan, Sweden.

ORTHITE.

A variety of Allanite.

687. Massive, in seams of a dark-brown colour, in a granite composed of yellowish-white felspar, gray quartz, and but very little mica. Finbo, Sweden.

PYRORTHITE.

This mineral would seem to be an Orthite containing 31·41 *per cent. of Carbon, and* 26·5 *per cent. of Water.*

CRYSTALLINE SYSTEM NOT KNOWN.

688. Massive, in parallel seams of a lead-gray colour; in a granite principally composed of yellowish-white felspar and gray quartz. Karafvet, Sweden.

NON-ALUMINOUS SILICATES, CONTAINING THE RARER EARTHS.

GADOLINITE.

FORMULA.—$6(FeO, CaO), SiO_3 + 4(3YO, SiO_3)$. (*Berzelius.*) *According, however, to Mosander, the Yttria includes the oxides of two new metals, which he denominates* Erbium *and* Terbium.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

689. Two small fragments, massive, of a black colour, conchoidal fracture, and a lustre between vitreous and resi-

nous. Translucent only on the edges, and in a very low degree. Brodbo, Sweden.

690. Of a pitch-black colour, bordered by yellowish-brown, imbedded in common granite. Finbo, Sweden.

691. Of a black colour, with olive tinge, resinous lustre, and distinct conchoidal fracture; in granite. Brodbo, Sweden.

692. In seams of a brownish-black colour, in some parts covered by a bluish-white film; in mica slate, with quartz, and yellowish-white calcareous spar. Ytterby, Sweden.

TSCHEWKINITE.

Composition not perfectly known, but similar to that of Gadolinite.

NOT FOUND IN CRYSTALS.

693. Massive, of a velvet-black colour, scarcely translucent on the edges, and having a flat conchoidal fracture; accompanied by felspar of a flesh-red colour. Miask, Ural.

CERERITE.—CERITE.

FORMULA.—$3CeO, SiO_3 + 3HO$. (*Berzelius.*) *What is set down, however, as Oxide of Cerium, includes Oxide of Lanthanum.*

CRYSTALLINE SYSTEM NOT KNOWN.

694. Massive, and of a colour between tile and cherry-red; sub-translucent on the edges. Andover, New Jersey.

695. Of a light reddish-yellow colour; accompanied by cerium. Bastnaes, near Riddarhyttan, Sweden.

696. Massive, with granular structure, and of a colour between clove-brown and cherry-red. Bastnaes, Sweden.

SILICATE OF CERIUM.

Precise Composition not known.

CRYSTALLINE SYSTEM, PROBABLY THE RHOMBOHEDRAL.

697.

PHENAKITE.

FORMULA.—G_2O_3, $2SiO_3$. (*From an analysis by Hartwall.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

698. In aggregated, flat, irregular prisms, transparent, and of a wine-yellow colour; imbedded in brown iron ore, and accompanied by quartz. Framont, France.

THORITE.

Berzelius assigns as formula $3ThO$, $SiO_3 + 3HO$, *but small quantities of Lime, Magnesia, Iron, Manganese, and other bases, are also present.*

OCCURS ONLY MASSIVE

699.

LEUCOPHANE.

FORMULA.—$12(CaO, SiO_3)+2(G_2O_3, SiO_3) + 3NaF$. (*From an analysis by Erdman.*

CRYSTALLINE SYSTEM, PROBABLY THE DOUBLY OBLIQUE PRISMATIC.

700.

ZIRCON.

FORMULA.—Zr_2O_3, SiO_3. *But, according to Swanberg, Zircon also contains a new earth, which he calls Noria.*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

701. Five rounded crystals, in some of which the outline of the right square prism may be traced, translucent, and of a gray colour by transmitted light, with the exception of one, which is light hyacinth-red. Ceylon.

702. Two right square prisms, one being slightly water-worn and of a grayish-yellow colour, the other of a shade between yellow and hyacinth-red. Ceylon.

703. An imperfect octahedron of a yellow colour, with tinge of red. Ceylon.

704. Nineteen crystals of a yellowish-gray colour, sub-translucent, but possessed of considerable lustre. The form of all is the same, viz., a short, right square prism, terminated at each end by pyramids whose faces correspond in position to those of the prism. Barwell County, North Carolina.

705. Some rolled crystals, of which one is of an amber-yellow colour, and the rest either colourless or of a very light hyacinthine-red. Ceylon.

HYACINTH.

This name is applied to those Zircons which have bright colours, are highly transparent, and possess smooth and shining surfaces.

706. Numerous small crystals, a few being nearly colourless, the rest of a hyacinth-red of various shades. The prevalent form is that of an octahedron combined with the right square prism. Ceylon.

707. A few splendent angular grains of a hyacinth-red colour; imbedded in basalt containing much magnetic iron ore. Puy en Velais, Haute Loire.

708. In right square prisms of a shade between honey-yellow and hyacinth-red; imbedded in leek-green Labrador felspar. Congnuk, Greenland.

709. Colour, hyacinth-red, with a shade of honey-yellow. Cut and polished.

710. Six small and nearly colourless zircons. Cut and polished.

711. Two specimens, perfectly transparent, of a wine-yellow colour, one of them having a tinge of green; cut and polished. Ceylon.

EUDIALYTE.

The formula deduced by Rammelsberg from Stromeyer's analysis is $6\{(CaO, NaO), SiO_3\} + 2(Zr_2O_3, Fe_2O_3, Mn_2O_3), 3SiO_3$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

712. In crystalline nodules of a rose-red colour, one of which contains a nucleus of sodalite of a greenish-gray tinge; imbedded in baccillar arfwedsonite of a velvet-black colour, and accompanied by some white felspar. Kangardluarsuk, West Greenland.

713. Of a rose-red colour and crystalline structure; accompanied by yellowish-white felspar and hornblende of a deep green colour. Kangardluarsuk, West Greenland.

SILICATES OF COPPER OR OF ZINC.

DIOPTASE.

FORMULA.—$3CuO, 2SiO_3 + 3HO$. (*From an analysis by Hesse.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

714. Crystalline aggregates of an emerald-green colour, presenting some rhombic faces. The larger specimen is from Silesia; the smaller has been named by Professor Miller.

CHRYSOCOLLA.

FORMULA.—$3CuO, 2SiO_3 + 6HO$. (*Von Kobel.*)

NOT FOUND IN CRYSTALS.

715. Compact, and of a turquois-green; imbedded in tile ore, and on one side associated with fibrous malachite and a little gypsum. Los Mantos, Chili.

716. Compact, and of a turquois-green colour; in massive silicate of copper of a brown colour. Los Mercedes, Chili.

VELVET COPPER.

Exact composition not known, but its constituents are Silex, Sulphuric Acid, Oxide of Copper, and Oxide of Zinc.

CRYSTALLINE SYSTEM, NOT KNOWN.

717. In small, spherical concretions of a light bluish-green colour, and consisting of translucent capillary crystals diverging from a centre; in the cavities of iron-shot common quartz.

BEAUMONTITE.

This is a compound of Oxide of Copper partly with Silica, and partly with Crenic Acid, and containing 10 *per cent. of Water.*

AMORPHOUS.

718.

ELECTRIC CALAMINE.

FORMULA.—$2(3ZnO, SiO_3) + 3HO$. (*Berzelius.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

719. In very flat, translucent prisms of a yellowish colour, very brittle, and having considerable lustre.

720. A crystalline mass composed of nodules consisting of minute, diverging, prismatic crystals of a greenish-white colour. Ziklowa, on the Bannat.

721. A botryoidal mass of a greenish-yellow colour, translucent, and having a compact structure. Nertschinsky, Siberia.

WILHELMITE.

FORMULA.—$3ZnO, SiO_3$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

722. A granular mass of a reddish-brown colour, and resinous lustre. Altenberg, Aix-la-chapelle.

723. A granular mass of a reddish-brown colour, with, at one point, a few minute crystals presenting rhombohedral faces. Liege.

SILICATES ABOUNDING IN IRON.

LIEVRITE.

FORMULA.—$3\{3(CaO, FeO), SiO_3\}+2(Fe_2O_3, SiO_3)$.
(*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

724. Three detached crystals of an iron-black colour, tinged, in several places, reddish-brown on the surface by peroxide of iron. *a* is a right rectangular prism, with an imperfect pyramidal termination. *b* and *c* are of the same form, presenting the facets of the primitive octahedron, of a vertical prism not the principal one, and of a horizontal prism. The octahedral faces present a remarkable iridescence. Elba.

725. In irregular crystals obviously referable to the right rhombic prism, pitch-black, and iron-shot on the surface. Elba.

726. Partly massive, partly in rhombic prisms of a pitch-black colour, several of which are iron-shot on the surface. Elba.

727. In slender, iron-black, rhombic prisms, some of which are terminated by the faces of the primitive octahedron, two opposite edges of which are truncated by two of the planes of a horizontal prism; accompanied by iron-shot quartz; imbedded in a mass of yellowish-green actynolite. Cape Calmite, Elba.

728. Partly massive, partly in rhombic prisms, and partly in baccillar concretions; accompanied by iron ochre of a yellowish-brown colour. Elba.

WEHRLITE.

FORMULA.—$2\{3(FeO, CaO), SiO_3\} + 5(Fe_2O_3, SiO_3)$. (*From an analysis by Wehrle.*)

NOT FOUND IN DISTINCT CRYSTALS.

729. Massive, exhibiting on its surface numerous lamellæ having a sub-metallic lustre; attracts the magnetic needle, and also possesses a feeble polarity. Szurrasko, Hungary.

KROKYDOLITE.

FORMULA.—$14\{(FeO, MgO), SiO_3\} + 3NaO, SiO_3 + 6HO$. (*From an analysis by Stromeyer.*)

DOES NOT OCCUR IN CRYSTALS.

730. Two specimens, polished on one surface, of a dark indigo-blue colour, passing, in some directions, into sky-blue, and exhibiting the chatoyant lustre, intersected by stripes of magnetic iron and jaspery-brown ironstone. In the smaller specimens the fibres are easily separated, and exhibit a loose flocculent appearance. Grigna Country, Orange River, Cape of Good Hope.

POLYHYDRITE.

Composed of Silex, Peroxide of Iron, and 29·2 per cent. of Water.

NOT FOUND IN CRYSTALS.

731. Of a liver-brown colour and resinous lustre, translucent on the edges, with imbedded iron pyrites; in slate. Breitenbrunn, Saxony.

HISINGERITE.

FORMULA.—$FeO,\ SiO_3 + Fe_2O_3,\ SiO_3 + 6HO$. (*From an analysis by Hisinger.*)

DOES NOT OCCUR IN DISTINCT CRYSTALS.

732.

CRONSTEDTITE.

FORMULA.—$3(FeO,\ MnO,\ MgO),\ SiO_3 + Fe_2O_3,\ 3HO$. (*Von Kobell.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

733.

CHLOROPAL.

FORMULA.—$FeO,\ SiO_3 + 2HO$. (*From an analysis by Brandes.*)

NOT FOUND IN CRYSTALS.

734. Texture earthy, colour yellowish or pistachio-green, feebly translucent on the edges, with adhering common opal, partly white, and partly of an amber colour. Unghwar, Hungary.

N. B.—Along with the preceding is placed a specimen of greenish-yellow common opal, which accompanies the chloropal at Unghwar.

SIDEROSCHISOLITE.

When massive this mineral is called Chamoisite. The formula assigned by Von Kobell is 5FeO, $SiO_3 + 2HO$, *but there is also present a little Alumina.*

CRYSTALLINE SYSTEM NOT KNOWN.

735.

ANTHOSIDERITE.

FORMULA.—Fe_2O_3, $3SiO_3 + HO$. (*From an analysis by Schnedermann.*)

CRYSTALLINE SYSTEM NOT KNOWN.

736. In tufts of a fibrous structure, and of a colour between straw-yellow and ochre-brown; accompanied by magnetic iron ore. Minas Geras, Brazil.

NONTRONITE.

Berthier's analysis conducts to the formula Fe_2O_3, $2SiO_3 + 6HO$. *This mineral, however, also contains a little Alumina.*

NOT FOUND CRYSTALLIZED.

737.

PINGUITE.

Karsten's analysis leads to the empyrical formula $4SiO_3 + 5FeO + 14HO$.

OCCURS MASSIVE.

738. In fragments of a soapy feel and siskin and oil-green colour, very soft, and subtranslucent on the edges. Wolkenstein, Saxony.

SILICATES ABOUNDING IN MANGANESE.

MANGAN-SPAR.

FORMULA.—$3MnO, 2SiO_3$.

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

739. Massive, and of a colour between flesh and rose-red; fracture scaly; with adhering black oxide of manganese. Katherinberg, Ural.

RHODONITE.

This and the two next minerals are impure varieties of Mangan-spar, containing generally a little Alumina, and the Carbonates of Iron and Manganese.

740 Massive, and of a flesh colour, passing into grayish-green and greenish-yellow; with adhering black oxide of manganese. Elbingerode, Hartz.

PHOTIZITE.

An impure variety of Mangan-spar.

741. Massive, with compact structure, and of different shades of yellowish-red.

ALLAGITE.

An impure variety of Mangan-spar.

742. Of a gray colour, with a tinge of red, and compact structure. Elbingerode, Hartz.

TROOSTITE.

FORMULA.—Fe_2O_3, $SiO_3 + 2(3MnO, SiO_3)$. (*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

743. In rounded nodules of a yellowish colour, on some of which rhombic faces may be discerned; on massive and crystallized franklinite. Sparta, New Jersey.

744. Massive, and in large, six-sided prisms of a yellowish-brown colour, some of which are acuminated by three planes, the faces of the primitive rhombohedron; accompanied by white calcareous spar. Stirling, New Jersey.

BUSTAMITE.

FORMULA.—$3CaO, 2SiO_3 + 2(3MnO, 2SiO_3)$. (*From an analysis by Dumas.*)

NOT FOUND IN CRYSTALS.

745.

HETEROCLINE.

According to the analysis of Evreinoff, the empirical formula, neglecting small quantities of Iron, Lime, and Potash, is $9MnO_2, SiO_3$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

746.

SILICATES ABOUNDING IN LIME.

DYSCLASITE.

FORMULA.—$3CaO, 4SiO_3 + 6HO$. (*Connell.*)

NOT FOUND IN DISTINCT CRYSTALS.

747. Texture fibrous and crystalline, colour white, with an opalescent tint. Translucent, and of exceeding toughness. Feroe Islands.

ÆDELFORSITE.

FORMULA.—CaO, SiO_3.

NOT FOUND IN DISTINCT CRYSTALS.

748. Massive, of a light yellow colour, and crystalline structure; with adhering yellowish-green epidote. Ædelfors, Smaland, Sweden.

TABULAR SPAR.

FORMULA.—$3CaO, 2SiO_3$.

CRYSTALLINE SYSTEM, PROBABLY THE DOUBLY OBLIQUE PRISMATIC.

749. An aggregate of lamellar crystals of a white colour, with very slight tint of bluish-green, and pearly lustre; accompanied by a few minute particles of a red chondrodite. Pennsylvania.

750. An aggregate of pretty distinct, flat, prismatic crystals, of a white colour and pearly lustre; accompanied by imbedded green coccolite. Lake Champlain.

751. A mass composed of interlaced, white, lamellar crystals, with a few imbedded grains of a grayish-green coccolite.

752. A concretionary mass composed of prismatic crystals of a white colour, with much imbedded colophonite, and a few grains of green coccolite. New York.

753. A concretionary mass composed of parallel prismatic crystals of a pearl-white colour, with adhering granular garnet of a yellowish-green tint. Orawitze, Bannat.

SILICATES ABOUNDING IN MAGNESIA.

TALC.

FORMULA.—MgO, SiO_3.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

754. A large, tabular, crystalline mass, sub-transparent, white, and having the pearly lustre on its cleavage faces, but a lustre intermediate between vitreous and silky on the surfaces produced by the transverse fracture of the

laminæ. This beautiful specimen was brought by Captain Parry from the Arctic regions.

755. Of a foliated texture, pearly lustre, and light apple-green colour. Zillersthal, Tyrol.

756. In thin seams of a snow-white colour and silky lustre, investing and interposed between layers of granular white dolomite. Donegal.

757. Composed of minute lamellæ having a parallel arrangement, a yellowish-white colour, and pearly lustre.

758. A yellowish-white powder composed of minute scales of a pearly aspect.

759. In distinct lamellar concretions of a greenish-white colour; accompanied by copper pyrites.

760. In numerous concretions composed of thin inelastic lamellæ of a bluish-green colour and pearly lustre; accompanied by quartz. Donegal.

761. This, which is a specimen of slaty talc, has a foliated structure and grayish-blue colour, passing into grayish-green, and a silky lustre. Foxhall, Donegal.

762. Structure nearly compact, colour white with a slight tinge of green. Croghy, Donegal.

763. Indurated talc of a foliated structure, and of a dark leek-green colour, verging towards bluish-green. Holyhead.

SOAPSTONE.

FORMULA.—$2(3MgO, 2SiO_3) + Al_2O_3, SiO_3 + 6HO$. (*From an analysis by Svardsjo.*) *Though containing Alumina it is placed here, from its close resemblance to Talc.*

NOT FOUND IN CRYSTALS.

764. An irregular tetrahedral mass, of a soapy feel, greasy lustre, and yellowish-white colour; sub-translucent on the edges. Lizard Point, Cornwall.

765. Of a reddish-white colour, soapy feel, and granular fracture. Bareuth.

766. A flat piece, cut and smoothened, compact, and of a pearl-white colour with a slight tinge of yellow. Perthshire.

767. A square lamina cut and polished, possessing considerable hardness, and a yellowish-white colour, with dendritic spots of peroxide of manganese. Winsiedale, Bareuth.

768. Of a grayish-white colour, greasy feel, and a structure partly lamellar and partly compact.

POTSTONE.

This appears to be little more than a variety of impure Soapstone. A Potstone from Sweden, analyzed by Thomson, may be represented by the formula $5\{3(MgO, FeO)\ 2(SiO_3, Al_2O_3)\} + 4HO$. *It is, however, undoubtedly a mixture.*

769.

CHRYSOLITE.

$3(MgO, FeO), SiO_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

770. Five specimens, three being amorphous fragments, two irregular crystals, all being transparent, and of an olive-green colour. Carthagena, Spain.

OLIVINE.

This name is applied to those Chrysolites which occur in crystals of inferior regularity, transparency, and brightness of colour.

771. In crystals of an olive-green colour, most of which are granular, some distinctly prismatic; imbedded in brownish-black basalt. Auvergne.

772. In granular concretions of an olive-green colour, some of the minute crystals being pavonized on the surface; imbedded in basalt. Auvergne.

773. In granular crystals of an amber-yellow colour, on a mass principally composed of dark-brown mica, and containing crystals of black augite. Vesuvius.

774. In minute prisms of an oil-green colour; imbedded in bluish-gray basalt. Vesuvius.

775. A nodule of a colour between olive-green and amber-yellow; imbedded in basalt.

776. Massive, of a dark green colour, and conchoidal fracture, constituting a nodule in amygdaloid, and encompassed by calcedony and quartz. Whitehouse, Belfast.

HYALOSIDERITE.

This is considered as a variety of Olivine, though the analysis by Walchner shows it to contain, in addition to the constituents of Olivine, small quantities of Alumina, Potash, and the Oxide of Chrome.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

777. In minute prismatic crystals of a reddish-brown colour and metallic lustre, accompanied by black crystals of hornblende; in amygdaloid. Kaiserstuhl, Baden.

FORSTERITE.

Not analysed, but consists, according to Children, of Silex and Magnesia.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

778. In rough, nearly colourless prismatic crystals, presenting in the fracture the vitreous lustre; accompanied by mica and a little augite. Vesuvius.

MONTICELLITE.

Not analyzed, but supposed by Breithaupt to resemble Olivine.

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

779. In minute crystals of a wax-yellow colour; on granular limestone. Vesuvius.

MEERSCHAUM.

A hydrated silicate of Magnesia, not constant in composition. A specimen analyzed by Berthier, and brought from Coulommiers, thirty miles east of Paris, has the formula $MgO, SiO_3 + HO$. *The constitution of the Natolian Meerschaum is represented by the formula* $3MgO, 2SiO_3 + 5HO$.

OCCURS ONLY MASSIVE.

780. Of a milk-white colour passing into a grayish-white, dotted with black oxide of manganese, and showing a few scales of mica. Adheres to the tongue, and is nearly light enough to float on water. Moravia.

781. Much heavier than preceding, translucent on the edges, of a grayish-green colour, and not adhering to the tongue. Crimea.

SERPENTINE.

Composed of a Silicate associated with a Hydrate of Magnesia; but the precise constitution, and the relative proportions of these constituents, is subject to variation. A little Alumina also is sometimes present.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

782. Of a deep oil-green colour, and translucent on the edges. This is a *precious* serpentine. Piedmont.

783. Colour partly red, partly dark-green with gray dots, intersected with white sinuous lines. Cornwall.

784. Colour, green of various shades, also yellowish-white, with some scales of mica. This specimen contains carbonate of lime intermixed, and is, therefore, identical with the verd-antique of the ancients. Ballinahinch, Galway.

785. A fragment cut into an oval slab, and exhibiting upon its upper surface various colours, viz., green, red, greenish-white, and yellowish-white. Portsoy, Scotland.

786. Cut into the form of a rectangular slab, and polished on one side; of various colours, viz., a dark green, dull red, yellow, and yellowish-green.

787. A slab cut into the rectangular form, and coloured partly dark-green approaching to black, and partly red, with various interspersed grayish dots. Saxony.

788. Of a dark green colour, and having a structure on one side between fibrous and foliated. Unst, Shetland.

789. Of a dark green colour, coated at some points, and intimately mixed with siskin-green indurated talc. Holyhead.

790. Noble serpentine, of a colour between siskin-green and light leek-green, and strongly translucent on the edges. New York.

PICROLITE.

This mineral, which was made a distinct species of by Hausman, is nothing but a fibrous variety of Serpentine.

791. Of a fibro-lamellar structure, and deep leek-green colour. Killin, Perthshire.

MARMOLITE.

This mineral, erected by Nuttall into a distinct species, is nothing but a foliated Serpentine.

792. Two specimens of a foliated structure, and light siskin-green colour, the smaller presenting a slight yellowish

tinge, and having attached to it a bit of common serpentine. Hoboken, New Jersey.

KEROLITE.

This is also considered by Beck as a variety of Serpentine, though it contains 12·18 *per cent. of Alumina. The results of its analysis by Pfaff correspond pretty well with the formula,* $2(3MgO, 2SiO_3) + 2Al_2O_3, 3SiO_3 + 28HO$.

793. Structure compact, feel greasy, colour a light yellow, and hardness less than that of glass; imbedded between two laminæ of a dull white substance, which has the appearance of an indurated soapstone. Frankenstein, Silesia.

NEMALITE.

FORMULA.—$3MgO, SiO_3 + 6 (MgO, 2HO)$. (*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM NOT KNOWN.

794 Inelastic, easily separable, diverging fibres, of a white colour, and silky lustre; on yellowish-green serpentine. Hoboken, New Jersey.

VILLARSITE.

According to the analysis of Pfaff, the formula is $4\{3(MgO, FeO), SiO_3\} + HO$, *or it is a hydrous Olivine.*

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

795. In minute translucent crystals of a yellowish colour; accompanied by magnetic pyrites and calcareous spar. Traversella, Piedmont.

PICROSMINE.

The analysis of Magnus makes the formula, $2(3MgO, 2SiO_3) + 3HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

796. Colour, grayish-green, structure columnar, like that of common asbestos, subtranslucent, and evolving, when moistened, a bitter odour. Saxony.

COMPOUND SILICATES, INCLUDING SOME OR ALL OF THE ISOMORPHOUS BASES, LIME, MAGNESIA, PROTOXIDE OF IRON, PROTOXIDE OF MANGANESE.

PYROXENE.

Under this head are arranged a variety of minerals, the constitution of all which is represented by the general formula $3RO, 2SiO_3$, RO *standing for a mixture of Lime, Magnesia, and Protoxide of Iron, with occasionally a little Protoxide of Manganese. The different varieties have received distinct names from differences in colour and other non-essential properties.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

DIOPSIDE.

This is the name applied to Pyroxenes of a light colour.

797. In four-sided rectangular prisms of a greenish-white colour, one of which is acuminated by four planes set upon the solid angles; accompanied by clear red garnets in crystals, presenting the faces of the dodecahedron and ikositetrahedron; on gneiss. Ala, Piedmont.

N. B. This variety of diopside is often, from its locality, called alalite.

798. In four-sided rectangular prisms of a greenish-white colour, with generally a dihedral termination; accompanied by hexahedral prisms of green talc, and clear red garnets in ikositetrahedrons, and forms compounded of the ikositetrahedron and dodecahedron. Ala, Piedmont.

799. An aggregate of a few flat prisms with indistinct terminal planes, of a colour between light siskin and olive-green. Ala, Piedmont.

800. Colour white, with very light tinge of green, and in rhombic prisms whose terminal edges are replaced; accompanied by clear red garnets, presenting the faces of the dodecahedron and ikositetrahedron. Ala, Piedmont.

801. A large rhombic prism of a bluish-white colour, cracked transversely in two places, with accompanying quartz. United States.

802. In rough six-sided prisms of a pale yellow colour, accompanied by common garnet in ikositetrahedrons on greenstone. Ala, Piedmont.

SAHLITE.

This term is applied to Pyroxenes of a grayish-green colour, but of a coarser structure, and less brilliant colour than Diopside. The names Baikalite, Pyrgom, Fassaite, are applied to dingy-green varieties of Sahlite.

803. Of a white colour with a shade of yellowish-green, crystalline, and having a coarse lamellar structure. Connecticut.

804. In prisms of a light leek-green colour, passing into yellowish-green, and having, some four, some eight lateral planes. New York.

805. In olive-green prismatic crystals, with some of the la-

teral edges bevilled ; accompanied by a few small fragments of garnet, on granite. Arendahl, Norway.

806. In irregularly rounded crystals of a leek-green colour, imbedded in flesh-red compact limestone. Tiree, Scotland.

807. A lump of a grayish-green colour, and lamellar texture, exhibiting some minute shining particles of galena on its surface. New York.

808. A siskin-green prismatic crystal, having six sides, and composed apparently of several smaller ones, closely aggregated in a parallel position; on calcareous spar. Baikal, Siberia.

809. In flat prisms, striated longitudinally, and wedge-shaped on two opposite edges, of a pale green colour passing into leek-green, accompanied by tabular crystals of felspar; on massive sahlite. Baikal, Siberia.

810. In leek-green prisms with numerous secondary planes; on green-stone, also containing mica. Fassa, Piedmont.

MUSSITE.

A variety of Sahlite, found at Mussa in Piedmont.

811. Colour dull white, with a scarcely perceptible tinge of green, composed of rounded prisms, without acuminations, so aggregated as to give rise to the columnar structure. Mussa, Piedmont.

812. A flat lamellar mass, of a gray colour, with light tinge of green. Specimens such as this are sometimes denominated *compressed* mussite. Mussa, Piedmont.

AUGITE.

This is the name given to the dark-coloured Pyroxenes usually found in Lava and Basalt, and hence called Basaltic Augite. These, it should be recollected, deviate, as to composition, slightly from the general formula for the Pyroxenes, in particular by containing Alumina.

813. A twin crystal of raven-black colour and considerable lustre, the form being that of an eight-sided prism with oblique dihedral summit. Capo di Bove, Rome.

814. Two detached crystals of a dark colour and same shape as preceding specimen. Bilin, Bohemia.

815. In indistinct prismatic crystals of a black colour; on massive augite. Arendahl, Norway.

816. In eight-sided prisms, with flat dihedral summits, of an olive-green colour. Piedmont.

817. In pitch-black crystals which are compounded of the faces of the primitive rhombic prism and of the primitive octahedron. In some, too, there are planes on the acute lateral edges, others exhibit a terminal face, and others the faces of the oblique prism of the fifth system; on grass-green granular epidote. Traversalla, Piedmont.

818. In small, black, prismatic crystals, most of which are shattered; imbedded in lava. Torre del Græco.

819. In pitch-black eight-sided prisms; imbedded in dark-brown basalt. Tyrol.

JEFFERSONITE.

This also is considered a variety of Pyroxene.

820. Massive, with an approach to the lamellar structure, of a dark brown colour and sub-metallic lustre. Sussex County, New Jersey.

EUCHYSIDERITE.

The analysis of this mineral has not been made, but it is considered to be a variety of Augite.

821. In flat six-sided prisms of a black colour, and considerable lustre; imbedded in common quartz. Eger, near Drammen, Norway.

COCCOLITE.

Any Pyroxene occurring in the granular form is a Coccolite.

822. Composed of cohering granular crystals of a grass-green colour; accompanied by a little calcareous spar. Arendahl, Norway.

823. In granular crystals of a leek-green colour; accompanied by, and imbedded in white calcareous spar. Arendahl, Norway.

824. In granular crystals of a dark-brown colour; accompanied by small yellowish-white crystals of leucite. New York.

SCHILLER SPAR.—DIALLAGE.

FORMULA.—3(CaO, MgO, FeO), $2SiO_3$, *or the same as the formula for Pyroxene.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

825. A mass of lamellar crystals of a gray colour inclining to bronze-yellow, and possessing, on the cleavage planes, a shining metallic lustre. From the Appenines.

826. In rhomboidal laminæ of a light olive-green colour, and shining metallic lustre; imbedded in serpentine. Hartz.

827. In curvilinear lamellæ of a leek-green colour, and submetallic lustre. Tyrol.

BRONZITE.

The formula usually assigned to this substance is $3MgO, 2SiO_3$, *but it rarely happens that some of the Magnesia is not replaced by other bases isomorphous with it, in particular the Protoxide of Iron. Dana, therefore, is probably correct in viewing this and the preceding mineral, and Hypersthene also, as mere varieties of Pyroxene.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

828. In foliated concretions of a pinchbeck-brown colour passing into bronze ; in greenstone. Fichle Mountains, Bavaria.

829. In lamellar or foliated concretions of a pinchbeck-brown colour, and sub-metallic lustre. Hoff, Franconia.

830. In scaly distinct concretions of a brass-yellow colour verging towards silver-white; polished on the upper surface. Sualpi, Styria.

HYPERSTHENE.

A variety of Pyroxene, or, more properly speaking, a Schiller spar of a dark colour.

831. A lamellar mass of a dark colour, and sub-metallic lustre. Labrador.

832. A large, imperfect, prismatic crystal, of a greenish-brown colour, and with a distinct basal cleavage.

833. In oblique rhombic prisms of a colour between plum and sky-blue; imbedded in quartz, and accompanied by a little mica. Kassiegiengast, Greenland.

RENSSLAERITE.

This mineral, first described as a distinct species by Emmous, appears to be merely a Pyroxene intermixed with Steatite. According to the analysis by Beck its formula is 4(MgO, FeO, CaO), $3SiO_3$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

834. Massive, and of a greenish-gray colour, intermixed with yellowish-white steatite. Perth, Canada.

HUDSONITE.

This mineral, distinguished as a species by Beck, is by Dana referred to Pyroxene. It differs from it, however, in containing 12·7 *per cent. of Alumina.*

NOT FOUND CRYSTALLIZED.

835.

BABINGTONITE.

The formula deduced by Rammelsberg from Arpe's analysis, is $3(CaOSiO_3) + 3FeO, 2SiO_3$.

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

836. In splendent crystals of a jet-black colour externally, and a blackish-green on a fractured surface intersecting the prismatic axis. The crystals are six-sided prisms with a single terminal edge, replaced by a plane; in flesh-coloured felspar, accompanied by apophyllite. Arendahl, Norway

HORNBLENDE FAMILY.

Under this heading are arranged several minerals, viz., Tremolite, Anthophyllite, Actynolite, and Hornblende proper, all of which occur in crystals referable to the oblique prismatic system, and whose composition (the last being excepted) is represented by the general formula $4RO, 3SiO_3$, RO *being Lime, Magnesia, or Protoxide of Iron, or a mixture of these bases.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

TREMOLITE.

FORMULA.—$4(MgO, CaO), 3SiO_3$.

837. In glassy prisms, having a lamellar structure, pearly lustre, and pearl-white colour, accompanied by a little grayish-white granular dolomite. Shetland.

838. A greenish-gray crystalline mass, composed of flat diverging prisms having the pearly lustre. Dannemora, Sweden.

839. Composed of opaque white diverging fibres, on a greenish crystalline limestone, accompanied by brown garnets, and a little vesuvian. Bunbeg, Co. Donegal.

840. Composed of interlaced pearl-gray fibres of a silky lustre, accompanied by ironstone. Piedmont.

ANTHOPHYLLITE.

FORMULA.—$4(FeO, MgO), 3SiO_3$.

841. In flat glassy prisms of a gray colour and pearly lustre, accompanied by mica; from veins in mica slate. Ilgortitokk, Greenland.

842. In diverging plumose fibres of a dark-brown colour, imbedded in a mica slate chiefly composed of quartz. Ivertok, South Greenland.

843. Structure interlaced lamellar, colour between clove-brown and leek-green. Kongsberg, Norway.

ACTYNOLITE.

FORMULA.—4(MgO, CaO, FeO), $3SiO_3$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

844. A fasciculus of slender prisms of a grass-green colour, arranged in a parallel position, and somewhat curved at one extremity; accompanied by a minute quantity of interspersed pearl-gray talc. Tyrol.

845. A mass composed of parallel prisms of a mountain-green colour and glassy lustre, with a little interposed pearly talc. Glenelg, Scotland.

846. Structure fibrous, colour apple-green passing into grass-green. Greiner, Tyrol.

847. In long rhombic prisms of a leek-green colour and glassy lustre, imbedded in pearl-white talc.

848. In rhombic prisms of a dark leek-green colour, imbedded in pearly talc having a scarcely perceptible tinge of green. Greenland.

849. Composed of parallel glassy fibres of a leek-green colour, slightly magnetic, in consequence of including some magnetic iron ore. Rhode Island.

850. A baccillar aggregate of slender glassy prisms of an apple-green colour, with some adhering pearl-white common talc. Greiner, Tyrol.

HORNBLENDE PROPER.

As originally applied, this name was restricted to the dark-coloured varieties, whether massive or in crystals. These are somewhat variable in composition, and differ strikingly from the Hornblendic minerals already described, in containing Alumina, and a small quantity of Fluorine.

851. Four detached crystals of a pitch-black colour, each being a six-sided prism derived from an oblique rhombic prism, by the combination of this latter form with a pair of planes set upon two opposite lateral edges. *a* has a dihedral termination at one end, and is acuminated by four planes at the other; *b* has three acuminating planes at the two ends; *c* is similarly terminated; and *d* has four acuminating planes at one extremity and three at the other. Teneriffe.

852. A six-sided prism of a pitch-black colour, rough surface, and considerable lustre, acuminated at one end by three planes resting on the alternate edges, two of which are much larger than the third, and with an irregular termination at the other extremity. Toëplitz, Bohemia.

853. In crystals of a dark leek-green colour, in form rhombic prisms, some of which have the obtuse lateral edges replaced by planes, and are, therefore, hexahedral; accompanied by a little magnetic iron ore, and interspersed particles of garnet. Arendahl, Norway.

854. In six-sided prisms, acuminated by three planes of a pitch-black colour and much lustre; in a rock composed of quartz and felspar, both of which are partially coloured with iron. Toëplitz, Bohemia.

855. Partly globular, partly in six-sided prisms of a dark leek-green colour; imbedded in calcareous spar, of a pearl-gray colour. From Pargas, Finland, and hence sometimes called *Pargasite*.

856. In long prismatic crystals of a black colour with a tinge of green, imbedded in flesh-coloured calcareous spar. Arendahl, Norway.

857. In numerous small and irregularly arranged jet-black prismatic crystals, with intermixed calcareous spar. Vesuvius.

858. A concretionary mass composed of numerous minute granular crystals of a raven-black colour. Garobladodatsky Iron Works.

859. A concretionary mass of a fibrous structure and dark green colour, with intermixed flesh-red calcareous spar. Greenland.

860. Of a dark brownish-black colour, and broad lamellar texture; iridescent. New York.

861. Of a dark colour, broad lamellar texture, and foliated fracture. Saxony.

862. In six-sided prisms of a dark colour, with a slight tinge of grayish-green; imbedded in common quartz. Utoe, Sweden.

863. A crystalline mass of a dark-green colour, and exhibiting on its surface of fracture the facets of the crystals of which it is composed. Kilranelagh, Co. Wicklow.

864. Massive and of a greenish-black colour; accompanied by a minute quantity of felspar, and some particles of copper pyrites. Co. Wexford.

ARFWEDSONITE.

This is usually considered a mere variety of Hornblende, but Brook distinguishes it as a separate species, in consequence of finding the obtuse angle of the rhombic prism less than that of Hornblende by about 35°. An analysis by Von Kobel makes its formula the same with that of Hornblende, from which, however, it differs in containing about 3 per cent. of Soda. The principal base is Protoxide of Iron, but of Lime and Magnesia there are mere traces.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

865. A flat crystalline plate, with cleavages conducting to a rhombic prism. Colour, jet-black, lustre, metallic, with some adhering greenish-white felspar. Kangerdluarsuk, Greenland, where it was found by Giesecke accompanied by eudialyte and sodalite.

866. A large flattened crystal of a velvet-black colour and metallic lustre; accompanied by pearl-gray felspar. Kangerdluarsuk, Greenland.

ASBESTUS.—AMIANTHUS.—MOUNTAIN LEATHER.—MOUNTAIN CORK.—ROCK-WOOD.

The different minerals distinguished by these names are generally considered as fibrous varieties of Tremolite or Actynolite, though some varieties should probably be referred to the genus Pyroxene. When the fibres are parallel the mineral is Asbestus; if parallel and very fine it is Amianthus; and if parallel and strongly cohering, it is Rock-wood. When the fibres interlace, the mineral is called Mountain Cork, or Mountain Leather, according as it more closely resembles in texture the one or the other of these substances.

867. Asbestus, in white flexible fibres of a silky lustre, easily separable from each other, but possessed of some tenacity.

868. Asbestus, of a bluish-green colour, and composed of parallel and curved cohering fibres, possessing little tenacity. Finmark.

869. Asbestus, of a greenish-white colour, and composed of fibres, some of which are flexible. Kilream, Donegal.

870. Amianthus, divisible into fine threads of a light-green colour, and constituting a vein in noble serpentine.

871. Mountain leather, a felted mass of a yellowish-white colour. An Irish specimen, probably from Slieve Gallion.

872. Mountain cork, of a pale-white colour, with yellow stripes. Adheres strongly to the tongue. Co. Derry.

873. Rock-wood, of a yellowish-white colour, with adhering steatite. Lizard Point, Cornwall.

874. Rock-wood, of a fibrous texture, somewhat silky lustre, and an Isabella-yellow passing into ochre-yellow colour. Tyrol.

NON-ALUMINOUS SILICATES INCLUDING AN ALKALI.

CUMMINGTONITE.

FORMULA.—$NaO, SiO_3 + 3\{(FeO, MnO) SiO_3\}$. (*From an analysis by Muir*).

CRYSTALLINE SYSTEM NOT KNOWN.

875. In thin diverging fibres of an ash-gray colour and silky lustre, iron-shot on the exposed surfaces. Cummington, Massachusetts.

876. Characters the same as those of preceding specimen, and from the same locality.

ACHMITE.

Formula.—$NaO, SiO_3 + Fe_2 O_3, 2SiO_3$. (*Berzelius and Chapman.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

877. In long prismatic crystals of a dark-brown colour, opaque, of a vitro-resinous lustre, and with an uneven earthy fracture. Rundemyr, Norway.

HYDROUS ANTHOPHYLLITE.

The most probable formula for this mineral deducible from the analysis by Thomson is $KO, 2SiO_3 + 6\{(MgO, FeO, MnO) SiO_3\}$.

THE CRYSTALLINE SYSTEM IS UNKNOWN.

878. In slender diverging prisms of a bluish-gray colour, soft and sectile. New York.

APOPHYLLITE.

Formula.—$KO, 2SiO_3 + 8(CaO, SiO_3) + 16HO$. (*Berzelius.*) *A little Fluorine is also very generally present, which, according to Rammelsberg, replaces some of the Oxygen of the mineral, forming* RF, SiF_3, R *being Potassium or Calcium, or both.*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

879. In transparent, tabular, right square prisms, whose angles and lateral edges are replaced by planes; accompanied by stilbite, on basalt.

880. In transparent right square prisms, none of which exhibit secondary planes; on amygdaloidal trap.

881. In transparent right square prisms, accompanied by some crystals of stilbite; on fibrous mesotype. Greenland.

882. In translucent right square prisms, whose angles are replaced by planes conducting to the octahedron, accompanied by sphæro-stilbite; on basalt. Skye.

883. In numerous transparent right square prisms, whose angles are replaced; on dolomite, which itself rests on a table of wine-yellow calcareous spar. From a copper mine, Bannat, Hungary.

884. A portion of a large tabular, right square prism. In this, and indeed in all crystals of apophyllite, the terminal and lateral planes are distinguishable by the lustre of the former being pearly, and of the latter vitreous.

885. Partly massive, partly in imperfect lamellar crystals of a light-rose colour, accompanied by a small quantity of fibrous natrolite. Hutoe, Faroe.

886. In right square prisms of a greenish tinge, terminated by pyramids whose faces are set on the lateral edges. Several of the crystals are aggregated, but one is found insulated with a double pyramidal termination; accompanied by natrolite. Tarajugetsomik, Greenland.

887. A lamellar apophyllite, composed of large and irregularly disposed crystalline laminæ, exhibiting the pearly lustre.

ALBIN.

An Apophyllite of an opaque white colour.

888. In small and nearly opaque white crystals, which are compound forms, exhibiting the faces of an octahedron and of a prism belonging to different classes, the former being those best developed. This variety of apophyllite has been only found at Aussig in Bohemia.

OXHAVERITE.

This is a green Apophyllite, found at the Oxhaver springs, Iceland.

889.

PECTOLITE.

FORMULA.—$3\{(NaO, KO), SiO_3\} + 4(3CaO, 2SiO_3) + 3HO$. *(From an analysis by Von Kobell.) According to Frankenheim it has no water, and may be considered as a Hornblende, in which some of the Lime is replaced by Soda and Potash.*

CRYSTALLINE SYSTEM NOT KNOWN.

890. In gray spheroidal masses consisting of opaque divergent fibres radiating from a centre. Fassa, Tyrol.

NON-ALUMINOUS SILICATES CONTAINING FLUORINE, CHLORINE, OR PHOSPHORUS.

CHONDRODITE.

FORMULA.— $MgF + 3(3MgO, SiO_3.)$ (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

891. In small granular crystals of a reddish-brown colour, imbedded in pearl-gray granular limestone. Zoëblitz, Silesia.

892. In granular crystals of a honey-yellow colour, accompanied by minute crystals of bluish-black dichroite; on bluish-white calcareous spar. Pargas, Finland.

HUMITE.

Not analyzed, but is probably only a variety of Chondrodite.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

893. In minute semi-transparent crystals of a light-yellow colour, and which present numerous facets. Vesuvius.

PYROSMALITE.

FORMULA.—$Fe_2Cl_3 + Fe_2O_3, 6HO + 4\ \{(3FeO, MnO)\, 2SiO_3\}$. (*Rose.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

894. In imperfect hexangular prisms of a liver-brown colour, passing into pistachio-green, and which exhibit on the terminal faces a strong pearly lustre. Phillipstadt, Sweden.

BISMUTH BLENDE.

FORMULA.—$3BiO_3, 5SiO_3 + x(Fe_2O_3, PO_5) + yFe_2F_3$. (*From an analysis by Karsten.*)

CRYSTALLINE SYSTEM, THE REGULAR.

895. In minute black lustrous crystals, referable to the regular system; on iron-shot quartz. Schneeberg, Saxony.

SECTION II.

ALUMINIDES.

GIBBSITE.

FORMULA.—Al_2O_3, + 3HO.

NOT FOUND IN DISTINCT CRYSTALS.

896. In mammillary concretions of a grayish-white colour, translucent, and possessing a faint waxy lustre. Massachusets.

897. A thin layer of a pale-white colour, exhibiting on the surface numerous mammillary concretions; on brown ironstone. Richmond, Massachusets.

DIASPORE.

FORMULA.—Al_2O_3 + HO.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

898. In irregular lamellar prisms of a hair-brown colour inclining to yellow, and possessing on its cleavage planes the splendent lustre. Siberia.

HYDRARGILLITE.

A Hydrate of Alumina according to Rose.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL, OR RIGHT PRISMATIC.

899. In transparent six-sided prisms with a tinge of green, and possessing, on terminal planes, the pearly lustre; on an augitic lava. Schischimskaja, Gora, Ural.

CORUNDUM.

FORMULA.—Al_2O_3.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

900. In six-sided prisms of a smoke-gray colour, passing into hair-brown, imbedded in decomposing granite abounding in felspar. Tyrol.

901. Two translucent specimens of a yellowish-green tinge of colour, the smaller being a six-sided prism, the larger a fragment of a crystal of the same shape. The latter is from Madras, where it occurs imbedded in syenite; the former from the Carnatic.

902. A six-sided prism of a reddish colour, rough upon the surface, and tapering towards one extremity. Thibet.

903. Two small six-sided prisms of a dark hair-brown colour, one of them being somewhat pyramidal.

SAPPHIRE.

A transparent Corundum of a blue colour.

904. A bluish-white rolled crystal, which is obviously a hexangular prism. Ceylon.

905. Three specimens, one being rolled, the others cut and polished. Ceylon.

RUBY.

A transparent Corundum of a red colour.

906. Two six-sided prisms, one of a colour between columbine and cherry-red, the other ruby-red, transparent, and with uneven lateral faces. Ceylon.

907. In irregular crystals of a colour passing from ruby-red into violet-red, and sapphire-blue; in granite. St. Gothard.

908. Of a rose-red colour, cut and polished. India.

ORIENTAL EMERALD.

A transparent Corundum of a green colour.

909.

ORIENTAL AMETHYST.

A transparent Corundum of an Amethystine colour.

910. A fragment of a six-sided prism, translucent, and of a bluish tinge of colour. Ceylon.

ORIENTAL TOPAZ.

A transparent Corundum of a yellow colour.

911. A six-sided pyramid of an amber-yellow colour, with a blue summit. Ceylon.

EMERY.

This appears to differ from Corundum in not occurring in crystals, and in containing a certain quantity of Protoxide of Iron.

912. Of a bluish-gray colour and granular structure, magnetic, and also possesses poles. Turkey.

913. A compact mass of a violet-blue colour, and fine splintery fracture. This specimen appears to be intermediate between corundum and emery. Malacca.

914.

SPINEL.

Of this there are several varieties, but the composition of all is represented by the general formula MO, Al_2O_3, *in which* MO *is either Magnesia or a mixture of Magnesia and Protoxide of Iron, or Oxide of Zinc with a little Magnesia and Oxide of Iron.*

CRYSTALLINE SYSTEM, THE REGULAR.

PLEONASTE.—BLACK SPINELLE.

915. Massive, and in opaque octahedrons of a bluish-black colour, the angles of some of the crystals being replaced by planes which conduct to the cube; accompanied by small grains of common garnet, and pearl-blue calcareous spar. Fassa, Tyrol.

916. In small octahedrons of a dark colour and splendent lustre; accompanied by idocrase and mica. Vesuvius.

917. In minute octahedrons of a greenish-black colour, imbedded in a mass of granular idocrase, accompanied by some crystals of nepheline. Vesuvius.

918. In octahedrons of a dark-gray colour with a tinge of red; imbedded in calcareous spar. Amity, New York.

919. In imperfect translucent crystals of a violet-blue verging towards reddish-blue; imbedded in white calcareous spar. Aaker, Sudermanland.

SPINEL RUBY, OR SCARLET SPINELLE.

920. In perfect regular octahedrons, transparent, and of a scarlet colour.

BALAS RUBY, OR ROSE-RED SPINELLE.

921. Two small specimens cut and polished.

922. In regular octahedrons of various colours, some being hyacinth-red, some crimson, and some violet-blue. Ceylon.

GAHNITE.—ZINCIFEROUS SPINELLE.

923. Two specimens of a dark colour, and rough surfaces, the one being an octahedron, the other a twin crystal. Fahlun, Sweden.

924. In imperfect crystals of the octahedral form, of a dark colour, and opaque; imbedded in chlorite slate. Fahlun, Sweden.

DYSLUITE.

This has a composition analogous to Gahnite, of which it would appear to be a mere variety. According to Rammelsberg its formula is (ZnO, FeO, MnO) (Al_2O_3, Fe_2O_3)

CRYSTALLINE SYSTEM, THE REGULAR.

925. Granular, and in crystals of a yellowish-brown colour, some of which exhibit the form of the regular octahedron. Stirling, New Jersey.

SAPPHIRINE.

FORMULA.—Al_2O_3, $SiO_3 + 3(MgO, Al_2O_3.)$ (*Rammelsberg.*)

CRYSTALLINE SYSTEM NOT KNOWN.

926. In small foliated grains or prisms of a pale-blue colour with a tinge of green, translucent, and exhibiting the vitreous lustre; in mica slate. Fiskanaes, Greenland.

CHRYSOBERYL.—CYMOPHANE.

FORMULA.—G_2O_3, $6Al_2O_3$. *It sometimes, however, in addition, contains a little Silex and Oxide of Iron.*

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

927. In rolled pieces, transparent, and of a yellowish-green colour. Ceylon.

928. A rolled piece of a yellowish-green colour, with a chatoyant play of light. Ceylon.

929. Two specimens of a yellowish-green colour and waxy lustre, cut and polished as drops for ear-rings.

TURNERITE.

Contains Alumina, Lime, Magnesia, and a little Iron. (*Children.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

930.

PLOMBGOMME.—PLUMBO-RESINITE.

The formula of this remarkable mineral is not well determined. It is generally viewed as $PbO, 2Al_2O_3 + 6HO$, *but Damour considers it a Phosphate of Lead combined with hydrate of Alumina, as represented by the following symbols:* $PbO, PO5 + Al_2O_3, 3HO$.

CRYSTALLINE SYSTEM NOT KNOWN.

931. In globules of a resinous lustre, and the colour and translucency of gum Arabic; accompanied by cobalt bloom. Johanngeorgenstadt, Saxony.

SECTION III.

BORIDES.

SASSOLINE.

FORMULA.—$BO_3 + 3HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

932. In thin pearly scales intermingled with particles of native sulphur. Lipari Isles.

BORAX.—TINCAL.

FORMULA.—$NaO,\ 2BO_3 + 10HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

933. In flat crystals, mealy on the surface, as if from efflorescence, and which may be considered as oblique rhombic prisms, whose obtuse lateral edges are deeply replaced. The summit of the prism presents three planes, one being the terminal face of the prism, and the other two, which are much smaller, secondary planes set at different angles on a terminal edge. Thibet.

BORACITE.

FORMULA.—$3MgO,\ 4BO_3$.

CRYSTALLINE SYSTEM, THE REGULAR.

934. Two detached crystals, the smaller of which is rough upon the surface, presenting generally the cubic form, its

edges, however, being replaced by planes which conduct to the dodecahedron; the larger, which is smooth on the surface, presenting at once the faces of the cube, the hemi-octahedron, and the dodecahedron, the latter form predominating. Luneberg, Hanover.

935. Two transparent glassy crystals imbedded in granular gypsum of a pearl-gray colour. The crystals present faces of the cube, the dodecahedron, and the hemi-octahedron. Luneberg.

936. A large semi-opaque crystal presenting the faces of the cube, the dodecahedron, and the hemi-octahedron, imbedded in common gypsum of a grayish colour intermixed with brown. Luneberg.

937. Three crystals, one of the three being less transparent than the two others, but all modified in the same way, exhibiting the faces of the cube, the dodecahedron, and the hemi-octahedron. Luneberg.

938. A large translucent crystal of a smoke-gray colour, with the faces of the cube, dodecahedron, and hemi-octahedron, imbedded in gypsum of a grayish-white and reddish-white colour. Luneberg.

939. Several small crystals of a honey-yellow colour, imbedded in crystalline gypsum. Luneberg.

RHODIZITE.

Not analyzed, but considered to be a Lime Boracite.

CRYSTALLINE SYSTEM, THE REGULAR.

940.

HYDRO-BORACITE.

FORMULA.—$3(CaO, MgO), 4BO_3 + 18HO$.

NOT FOUND IN CRYSTALS.

941.

HYDROUS BORATE OF LIME.

Exact composition not determined.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

942.

DATHOLITE.

FORMULA.—$3CaO, 4BO_3, + 6(CaO, SiO_3) + 4HO$. (*From an analysis by Rammelsberg.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

943. In aggregated translucent crystals, much modified, and of a vitreous lustre. Norway.

944. In transparent, well-developed prismatic crystals, accompanied by a few rhombohedrons of a yellow calcareous spar. Bergen Hill, New Jersey.

945. Several colourless translucent crystals, irregular, and somewhat rough upon the surface; on a vesicular felspathic rock containing imbedded laminæ of mica. Nodebroc mine, Norway.

BOTRYOLITE

This is a Datholite, containing, however, twice as much water as that mineral.

NOT FOUND IN DISTINCT CRYSTALS.

946. Botryoidal, and of a flesh-red colour passing into Isabella-yellow, accompanied by calcareous spar.

947. In rounded mammillary masses of a dark colour on the surface, intermixed with honey-yellow crystals of calcareous spar; on a mixed calcareous stone. Arendahl.

HUMBOLDTITE.

A variety of Datholite made a distinct species by Levy.

948. In transparent oblique prisms, accompanied by calcareous spar. Hartz.

SECTION IV.

CARBONIDES.

DIAMOND.

Composed solely of Carbon. *Symbol* C.

CRYSTALLINE SYSTEM, THE REGULAR.

949. A small hexakis-octahedron with curved faces of a slightly yellowish tinge of colour, and with an irregular notch on one side.

950. An octahedron, two pairs of faces being better developed than the remaining ones. Colour white, verging towards yellowish-white, with black spots in the interior. Brazil.

951. A little spheroid, rough on the surface, of a pearl-white colour, and having on one side a pyramidal depression. East Indies.

PLUMBAGO.

Composed, like the Diamond, entirely of Carbon.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

952. A very pure specimen, with compact structure and metallic lustre. Borrowdale, Cumberland.

953. In curved shining lamellæ, adhering to an argillaceous stone, with accompanying quartz, and a little copper pyrites. Cumberland.

954. Slaty graphite, of a lead-gray colour, uneven surface, and greasy lustre. Borrowdale, Cumberland.

955. Compact graphite. Ayrshire.

956. Slaty graphite. Italy.

ANTHRACITE.

A variety of Coal, destitute, or nearly so, of Hydrogen, and which burns without flame.

957. Structure lamellar, lustre brilliant, with numerous interposed laminæ of sparry iron ore. Castlecomer, Kilkenny.

958. Structure curved lamellar, lustre submetallic, with a good deal of interspersed lamellar iron pyrites.

BITUMINOUS COAL.

The numerous varieties to which the term bituminous is applied, all contain Hydrogen in considerable quantity, and burn with flame.

959. Structure compact, lustre resinous, and fracture conchoidal. This is the variety called cannel coal. Newcastle.

960. Cannel coal. Wigan, Lancashire.

961. Cannel coal of a coarser and somewhat slaty texture Edinburgh.

962. Structure lamellar, lustre resino-metallic. New South Wales.

963. Structure lamellar, colour a pitch-black, lustre resino-metallic.

964. Structure loosely lamellar, beautifully pavonized on the surface.

LIGNITE.

This is a variety of coal in which the woody structure is more or less discernible.

965. Of a jet-black colour, and resinous lustre, with iron pyrites in a state of decomposition. Resembles cannel coal in its cross fracture. Sussex.

966. Fracture conchoidal, and lustre resino-metallic. Exhibits little of the woody structure. Italy.

967. Of a brown colour, and earthy structure.

968. Of a dark-brown colour, and earthy structure.

969. Of a grayish-black colour, and nearly destitute of the woody structure. Gilmorton, near Edinburgh.

970. Of a brown colour, with the ligneous texture very distinct. Lough Neagh.

971. Of a dark brown colour, with the woody texture less distinct than in preceding specimen. Lough Neagh.

972. Of a brown colour and fibrous structure.

973. Of a light brown colour and distinct woody structure.

974. Of a dark colour with tinge of red, and distinct woody structure.

975. Of a dark brown colour, and ligneous texture, the latter, however, being much altered. Lough Neagh.

976. Of a dull dark colour, with numerous minute imbedded nodules of amber. Baltic.

AMBER.

A resinous substance, composed of Carbon, Hydrogen, and Oxygen, and yielding, when heated, Succinic Acid, and a fetid oil.

977. Colour yellow, transparent; cut into the form of a fish.

978. Transparent, and of a wine-yellow colour, with numerous minute imbedded insects.

979. Translucent, and of a wine-yellow colour. Yarmouth.

980. Two translucent fragments, one yellow, the other of a reddish tinge of colour.

981. Transparent, and of a wine-yellow colour, cut into a circular form, and with a perforation in the centre.

982. A honey-yellow translucent fragment.

983. Two fragments of a pale-yellow colour, and nearly opaque.

984. Two specimens, partly of a wine-yellow, and partly of a yellowish-white colour. The whitish stripes are opaque.

985. Three fragments, two of which have rough vesicular surfaces, the third is compact.

FOSSIL COPAL.—HIGHGATE RESIN.

A resinous substance analogous to Copal, found in blue clay at Highgate Hill, near London. Composed of Carbon, Hydrogen, and Oxygen.

986. Translucent, of a honey-yellow colour, and exhibiting something of the conchoidal fracture. East Indies.

SCHEERERITE.

Composed of Carbon and Hydrogen, without any Oxygen.

FOUND SOMETIMES IN PRISMATIC CRYSTALS, BUT THE SYSTEM TO WHICH THEY BELONG HAS NOT BEEN DETERMINED.

987. Occurs as a white crystalline coating of a pearly lustre, on fibrous lignite of a brown colour. Uznach, near St. Gallen, Switzerland.

N. B. The fichtelite of Bromeis, and the konilite of Kraus, from the same locality, are substances of the same nature, i. e. are hydrocarbons.

HARTITE.

A Hydrocarbon.

SYSTEM, THE OBLIQUE PRISMATIC.

988. In minute prisms of a white colour and greasy lustre; on lignite. Oberhart, Gloggnitz, Austria.

MIDDLETONITE.

A compound of Carbon, Hydrogen, and Oxygen.

NOT FOUND CRYSTALLIZED.

989.

IXOLYTE.

Probably a Hydrocarbon.

AMORPHOUS.

990. In minute particles of an amber-yellow colour; on lignite. Gloggnitz, Austria.

HATCHETINE.

A Hydrocarbon.

AMORPHOUS, AND CRYSTALLIZED IN THIN LAMINÆ.

991. Amorphous, soft, and of a yellowish-green colour, accompanied by white dolomitic spar; on clay iron-stone. Glamorganshire.

OZOKERITE.

A Hydrocarbon.

AMORPHOUS.

992. Colour dark brown by reflected, yellow by transmitted light; odour bituminous. Moldavia.

MINERAL PITCH.

A Hydrocarbon.

AMORPHOUS.

993. Elastic, and of a dark brown colour and resinous lustre. Odin mine, Derbyshire.

994. Elastic, of a loose texture, and dark brown colour. Derbyshire.

995. Elastic, clammy to the feel, and of a dark brown colour. Derbyshire.

996. Elastic, of a dark brown colour, and waxy lustre; on gray limestone. Derbyshire.

997. Of a brownish-black colour, occurring as a thin coating on white crystalline limestone. Italy.

998. Constitutes a thin coating of a dark colour on an argillaceous stone, to which are attached several mammillary concretions of blue and yellowish calcedony. Auvergne.

999. In rounded concretions of a dark colour, inelastic, and polished on the surface, attached to a limestone petrifaction.

1000. Colour brownish-black, structure earthy; inelastic.

1001. Colour brownish-black, structure earthy; inelastic. Trinidad.

PETROLEUM.—FLUID BITUMEN.

This, by distillation, yields the fluid called Naphtha. It is a Hydrocarbon.

1002. A very viscid liquid of a dark-brown colour. From the surface of the sea near Naples.

1003. A dark brown viscid liquid similar to preceding; on compact limestone. Derbyshire.

ASPHALT.

This is a Bitumen or solid Petroleum.

1004. Texture earthy, colour brownish-black; fracture conchoidal. Probably from the shores of the Dead Sea.

RETINITE.

Composed of Carbon, Hydrogen, and Oxygen.

AMORPHOUS.

1005. Of a light brown colour and earthy texture; opaque. Probably from Bovey Tracy, Devonshire.

1006. Of a light brown colour, and earthy texture; opaque. Devonshire.

GUYAQUILLITE.

Composed of Carbon, Hydrogen, and Oxygen.

AMORPHOUS.

1007.

IDRIALIN.

A Hydrocarbon.

AMORPHOUS.

1008. Of a brownish-black colour, and greasy lustre. Does not melt under 400°. Quicksilver mines, Idria.

MELLITE.

A Mellitate of Alumina, with Water of crystallization. FORMULA.—Al_2O_3, $3C_4O_4H + 18HO$.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1009. A fragment of a right square octahedron, partly of a honey-yellow, partly of a hyacinth colour, the latter portion being transparent. Artern, Thuringia.

1010. Four fragments of a honey-yellow colour, on all of which some of the faces of the octahedron may be distinguished. Thuringia.

1011. Three rounded pyramidal fragments of a sulphur-yellow colour, and glassy lustre. Switzerland?

HUMBOLDTINE.

FORMULA.—$FeO, C_2O_3 + HO$, (*Rammelsberg.*)

NOT FOUND IN CRYSTALS.

1012.

OXALATE OF LIME.

FORMULA.—CaO, C_2O_3.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1013.

NATRON.

FORMULA.—$NaO, CO_2 + 10HO$, *mixed with a little Sulphate of Soda, and a considerable quantity of Chloride of Sodium.*

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1014. In minute crystals of a pearl-white colour. Egypt.

TRONA.

FORMULA.—$2NaO, 3CO_3 + 4HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1015.

GAYLUSSITE.

FORMULA.—$2NaO, 3CO_2 + CaO, CO_2 + 6HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1016. In elongated aggregated crystals, having some resemblance to a rhombic prism, terminated at each extremity by pyramids, of a yellowish-white colour, and, when broken, exhibiting the glassy lustre. Sangerhausen, Thuringia.

CALC SPAR.

FORMULA.—CaO, CO_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1017. A perfectly colourless and transparent rhombohedral fragment, with fan-like crystals of pearly stilbite imbedded on its upper surface. Iceland.

1018. An elongated rhombohedral crystal, rough upon the surface, translucent, and of a yellowish-white colour. Iceland.

1019. Two flat rhombohedral crystals, perfectly transparent and colourless. Iceland.

1020. A rhombohedral crystal, transparent, iridescent, and of an amethystine-blue colour. Freyberg, Saxony.

1021. An incrustation of transparent and nearly colourless crystals, formed by the replacement of the angles and edges of the primitive rhombohedron; on compact fluor, containing crystals of galena and blende.

1022. In pyramidal crystals accuminated at the apex, and with the alternate edges slightly bevilled, of a pearl-blue colour, passing into greenish-white; on gray limestone.

1023. Numerous translucent six-sided prisms, terminated by trihedral summits. The terminal faces are planes of the primitive rhombohedron, and the prism is formed by the replacement of the lateral angles of the rhombohedron; on galena, containing a few crystals of iron pyrites. Alston Moor, Cumberland.

1024. Six-sided prisms of a grayish-white colour terminated by low three-side pyramids, whose planes are the faces of the primitive rhombohedron; on amethystine quartz of a pearl-gray colour. Cornwall.

1025. Large, translucent, six-sided prisms with rough surfaces, terminated by low three-sided pyramids, on white and bluish-white quartz. Cumberland.

1026. Numerous short, transparent six-sided prisms, terminated at each end by low three-sided pyramids, accompanied by limpid crystals of cubic fluor, and partially coated by brown spar.

1027. Six-sided prisms of a greasy lustre, and rough upon the lateral and terminal planes; on baccillar carbonate of lime. Andreasberg, Hartz.

1028. In subtransparent six-sided prisms, of a very pale rose tinge of colour, the lateral planes being smooth, and the terminal rough. The adjacent prismatic faces are of very unequal sizes, so that the crystals look like three-sided prisms with truncated edges. This crystalline variety has been called cannon spar. Andreasberg, Hartz.

1029. In very acute rhombohedral crystals of a greenish tinge of colour. The halves of the rhombohedrons only being visible, the crystals have the appearance of triangular pyramids. Derbyshire.

1030. Six-sided prisms with low three-sided pyramids, the cannon spar variety; transparent, and of a tinge between pearl-gray and bluish-white; on quartz, with some adhering iron pyrites, and green earth. Schneeberg, Saxony.

1031. In rough pyramidal crystals of a very light pink colour, and containing 9 per cent. of the carbonate of manganese. Nairtly Valley, Caernarvonshire.

1032. Transparent six-sided prisms with low three-sided pyramids, the faces of which have a pearly lustre; on pearl-gray amethyst, crystallized in six-sided pyramids. Cumberland.

1033. In grayish-white, translucent, six-sided prisms, with three alternate lateral planes larger than the remaining ones; on calcareous spar in smaller crystals. Andreasberg, Hartz.

1034. Crystallized in very obtuse rhombohedrons of a waxy lustre, set on their lateral edges on quartz, and accompanied by a little iron pyrites. Cumberland.

1035. In obtuse rhombohedrons, translucent, and rough on the surface, accompanied by galena, brown blende, and pink fluor, the latter being covered with small prismatic crystals of calcareous spar. Westmoreland.

1036. In acute rhombohedrons of a yellowish tinge of colour, with the terminal edges bevilled; on cubic crystals of galena. Derbyshire.

1037. A wine-yellow twin scalenohedral crystal, with an adhering crust of light blue fluor in cubes. Derbyshire.

1038. Tabular six-sided prisms, yellow in the centre and at the circumference, and of a dusky-blue in the intervening parts; on smoked quartz. Durham.

1039. In scalenohedrons of a smoke colour, on a dark siliceous stone containing minute crystals of fluor on its under surface.

1040. A flattened rhombohedron enclosing numerous moss-like fibres of iron pyrites.

1041. A lamellar fragment of a flesh-red colour, and vitreous lustre.

1042. A rhombohedral mass of a white colour with red streaks; translucent on the edges.

1043. A rhombohedral crystal, milk-white, and nearly opaque. Co. Dublin.

1044. A rhombohedral crystal, translucent, and of a white colour. Co. Dublin.

1045. A rhombohedral mass, translucent on the edges, partly white and partly gray, with a little adhering blende. La Tolfa.

SATIN SPAR.

Carbonate of Lime, of a fibrous structure, and silky lustre.

1046. In this specimen, which is quite white, the wavy lines exhibited by reflected light are at right angles to the fibrous structure. From a vein in alum slate. Cumberland.

1047. This specimen, which is cut and polished, is partly of a gray, and partly of a honey-yellow colour. Though its structure is fibrous, it has little, if any, of the satiny lustre. Cumberland.

SCHIEFER SPAR.

Carbonate of Lime with a schistose structure, and pearly lustre. According to Beudant the plates of Schiefer Spar are the laminæ at right angles to the axis of the rhombohedron.

1048. Of a perfectly white colour, foliated texture, and bright pearly lustre.

1049. In thin subtranslucent laminæ of a dull pearly lustre, accompanied by blende, and, on the under surface of the specimen, by numerous rough lenticular crystals of calcareous spar. Luganure Mine, Co. Wicklow.

FONTAINBLEAU SPAR.

This is Calcareous Spar, with a considerable quantity of intermingled siliceous sand, which, however, does not alter the crystalline form.

1050. A group of aggregated rhombohedral crystals, rough on the surface, and of a pale-white colour. Fontainbleau.

MARBLE.

A Limestone consisting of nearly pure Carbonate of Lime, and susceptible of a considerable degree of polish.

1051. Crystalline and white with a tinge of green, and containing translucent garnets of a cinnamon-brown colour, some of which present the faces of the rhombic dodecahedron. Donegal.

1052. Of a white colour and small crystalline structure, cut into a square slab. Paros.

1053. Of a pure white colour, and granular structure. Carrara.

1054. Of a pure white colour, but somewhat coarse crystalline structure. Connemara.

1055. Of a black colour, and minutely crystalline structure, with circular white spots; polished on the upper surface. Co. Kilkenny.

1056. Of a black colour, with large white circular spots. Co. Kilkenny.

1057. Jet-black, of a close structure, and susceptible of a fine polish, with numerous irregular depressions on its upper surface. From the Menlo quarries, Lough Corrib.

1058. Colour flesh-red, with streaks of blue, structure compact; takes a fine polish. Seven Churches, King's Co.

1059. Colour flesh-red, structure compact, with imbedded crystals of deep-green sahlite. Tiree, Scotland.

1060. Of a flesh-red colour, and a structure between crystalline and compact. Donegal.

1061. A shell marble of a a dark smoke colour intermixed with white, and highly iridescent, the colours reflected being chiefly red and green. From the latter property it is called lumachella or fire marble. Willach, Bleyberg, Carinthia.

1062. Madrepore marble, of a hair-brown colour, intermixed with yellowish-white spots.

1063. Of a dark hair-brown colour, with numerous imbedded madrepores, the latter being reddish-yellow. Longford.

1064. A pebble of madrepore limestone, of a light vermillion-red colour, with yellowish spots. Somersetshire.

1065. An aggregate, apparently of nodules of different shades of yellowish-white, with a few of a hair-brown colour, having a compact structure, and susceptible of a good polish. This variety has been called cipolin marble. Port Stewart.

1066. Of a dark smoke-gray colour, mixed with yellowish-brown, composed almost entirely of bivalve shells. Cornwall.

1067. Madrepore limestone of a smoke-gray colour. Vicinity of Dublin.

1068. Madrepore limestone of a yellowish-white colour.

1069. Fibrous limestone of a light yellowish-brown colour, composed of three or four distinct layers, deposited apparently in succession. Probably a stalactitic production. Gibraltar.

STALACTITE.

This term is applied to the pendent masses of Calcareous Spar which are sometimes attached to the roofs of Limestone caves. Growths of the same description from the floor of the cave are called Stalagmites.

1070. Two conical masses of a light yellow colour, and highly crystalline structure. Cave of Dunmore, Kilkenny.

CALCAREOUS TUFA.

This is a form of Carbonate of Lime, and, like Stalactites and Stalagmites, it is deposited from Water holding such salt dissolved by Carbonic Acid. It occurs, however, in beds, and has generally a porous structure. Such a deposit, when its structure is compact, has been denominated Travertine.

1071. Composed of tubes of a yellowish-white colour, from the sides of which issue numerous smaller tubes with hamiform appendages, exhibiting a dendritic arrangement. Terni.

1072. Of a yellowish-white colour and spongy texture.

1073. Two tubes of a pearl-white colour, and concentric lamellar structure. Chartres.

1074. Of a brownish-yellow colour, with vegetable impressions.

1075. A flattened mass of a hair-brown colour passing into Isabella-yellow, with tooth-like elevations, smooth, and having a splendent lustre. Imbedded fragments of yellowish-gray limestone are visible on its under surface.

1076. Of a dark Isabella-yellow colour, containing bones, partly yellowish-brown and partly white, with an imbedded pebble of hornstone. Gibraltar.

OOLITE.

This is a Limestone composed of rounded grains resembling the roe of a fish. When the spherules reach the size of a pea, it is called Pisolite or Peastone.

1077. An aggregate of minute spherical grains, of a brownish-yellow colour.

1078. An aggregate of little balls of various sizes, and of a reddish-brown colour. From the size of the grains this may be considered a pisolite.

1079. An aggregate of numerous rounded concretions, of a pale white colour, and a concentric laminar structure, each of which has a nucleus of an arenaceous nature. This is obviously a pisolite.

1080. An aggregate of very minute irregularly rounded concretions, of a grayish-white colour with a tinge of yellow, intersected by veins of calcareous spar. This is well known under the name of Portland stone. Isle of Portland.

CHALK.

This is a massive Carbonate of Lime, possessing usually a white colour, and a purely earthy structure.

1081. Of a white colour with very slight tinge of yellow, and a loose earthy structure. England.

1082. Of a grayish-white colour, wrinkled surface, compact structure, and a hardness exceeding that of calcareous spar, with some laminæ of crystallized carbonate of lime. Slieve Gallion, Londonderry.

MULATTO STONE.

This is a Chalk containing imbedded particles of green Sand, and which exhibits a mottled appearance.

1083. Of a mottled colour, partly yellowish-white, and partly green, with some large imbedded pebbles of a dull calcedony. Antrim.

AGARIC MINERAL.—ROCK-MILK.

This is a Tufaceous Carbonate of Lime, of a loose pulverulent structure.

1084. Of a snow-white colour, and loose earthy structure.

LITHOGRAPHIC STONE.

A compact Carbonate of Lime used in Lithography.

1085. Of a compact structure, and Isabella-yellow colour. Solenhofen, Bavaria.

ARRAGONITE.

In a chemical point of view this mineral is identical with Calcareous Spar, but it differs from it in occurring in crystals referable to the right prismatic system.

1086. Two transparent six-sided prisms of a slightly yellowish tinge of colour. The smaller has two of its six lateral planes of much less size than the rest, and is terminated by six pyramidal planes, two of which (being opposite ones) are better developed than the remaining four, and have their edge of intersection replaced by a plane parallel to the base of the prism. Bohemia.

1087. Two six-sided prisms, partly rough and partly smooth on their surfaces. Auvergne.

1088. Three six-sided prisms, the largest of a clove colour, the others of a lighter hue. To the base and summit of the largest, a number of lesser prisms are attached. The two smaller have also parasitic crystals, with their axes placed, the one at an angle of 90°, the other at an angle of about 60° to the axis of the prism on which they rest. Arragon.

1089. A group of six-sided prisms, without terminal pyramids, of a yellowish-white colour, highly translucent, and possessing the vitreous lustre. Auvergne.

1090. In acute four-sided pyramids of a pearl-gray colour, and rough upon the surface; on graystone. This is the variety called igloite.

1091. A baccillar mass of a yellowish-white colour, composed of aggregated six-sided prisms. Mont Doré, Auvergne.

1092. A baccillar mass of transparent six-sided prisms, with a strong vitreous lustre. Auvergne.

1093. In vesicular prisms having a baccillar arrangement, and terminated by pyramids; colour yellowish-white, lustre between vitreous and pearly.

1094. Colour white, translucent on the edges, compact, with something of a radiated and concentric structure. Arkindale, Yorkshire.

1095. Colour sky-blue, passing into pearl-blue, structure fibrous, with transverse undulating lines. Cornwall.

FLOS FERRI.

This is Arragonite in a coralloidal form, and derives its name from being usually found associated with ores of Iron.

1096. Of a coralloid structure, pearl-white colour, and silky lustre. Hartz.

MAGNESITE (GIOBERTITE).

FORMULA.—MgO, CO_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1097. Colour white, structure compact, fracture somewhat conchoidal, scratches calcareous spar, and does not effervesce when touched with dilute muriatic acid. East Indies.

1098. Structure compact, colour a pale white but somewhat crystalline, and of a yellow hue on the surface. Frankenheim, Silesia.

1099. Colour milk-white and reddish-white, with an earthy, flat, conchoidal fracture. Moravia, where it is found in reniform masses associated with serpentine.

HYDROMAGNESITE.

This differs from preceding in the Carbonate of Magnesia being hydrated, and associated with Hydrate of Magnesia. Its formula, according to Rammelsberg, is 3(MgO, CO_2, HO) + MgO, HO.

NOT FOUND IN CRYSTALS.

1100. Colour snow-white, structure earthy. Occurs as a thin incrustation on grass-green serpentine. Hoboken, New Jersey, North America.

BITTER SPAR.

The mineral to which this name is applied varies somewhat in composition, as represented by the formula MgO, CO_2 + x(CaO, CO_2), *in which* x *is* 1, $1\frac{1}{2}$, 2, *or* $\frac{1}{3}$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1101. Of a yellowish-white colour with a mammillary surface composed of minute rhomhohedrons; on quartz, and accompanied by a group of rhombohedral crystals of calcareous spar. Tyrol.

PEARL SPAR.

This is Bitter Spar with a pearly lustre.

1102. In curved and flattened rhombohedrons of a brown colour, and pearly lustre, accompanied by cubes of galena and twin crystals of transparent fluor. Derbyshire.

1103. Numerous aggregated rhombohedrons of a bluish-white and yellowish-white colour, and exhibiting a high degree of pearly lustre; on blue dolomitic limestone.

1104. Massive, of a light yellow colour, and with an incrustation of pearly rhombohedrons with curved facets. Kilkenny.

BROWN SPAR.

This is Bitter Spar of a brown colour, and without the pearly lustre. It contains from 5 to 10 per cent. of the Protoxide of Iron.

1105. In rhombohedrons of a yellowish-brown colour, with their faces much curved; on fluor, and accompanied by galena. Cumberland.

1106. A crystalline mass with rhombohedral cleavages, of a light gray colour internally, but grayish-brown on the surface. Tyrol.

BREUNNERITE.

This, according to the analysis of Stromeyer, is a Carbonate of Magnesia, in which a little of this earth is replaced by a mixture of the Protoxides of Iron and Manganese.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1107. In tolerably transparent rhombohedral crystals, some of a gray, others of a yellowish-red colour; on slaty talc, of a leek-green and greenish-white colour. Zillersthal, Tyrol.

GURHOFFITE.

A compact Dolomite of a white colour.

1108. Milk-white, compact, with small adhering particles of serpentine. Gurhof, Austria.

CONITE.

A Bitter Spar of the formula $CaO, CO_2 + 3(MgO, CO_2)$, *occurring in conical concretions.*

1109. Of a grayish-white and yellowish-white colour; effervesces with acids. Greenland.

DOLOMITE.—MAGNESIAN LIMESTONE.

This is an amorphous Bitter Spar, with a granular or crystalline structure.

1110. Of a pearl-gray colour, and fine granular structure, nearly friable. Does not effervesce with dilute muriatic acid. St. Gothard.

1111. Of a grayish-white colour, and a structure partly compact and partly crystalline. Effervesces slightly with dilute muriatic acid. Tyrol.

1112. An aggregate of nearly spherical balls of a light brown colour, resting on a base of the same material. Effervesces with dilute muriatic acid. Sunderland.

1113. In greenish polyhedral concretions of considerable hardness, and not effervescing with cold dilute muriatic acid. Miemo, Tuscany. This variety is known under the name of *Miemite.*

1114. Of a smoke-gray colour passing into yellowish-gray, a pearly lustre and fine scaly fracture, with some yellowish calcareous spar on its under surface. Tarand, Leipsic. This variety of magnesian limestone is sometimes called *Tarandite.*

SPARRY IRON ORE.

FORMULA.—FeO, CO_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1115. A mass of aggregated obtuse rhombohedrons of an Isabella-yellow colour and considerable lustre, with micaceous iron ore adhering to its under surface. Val de Brino, Piedmont.

1116. In obtuse rhombohedrons of a honey-yellow colour, with striated surfaces; on quartz. Cornwall.

1117. In very obtuse curved rhombohedrons of a golden-yellow colour, on bluish fluor in cubic crystals, with some of their angles truncated. Cararach, Cumberland.

1118. In rounded nodules composed of cohering obtuse rhombohedrons of a yellowish-brown colour, accompanied by some cubic crystals of fluor, and several rhombohedrons of calcareous spar. Alston Moor, Cumberland.

1119. In small rhombohedrons with irregular surfaces, of a honey-yellow colour and waxy lustre; on quartz. Carinthia.

1120. In very obtuse and curved rhombohedrons of a yellowish-brown colour, accompanied by some particles of pyrites; on quartz. Cornwall.

1121. In six-sided prisms terminated by six-sided pyramids of a waxy lustre, and a colour between yellow and tile-red. Bohemia.

1122. Massive, and in large rhombohedral crystals of a dark-red colour, accompanied by numerous slender prisms of rock crystal. Allevard, Dauphiné.

1123. A rounded mass of a dark-red colour, and exhibiting in its fracture the facets of the rhombohedrons of which it is composed.

1124. Internally of an amber-yellow colour, and crystalline structure; black on the surface, which is composed of the edges of very obtuse rhombohedrons.

1125. Of a pale Isabella-yellow passing into yellowish-gray, and a fine granular graduating into the lamellar structure. Carinthia.

1126. Of a dark liver-brown colour, and a structure passing from granular to lamellar. Carinthia.

SPHÆROSIDERITE.

This is a Carbonate of Iron occurring in spheroidal forms.

1127. A cluster of spheroidal nodules, dark externally, yellow within, and exhibiting the fibrous structure; on basalt. Hanau, Hesse Cassel.

1128. Two globular nodules of a dark colour and compact structure. Steinheim, Hesse Darmstadt.

CLAY IRONSTONE.

This is sparry Iron ore mechanically intermixed with a variable amount of Clay.

1129. A flattened fragment consisting of numerous pentagonal prismatic masses, surrounded by thin seams of calcareous spar. Arigna.

1130. The polished surface of this specimen shows it to be composed of several distinct portions tied together by calcareous spar.

1131. A rounded mass, red on the surface, penetrated by fistulous productions of a darker colour than the rest of the specimen.

1132. An irregular rhombohedral fragment, partly of a black, partly of a reddish-brown colour. Carron, Scotland.

1133. Of a dark colour, and composed of successive strata separated by thin seams of pyrites. From Mushet's Black Band, Airdrie, Scotland.

1134. Of a dark gray colour and a columnar structure, this latter being due to thin seams of calcareous spar intersecting nearly at right angles. Arigna.

MESITINE SPAR.

This is a Bitter Spar, containing a little Carbonate of Manganese.

1135. In curved rhombohedral crystals, rough upon the surface, and possessing the pearly lustre; accompanied by white crystals of calcareous spar. Traversella, Piedmont.

ANKERITE.

FORMULA.—$2(FeO, MnO)\ CO_2 + 3(MgO, CO_2) + 5(CaO, CO_2.)$ *Berthier.*

SYSTEM, THE RHOMBOHEDRAL.

1136. A mass composed of greenish-white lamellæ, exhibiting a rhombohedral cleavage, with a little adhering asbestus. Eisenerz, Steynmark.

OLIGON SPAR.

FORMULA.—$3(FeO, CO_2) + 2(MnO, CO_2.)$

SYSTEM, THE RHOMBOHEDRAL.

1137. In reddish-brown rhombohedrons, pink-coloured on the surfaces of fracture. Ehrenfriedersdorf, Saxony.

DIALLOGITE.

FORMULA.—MnO, CO_2.

SYSTEM, THE RHOMBOHEDRAL.

1138. In flat rhombohedral (lenticular) crystals, rough on the surface, and of a pink colour; on rock crystal. Kapnik, Transylvania.

1139. In confusedly aggregated lamellar crystals of a pink or flesh-red colour; on reddish-white barytes, with a little adhering pyrites and quartz. Freyberg, Saxony.

1140. Of a light flesh-red or pink colour, and a structure between subcrystalline and compact. Sunderland.

1141. In numerous rhombohedral crystals of a light pink colour, and faint pearly lustre ; on crystalline quartz. Nagyag, Transylvania.

STRONTIANITE.

FORMULA.—SrO, CO_2.

SYSTEM, THE RIGHT PRISMATIC.

1142. In parallel and closely aggregated prismatic crystals of a light green colour, with a little adhering carbonate of barytes and calcareous spar. Strontian, Argyleshire.

1143. In slender six-sided prisms of a light olive-green colour; on calcareous spar. Strontian.

1144. In slender, divergent, and cohering prisms of a yellowish-brown colour, with a little calcareous spar. Strontian.

STROMNITE.

FORMULA.—$BaO, SO_3 + 4(SrO, CO_2.)$

SYSTEM, THE RIGHT PRISMATIC.

1145.

WITHERITE.

FORMULA.—BaO, CO_2.

SYSTEM, THE RIGHT PRISMATIC.

1146. In six-sided prisms confusedly grouped, and rough and nearly opaque on the surface; on calcareous spar. Arkindale, Yorkshire.

1147. Massive, translucent, of a greenish-white colour, and resinous lustre. Arkindale, Yorkshire.

1148. Massive, with something of a radiated structure, translucent, and of a yellowish tinge of colour. Anglesark, Lancashire.

1149. Of a structure between massive and radiated, translucent, and of a yellowish tinge of colour. Arkindale, Yorkshire.

1150. A globular mass consisting in great part of numerous six-sided prisms, rough on the surface, and confusedly grouped. Alston Moor, Cumberland.

1151. Of a pearl-gray colour, cellular structure, and rough, corroded surface, including numerous imbedded six-sided prisms. Derbyshire.

BARYTO-CALCITE.

FORMULA.—$BaO, CO_2 + CaO, CO_2$.

SYSTEM, THE OBLIQUE PRISMATIC.

1152.

BROMLITE.

Composition same as that of Baryto-calcite. (*Breithaupt.*)

SYSTEM, THE RHOMBOHEDRAL.

1153. In six-sided pyramids of a bluish-white colour and rough upon the surface, accompanied by galena and blende; on limestone. Effervesces with muriatic acid. Bromly Hill, Alston Moor.

1154. In transparent, white, six-sided prisms, and hexangular dodecahedrons; on limestone. Effervesces with muriatic acid. Bromly Hill, Alston Moor.

SULPHATO-CARBONATE OF BARYTES.

FORMULA.—$BaO, SO_3 + 2(BaO, CO_2.)$ *Thomson.*

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1155.

CALAMINE.

FORMULA.—ZnO, CO_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1156. In white, transparent, three-sided pyramids of a glassy lustre, accompanied by iron-shot calamine. Effervesces with dilute muriatic acid. Dagnatska, Bannat.

1157. A botryoidal and stalactitic mass of a reddish-yellow colour. Wales.

1158. Of an earthy and cellular structure, and yellowish-white colour. Does not effervesce with dilute muriatic acid. Saxony.

1159. Of a pale yellow colour, botryoidal form, and corroded surface. Effervesces with muriatic acid. Carinthia.

1160. In thin hexangular tables of a yellowish-gray colour. Carinthia.

1161. A snow-white mass of a loose earthy structure, and irregular mammillated surface. Effervesces with muriatic acid. Carinthia.

1162. In folia of a green colour and pearly lustre, with a divergent arrangement; on massive and partly crystallized fluor. Effervesces with muriatic acid.

1163. Of a green colour, foliated structure, and pearly lustre, on yellowish-white common calamine; accompanied by particles of earthy black oxide of manganese. Catharineberg, Siberia.

ZINC BLOOM.

FORMULA.—$(HO, ZnO, CO_2) + 2(ZnO, HO.)$

NOT FOUND IN CRYSTALS.

1164.

CARBONATE OF LEAD.—WHITE LEAD ORE.

FORMULA.—PbO, CO_2.

SYSTEM, THE RIGHT PRISMATIC.

1165. A mass of aggregated prisms, subtranslucent, of a white colour and pearly lustre, with adhering ochry clay. Silvermines, Tipperary.

1166. An aggregate of opaque prisms, channelled longitudinally, and of a gray colour, some being iron-shot on the surface. Cumberland.

1167. In rounded, transparent, six-sided prisms, terminated by pyramids, the prismatic and pyramidal edges being replaced; in a geode of quartz. Hohengeroldsack, Suabia.

1168. In long, slender, six-sided prisms of a snow-white colour; on an iron-shot siliceous stone, accompanied by dark-coloured pyramidal quartz. Cumberland.

1169. A mass of crystals, generally flat, and of a yellowish-white colour. Two of the crystals which cohere have a slight tinge of red. Glenmalur, Wicklow.

1170. A crystalline mass composed of irregular flattened prisms of a gray colour within, passing into carnelian-red, and rendered opaque on the surface by a thin investment of yellowish-white, and minutely crystalline carbonate of lead. Glenmalur, Wicklow.

1171. A mass of slender prismatic crystals of a yellowish-red colour, confusedly arranged. Leadhills.

1172. Perfect six-sided prisms of a wine-yellow colour; on an indurated talcose schist. Leadhills, Scotland.

1173. A mass of flattened irregular prisms, a few of which are white, but most of them of a bluish-gray colour. Leadhills.

1174. In rounded six-sided prisms of an emerald-green colour, and slightly translucent; on an iron-shot quartz. Hartz.

1175. In slender, acicular, six-sided prisms, translucent, and of a pistachio-green colour; on sandstone. Catharineberg, Siberia.

1176. Bottle-green, grouped, six-sided pyramids, translucent, and of a high lustre; in a cavity in massive white lead ore. Leadhills.

AZURE COPPER ORE.—BLUE CARBONATE OF COPPER.

FORMULA.—$2(CuO, CO_2) + CuO, HO$.

SYSTEM, THE OBLIQUE PRISMATIC.

1177. Massive, with a fibrous texture, and in accumulated lenticular crystals of an indigo-blue colour; accompanied by some gray copper. Chessy, near Lyons.

1178. Massive, and somewhat radiated, of an indigo-blue colour, covered with closely packed lenticular crystals of a velvet-blue, with adhering white clay. Chessy.

1179. An aggregate of very distinct oblique rhombic prisms, of a dark azure-blue colour, dotted over with malachite, and intermixed with clay. Chessy.

1180. In lenticular crystals of a dark blue colour, and adamantine lustre; also intermixed with a little gray copper and a yellowish-red clay. Chessy.

1181. Massive, with earthy structure and a blue colour, intermixed with a yellowish-brown clay, and accompanied by a small quantity of malachite. Adelaide, Australia.

MALACHITE.

FORMULA.—$2CuO, CO_2 + HO$.

SYSTEM, THE OBLIQUE PRISMATIC.

1182. A laminar mass exhibiting circular spots having a concentric structure, and of three different shades of colour, viz., grass-green, deep-green, and greenish-white. Siberia.

1183. A portion of a rounded nodule of a grass-green colour internally, and a radiated structure. Gomashatfsgy, Siberia.

1184. Of a fine fibrous texture, and a colour partly grass-green, and partly olive-green, with a changing pearly lustre. Siberia.

1185. Of a colour between grass and verdigris-green, massive, fibrous, and in rough rhombic prisms; on yellowish-red coarse granular sandstone. Chessy.

1186. An irregular stalactitic mass of a grass-green colour and fibrous structure. Silvermines, Tipperary.

1187. Massive, with botryoidal surface, accompanied by ruby copper ore; on white quartz. Cappagh Mine, Cork.

1188. Of a bright grass-green colour and fibrous structure, with intermixed ruby copper, and a few dots of yellowish-white clay. Catharineberg, Siberia.

1189. In grass-green silky tufts of slender prismatic crystals; on quartz. Knockmahon, Waterford.

MYSORINE.

FORMULA.—$2CuO, CO_2$. (*Thompson.*)

NOT FOUND IN CRYSTALS.

1190.

CARBONATE OF CERIUM.

CRYSTALLINE SYSTEM NOT KNOWN.

1191. In rounded and very thin pellicles of a white colour, scattered over the surface of cerite. Riddharyttan, Sweden.

BISMUTH.—CARBONATE OF BISMUTH.

CRYSTALLINE SYSTEM NOT KNOWN.

1192. In acicular prisms of a grayish-white colour, traversing brown hæmatite. Lobenstein, Saxony.

CARBONATE OF SILVER.

FORMULA.—AgO, CO_2.

MASSIVE.

1193.

SECTION V.

SULPHURIDES.

SULPHUR.

FORMULA.—S.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1194. In numerous, transparent, prismatic crystals, with pyramidal terminations, and associated with slender prisms of celestine in stellate groups; on limestone. Sicily.

1195. An irregular crystalline mass of a canary-yellow colour, and conchoidal fracture.

1196. In crystals of various shades of yellow, some of which exhibit the faces of the rhombic prism and corresponding octahedron, the latter being the best developed; on a yellowish-brown calcareous stone.

1197. Crystalline, lustrous, and of a yellow colour, intermingled with small crystals of calcareous spar; on gray crystalline limestone. Brooklodge, County Galway.

1198. A thin coating of a very pale grayish-yellow colour, with a few minute, imbedded, acicular prisms; on calcareous tufa. Bed of the Solfaterra River, Rome.

MAGNETIC PYRITES.

FORMULA.—FeS, *combined with a variable amount of* FeS_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1199. Of a pinchbeck-brown colour, lamellar structure, and metallic lustre, with a little adhering magnetic iron ore of a black colour. Bodenmais, Bavaria.

1200. Massive, and of a bronze colour and lustre; on a stone composed of gneiss and quartz. Leaghtown, County Donegal.

IRON PYRITES.—MUNDIC.

FORMULA.—FeS_2.

CRYSTALLINE SYSTEM, THE REGULAR.

1201. In separate cubic crystals of a whitish-yellow colour, to one of which is attached a lamina of calcareous spar. England.

1202. Five separate crystals, three being perfect cubes, one a right square, and the other a right rectangular prism.

1203. A fragment of a cube rounded by attrition, externally of a liver-brown, internally of a brass-yellow colour; accompanied by a large cubic crystal of a bronze colour.

1204. Eleven perfect pentagonal dodecahedrons, the faces being liver-brown, and the edges brass-yellow.

1205. Three cubic crystals of a liver-brown colour on the surface. Cape of Good Hope.

1206. In pentagonal dodecahedrons, of a dark liver-brown colour; imbedded in greenish-gray marl slate. Munster, Hanover.

1207. In cubical crystals of a brass-yellow colour, with striated faces; on fluor, with a little intermixed quartz.

1208. In aggregated cubes of a brass-yellow colour, accompanied by some small crystals of blende; upon crystallized galena. Cumberland.

1209. In confusedly aggregated cubes, partly of a brass and partly of a bronze-yellow colour. Piedmont.

1210. In minute, yellow, cubic crystals, implicated in each other, and forming a coating on calp limestone. Dublin.

1211. A mass of closely aggregated cubic crystals, with curved surfaces.

1212. Minute cubic crystals with curved surfaces, aggregated in spheroids; on quartz. Cornwall.

1213. Partly massive, and in acicular crystals crossing at an angle of 90°. Saxony.

1214. A cubical fragment of a bell-metal-yellow colour, and somewhat fibrous structure. Saxony.

1215. Massive, very hard, and of a bell-metal-yellow colour. Saxony.

1216. An ellipsoidal mass with a number of rounded projections at the extremities of the major axis. From the calp limestone of Dublin?

1217. A nearly perfect sphere of a dark brown colour, studded with truncated pyramids, which are, in a great measure, converted into peroxide of iron.

1218. An ammonite converted into massive pyrites, with minute cubic crystals on the surface. Cornwall.

PRISMATIC PYRITES.—WHITE IRON PYRITES.

FORMULA.—FeS_2, *or the same as common Pyrites.*

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1219. In aggregated prisms, most of which appear to be hexahedral, of a yellowish-white colour; accompanied by numerous crystals of quartz. Saxony

MISPICKEL.

FORMULA.—(Fe, Co), (S_2, As). (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1220. Massive, and in octahedral crystals, with rectangular bases; intermixed with chlorite, quartz, and copper pyrites. Cornwall.

1221. Massive, and in pyramids which are the halves of rectangular octahedrons, with tin stone in octahedrons, and acicular crystals. Cornwall.

1222. In low, right rhombic prisms of considerable lustre, a white colour, and with their summits striated in the direction of the shorter diagonal.

ARSENICAL PYRITES.

This term is applied to Mispickel, when not in distinct crystals, and, indeed, to any variety of Pyrites not crystallizing in the regular system, and containing an appreciable quantity of Arsenic.

1223. In columnar concretions of a colour between gray and bell-metal-yellow. Freyberg.

1224. Massive, and of a grayish-white colour, with adhering talc. Cornwall.

1225. Of a grayish-white colour, with thin parallel seams of a black slate, steatite, and asbestus. Reichenstein, Silesia.

1226. Of a grayish-white colour and lamellar structure; on quartz. Faithleg, Waterford.

1227. Of a tin-white colour, and lamellar radiated structure; on quartz. Faithleg, Waterford.

SELENIFEROUS PYRITES.

Pyrites, containing a little Selenium.

1228. Massive, granular, and of a brassy-yellow colour, with some quartz. Bohemia.

CAPILLARY PYRITES.

FORMULA.—NiS.

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1229. In capillary four-sided prisms of a brass-yellow colour, attached to iron-shot quartz. Joachimstal, Bohemia.

1230. In capillary crystals of a bronze colour and considerable lustre; on corroded quartz sprinkled over with chlorite earth. Lanescot Mine, Cornwall.

SULPHURET OF IRON AND NICKEL.

FORMULA.—$(Fe, Ni) S$.

CRYSTALLINE SYSTEM, THE REGULAR.

1231. Of a light bronze colour, disseminated through hornblende. Lillehammer, Norway.

COBALT PYRITES.

FORMULA.—$Co, S + Co_2 S_3$, *or* $Co_3 S_4$. (*Frankenheim.*)

CRYSTALLINE SYSTEM, THE REGULAR.

1232. Massive, and in numerous tin-white crystals, which are compound forms, exhibiting the faces of the cube and the octahedron, the latter being those which are best developed. Mussen, near Siegen, Prussia.

ALABANDINE.

FORMULA.—$Mn S$.

CRYSTALLINE SYSTEM, THE REGULAR.

1233. Massive, of a bluish colour, and the aspect of porcelain; in some parts brown externally; accompanied by crystalline carbonate of manganese. Nagyag, Transylvania.

1234. Massive, with an irregular lamellar structure, a dark brown colour, and sub-metallic lustre. Effervesces with muriatic acid, evolving sulphuretted hydrogen. Nagyag, Transylvania.

BLENDE.

FORMULA.—Zn S.

CRYSTALLINE SYSTEM, THE REGULAR.

1235. In jet-black lustrous crystals, in some of which can be recognised the faces of the rhombic dodecahedron, and of the octahedron, with some lenticular rhombohedrons of calcareous spar; on clay slate. Alston Moor, Cumberland.

1236. In numerous twin crystals of a jet-black colour and metallic lustre; accompanied by pearl spar; on quartz. Newtownards, County Down.

1237. In crystals of a dark colour, and strong metallic lustre, several of which exhibit the faces of the rhombic dodecahedron, and the octahedron, the former being those best developed, accompanied by several obtuse rhombohedrons of calcareous spar; on siliceous slate. Alston Moor, Cumberland.

1238. In irregular jet-black crystals, intermingled with numerous cubes of bluish-gray fluor and a little galena. Cumberland.

1239. Two specimens, both of which exhibit twin crystals, the component ones showing the faces of the octahedron and rhombic dodecahedron, the former being best developed.

1240. In crystals which exhibit the faces of the octahedron and rhombic dodecahedron, and are of a colophony-brown colour, passing into hyacinth-red; on a smoke-gray highly siliceous limestone. Clontarf, County Dublin.

1241. In crystals, several of which are octahedrons, with uneven surfaces, and of a colour intermediate between colophony-brown and honey-yellow; on quartz, which itself rests upon dolomitic spar, nearly massive, and of a yellowish-white colour with a tinge of pink. Westmoreland.

1242. Of a colophony-brown colour, lamellar texture, and strong metallic lustre, with adhering particles of white steatite. Flintshire.

1243. Of a colophony-brown colour, massive, and crystallized, partially covered with a thin coating of greenish calcareous spar; on killas. Cornwall.

1244. Nearly massive, with a lamellar structure, and of a yellowish colour, intermixed with quartz. Leadhills, Scotland.

1245. Of a hair-brown colour, and of a fibrous and radiated structure, with adhering particles of quartz and lamellar galena. Przibram, Bohemia.

1246. Of a radiated structure and dark colophony-brown colour. Przibram, Bohemia.

N. B.—The Przibram blende contains from 1·5 to 1·8 per cent of cadmium.

1247. A mammillary mass, partly of a yellowish-white, and partly of a brown colour; accompanied by copper pyrites and quartz.

GREENOCKITE.

FORMULA.—Cd, S.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1248. In small orange-yellow crystals, one of which is a very perfect six-sided pyramid, with its apex truncated;

on botryoidal prehnite of a greenish-yellow colour on the surface. Bishopton, Renfrewshire.

1249. A few minute honey-yellow crystals; on greenish-white prehnite. Bishopton, Renfrewshire.

1250. Two distinct crystals of an amber-yellow colour, the larger being a regular six-sided prism; imbedded in a vesicular trap, and accompanied by rhombohedrons of calcareous spar. Bishopton, Renfrewshire.

COPPER GLANCE.—VITREOUS COPPER.

FORMULA.—Cu_2, S.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1251. Of a steel-gray colour, massive, and in flat crystals having the form of grouped six-sided prisms, with several terminal facets. Chessy.

1252. In highly lustrous six-sided prisms, terminated by pyramids on either side, the apices of the latter being deeply truncated; on quartz. Cornwall.

1253. In six-sided prisms of little lustre; on iron-shot cellular quartz. Cambourne Mine, Cornwall.

1254. A concretionary mass composed of numerous highly modified crystals; accompanied by quartz and copper pyrites. Cornwall.

BLUE COPPER.—KUPFERINDIG.

FORMULA.—Cu S.

CRYSTALLINE SYSTEM NOT KNOWN.

1255. Occurs as a thin coating of an indigo-blue colour, on a loose siliceous stone, containing interspersed particles of copper pyrites. Sangerhausen, Thuringia.

COPPER PYRITES.

Formula.—$xCu_2S + Fe_2 S_3$, *the value of* x *fluctuating between* 1 *and* 5.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1256. In hemioctahedrons of a brass-yellow colour; on crystallized quartz, partially coloured rose-red. Tincroft Mine, Cornwall.

1257. In hemioctahedrons which are covered by a thin greenish-brown coating, probably produced by oxidation; accompanied by some prisms of rock crystal. Cornwall.

1258. In variously grouped right square octahedrons of a brass-yellow colour; on pearl spar. Devonshire.

1259. In crystals, some of which are octahedrons, and some hemioctahedrons; on quartz, with some imperfect cubes of pink fluor. Cornwall.

1260. In clustered indistinct crystals; on baroselenite, incrusting calcareous spar, through which numerous particles of galena are disseminated. Derbyshire.

1261. Numerous indistinct bronze-coloured crystals, investing calcareous spar, and accompanied by some nodules of baroselenite and crystals of quartz. Derbyshire.

1262. Numerous closely aggregated indistinct crystals, some of which are pavonized; on nodules of baroselenite, which rest on calcareous spar. Cornwall.

1263. Botryoidal, and of a brass-yellow colour, tarnished on the surface. Cornwall.

1264. Two specimens, botryoidal, and tarnished on the surface. Cornwall.

1265. Massive, and of a bright yellow colour, intermixed with bluish-white quartz. Ballymurtagh, Wicklow.

1266. Massive, and of a granular structure, with a small quantity of intermixed quartz. Cronbane, Wicklow.

1267. A specimen, apparently without matrix, and exhibiting a fracture which is partly flat and partly small conchoidal.

1268. Massive, and of a brass-yellow colour, rendered dull by an intermixture of dark-coloured clay, with a little imbedded calcareous spar. Mukruss, Killarney.

1269. Massive, and pavonized on the surface, with a little adhering quartz and hornblende. Snowdon.

1270. Massive, and variously pavonized on the surface, with much intermixed quartz. Allihies Mine, Berehaven.

CUBAN.

A Pyrites containing about 19 *per cent. of Copper.* (*Breithaupt.*)

CRYSTALLINE SYSTEM, THE REGULAR.

1271.

PURPLE COPPER.

FORMULA.—$yCu_2S+Fe_2S_3$, y *being* 3 *or* 5; *or* xCu_2S+FeS, x *being* 2, 4 *or* 4·5.

CRYSTALLINE SYSTEM, THE REGULAR.

1272. Massive, and of a colour between copper-red and pinchbeck-brown, pavonized blue all over its surface, with intermixed quartz. Audley Mine, Cork.

1273. Massive, and of a yellowish-brown colour, pavonized blue on the surface, with some adhering particles of yellowish-white dolomitic spar.

1274. Massive, and of a blue colour externally, with a tinge of green, but copper-red on the recent fracture; accompanied by quartz. Audley Mine, Cork.

1275. Of a yellow colour, much tarnished on the surface, the prevailing colour being blue; accompanied by quartz. This specimen is probably nothing but a pavonized copper pyrites.

TIN PYRITES.

FORMULA.—FS_2, $2SnS+FeS_2$, $2Cu_2S$.

CRYSTALLINE SYSTEM, THE REGULAR.

1276. Massive, and of a steel-gray colour, intermixed with copper pyrites and blende. St. Agnes, Cornwall.

1277. Massive, with a minute, curved, and irregularly scaly structure, and bell-metal colour. St. Agnes, Cornwall.

1278. Massive, of a thick scaly texture, and a colour between lead-gray and tin-white, coated on the surface with earthy malachite. St. Agnes, Cornwall.

GALENA.

FORMULA.—$Pb\,S$.

CRYSTALLINE SYSTEM, THE REGULAR.

1279. Ten detached crystals which are compound forms, exhibiting, combined, the faces of the cube and of the octahedron. From a clay vein at Allanherds, Cumberland.

1280. In cubes, rounded as if from fusion, with some crystals of quartz; on flesh-coloured pearl spar. Isaac Mine, Freyberg.

1281. In crystals presenting at once the faces of the cube and the octahedron; on crystalline quartz. Isaac Mine, Freyberg.

1282. A mass composed of three or four cohering crystals, one of which is a fragment of a nearly perfect octahedron. Luganure, Wicklow.

1283. In cubo-octahedral crystals, coated underneath with black blende. Alston Moor, Cumberland.

1284. In cubic crystals having a strong metallic lustre; accompanied by crystals of quartz and some nodules of lamellar heavy spar.

1285. Two specimens, in each of which the galena has the cubo-octahedral form. *a* has associated with it some crystals of black blende, and the galena rests on quartz. Derbyshire. In *b* the supporting stone is gneiss. Freyberg, Saxony.

1286. In cubo-octahedral crystals, accompanied by crystallized iron pyrites of a brass colour; on quartz.

1287. In cubo-octahedral crystals; on massive quartz. Derbyshire.

1288. A large cubic fragment with lamellar structure and perfect lead-gray colour. Durham.

1289. Three cubic fragments, remarkable for being striated in the direction of one diagonal. Leadhills, Scotland.

1290. An irregularly cubic fragment with curved lamellar structure, and pavonized on the upper surface. Cumberland.

1291. A flat mass with foliated structure, occurring in nodules. Ruschacht, Freyberg.

1292. Of a laminar structure and high metallic lustre, scattered through white calcareous spar. County Clare.

1293. Structure foliated and divergent, lustre strongly metallic. Freyberg.

N. B.—This galena is the richest in silver of any in Saxony.

1294. In large but irregular cubic crystals; accompanied by crystallized copper pyrites, pearl spar, and quartz. Cumberland.

1295. In rough, large, cubic crystals, most of which are invested by a tunic of yellowish crystalline quartz, accompanied by numerous pyramids of topaz-coloured rock crystal, and a few particles of copper pyrites; on massive quartz. Cumberland.

1296. In large, rough cubes; accompanied by numerous crystals of calcareous spar, some brown spar, fluor, and blende. Alston Moor, Cumberland.

1297. In numerous cubes with dull surfaces, some of which are covered by a little greenish calcareous spar; accompanied by a net work of minute crystals of copper pyrites, resting on a bluish limestone. Cumberland.

1298. In cubes, the angles of which are slightly truncated, accompanied by yellowish pearl spar, and numerous cubes of colourless and perfectly transparent fluor, with a few minute crystals of blende; on limestone. Alston Moor, Cumberland.

1299. A large laminar mass, covered with small crystals of pyramidal quartz and black blende, and accompanied by a little pink-coloured fluor. Alston Moor, Cumberland.

1300. Of a minutely laminar, approaching to a granular structure; accompanied by quartz and a little laminar baroselenite. Ballycorus, Dublin.

1301. Massive, and of a minute scaly, approaching to a granular structure.

1302. Massive, and of a granular structure, intermixed at its surface with stony matter, which is traversed by a thin seam of white calcareous spar. Ross Island, Kerry.

1303. Massive, with a structure partly granular and partly laminar, the latter part being striated. Kenschatt, Saxony.

N. B.—This contains no silver.

1304. Massive, compact, and of bluish-gray colour, with disseminated particles of iron pyrites. Freyberg, Saxony.

SUPER-SULPHURET OF LEAD.

FORMULA.—$Pb\ S_2$?

NOT FOUND CRYSTALLIZED.

1305. Amorphous, friable, and of a dull blue colour, intermixed with a little yellowish-white lead ochre, including sulphate of lead. Dufton, Westmoreland.

BLUE LEAD ORE.

Composition that of Galena, intermixed with Phosphate of Lead.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL, OR THAT IN WHICH PHOSPHATE OF LEAD OCCURS, THE MINERAL, IN FACT, BEING A PSEUDOMORPHOUS GALENA.

1306. In fascicular six-sided prisms of a grayish-blue colour, and without lustre.

1307. In nearly circular six-sided prisms, bluish-gray externally, and enclosing yellowish-white phosphate of lead. Huelgoet, Brittany.

SULPHURET OF SILVER.—VITREOUS SILVER.

FORMULA.—$Ag\ S$.

CRYSTALLINE SYSTEM, THE REGULAR.

1308. A crystalline mass of a lead-gray colour, one part being a cube somewhat distorted, with its angles truncated; accompanied by a little calcareous spar. Joachimstahl, Bohemia.

1309. In rounded crystals, which appear to be combinations of the cube with the ikositetrahedron, accompanied by a little yellow sulphuret of iron; on gneiss. Freyberg, Saxony.

1310. In rounded crystals of a dark colour, which exhibit the faces of the cube, the octahedron, and the dodecahedron; on quartz. Johannegeorgenstadt, Saxony.

1311. An amorphous sectile mass of a lead-gray colour and metallic lustre, composed of rounded crystalline concretions, and accompanied by calc spar. Sambrurite, Mexico.

STERNBERGITE.

FORMULA.—$Ag\,S, 2Fe_2\,S_3$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1312. In numerous minute nearly granular crystals, lining a cavity in a mass composed of laminar galena, quartz, and calcareous spar. Joachimstal, Bohemia.

FLEXIBLE SILVER ORE.

Composed of Silver, Iron, and Sulphur. (*Wollaston.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1313. In distinct prismatic crystals, sectile, and with metallic lustre. Konigsberg.

STROMEYERITE.

FORMULA.—$Cu_2\,S, Ag\,S$.

NOT FOUND IN CRYSTALS.

1314. Massive, with metallic lustre, and steel-gray colour. Schlangenberg, Altai.

CINNABAR.

FORMULA.—HgS_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1315. Two specimens, the smaller exhibiting very distinct crystals with triangular facets, the halves of acute rhombohedrons; on clay slate. In the larger the cinnabar is granular; upon and disseminated through sandstone. Deux Ponts.

1316. Massive, and of a dark red colour, with interspersed particles of iron pyrites, and some nodules of idrialine. Idria.

1317. Massive, and of an ochre-red colour. Idria.

1318. Amorphous, and in cochineal-red and reddish-brown sub-transparent crystals; on a quartzose rock. Almaden, Spain.

GRAY ANTIMONY.

FORMULA.—Sb, S_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1319. In long and very regular rhombic prisms, terminated by pyramids, having generally a divergent arrangement. Auvergne.

1320. In very thin acicular prisms of an iron-gray colour, some of which are pavonized; on the same, massive. Transylvania.

1321. A baccillar mass of adhering prisms, slightly divergent. Auvergne.

1322. Two separate sets of four-sided prisms, which cross each other, of a steel-gray colour, and partially pavonized on the surface. Transylvania.

1323. In capillary crystals of a lead-gray colour; on granite, and associated with galena, and a little magnetic pyrites. Kapnik, Hungary.

1324. Partly granular, partly fibrous, passing into radiated, pavonized on the surface, with some adhering quartz. Braunsdorf, Saxony.

1325. Nearly compact, with a slight tendency to the fibrous structure. Braunsdorf, Saxony.

NICKEL STIBINE.

FORMULA.—$Ni(Sb, As) + NiS_2$.

CRYSTALLINE SYSTEM, THE REGULAR.

1326. In crystalline plates of a steel-gray colour and low metallic lustre, on some of which the faces of the octahedron are discernible; accompanied by yellow dolomitic spar. Lobenstein, Saxony.

MOLYBDENITE.

FORMULA.—MoS_2.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1327. In small crystalline masses of a lead-gray colour and high metallic lustre, very soft, and round on the surface; on white quartz. Saxony.

1328. Of a lead-gray colour, and foliated structure; on yellowish-gray felspar. Ritzberg, Sweden.

1329. Of a lead-gray colour, metallic lustre, and lamellar structure; on quartz. Schlackenwald, Bohemia.

BISMUTH GLANCE.

FORMULA.—BiS_3. (*Rammelsberg.*)

SYSTEM, THE RIGHT RHOMBIC.

1330. In acicular prisms of a yellowish colour, imbedded in quartz, and accompanied by copper pyrites. Schneeberg, Saxony.

1331.

BISMUTH NICKEL.

FORMULA.—$BiS_3 + 11(Ni_2S_3)$. *(From an analysis by Von Kobel.) It also, however, contains traces of Lead and Copper.*

CRYSTALLINE SYSTEM, THE REGULAR.

1332.

BISMUTHIC SILVER.

FORMULA.—$BiS_3 + 5\{(Pb, Ag, Fe), S\}$. *(From an analysis by Klaproth.)*

CRYSTALLINE SYSTEM NOT KNOWN.

1333.

NEEDLE ORE.

FORMULA.—$2Cu_2S, BiS_3 + 4\ PbS, BiS_3$. *(From an analysis by Frick.)*

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

1334. Massive, and in long rectangular crystals of a slight brassy tinge of colour; upon and imbedded in white quartz. Beresoff, Siberia.

1335.

REALGAR.

FORMULA.—As, S_2.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1336. In vermillion-coloured, four-sided prisms; accompanied by acicular gray antimony and quartz, and in some places invested with a thin coating of pulverulent yellow orpiment. Transylvania.

ORPIMENT.

FORMULA.—As, S_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1337. Occurs as a thin coating on numerous irregular crystals of realgar; on graystone. Fahlenstein, Tyrol.

1338. Of a deep yellow colour, foliated structure, and pearly lustre. Nagyag, Transylvania.

RED SILVER ORE.—RUBY SILVER.

FORMULA.—$3AgS, SbS_3$, *or* $3AgS, AsS_3$. *These two are viewed as varieties of the same species, and are distinguishvd under the names of the* dark red *and the* light red *Silver ores.*

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1339. A perfect six-sided prism of a dark cinnabar-red colour; accompanied by mammillar brittle silver ore, and yellowish-white rhombohedrons of pearl spar. Himmelsfurst, Freyberg, Saxony.

1340. In six-sided prisms of a dark red colour, passing into lead-gray, accompanied by dark gray brittle silver ore, both massive and crystallized, with a little light red ruby silver and grayish-white calcareous spar; on gneiss. Joachimstahl, Bohemia.

1341. Massive, and of a steel-gray colour, inclining to red, with small conchoidal fracture, and a considerable degree of lustre; on quartz, with adhering gneiss. Freyberg.

1342. A cluster of brilliant six-sided prisms, with dihedral summits, the angles and edges of which are much modified; on gray calcareous spar.

1343. In dendritic crystals of a dark red colour, on calcareous spar; accompanied by a little native arsenic. Andreasberg, Hartz.

MIARGYRITE.

FORMULA.—AgS, SiS_3.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1344. In indistinct crystals of an iron-black colour, with much lustre, and a cherry-red streak. Braunsdorf, Freyberg.

SPRÖDGLASERZ.—BRITTLE SILVER ORE.

FORMULA.—$6AgS, SbS_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1345. Massive, sectile, with uneven fracture and strong metallic lustre. Schemnitz, Hungary.

1346. Rhombic prisms, the terminal edges of some of which are replaced by planes conducting to the octahedron. Freyberg.

ANTIMONIAL SULPHURET OF SILVER.—SCHILFGLASERZ

FORMULA.—$2AgS, SbS_3 + 3PbS, SbS_3$. (*From an analysis by Wohler.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1347. A small specimen, composed of a few aggregated prisms channelled longitudinally, and pavonized slightly on the surface. Braunsdorf, Freyberg.

1348. Of a lead-gray colour, and curved foliated structure, constituting a vein in flesh-red brown spar, which traverses gneiss. Braunsdorf, Saxony.

1349. Massive, and of a colour between lead-gray and tin-white, with something of the lamellar structure, coated on the under surface with red iron ochre. Guanaxuato, South America.

ANTIMONIAL COPPER GLANCE.—STIBIATED COPPER GLANCE.

FORMULA.—Cu_2S, SbS_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1350. In particles of a dark lead-gray colour and metallic lustre; accompanied by dolomitic spar and hæmatite. Wolfsberg, Hartz.

BERTHIERITE.

FORMULA.—FeS, SbS_3. (*From an analysis by Berthier.*)

CRYSTALLINE SYSTEM NOT KNOWN.

1351. A mass of cohering slender prisms of a dark steel-gray colour, intermixed with particles of quartz, and, at some points, pavonized on the surface. Braunsdorf, Freyberg.

GEOCRONITE.

FORMULA.—$5PbS, \{(Sb, As), S_3\}$.

NOT FOUND IN CRYSTALS.

1352. Massive, and of a light bluish lead-gray colour, with adhering calcareous spar, partly of a white and partly of a greenish colour. Sala, Sweden.

KILBRICKENITE.

FORMULA.—$6PbS, SbS_3$.

NOT FOUND CRYSTALLIZED.

1353. Massive, compact, and of a lead-gray colour. Kilbricken, County Clare.

ZINKENITE.

FORMULA.—PbS, SbS_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1354. In bluish-white shining prisms, apparently of six sides, deeply striated longitudinally, also massive; on quartz. Wolfsberg, Hartz.

1355. In slender striated prisms, also massive; on quartz. Wolfsberg, Hartz.

PLAGIONITE.

FORMULA.—$4PbS + 3SbS_3$. (*Rose.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1356. In short, striated, oblique prisms of a dark lead-gray colour, striated longitudinally; on white massive quartz. Wolfsberg, Hartz.

1357. In minute acicular prisms, also as a crystalline incrustation of a dark lead-gray colour; on quartz. Wolfsberg, Hartz.

JAMESONITE.

FORMULA.—$3PbS + 2SbS_3$. (*Rose.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1358. Composed of fine parallel waving fibres of a steel-gray colour and metallic lustre; accompanied at one end by cubic crystals of iron pyrites, and dotted in several places with antimonial ochre. Cornwall.

FEATHER ORE.

FORMULA.—$2PbS, SbS_3$. (*Rose.*)

CRYSTALLINE SYSTEM NOT KNOWN.

1359. In fine capillary threads of a lead-gray colour; on pearl spar, and accompanied by some crystals of quartz. Saxony.

BOULANGERITE.

FORMULA.—$3PbS, SbS_3$.

CRYSTALLINE SYSTEM NOT DETERMINED.

1360. Massive, of a light lead-gray colour, and of lustre between silky and greasy. Also in lustrous, tabular, six-sided prisms, terminated by pyramids; associated with pearl spar and garnets. From Ober Lahr.

KOBELLITE.

FORMULA.—$3FeS, 2SbS_3 + 3PbS, BiS_3$.

NOT FOUND IN CRYSTALS.

1361. Massive, of a gray colour, and with metallic lustre. Hvena Mine, Sweden.

BOURNONITE.

FORMULA.—$3Cu_2S, SbS_3 + 2(3PbS, SbS_3)$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1362. One composite prism of a dark lead-gray colour, with several indeterminate crystalline fragments; on milk-white quartz. Savoy.

1363. Numerous composite crystals, the component ones being right rectangular prisms, and so disposed as to give rise to the appearance of a cogged wheel; on white crystalline quartz. Nagyag, Transylvania.

1364. Numerous composite crystals, wheel-shaped, associated with a little blende and iron pyrites. Transylvania.

1365. Structure lamellar, colour light lead-gray; associated with brass-yellow iron pyrites and quartz. Holberg, Hartz

GRAY COPPER ORE.—KUPFERFAHLERZ.

FORMULA.—$4(Cu_2S, AgS, FeS, ZnS), (SbS_3, AsS_3)$.

(*Frankenheim.*)

CRYSTALLINE SYSTEM, THE REGULAR.

1366. In dodecahedrons of a dull lead-gray colour, some of which present the edges and octahedral angles truncated; associated with calcareous spar and quartz. Schwartz, Tyrol.

1367. In tetrahedrons, gray within, externally brass-yellow, with bevilled edges, that is, in forms which present the faces of the hemioctahedron and hemiikasitetrahedron; accompanied by pearl spar in rhombohedrons with curved faces, and lenticular spathose iron. Lanterberg, Hartz.

1368. In composite crystals of a dark gray colour and considerable lustre, the individual crystals being modified octahedrons or dodecahedrons; accompanied by quartz.

1369. In crystalline lamellæ of a steel-gray colour and much lustre; on silicate of manganese resting on pearl spar. Nagyag, Transylvania.

1370. Massive, of a gray colour, with some imbedded crystals of white calcareous spar. Allihies Mine, Berehaven.

1371. Massive, with metallic lustre, and small sub-conchoidal fracture.

1372. Three separate crystals. The smallest is a regular octahedron, the parts corresponding to the planes being, in a great measure, removed, while the octahedral edges remain. The remaining crystals are compound forms, presenting at once the faces of the octahedron and hemiikasitetrahedron. In all three the gray copper ore is, in whole or part, replaced by malachite and tile ore. Beresof, Catharineberg, Siberia.

TENNANTITE.

FORMULA.—$4(Cu_2S, FeS), AsS_3$. (*Frankenheim.*)

CRYSTALLINE SYSTEM, THE REGULAR.

This mineral can scarcely be distinguished from Gray Copper, for both crystallize in the same system, and both have the same general formula.

1373. In crystals of a lead-gray colour, which are combinations of the octahedron and cube; on an argillaceous stone, and accompanied by a little galena.

1374. In minute, dark, steel-gray crystals, presenting the faces of the cube, the octahedron, and the dodecahedron; on mammillar and pavonized copper pyrites. Cook's Kitchen, Cornwall.

1375. A crystalline coating of a steel-gray colour and metallic lustre; on massive copper pyrites, with a little tile ore. Huel Ryan, Cornwall.

SILBERFAHLERZ.—ARGENTIFEROUS GRAY COPPER.

This mineral is identical with Gray Copper, with the exception that some of the Copper of the latter is replaced by Silver. Their formulæ and crystalline forms are the same.

1376. In hemioctahedrons of a bright steel-gray colour, associated with composite crystals of dodecahedral blende, of a colophony-brown, along with a little iron pyrites and galena; on quartz. Kapnik, Transylvania.

POLYBASITE.

FORMULA.—$9(AgS, Cu_2S), (Sb_2S_3, As_2S_3)$. (*From an analysis by Rose.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1377. In six-sided prisms whose terminal edges are replaced, of a dark lead-gray colour, and having considerable lustre, accompanied by a few regular six-sided prisms of ruby silver; on crystalline corroded quartz of a brownish-yellow colour.

THENARDITE.

FORMULA.—NaO, SO_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1378.

GLAUBER SALT.—EXANTHALOSE.

FORMULA.—$CuCl + 2NaCl + 3(NaO, CO_2) + 9(NaO, SO_3) + 2HO$. (*From an analysis by Reuss*).

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1379. In transparent crystals with a vitreous lustre, also pulverulent and opaque. Taste saline and bitter. Spain.

1380.

MASCAGNINE.

FORMULA.—NH_4O, SO_3, HO.

CRYSTALLINE SYSTEM, ONE OF THE PRISMATIC.

1381.

APHTHITALITE.

FORMULA.—$NH_4Cl + NaCl + 3(NaO, SO_3) + 9(KO, SO_3.)$

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1382. In mammillary forms of a white colour, with a tinge of green; in vesicular lava of 1834. Vesuvius.

WEBSTERITE.

FORMULA.—Al_2O_3, $SiO_3 + 9HO$. (*From an analysis by Stromeyer.*)

NOT FOUND CRYSTALLIZED.

1383. Massive, white, with mammillary surface; taste saline. New Haven, Sussex.

ALUM STONE.

FORMULA.—KO, $SiO_3 + 3(Al_2O_3, SiO_3) + 6HO$. (*From an analysis by Cordier.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1384. Massive, and of a grayish-white colour. La Tolfa, Italy.

1385. Massive, and of a brick-red colour, striped with dark red and reddish-white. La Tolfa.

FEATHER ALUM.

FORMULA.—Al_2O_3, $SO_3 + 18HO$.

CRYSTALLINE SYSTEM NOT KNOWN.

1386. In delicate capillary prisms of a white and brownish-white colour and silky lustre; taste like that of alum, but is not so sweet.

POTASH ALUM.

FORMULA.—KO, $SO_3 + Al_2O_3$, $3SO_3 + 24HO$.

CRYSTALLINE SYSTEM, THE REGULAR.

1387. Partly compact, partly fibrous, and of a greenish-gray colour passing into pearl-gray; imbedded in alum stone. La Tolfa.

1388. In small, rounded, amorphous masses of a pale yellowish-white colour; intermixed with particles of lava. Solfaterra, Naples.

SODA ALUM.

FORMULA.—$NaO, SO_3 + Al_2O_3, 3SO_3 + 24HO$.

CRYSTALLINE SYSTEM, THE REGULAR.

1389.

AMMONIA ALUM.

FORMULA.—$NH_4O, SO_3 + Al_2O_3, 3SO_3 + 24HO$.

CRYSTALLINE SYSTEM, THE REGULAR.

1390. A translucent crystalline mass of a bluish colour and fibrous structure, with adhering clay. Iskernig, Bohemia.

MAGNESIA ALUM.

FORMULA.—$MgO, SO_3 + Al_2O_3, 3SO_3 + 24HO$.

STRUCTURE FIBROUS, BUT SYSTEM UNKNOWN.

1391.

MANGANESE ALUM.

FORMULA.—$MnO, SO_3 + Al_2O_3, 3SO_3 + 24HO$.

CRYSTALLINE SYSTEM UNKNOWN.

1392. In long, capillary, prismatic crystals cohering longitudinally, of a white colour, and pearly lustre. Grahamstown, Africa.

EPSOM SALTS.

FORMULA.—$MgO, SO_3 + 7HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1393. In minute acicular prisms of a pearl-gray colour, and bitter taste; from rifts in alum slate. Quicksilver Mines, Idria.

GREEN VITRIOL.

FORMULA.—$FeO, SO_3 + 7HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1394. An irregular rounded mass, yellow externally, but bottle-green within, and with a lamellar structure.

COQUIMBITE.

FORMULA.—$Fe_2O_3, 3SO_3 + 9HO$. (*From an analysis by Rose.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1395.

YELLOW COPPERAS.

FORMULA.—$2Fe_2O_3, 5SO_3 + 18HO$. (*From an analysis by Rose.*)

CRYSTALLINE SYSTEM, PROBABLY THE RHOMBOHEDRAL.

1396.

BOTRYOGEN.

FORMULA.—$MgO, SO_3 + 2(FeO, SO_3) + 10HO$. (*From an analysis by Berzelius.*)

CRYSTALLINE SYSTEM, THE OBLIQUE RHOMBIC.

1397.

PISSOPHANE.

FORMULA.—$2(Al_2O_3, Fe_2O_3), SO_3 + 15HO$. (*From an analysis by Erdman.*)

DOES NOT OCCUR IN CRYSTALS.

1398. Of a deep amber-yellow colour, passing into olive-green. Garusdorf, Saalfield.

PITTIZITE.

FORMULA.—$2Fe_2O_3, SO_3 + 6HO$. (*From an analysis by Berzelius.*)

NOT FOUND IN CRYSTALS.

1399.

BLUE VITRIOL.

FORMULA.—$CuO, SO_3 + 5HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1400. In doubly oblique prisms of an azure-blue colour; on crystallized quartz. Hungary.

BROCHANTITE.

FORMULA.—$3CuO, SO_3 + 3HO$.

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1401. In numerous prismatic crystals of a deep emerald-green colour, with a little adhering malachite and interspersed red oxide of iron. Hungary.

WHITE VITRIOL.

FORMULA.—$ZnO, SO_3 + 7HO$.

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1402. Of a yellowish-white colour and waxy lustre, coated with a little of same in the pulverulent condition. Rammelsberg Mine, Hartz.

RED VITRIOL.

FORMULA.—$CuO, SO_3 + 6HO$. (*From a mean of two analyses by Kopp.*) *But it varies in composition.*

NOT FOUND IN CRYSTALS.

1403. A rounded crystalline mass, translucent, and of a rose-red colour. Nemsohl, Hungary.

JOHANNITE.

A hydrated Sulphate of the Protoxide of Uranium.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1404. In small crystalline dots of an apple-green colour; on a stone composed of pitchblende and flesh-red felspar intermixed.

SELENITE.

FORMULA.—$CaO, SO_3, + 2HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1405. In large, flat, prismatic crystals, colourless and transparent; on same, in smaller crystals confusedly aggregated, and of a gray colour.

1406. A pair of cohering, colourless, and transparent crystals, one being a rhomboidal table, the other an imperfect six-sided prism, exhibiting a portion of its summit, and an oblique plane which is probably a face of the primitive octahedron. Bex, Switzerland.

1407. Four perfectly colourless and transparent flat crystals, cohering by their lateral planes. Bex, Switzerland.

1408. Two crystals of nearly the same size, and of exactly the same form, this being a six-sided prism, terminated by a dihedral summit, and which (Rose) arises from a combination of three simple forms, viz., the faces of the vertical prism, two lateral faces, and two of the faces of the primitive octahedron. Chitleg, Somersetshire.

1409. Structure lamellar, colour gray, highly translucent, and with a mother of pearl lustre. Montmartre.

1410. A large transparent plate of lamellar structure, tinged brown all round its edge.

1411. A group of acicular six-sided prisms, presenting at once the faces of the vertical prism, two lateral faces, and, in some instances, all, in others but two of the planes of the primitive octahedron; on tile-red salt clay. Ischel, Austria.

1412. Long six-sided prisms, terminated like those of preceding specimen, transparent, and of a lustre between vitreous and pearly. Coal Mine, Glasgow.

GYPSUM.

This term is here confined to those varieties of hydrated Sulphate of Lime which do not occur in transparent crystals.

1413. In globular concretions of a smoke-gray colour passing into brown, and radiated structure; imbedded in fine grained granular gypsum. America.

1414. In long translucent prisms of a white colour, cohering longitudinally, and thus giving rise to the fibrous structure. Derbyshire.

1415. Structure fibrous, with curved prisms, colour white, translucent. Antrim.

1416. Of a fibrous structure, perfect white colour, and pearly lustre. Derbyshire.

1417. Two fibrous specimens cut into hemispheres and polished, the larger snow-white, the smaller of a brownish-yellow, and both exhibiting a pearly and somewhat chatoyant lustre. The larger specimen from Derbyshire, the smaller from Bex, Switzerland.

1418. Of a scaly structure, white colour, and pearly lustre, accompanied by wine-yellow selenite; on grayish-yellow granular gypsum. Montmartre.

1419. In fibrous, curved, stalactitic forms of a grayish-white colour. Mammoth Cave, Kentucky.

1420. Of a close earthy structure, and a colour partly white and partly flesh-red. England.

1421. Of a compact structure and dark smoke-gray colour. England.

1422. Structure compact and foliated, colour dark smoke-gray, spotted with ash-gray. Wieliczka, Poland.

ANHYDRITE.

FORMULA.—CaO, SO_3. *Mineralogists distinguish four varieties of this mineral, the lamellar (Muriacite), the contorted (Tripestone), the compact (Anhydrite proper), and the scaly (Vulpinite). The latter is said to include a little Silex, and is harder than the rest.*

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1423. A muriacite consisting of right rhombic prisms, with faces somewhat curved, and of a reddish-white colour, passing into pearl-gray; accompanied by a single crystal of sulphur, and celestine in bluish-green crystals. Ignau, Mielzyusky.

1424. A muriacite in rectangular prisms of a light rose-red colour, which is (Rose) a secondary form arising from the combination of the base and summit of the primitive rhombic prism with the first and second lateral planes. Ischel, Austria.

1425. A muriacite of a grayish-white colour with a tinge of blue. Switzerland.

1426. Vulpinite, of a scaly structure and a colour which is smoke-gray on the edges and pearl-white on the faces of the scales. Vulpino, near Bergamo, Italy.

1427. Of a compact texture and pearl-blue colour. Nordhausen, Hanover.

1428. Compact, and of a pearl-gray colour, passing into bluish-gray.

1429. Compact, and of an opaque bluish-white colour, passing into pearl-white. Savoy.

1430. Of a broad lamellar structure, and a brownish-black, passing into a velvet-black colour. Tyrol.

1431. Of a fine fibrous structure and tile-red colour. Hall, Saltzburg.

GLAUBERITE.

FORMULA.—$NaO,\ SO_3 + CaO,\ SO_3$.

CRYSTALLINE SYSTEM, THE OBLIQUE RHOMBIC.

1432. A rounded crystal, translucent, and having a vitreous lustre, nearly surrounded by a white efflorescence. Near Madrid.

POLYHALITE.

FORMULA.—$CaO,\ SO_3 + MgO,\ SO_3 + 2(KO,\ SO_3)$. (*From an analysis by Stromeyer.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1433. Of a brick-red colour, fibrous structure, and resinous lustre. Mines of Ischel, Austria.

BAROSELENITE.—HEAVY SPAR.

FORMULA.—$BaO,\ SO_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1434. In yellowish, tabular, right rhombic prisms of various sizes, with a few adhering particles of red orpiment. The crystals on the inferior side of this specimen have a dark colour from intimately mixed plumose gray antimony. Felsobanya, Transylvania.

1435. A large crystal which is a compound form, exhibiting the base and summit of the primitive rhombic prism, and the faces of the two horizontal prisms. The latter planes are rough, of a reddish colour, and nearly opaque on the surface. Cumberland.

1436. A single crystal of a light amber colour, exhibiting the terminal faces of the primitive rhombic prism, and also the faces of the two horizontal prisms, with two adhering prismatic crystals, having their axes at right angles to those of the crystals to which they are attached.

1437. In yellowish-white transparent crystals of the same form as two last specimens; resting on galena, and accompanied by quartz and a little pyrites. Przibram, Bohemia.

1438. A mass of flat adhering prisms, transparent, but passing into reddish-yellow heavy spar of a lamellar structure.

1439. Numerous tabular rhombic prisms of a yellowish colour; accompanied by massive and crystallized quartz. Marienberg, Saxony.

1440. In tabular prisms, the edges of which are tinged yellow by orpiment. Transylvania.

1441. A large lamellar specimen composed of numerous adhering tabular prisms, rough, and a little iron-shot on their exposed surfaces. Cumberland.

1442. In very perfect, tabular, right rhombic prisms, highly translucent, and of a yellowish colour; on massive baroselenite, and accompanied by a little oxide of manganese.

1443. Lamellar, and of an opaque-white colour, passing, on the under surface, into very light flesh-red. Derbyshire.

1444. Lamellar, and of a reddish-gray colour, coated over with yellowish pearl spar, and pavonized iron pyrites. Freyberg.

1445. Lamellar, translucent, and of a white colour. Freyberg.

1446. Massive, of an ash-gray colour, with fine splintery fracture. Peggan, Styria.

1447. Granular, and of a white colour partially tinged with red. Glandore, County Cork.

1448. Massive, of a white colour, with adhering particles of iron pyrites. Bandon, County Cork.

1449. Structure, curved lamellar, colour, tile-red, lustre, greasy. Freyberg.

CELESTINE.

FORMULA.—SrO, SO_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1450. In colourless rhombic prisms terminated by the faces of an octahedron of a different class, and with its acute lateral edges truncated; resting on a thin stratum of a bluish calcareous stone, which is itself supported by a cake of sulphur, the surface of which is studded with some very regular crystals. Sicily.

1451. In colourless and transparent rhombic prisms with dihedral summits, that is, in compound forms exhibiting the faces of the primitive vertical prism, and those of an horizontal prism; accompanied by native sulphur. Massora, Sicily.

1452. In slender, colourless, and transparent rhombic prisms, having dihedral summits, with adhering native sulphur; on a bluish calcareous rock.

1453. In colourless, transparent, rhombic prisms, which exhibit at their terminations the faces of the primitive octahedron and of the two horizontal prisms; accompanied by native sulphur. Girgenti, Sicily.

1454. Lamellar, and of a pearl-blue colour, coloured partially by a brown ochry ironstone. Bristol.

1455. A large crystal with a slightly bluish tinge of colour, having its acute lateral edges truncated, and exhibiting, at one extremity, the faces of the two horizontal prisms. The planes produced by the replacement of the obtuse lateral edges have a pearly lustre. Lake Erie, North America.

1456. Lamellar, and of a very light blue colour. Bristol.

1457. Lamellar, and of a white colour partially tinged blue, with some substance of a smaller lamellar texture, and flesh colour. Bristol.

1458. A crystalline coating of a bright sky-blue; on a dark calcareous conglomerate. Montechio Maggiore, Vicentia.

1459. Compact, and of a yellowish-brown colour, studded with minute crystals. Montmartre, Paris.

1460. Compact, and of a grayish-white colour, passing into yellowish-white. Montmartre, Paris.

1461. In minute crystals of a pearl-gray and yellowish-gray colour; on gray flint. Montmartre?

BARYTO-CELESTINE.

FORMULA.—$BaO, SO_3 + 2(SrO, SO_3)$. (*From an analysis by Thomson.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1462. Amorphous, and in aggregated prismatic crystals of a pale white colour, intersected by a thin seam of galena. Clifton, Bristol.

ANGLESITE.

FORMULA.—PbO, SO_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1463. In flat transparent prisms of a glassy lustre, accompanied by crystallized black carbonate of lead; on same, compact and earthy. Leadhills.

1464. In minute glassy crystals, with numerous secondary facets, the edges and angles of the primitive rhombic prisms being all replaced; on a dark red cellular ironstone. Paris Mine, Anglesea.

1465. In flattened prisms of a wine-yellow colour and waxy lustre; accompanied by galena and lead earth. Leadhills.

CUPREOUS ANGLESITE.

FORMULA.—$PbO, SO_3 + CuO, HO$. (*Brooke.*)

CRYSTALLINE SYSTEM, THE OBLIQUE RHOMBIC.

1466. In aggregated minute prisms of an azure-blue colour; accompanied by quartz in pyramidal crystals, and lamellar carbonate of lead, with a pearly lustre. Leadhills.

1467. In minute greenish-blue prisms, terminated by numerous facets, the most distinct of which rest upon the angles of the prisms; accompanied by crystallized and earthy carbonate of lead. Leadhills.

DIOXYLITE.—SULPHATO-CARBONATE OF LEAD.

FORMULA.—$PbO, SO_3 + PbO, CO_2$. (*Brooke.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1468. In oblique rhombic prisms of a greenish-gray colour, and translucent, accompanied by carbonate of lead; on quartz. Leadhills.

LEADHILLITE.—SULPHATO-TRICARBONATE OF LEAD.

FORMULA.—$PbO, SO_3 + 3(PbO, CO_2)$. (*Brooke.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1469. In tabular prisms of a yellowish-white colour and pearly lustre; accompanied by white lead. Leadhills, Scotland.

CALEDONITE.—CUPREOUS SULPHATO-CARBONATE OF LEAD.

FORMULA.—$3(PbO, SO_3) + 2(PbO, CO_2) + CuO, CO_2$.
(*From an analysis by Brooke.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1470.

SECTION VI.

SELENIDES.

SELENIDE OF LEAD AND COPPER.

FORMULA.—(Pb, Cu) Se. (*From an analysis by Rose.*)

NOT FOUND IN CRYSTALS.

1471. Massive, with granular structure, light lead-gray colour, and metallic lustre; on calcareous spar in granular crystals, and accompanied by a little earthy hematite. Clausthal, Hartz.

SELENSILVER.

FORMULA.—3(Ag, Pb), 4Se? (*From an analysis by Rose.*)

CRYSTALLINE SYSTEM, THE REGULAR.

1472. In minute granular particles of a lead-gray colour and strong metallic lustre; accompanied by calcareous spar and copper pyrites. Tilkerode, Hartz.

EUKAIRITE.

FORMULA.—$Cu_2Se + AgSe$. (*From an analysis by Berzelius.*)

MASSIVE.

1473.

CLAUSTHALITE.

FORMULA.—PbSe.

MASSIVE.

1474. Of a granular structure and blue colour, accompanied by dolomitic spar; in a schistose rock of a brown colour. Tilkerode, Hartz.

SELENIDE OF MERCURY.—SELENO-SULPHURET OF MERCURY.

FORMULA,—Hg(S, Se). (*From an analysis by Rose.*)

MASSIVE.

1475. Texture compactly granular, with steel-gray colour and metallic lustre; disseminated through calcareous spar. San Onofre, Mexico.

RIONITE.

FORMULA.—$4ZnSe + HgSe_2$. (*From an analysis by Del Rio.*)

MASSIVE.

1476.

SELENIATE OF LEAD.

FORMULA.—PbO, SeO_3.

NOT FOUND IN CRYSTALS.

1477.

SECTION VII.

TELLURIDES.

TELLURIUM.

SYMBOL.—Te.

Composed of Tellurium, with traces of Gold and Iron.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1478. Massive, and in minute acicular prisms of a tin-white colour and bright metallic lustre ; accompanied by a whitish clay and by iron pyrites in tetrakishexahedrons. Facebay, Transylvania.

1479. In particles of a grayish-white colour, disseminated through quartz, and accompanied by a little native gold. Facebay, Transylvania.

1480. Of a tin-white colour, slightly tinged with yellow, and metallic lustre ; on quartz, and accompanied by iron pyrites and a bluish-white clay. Transylvania.

1481. A coating of thin laminæ, and prismatic crystals of a tin-white colour and metallic lustre; on a decomposing claystone porphyry. Transylvania.

TELLURIDE OF LEAD.

FORMULA.—PbTe.

CRYSTALLINE SYSTEM, THE REGULAR ?

1482.

TELLURIDE OF SILVER.—TELLURIC SILVER.

FORMULA.—AgTe. (*From an analysis by Rose.*)

MASSIVE.

1483. Coarsely granular, with strong metallic lustre, and of a colour between lead and steel-gray, with adhering particles of a greenish steatite. Sardinsky Mine, Altai.

GRAPHIC TELLURIUM.

FORMULA.—$AgTe + 2AuTe_3$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1484. In filiform crystals of a steel-gray colour, on a stratum of bluish quartz in minute crystals; resting on claystone porphyry. Offenbanya, Transylvania.

1485. Partly massive, partly in imperfect crystals of a tin-white colour; on claystone porphyry. Offenbanya, Transylvania.

1486. Of a tin-white colour, and in prismatic lamellæ, so arranged as to exhibit the graphic character; on crystallized quartz supported by claystone porphyry. Offenbanya, Transylvania.

BLACK TELLURIUM.—FOLIATED TELLURIUM.—BLATTERERZ.

Contains Lead, Gold, Tellurium, Sulphur, a trace of Copper, and sometimes a little Antimony.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1487. In foliated indeterminate crystalline plates, sectile, of a dark lead-gray colour and strong metallic lustre; accompanied by flesh-coloured diallogite. Nagyag, Transylvania.

1488. In brilliant plates of a dark steel-gray colour and considerable lustre; on quartz. Nagyag, Transylvania.

1489. In brilliant plates of a dark steel-gray colour, some of which are obviously tabular right square prisms; imbedded in and disseminated through reddish-gray carbonate of manganese. Nagyag, Transylvania.

1490. Of a dark steel-gray colour and foliated structure; accompanied by quartz. Nagyag, Transylvania.

1491. Of a dark steel-gray colour and foliated texture; disseminated through pale flesh-red diallogite. Nagyag, Transylvania.

1492. In thin, black, shining leaves; disseminated through pale flesh-red diallogite. Nagyag, Transylvania.

YELLOW TELLURIUM.—WHITE TELLURIUM.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1493. Of a tin-white colour, inclining to brass-yellow, scattered over crystalline quartz. Nagyag, Transylvania.

TETRADYMITE.

FORMULA.—$BiS_3 + 2BiTe_3$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1494. In irregular crystals, some of which appear to be six-sided prisms of a very light steel-gray colour, and tarnished on the surface; in a loose white clay. Schonbkaw, Schemnitz.

SECTION VIII.

ARSENIDES.

ARSENIC.

SYMBOL.—As.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1495. A large mammillary mass of a dark gray colour and granular structure, with a little adhering yellowish pearl-spar; on a greenish clayslate. Idria, Austria.

1496. In stripes of a dark iron-black colour, tarnished on the surface, alternating with grayish-white calcareous spar. St. Marie aux Mines, Vosges.

LEUCOPYRITE.

FORMULA.—FeAs.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1497. In indistinct and irregularly aggregated prisms of a tin-white colour, with adhering particles of serpentine. Reichenstein, Silesia.

ARSENIURET OF MANGANESE.

FORMULA.—$Mn_5\ As_2$? (*Kane.*)

NOT CRYSTALLIZED.

1498.

WHITE NICKEL.

FORMULA.—(Ni, CO, Fe), As.

CRYSTALLINE SYSTEM, PROBABLY THE REGULAR.

1499. Massive, of a tin-white colour and uneven fracture, coated, at one point, with a little nickel ochre. Schneeberg, Saxony.

PLACODINE.

FORMULA.—Ni_4, As.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1500.

COPPER NICKEL.—KUPFER-NICKEL.

FORMULA.—Ni_2, As. (*From an analysis by Berthier.*)

CRYSTALLINE SYSTEM NOT DETERMINED.

1501. Massive, with small conchoidal fracture, and of a copper colour ; imbedded in gray cobalt. Cladming, Styria.

GRAY NICKEL.—NICKEL GLANCE.

FORMULA.—Ni, (As, S_2).

CRYSTALLINE SYSTEM, THE REGULAR.

1502. Massive, with lamellar structure and a steel-gray colour; accompanied by dolomitic spar. Mussen, Siegen.

TIN-WHITE COBALT.—SMALTINE.—BINARSENIURET OF COBALT.

FORMULA.—(CO, Fe, Ni), As.

CRYSTALLINE SYSTEM, THE REGULAR.

1503. Massive, with a schistose structure and a tin-white colour, intersected by a thin vein of copper pyrites. Schladening, Styria.

1504. Massive, and coarsely crystallized in cubes of a tin-white colour; accompanied by a little copper nickel and crystallized quartz. Schneeberg, Saxony.

1505. Massive, and crystallized in cubes confusedly aggregated, and of a dull white colour. Schneeberg, Saxony.

1506. In cubes of a tin-white colour, with the angles slightly truncated; on quartz, massive and crystallized.

GRAY COBALT.—GLANCE COBALT.*—ARSENIO-SULPHURET OF COBALT.

FORMULA.—(Co, Fe), (As, S_2).

CRYSTALLINE SYSTEM, THE REGULAR.

1507. Four separate crystals, the three largest being hemitetrakishexahedrons, also presenting the faces of the cube and octahedron; the remaining one an octahedron whose angles are bevilled so as to exhibit the facets of the hemitetrakishexahedron. Colour, tin-white with a tinge of red. Tunaberg, Sweden.

1508. In hemitetrakishexahedrons, of a reddish-white colour, accompanied by particles of copper pyrites; in white calcareous spar intermixed with sahlite. Tunaberg, Sweden.

1509. Massive, of a steel-gray colour and even fracture; accompanied by a little quartz and galena.

1510. Massive, with granular structure and a light gray colour with pinkish tinge. Pyrenees.

1511. Massive, of a light gray colour and feeble metallic lustre, intermixed with white calcareous spar. Muckruss, Killarney.

* The term *Glance* is usually applied to the crystallized specimens.

BISMUTH COBALT ORE.

A mechanical mixture of Smaltine and Bismuth Glance.

1512. Of a gray colour and a texture between crystalline and coarsely granular. Schneeberg, Saxony.

GANOMATITE.—ARSENICAL SILVER.

Exact composition not known, but contains Arsenic, Silver, and Iron.

NOT FOUND IN CRYSTALS.

1513. A brittle film of a greenish-yellow colour, constituting a thin investment upon a mass of galena. Andreasberg, Hartz.

XANTHOKON.

An Arsenio-sulphuret of Silver.

CRYSTALLINE SYSTEM NOT KNOWN.

1514.

ARSENICAL ANTIMONY.

FORMULA.—Sb, As. (*From an analysis by Rammelsberg.*)

NOT FOUND IN DISTINCT CRYSTALS.

1515. A reniform mass of a granular structure and lead-blue colour. Allemont, Dauphiné.

COBALTIC LEAD ORE.—ARSENIURET OF LEAD.

An Arseniuret of Lead, with a little Iron, Sulphur, and Cobalt.

CRYSTALLINE SYSTEM NOT KNOWN.

1516.

ARSENIOUS ACID.

FORMULA.—AsO_3.

CRYSTALLINE SYSTEM, THE REGULAR.

1517. Opaque, compact, and covered on one side with octahedral crystals. This is an artificial product.

ARSENITE OF COBALT.

Exact composition not determined.

NOT FOUND IN CRYSTALS.

1518.

PHARMACOLITE.

FORMULA.—$2CaO, AsO_5 + 6HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1519. In white fibrous crystals stellularly arranged, accompanied by cobalt bloom; on a granitic stone, traversed by a vein of reddish-white dolomitic spar. Hesse.

1520. In white globular concretions, studded with acicular crystals, accompanied by a little cobalt bloom; on granite. Princess Sophia Mine, Wittichen, Baden.

1521. In little balls of a fibrous and radiated structure and silky lustre, accompanied by a little cobalt bloom; on a stone consisting principally of carbonate of lime. Wittichen, Furstenberg, Baden.

MAGNESIAN PHARMACOLITE.

FORMULA.—$2(MgO, CaO), AsO_5 + 6HO$.

MASSIVE.

1522.

HAIDINGERITE.

FORMULA.—$2CaO, AsO_5 + 4HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1523.

IRON SINTER.—PITCHY IRON ORE.

FORMULA.—$2Fe_2O_3, AsO_5 + 12HO$.

AMORPHOUS.

1524. In fragments of a reddish-colophony colour and pitchy lustre, translucent on the edges. Graul, Saxony.

1525. In friable fragments of a light yellow colour. Friburg, Saxony.

CUBE ORE.—WÜRFELERS.

FORMULA.—$3FeO, AsO_5 + 3Fe_2O_3, 2AsO_5 + 18HO$.

CRYSTALLINE SYSTEM, THE REGULAR.

1526. In perfect cubes of a dark emerald-green colour; in cavities in an iron-shot quartz. Cornwall.

1527. In cubes of an olive-green colour; on quartz. Cornwall.

1528. Numerous cubic crystals of an olive-green colour; in cavities in an iron-shot quartz. Carharrak Mine, Cornwall.

SCORODITE.

FORMULA.—$2FeO, AsO_5 + 2(Fe_2O_3, AsO_5) + 12HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1529. Partly massive, with a few dark leek-green crystals, which are rhombic prisms, modified on the edges, and with the terminal planes of the primitive octahedron. Saxony.

1530. In pyramidal crystals of a leek-green colour, lining cavities in a ferriferous quartz. Cornwall.

1531.

NICKEL OCHRE.—NICKEL GREEN.

FORMULA.—$3NiO, AsO_5 + 8HO$.

CRYSTALLINE SYSTEM NOT KNOWN.

1532. An amorphous coating of a grass-green colour, scattered over a fragment of arsenical nickel.

1533. A thin coating of an apple-green colour and translucent; on prisms of acicular bismuth ore, imbedded in quartz, and accompanied by a few particles of native gold. Siberia.

COBALT BLOOM.

FORMULA.—$3CoO, AsO_5 + HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1534. In slender prisms of a peach-blossom-red colour; imbedded in white quartz. Schneeberg, Saxony.

1535. In thin stellularly arranged prisms of a peach-blossom-red colour; on quartz. Schneeberg, Saxony.

1536. Earthy, and of a peach-blossom-red colour; disseminated through black mica slate. Tunaberg, Sweden.

1537. In slender prisms of a peach-blossom-red colour, and having a radiated arrangement; on hornstone. Schneeberg, Saxony.

1538. Earthy, and of a light peach-blossom colour, accompanied by gray cobalt; on calcareous spar. Killarney.

ROSELITE.

A hydrated Arseniate of Cobalt, Lime, and Magnesia.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1539.

MIMETESE.—HEDYPHANE.

FORMULA.—$PbCl + 3(3PbO, AsO_5)$. *In the Hedyphane a little of the Oxide of Lead is replaced by Lime. It may be added that all the varieties of the mineral include a little Phosphoric Acid.*

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1540. Fascicular groups of acicular crystals of a yellowish-white colour, and a lustre between greasy and silky; on quartz.

1541. In acicular six-sided prisms, without acuminations, of a yellowish-white colour and greasy lustre; on quartz containing chlorite. Cornwall.

1542. In fasciculi of acicular prisms of a yellowish-white colour and greasy lustre; on clay slate. Unity Mine, Cornwall.

1543. Low six-sided prisms of a wax-yellow colour; on quartz. Cumberland.

1544. In acicular, translucent, and lustrous prisms of a clove-brown colour, imbedded in a sheet of stalactitic quartz attached to clay slate. Leeds.

1545. In six-sided prisms with a tapering pyramidal termination, of a clove-brown colour and considerable lustre; on a splinter of bluish-white quartz. Leeds.

1546. In translucent six-sided prisms of a wax-yellow colour, and with all the terminal edges replaced; on reddish quartz, stained, at some points, black, by oxide of manganese. Johanngeorgenstadt, Saxony.

COPPER FROTH.—KUPFERSCHAUM.

FORMULA.—$5CuO, AsO_5 + 10HO$, *with a little Carbonate of Copper.*

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1547. In seams of an earthy structure and light green colour; imbedded in a brownish clay. Tyrol.

CONDURRITE.

The most probable formula of this mineral, when unaltered, is Cu_6, As. (*Blythe.*) *It, however, is always found partially oxidated, and, therefore, contains some Oxide of Copper and Arsenious Acid, and also a little Water.*

MASSIVE.

1548. Structure compact, colour brown. Condurra Mine, Cornwall.

ERINITE.

FORMULA.—$5CuO, AsO_5 + 2HO$.

NOT FOUND IN DISTINCT CRYSTALS.

1549.

APHANESITE.

FORMULA.—$6CuO, AsO_5 + 3HO$.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1550. In tabular prisms so aggregated as to constitute rounded crystalline masses of a blue colour with tinge of green. Huel Gorland Mine, Cornwall.

EUCHROITE.

FORMULA.—$4CuO, AsO_5 + 8HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1551. In right rhombic prisms, with the acute angles replaced by a single plane, of an emerald-green colour; on mica slate, blackened by oxide of manganese. Libethim, Hungary.

OLIVENITE.

FORMULA.—$4CuO, (AsO_5, P_2O_5) + HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1552. Massive, and of a dull olive-green colour, with minute intersecting prisms on the surface of a lighter green; on quartz, stained superficially with oxide of iron. Cornwall.

1553. Massive, and of a light olive-green colour, with a few adhering particles of quartz. Cornwall.

1554. In capillary radiating crystals of an olive-green colour, passing into oil-green; in cellular iron-shot quartz. Cornwall.

1555. In nodules of a hair-brown colour and radiated structure, intermixed with chrysocolla; on quartz. Cornwall.

1556. In concretions of a hair-brown colour and radiated structure; on quartz, with adhering chlorite.

1557. In lenticular crystals of a brown colour with shade of olive-green; on iron-shot cellular quartz.

1558. In numerous prisms of a brownish olive-green colour. The prisms have six sides and a dihedral termination, but, viewed crystallographically, they are rhombic prisms with two terminal edges, and the acute lateral edges replaced by planes. Cornwall.

1559. In crystalline concretions of an olive-green colour and fibrous structure; on quartz. Cornwall.

1560. In capillary crystals, of an olive-green colour, in a ferruginous quartz stone. Cornwall.

1561. In fine capillary crystals, of a colour between grass and olive-green, in iron ochre. Cornwall.

LIROCONITE.—LENTICULAR COPPER.

FORMULA.—$8CuO, AsO_5 + Al_2O_3, AsO_5 + 24HO$. *A little, however, of the Arsenic is replaced by Phosphoric Acid.*

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1562. In blue rhombic prisms, with a bihedral termination, the faces of which rest upon the obtuse angles of the prism. Cornwall.

1563. In rhombic prisms, with the obtuse angles replaced, of a verdigris-green colour; on a quartzose stone. St. Day, Cornwall.

COPPER MICA.

FORMULA.—$6CuO, AsO_5 + 12HO$. (*Damour.*) *Contains also traces of Phosphoric Acid, Alumina, and Protoxide of Iron.*

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1564. In hexahedral plates, of a grass-green colour, on a ferruginous quartz.

1565. A pretty thick crystalline concretion, composed of distinct hexangular plates of a pearly lustre, and emerald-green colour, accompanied by ruby copper; on quartz. Cornwall.

1566. In hexangular laminæ of an emerald-green colour and pearly lustre, accompanied by pyrites, oxide and carbonate of copper, and quartz. Cornwall.

SECTION IX.

PHOSPHORIDES.

APATITE.

FORMULA.—$3(3CaO, PO_5) + Ca(F, Cl)$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1567. A six-sided prism of a green colour, and a lustre between vitreous and resinous; imbedded in yellowish-white calcareous spar. Hammond, St. Lawrence County, New York.

1568. A six-sided prism of a light bluish-gray colour, accompanied by arsenical pyrites and lithomarge; in quartz.

1569. In six-sided prisms, the two largest of which are of a white colour with a tinge of green, and have a vitreous lustre; imbedded in quartz. Some smaller prisms on the under surface are of an amethystine blue. Ehrenfriedersdorf, Saxony.

1570. In six-sided prisms of a light bluish-gray colour and glassy lustre, in a quartzose stone, which also includes arsenical pyrites, iron-stone, fluor, and lithomarge. Saxony.

1571. In tabular six-sided prisms of an amethystine rose-colour; on quartz. Ehrenfriedersdorf, Saxony.

1572. A laminar mass of a greenish-white colour, with imbedded magnetic iron ore. Arendahl, Norway.

1573. A twelve-sided prism of a bluish-gray colour, the alternate terminal edges being slightly replaced; accompanied by a few rock crystals on quartz rock containing arsenical pyrites. Zinwald, Bohemia.

1574. In translucent six-sided prisms of a green colour, all whose lateral edges are truncated; in a close-grained felspathic granite. County Dublin.

1575. A translucent prism of a greenish-white colour, with six lateral faces, the lateral edges also being slightly replaced; on felspathic granite. County Dublin.

1576. In irregular yellowish-green crystals, accompanied by a yellowish-brown rhombohedron of dolomitic spar, imbedded in greenish-white foliated talc, with a silvery lustre. Zillerthal, Tyrol. This is the variety of apatite usually called asparagus stone.

1577. In yellowish-green glassy crystals, some of which have six, and some twelve lateral faces, produced by the truncation of the lateral edges of the hexangular prism, accompanied by a little micaceous iron in iron-shot and spongy quartz. Capo di Gata, Spain.

STRUVITE.

FORMULA.—$(NH_4O, 2MgO), PO_5 + 12HO$. (*Ulex.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1578. Two octahedral crystals of a yellowish colour, and opaque on the surface, apparently from efflorescence. Foundation of the Church of St. Nicholas, Hamburg.

PHOSPHORITE.

This is a massive Apatite.

1579. Of a compact texture and yellowish-gray colour, tinged brownish-yellow on the surface by iron ochre. Ansberg, Bavaria.

1580. Of a pearl-gray colour and a structure between earthy and fibrous, with adhering quartz crystals and reddish-yellow ochre. Logrostand, Estremadura.

WAGNERITE.

FORMULA.—$3(3MgO, PO_5) + 2MgF$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1581.

HERDERITE.

Exact composition unknown.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1582.

WAVELLITE.

FORMULA.—$Al_2F_3 + 3(4Al_2O_3, 3PO_5, + 18HO)$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1583. In capillary prisms, having a stellular arrangement, and a white colour with a tinge of green; on a flinty slate approaching, in its character, to lydian stone, and intersected by very thin veins of quartz. Barnstaple, Devonshire.

1584. In concretions of a greenish colour and silky lustre, each being composed of capillary prisms having a stellular arrangement; on flinty slate. Devonshire.

1585. In stellular concretions of a white colour passing into yellowish-green; on flinty slate. Devonshire.

1586. In concretions composed of capillary prisms with a stellular arrangement, and having a silky lustre; on sandstone.

1587. In thin concretions of a yellowish-green tinge of colour, composed of capillary prisms with a radiated arrangement; on flinty slate. Devonshire.

1588. In yellowish-green stellular concretions; on ash-gray flinty slate. Devonshire.

1589. In stars of a grayish-white colour, fibrous structure, and sub-silky lustre; on flinty slate. Tracton Abbey, Cork.

1590. A mass of rounded fibrous concretions, partly of a slate-gray and partly of a yellowish-green colour. Tracton Abbey, Cork.

1591. A large concretionary mass of fibrous and radiated structure, green externally, but of a lighter colour in the fracture; on a soft ash-gray clay slate. Tracton Abbey, Cork.

KAKOXENE.

Rammelsberg considers this mineral as a Wavellite, a portion of whose Alumina has been replaced by Peroxide of Iron.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC?

1592. In radiating tufts of a straw-yellow colour and silky lustre; on a brown iron ore occurring in the clefts of a micaceous sandstone. Hrbeck, Bohemia.

CHILDRENITE.

Composed of Alumina, Peroxide of Iron, and Phosphoric Acid. (*Wollaston.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1593. In transparent octahedrons of a yellowish-brown colour and vitreous lustre; accompanied by arsenical pyrites and quartz. Tavistock, Devonshire.

1594. In rounded grains of a yellowish-brown colour; on the surface of bluish quartz rock. Tavistock, Devonshire.

LAZULITE.—BLUE SPAR.—VORAULITE.

FORMULA.—$2\{3(MgO, FeO), PO_5\} + 4Al_2O_3, 3PO_5 + 6HO$. (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1595. In crystalline fragments of a granular structure and azure-blue colour; on white quartz. Vorau, Styria.

TURQUOISE.—CALAITE.

FORMULA.—$2Al_2O_3, PO_5 + 5HO$. *It also contains traces of Copper and Iron.*

NOT FOUND CRYSTALLIZED.

1596. In amorphous nodular masses of a bluish-green colour, translucent on the edges, with adhering brownish quartz. Kohrassan, Persia.

1597. In granular particles of a pale greenish-blue colour, passing into bluish-white; imbedded in brown ochre. Abdaol Razami, Russia.

1598. A very thin coating of a bluish-green colour; on the surface of fibrous blue quartz. Stein, Silesia.

AMBLYGONITE.

FORMULA.—$(5Al_2O_3, 3PO_5 + 5RO, 3PO_5) + (Al_2F_3 + RF)$; R *being a mixture of Lithium and Sodium.* (*Rammelsberg.*)

CRYSTALLINE SYSTEM, THE RIGHT OR THE OBLIQUE PRISMATIC.

1599.

XENOTOME.

FORMULA.—$3YO, PO_5$. (*From an analysis by Berzelius.*)

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1600.

MONAZITE.—EDWARDSITE.—MENGITE.

FORMULA.—3RO, PO_5, R *being a mixture of Cerium, Lanthanum, and Thorium, with a trace of Manganese, and the Phosphoric being associated with minute quantities of the Stannic and Titanic Acids.* (*Berzelius.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1601. A few transparent rhombic prisms of a hyacinth colour, associated with sillimanite; in a rock composed of quartz and felspar. Norwell, Connecticut.

1602. A couple of translucent four-sided prisms, of a wine-yellow colour; imbedded in loose yellowish felspar, with adhering plates of silvery mica. Miask, Ural.

URANITE.—URAN MICA.

FORMULA.—$3RO, PO_5 + 2(3U_2O_3, PO_5) + 24HO$.

There are two varieties of this mineral, RO *being Lime in the one, and Oxide of Copper in the other. The former is Siskin-green with a tinge of Yellow; the latter of a shade varying between Grass and Emerald-green.*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1. LIME URANITE.

1603.

2. COPPER URANITE.

1604. In tabular square prisms of an emerald-green colour, and a lustre between metallic and pearly, on a brown ironstone intermixed with quartz. Cornwall.

1605. In tabular square prisms of a grass-green colour, and a lustre between pearly and metallic, on a stone composed of quartz and reddish felspar. Redruth, Cornwall.

1606. Tabular right square .prisms of an emerald-green colour, with some adhering particles of quartz.

1607. In emerald-green pearly laminæ, and in grass-green crystals exhibiting the faces of the primitive right square prism, and others conducting to an octahedron of the same class; on iron-shot quartz. From the Wagsford mine, Johanngeorgenstadt, Saxony.

HOPEITE.

Composed of the Oxides of Zinc and Cadmium combined with a fixed Acid (the Phosphoric, or Boracic) and Water.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1608.

VIVIANITE.

FORMULA.—$3FeO, PO_5 + 8HO$ *or* $6HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1609. A tabular rhombic prism of lamellar structure, metallic lustre, and greenish-blue colour, accompanied by iron pyrites, yellow blende, and quartz. Cornwall.

1610. A rhombic prism of a lamellar texture, metallic lustre, and blue colour with tinge of green, accompanied by copper pyrites and quartz; on Isabella-yellow hornstone. Cornwall.

1611. A stalactitic cylindric mass composed of eccentrically radiated lamellar crystals of a bluish-black colour, invested by a tunic of iron-shot coarse quartz sand. America.

1612. Massive, of a compact earthy structure, and indigo-blue colour, with a little adhering iron ochre. Franklin, North America.

ANGLARITE.

FORMULA.—$4FeO, PO_5 + 4HO$. (*From an analysis by Berthier.*)

CRYSTALLINE SYSTEM NOT KNOWN.

1613.

KARPHOSIDERITE.

Consists of Hydrated Phosphate of Iron with a little Oxide of Zinc. (*Harkort.*)

MASSIVE.

1614.

DELVAUXENE.

FORMULA.—$2Fe_2O_3$, $P_2O_5 + 25HO$; *mixed with Carbonate of Lime and a little Silex.* (*From an analysis by Dumont.*)

MASSIVE.

1615. In rounded masses of a reddish-brown colour and earthy structure. Bernaw, Belgium.

GREEN IRON ORE.

FORMULA.—$2(2Fe_2O_3, P_2O_5) + 5HO$.

NOT FOUND IN DISTINCT CRYSTALS.

1616. Structure radiated, lustre somewhat silky, colour yellowish-brown. Eiserfeld, Siegen.

MELANCHOR.

Composed of Phosphoric Acid and Peroxide, with a little Protoxide of Iron. (*Fuchs.*)

NOT FOUND IN CRYSTALS.

1617.

ALLUAUDITE.

FORMULA.—$3(MnO, NaO)$, $PO_5 + Fe_2O_3$, $PO_5 + HO$. (*Damour.*)

CRYSTALLINE SYSTEM NOT KNOWN.

1618. In clustered spherical concretions, reddish-brown on the surface, within of a dull green colour with a fibrous and radiated structure; on brown iron stone. Ullersrurth, Hoff.

PHOSPHATE OF IRON AND MANGANESE.—ZWIESELITE.

FORMULA.—$3\{3(FeO, MnO), PO_5\}+FeF$. (*Fuchs.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1619.

TRIPLITE.

FORMULA.—$4(MnO, FeO), PO_5$. (*From an analysis by Berzelius.*)

NOT FOUND IN DISTINCT CRYSTALS.

1620. Massive, opaque, and of a dark brown colour, with adhering greenish-yellow quartz. Rabenstein, Bavaria.

1621. Massive, of a pitch-black colour and resinous lustre. Limoges.

1622. Massive, with indications of three rectangular cleavages, of a brown colour and resinous lustre. Limoges.

HETEROZITE.—HETEPOZITE.

FORMULA.—$5(FeO, MnO), 2PO_5+2HO$. (*From an analysis by Dufrenoy.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1623. Massive, and of a brown colour. Limoges.

HUREAULITE.

FORMULA.—$5(MnO, FeO,), 2PO_5+8HO$. (*From an analysis by Dufrenoy.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1624.

TRIPHYLLINE.

FORMULA.—$3(FeO, MnO, LO), PO_5$. (*From an analysis by Berzelius.*)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1625. In imperfect crystals of a greenish-gray colour; accompanied by quartz. Rabenstein, Bavaria.

1626. In indeterminate prismatic crystals of a greenish-gray colour passing into blue. Bodenmais, Bavaria.

PSEUDO-MALACHITE.

FORMULA.—$5CuO, PO_5 + 2HO$. (*Kuhn.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1627.

LIBETHENITE.

FORMULA.—$4CuO, PO_5 + HO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1628. In olive-green rhombic octahedrons of a resinous lustre, imbedded in the cavities of an iron-shot quartz; accompanied by chrysocolla. Libethen, Hungary.

1629. In minute, olive-green, rhombic octahedrons of a lustre between resinous and metallic; imbedded in cavities occurring in an iron-shot quartz. Libethen, Hungary.

1630. In rhombic octahedrons of a dark green colour; imbedded in iron-shot quartz, and accompanied by chrysocolla. Libethen, Hungary.

PYROMORPHITE.—PHOSPHATE OF LEAD.

FORMULA.—$3(3PbO, PO_5) + PbCl$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1631. In siskin-green, translucent, six-sided prisms, with the lateral edges truncated, and thus becoming nearly cylindric to the eye. Several of the prisms taper at their free extremity, thus indicating a tendency to a pyramidal termination; imbedded in quartz, and accompanied by decomposed galena and heavy spar. Friburg, Brisgau.

1632. In prismatic crystals of a dull green colour, some of which are striated longitudinally; imbedded in massive carbonate of lead. Siberia.

1633. In translucent six-sided prisms of a waxy lustre and light green colour. Some of the crystals are unmodified, and some have the lateral and terminal edges slightly truncated; on reddish-white heavy spar.

1634. Of a green colour, massive, and in numerous six-sided prisms aggregated into botryoidal forms. Wales.

1635. In botryoidal forms of a light grass-green colour in the fracture, and a structure partly compact and partly fibrous. Friburg, Brisgau.

1636. Massive, and botryoidal forms, mouse-brown externally, light green on the fractured surfaces, and exhibiting the compact structure. Leadhills, Scotland.

1637. Numerous translucent six-sided prisms, some of which taper at the extremities, of a brown colour and resinous lustre, accompanied by a little copper pyrites and crystallized quartz; on a decomposing, white, felspathic rock. Schemnitz, Hungary.

1638. Numerous translucent six-sided prisms of a wax-yellow colour, some with pyramidal terminations, accompanied by black oxide of manganese; on quartz, partly massive and partly in crystals. Glenmalur, county Wicklow.

1639. In six-sided prisms and fasciculi of acicular crystals, translucent, and of a hair-brown colour. Poullaouen Mine, Brittany.

1640. A mass of mammillary concretions, translucent, and of a flesh-red colour with a tinge of yellow.

1641. A loose mass of irregularly aggregated acicular prisms, of a colour between sulphur and orange yellow. Leadhills.

NUSSIERITE.

FORMULA.—$5\{3(PbO, CaO), PO_5\} + PbCl$.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1642.

SECTION X.

NITRIDES.

NITRE.—NITRATE OF POTASH.

FORMULA.—KO, NO_5.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1643.

NITRATE OF SODA.

FORMULA.—NaO, NO_5.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1644. In minute rhombohedral crystals of a yellowish-white colour and deliquescent. Northern frontier of Chili.

SECTION XI.

HALOID COMPOUNDS.

SAL GEMME.—ROCK SALT.

FORMULA.—Na Cl.

CRYSTALLINE SYSTEM, THE REGULAR.

1645. A cubic mass, translucent and colourless; deliquesces slightly in a moist atmosphere. Cheshire.

1646. Several cubical fragments of a very light reddish tinge of colour. Cheshire.

1647. Amorphous, white, and opaque. Vesuvius.

1648. Two rounded fragments, translucent, nearly colourless, and of a texture between small lamellar and coarse granular; do not deliquesce. Hallein, Salzburg.

1649. Of a fibrous texture and pearl-gray colour passing into sky-blue, with a blotch of red; does not deliquesce. Hallein, Salzburg.

1650. A rhomboidal mass of a fibrous structure and white colour, but streaked diagonally of a red colour by ferruginous clay. Tyrol.

CHLORIDE OF POTASSIUM.

FORMULA.—KCl.

CRYSTALLINE SYSTEM, THE REGULAR.

1651. In cellular lumps of a white colour passing into gray, and having a minutely crystalline texture. Mount Vesuvius.

SAL AMMONIAC.

FORMULA.—NH_4Cl.

CRYSTALLINE SYSTEM, THE REGULAR.

1652.

HORN SILVER.

FORMULA.—$AgCl$.

CRYSTALLINE SYSTEM, THE REGULAR.

1653. Two specimens, the horn silver occurring in each as a crystalline coating, on claystone porphyry. The smaller is accompanied by cinnabar. Maschelardsberg, Deux Ponts.

1654. In grayish-brown, detached, flat concretions, on the surface of a quartzose stone. Siberia.

HORN QUICKSILVER.—NATIVE CALOMEL.

FORMULA.—Hg_2Cl.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1655. A single, minute geode of crystals, of a gray colour and adamantine lustre, one being obviously a right square prism with the angles slightly replaced; on a ferruginous quartz rock, containing lithomarge and blue carbonate of copper. Maschel, Rheinbaiern.

COTUNNITE.—CHLORIDE OF LEAD.

FORMULA.—$PbCl$.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1656.

MENDIPITE.

FORMULA.—$PbCl + 2PbO$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1657.

CORNEOUS LEAD.—CHLORO-CARBONATE OF LEAD.

FORMULA.—$PbCl + PbO, CO_2$.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1658. In right square prisms of a pale white colour and nearly opaque. Tarnowitz, Silesia.

ATACAMITE.

FORMULA.—$CuCl + 3(HO, CuO)$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1659. An emerald-green sand mixed with minute particles of quartz. Atacama, Peru.

1660. A concretionary and nearly compact mass, of a grass-green colour and mammillary surface, intermixed with a friable white plastic clay. Adelaide, Australia.

IODIC SILVER.

Composed of Iodine and Silver, but also generally includes, probably in a state of mixture, Lead, Iron, and Sulphur.

NOT FOUND IN DISTINCT CRYSTALS.

1661.

IODIC MERCURY.

FORMULA.—HgI.

NOT FOUND CRYSTALLIZED.

1662.

BROMIC SILVER.

FORMULA.—$AgBr$.

CRYSTALLINE SYSTEM, THE REGULAR.

1663.

FLUOR.—FLUOR SPAR.

FORMULA.—CaF.

CRYSTALLINE SYSTEM, THE REGULAR.

1664. A large cubic crystal of a light pink colour, encompassed, except at a couple of points, by a layer of white translucent quartz in six-sided prisms, terminated by pyramids. The octahedral cleavage is very obvious in this specimen.

1665. A single crystal, being a portion of a cube, of a light, amethystine blue at two of its angles, elsewhere greenish-yellow, and dotted over with minute rock crystals of a pearly lustre.

1666. An aggregate of greenish-gray cubic crystals, dotted over with octahedral copper pyrites.

1667. In transparent and nearly colourless cubes, some of which are twin crystals, accompanied by black blende; on quartz. Cumberland.

1668. In cubic crystals of a gray colour, with tinge of green, dotted over with particles of copper pyrites. Cumberland.

1669. In cubic crystals of a light rose colour, accompanied by black blende, and orange-yellow pearl spar, on a dark coloured quartz rock. Cumberland.

1670. In large cubes of a pale violet-blue colour, accompanied by quartz crystals, sparry iron ore, and blende. Cumberland.

1671. In cubes of a violet-blue colour, accompanied by a couple of crystals of blende, and a little sparry iron ore. Cumberland.

1672. In cubes of an amber-yellow colour, with interspersed globular particles of pyrites; on quartz intermixed with massive fluor.

1673. Partly massive, chiefly in cubes of a pale wax-yellow colour, accompanied by a little pearl spar.

1674. In numerous cubes of a very light greenish-yellow colour, accompanied by pearl spar; on limestone. Alston Moor, Cumberland.

1675. In transparent cubes, very lightly tinged with blue, accompanied by pearl spar; on blende. Alston Moor, Cumberland.

1676. Numerous cubic crystals, some being colourless, some bluish, others of a rose tinge, but the greater number green. Several are twin crystals, and almost all have bevelments on their edges conducting to the tetrakishexahedron.

1677. An aggregate of grass-green cubes, some of them being twins, and most having their edges replaced by a pair of planes. Alston Moor, Cumberland.

1678. In cubes with bevelled edges of an amethystine blue colour, several of them being twin crystals; on a saliferous marl.

1679. In cubes of a deep violet-blue colour, with some of a paler tinge, accompanied by a reddish-brown, and yellowish-white baroselenite. Derbyshire.

1680. In cubes, almost all of which are twin crystals, of a violet-blue colour, accompanied by calcareous spar in six-sided prisms, with trihedral summits, and by a little galena.

1681. In cubes of a deep violet blue colour, dotted over with minute particles of copper pyrites; on massive fluor. Cornwall.

1682. In tetrakishexahedrons of an amethyst-blue colour, the angles corresponding to the faces of the cube being truncated, accompanied by yellowish-brown blende, and iron pyrites; on a greenish-gray clay slate. Cornwall.

1683. In cubes, several of which are twins, some of an amethystine, and some of a light rose colour, accompanied by crystals of quartz.

1684. In regular octahedrons of a sea-green colour, with a grayish-white coating of lithomarge, accompanied by a little galena; on yellowish-red quartz.

1685. Numerous opaque cubes, with bevelled edges, of a yellowish-red colour, and with black dots on the surface; on massive heavy spar. Alston Moor, Cumberland.

1686. A lamellar mass, partly grayish-white, and partly of a light green.

1687. Massive, with lamellar structure, and of a pure white colour. La Tolfa, Italy.

CRYOLITE.

FORMULA.—$3NaF + Al_2F_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1688. Translucent, of a grayish-white colour, and lamellar structure. Arksutfiord, West Greenland.

1689. Translucent, of a white colour, and lamellar structure. Arksutfiord, West Greenland.

1690. Translucent, with lamellar structure, and of a white colour, with a tinge of yellowish-red from infiltered iron. Arksutfiord, West Greenland.

FLUELLITE.

Composed of Aluminum and Fluorine. (Wollaston.)

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1691. A few crystalline particles of a greenish colour, and a somewhat pearly lustre; on granite. Stenna Gwyn, Cornwall.

FLUOCERINE.

FORMULA.—$CeF + Ce_2F_3$. (*From an analysis by Berzelius.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL?

1692. A thin amorphous coating of a reddish-yellow colour; on one part of a stone composed of albite, quartz, and mica. Finbo, Sweden.

BASIC FLUOCERINE.

FORMULA.—$Ce_2F_3 + (Ce_2O_3, HO)$.

CRYSTALLINE SYSTEM, THE REGULAR?

1693.

YTTRO-CERITE.

Composed of Lime, Oxide of Cerium, Yttria, and Fluorine.

CRYSTALLINE SYSTEM NOT KNOWN.

1694. Massive, of a dark brown colour, and low degree of glimmering lustre; imbedded in a stone composed of quartz, albite, and a little mica. Finbo, Sweden.

WARWICKITE.

Contains Titanium, Iron, and Fluorine, with a trace of Yttria and Alumina. (Shepard.)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1695.

SECTION XII.

ANTIMONIDES.

NATIVE ANTIMONY.

SYMBOL.—Sb.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1696. Texture, small, foliated, passing into granular; colour, tin-white, accompanied by some straw-yellow antimonial ochre, and a little yellowish-red iron ochre. Dauphiné.

ANTIMONIAL SILVER.

FORMULA.—Ag_4Sb.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1697. Of a granular and crystalline texture, and of a tin-white colour, slightly verging towards brass-yellow, accompanied by galena and white baroselenite. Wincelaus mine, Bareuth, Baden.

ANTIMONIAL NICKEL.

FORMULA.—Ni_2Sb.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1698.

WHITE ANTIMONY.—ANTIMONY BLOOM.

FORMULA.—SbO_3.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1699. In flattened rectangular prisms of a white colour and silky lustre, associated with iron pyrites and quartz, on a mass composed of galena and blende, and which is transversed by a seam of serpentine. Przibram, Bohemia.

1700. In slender prisms, colourless, transparent, and with adamantine lustre, in a cavity in quartz rock ; also in flattened crystals attached to the surface of the stone. Braunsdorf, Friburg.

ANTIMONIAL OCHRE.

An impure Deutoxide of Antimony.

NOT FOUND IN CRYSTALS.

1701. Of a loose schistose structure, and ochre-yellow colour. Cornwall.

1702. Of a laminar texture, reddish-yellow colour, and hard enough to scratch glass. North America.

1703. A coating of a reddish-yellow colour; on broad lamellar sulphuret of antimony. Felsobanya, Transylvania.

ROMEINE.

FORMULA.—$4CaO, 3SbO_4$. (*Damour.*)

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1704.

RED ANTIMONY.

FORMULA.—$SbO_3, 2SbS_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1705. In tufts composed of diverging capillary prisms of a cinnabar-red colour; on a dark quartzose stone. Malazka, Hungary.

SECTION XIII.

BISMUTHIDES.

NATIVE BISMUTH.

SYMBOL.—Bi.

CRYSTALLINE SYSTEM, THE REGULAR.

1706. In sectile particles of a yellowish colour on the surface and iridiscent, but giving a white streak; disseminated through quartz. Schneeberg, Saxony.

1707. In particles presenting the pigeon's-neck play of colours; accompanied by cobalt bloom and disseminated through quartz. Schneeberg, Saxony.

1708. This specimen is almost entirely metallic, the bismuth being associated with but a very small portion of quartz. Iridescence very beautiful. Schneeberg, Saxony.

BISMUTH OCHRE.

FORMULA.—BiO_3.

NOT FOUND IN CRYSTALS.

1709. In rounded particles of a very light apple-green colour; disseminated through the cavities of a cellular gray cobalt. Riegelsberg, Norway.

SECTION XIV.

STANNIDES.

TIN STONE.

FORMULA.—SnO_2.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1710. In right square prisms, some of which have pyramidal terminations, most of them being twin crystals of an iron-black colour; on quartz. Cornwall.

1711. In lustrous crystals, most of which are twins, translucent, and of a dark honey-yellow colour; associated with fluor, quartz, and a little chlorite. Cornwall.

1712. In prismatic crystals, some of which are twins, translucent, and of a colophony-yellow colour; upon gneiss. Schlackenwald, Bohemia.

1713. In dark clove-brown crystals, nearly opaque, accompanied by quartz and a little fluor; on gneiss.

1714. In colophony-brown crystals, slightly translucent; on quartz. Cornwall.

1715. In colophony-coloured lustrous crystals, several of which are twins; on a slaty quartz rock. Cornwall.

1716. In lustrous crystals of a deep clove-brown colour, which are right square prisms terminated by pyramids, and have, in some cases, all their edges truncated; on a schistose quartzite. Cornwall.

1717. In colophony-brown crystals, rough upon the surface; associated with quartz and crystallized chlorite. Cornwall.

1718. In dark brown and lustrous right square prisms, terminated by pyramids; on a schistose stone containing much quartz. Cornwall.

1719. In dark brown crystals, most of which are twins, accompanied by fluor spar; on quartz, containing arsenical pyrites. Ehrenfriedersdorf, Saxony.

1720. In dark brown crystals of much lustre; accompanied by quartz. Cornwall.

1721. In numerous minute crystals, some of a colophony-brown, others of a hyacinth colour; accompanied by yellowish rhombohedrons of calcareous spar. Cornwall.

1722. In minute right square prisms of an iron-black colour; on cellular quartz. Cornwall.

STREAM TIN.

This name is applied to water-worn pebbles of Tin Stone.

1723. Six pebbles of a dark hair-brown colour. Cornwall.

1724. Two pebbles, one of a light brown colour and granular texture, with numerous irregular depressions on its surface, the other smoother and of a bluish-gray colour. Cornwall.

WOOD TIN.

This name is applied to Tin Stone of a fibrous structure.

1725. Eight wedge-shaped, water-worn specimens of a yellowish-red colour. Cornwall.

1726. In rolled pieces of a pale hair-brown colour and fibrous structure. St. Agnes, Cornwall.

COLUMBIFEROUS TIN.

This is a Tin Stone containing a variable amount of Oxide of Tantalum. Berzelius, in one instance, found 12 *per cent.*

1727.

PSEUDOMORPHOUS TIN.

1728. The larger specimen is felspar in a state of incipient disintegration, the smaller tin stone in the form of felspar. Both are twin crystals. Cornwall.

SECTION XV.

TITANIDES.

TITANIUM. (ARTIFICIAL.)

FORMULA.—Ti.

1729. In numerous minute cubes of a copper colour, dispersed through the cavities of a vesicular iron slag. Bromford, Staffordshire.

These cubes, first described as metallic titanium by Wollaston, have been recently shown by Wöhler to be composed of a cyanide and nitruret of the metal, and to have the formula $TiCy + 3Ti_3N$.

ANATASE.—OCTAHEDRITE.

FORMULA.—TiO_2.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1730. In right square octahedrons of a dark stone-brown colour, accompanied by some laminæ of brookite and several small crystals of adularia; on a stone composed of quartz and felspar. Dauphiné.

1731. A single right square octahedron of a steel-gray colour and considerable lustre, accompanied by minute rhombic crystals of adularia; upon a stone composed of talc and quartz. Dauphiné.

1732. A single octahedral crystal of a hair-brown colour, accompanied by laminæ of micaceous iron, minute crystals of adularia, and chlorite; on a stone composed of quartz and felspar. Dauphiné.

1733. In numerous octahedrons, some of a dark and some of a honey-yellow colour, accompanied by rock crystals; on a stone composed of quartz and felspar. Dauphiné.

RUTILE.

FORMULA.—TiO_2, *the same with Anatase, from which it differs chiefly by occurring in prismatic crystals.*

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1734. Massive, with lamellar structure and a dark crimson-red colour, with some adhering felspar. Guanaxato, South America.

1735. Massive, and of a brownish-red colour and lamellar structure, with a little imbedded grass-green actynolite. Arendahl, Norway.

1736. In capillary prisms of a golden-yellow colour; on sparry iron ore of an Isabella-yellow colour, and accompanied by quartz and lamellar baroselenite of a pearly lustre. Saxony.

1737. In numerous capillary right square prisms, without colour, traversing rock crystal. St. Gothard.

1738. In numerous capillary prisms of a deep cinnamon colour, traversing transparent rock crystal. Siberia.

1739. Twelve fragments, some of which are obviously prismatic; of a reddish-brown colour. Ohlapian, Transylvania. This is the variety called nigrine.

BROOKITE.

FORMULA.—TiO_2, *the same with Anatase and Rutile.*

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1740. In hexangular laminæ of a clove-brown colour; accompanied by transparent rock crystals. St. Gothard.

SPHENE.

FORMULA.—$CaO, 2TiO_2 + 2(CaO, SiO_3)$. (*Von Kobel.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1741. Two specimens presenting the form of elongated prisms of a siskin-green colour, passing into yellowish-green; upon a group of rhombic crystals of adularia, sprinkled over with crystallized chlorite. St. Gothard.

1742. In prismatic crystals of a wine-yellow colour tinged with hyacinth, the largest being a twin, associated with adularia, which is sprinkled over with chlorite and with greenish-gray byssolite; on gneiss. St. Gothard.

1743. Two detached fragments, the larger being part of a twin tabular crystal of a leek-green colour, passing into yellowish-green. St. Gothard.

TITANITE.

This term is applied to the brown and dark coloured Sphenes, which contain a little Protoxide of Iron.

1744. In oblique rhombic prisms of a brown colour, with the angles corresponding to the obtuse edges replaced; in a rock composed of quartz and reddish felspar. Bunen, Norway.

TITANIFEROUS CERITE.

Contains Oxide of Cerium, Oxide of Iron, Lime, Alumina, Silex, and Titanic Acid.

NOT FOUND IN CRYSTALS.

1745.

PEROWSKITE.

FORMULA.—CaO, TiO_2. (*Brookes.*)

CRYSTALLINE SYSTEM, THE REGULAR.

1746.

GREENOVITE.

FORMULA.—$3MnO, 8TiO_2$.

CRYSTALLINE SYSTEM, THE DOUBLY OBLIQUE PRISMATIC.

1747.

ŒRSTEDTITE.

A Titanate of Zirconia, containing also Silex, Lime, Magnesia, and Water.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1748. A prism of a light brown colour, with pyramidal summits; on quartz, and accompanied by a greenish augite. Arendahl, Norway.

MOSANDRITE.

A mixed Silicate and Titanate of the Oxides of Cerium and Lanthanum.

CRYSTALLINE SYSTEM NOT KNOWN.

1749. In flat prisms, of a dull reddish-brown colour; in a rock composed of felspar and black mica. Langesund Fiord, Brevig, Norway.

ÆSCHYNITE.

A mixed Titanate and Niobate of Zirconia, and the Oxides of Cerium, Lanthanum, and Iron.

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1750. A very obtuse rhombic prism, rough upon the surface, of a dark colour, and exhibiting a small conchoidal fracture. Siberia.

POLYMIGNITE.

A combination of Titanic Acid with Zirconia, Yttria, Lime, and the Sesquioxides of Iron, Cerium, and Manganese.

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1751. A long prismatic crystal with pyramidal termination, of a dark colour, and submetallic lustre; on flesh-coloured felspar, which is intermixed with a little quartz and hornblende. Fredericksvarn, Norway.

1752. A six-sided prism of a black colour, flattened by the deep truncation of the obtuse lateral edges; on flesh-coloured felspar, intermixed with hornblende and a little quartz. Fredericksvarn, Norway.

TITANIC IRON.

Of this there are many varieties, some of which have distinct names, but all are compounds of the Sesquioxides of Titanium and Iron; so that the general formula is $Ti_2O_3 + Fe_2O_3$. *Those which are magnetic probably owe this property to the presence of a little Magnetic Iron Ore.* (*Schurer.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1753. CRICHTONITE.—In hexahedral tables of a bluish-black colour and metallic lustre, accompanied by rock crystals; on a talcose gneiss. Bourg d'oisans, Dauphiné.

1754. Crichtonite.—In rounded tables of a steel-gray colour and metallic lustre, some of which are pavonized, accompanied by crystals of quartz; on a grayish-white felspathic rock. Dauphiné.

1755. Crichtonite.—In thin hexahedral plates, accompanied by rock crystals sprinkled over with chlorite; on a felspathic rock containing a little quartz. Dauphiné.

1756. Washingtonite.—A large hexahedral table, of a dark brown colour, with a little adhering quartz. Lichfield, Connecticut.

1757. Ilmenite.—A flat rhombohedral crystal, of a dark bluish-brown colour, and low degree of lustre. Miask, Ural Mountains.

1758. Menaccanite.—In minute rounded grains of a steel-gray colour and submetallic lustre; magnetic. Menaccan, Cornwall.

1759. Hystatite.

1760. Axotomous Iron.—A large laminar mass of a dull black colour externally, but exhibiting, when broken, the metallic lustre; slightly magnetic. Longwood, New Jersey.

1761. Iserine.—In numerous iron-black rolled prisms, exhibiting, when broken, a high metallic lustre, strongly magnetic. Riesengiberge, Bohemia.*

1762. Titanic Iron.—A massive specimen composed of distinct flattened concretions, of an iron-black colour, metallic lustre, and granular structure; strongly magnetic. Egersund, Norway.

* This mineral has been placed here through inadvertence. It crystallizes in forms belonging to the first system, and is probably magnetic iron ore, some of the peroxide of iron of which is replaced by the sesquioxide of titanium.

SECTION XVI.

TANTALIDES.

TANTALITE.—COLUMBITE.

FORMULA.—3(FeO, MnO), TaO_3. (*From an analysis by Berzelius.*) *The recent researches of Rose, however, show that the Tantalic is mixed with two other analogous acids, the Niobic and Pelopic.*

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1763. A large wedge-shaped crystal of a pitch-black colour, and low degree of lustre; in a decomposing granite. Warwick, New Jersey.

1764. In lamellar crystals of an iron-black colour, intermixed with seams of yellowish felspar. Middletown, Connecticut.

FERRO-TANTALITE.

FORMULA.—(FeO, MnO), TaO_3, *a little of the Tantalic Acid being replaced (particularly in the Ferro-tantalite of Broddbo) by Peroxide of Tin and Tungstic Acid.*

CRYSTALLINE SYSTEM, THE RIGHT RHOMBIC.

1765. In irregular prismatic fragments of a dark brown colour; imbedded in coarse granite. Broddbo, Sweden.

1766. Nearly massive, and of an iron-black colour, and submetallic lustre; in felspar. Copenhagen.

1767. Partly massive, and partly in rough prismatic crystals of a brownish-black colour; imbedded in the felspar of a granite. Finbo, Finmark.

1768.

YTTRO-TANTALITE.

A combination of Tantalic and a little Tungstic Acid, with Yttria, Lime, and the Oxides of Uranium and Iron. (*Berzelius.*)

NOT FOUND IN DISTINCT CRYSTALS.

1769. In particles of a dark brown colour, and little lustre; imbedded in reddish albite. Finbo, Sweden.

1770. In thin seams of a black colour, and resinous lustre, traversing felspar. Ytterby, Sweden.

1771. Of a black colour, and pitchy lustre; imbedded in the felspar of a granite containing a considerable quantity of a dull dark-coloured mica. Ytterby, Sweden.

URANO-TANTALITE.

A combination of Niobic and Tungstic Acids, with Yttria and the Oxides of Iron and Uranium. (*Rose.*)

NOT FOUND IN DISTINCT CRYSTALS.

1772. A prismatic crystal of a dark colour, and submetallic lustre, imbedded in reddish felspar, with adhering black mica. Miask, Ural.

FERGUSONITE.

FORMULA.—6RO, TaO_3, RO *being principally Yttria, Oxide of Cerium and Zirconia, with traces of the Peroxides of Tin, Uranium, and Iron.* (*Hartwall.*)

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1773.

PYROCHLORE.—MICROLITE.

A combination of Tantalic Acid, some of which is replaced by Titanic Acid, with various bases, the principal being Lime and Yttria; those present, in smaller proportion, Soda and the Oxides of Iron and Manganese. (Wöhler and Hayes.)

CRYSTALLINE SYSTEM, THE REGULAR.

1774. In regular octahedrons of a dark brown colour, dull upon the external surface, but exhibiting, when broken, the resinous lustre; imbedded in white felspar, with adhering black mica. Miask, Ural.

WÖHLERITE.

A Silico-tantalate of Lime, Zirconia, and the Peroxide of Iron, and Protoxide of Manganese. (Scheerer.)

NOT FOUND IN DISTINCT CRYSTALS.

1775. In crystalline fragments of a granular structure and honey-yellow colour; imbedded in granite. Brevig, Norway.

EUXENITE.

A combination of Tantalic and some Titanic Acid with Yttria and the Oxides of Uranium, Cerium, and Lanthanum.

CRYSTALLINE SYSTEM, PROBABLY THE RIGHT PRISMATIC.

1776.

SECTION XVII.

TUNGSTIDES.

TUNGSTIC ACID.—TUNGSTIC OCHRE.

FORMULA.—WoO_3.

NOT FOUND IN CRYSTALS.

1777.

TUNGSTEN.—TUNGSTATE OF LIME.

FORMULA.—CaO, WO_3.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1778. A fragment of an octahedron, translucent, white, and of a vitreous lustre. Bohemia.

1779. Two pearl-white fragments similar to preceding. Zinwald, Bohemia.

1780. In square octahedrons of an Isabella-yellow colour and vitreous lustre; on smoke-gray quartz. Zinwald, Bohemia.

1781. Numerous octahedrons of an Isabella-yellow colour and semi-metallic lustre; on a fragment of a crystal of quartz. Zinwald, Bohemia.

1782. In octahedrons of a colour between Isabella and honey-yellow, highly translucent and lustrous. Zinwald, Bohemia.

1783. In numerous imperfect octahedrons of a colour between clove-brown and Isabella-yellow; on quartz crystals, the interior of which is cellular. Zinwald, Bohemia.

1784. In mammillary crystals of an Isabella-yellow colour, composed of closely aggregated octahedrons; on grayish-white mica.

1785. In mammillary masses composed of minute aggregated crystals of a clove-brown colour; on a rock composed of quartz and mica. Zinwald, Bohemia.

TUNGSTATE OF LEAD.

FORMULA.—PbO, WO_3.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1786.

1787.

WOLFRAM.

FORMULA.—$(FeO, MnO) WO_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1788. In prismatic crystals of a dark hair-brown colour and metallic lustre; on killas. St. Agnes, Cornwall.

1789. Composed of columnar concretions of an iron-black colour and semi-metallic lustre. Altenberg, Saxony.

1790. Partly massive, partly in prismatic crystals of a pitch-black colour. Zinwald, Bohemia.

1791. Of a structure partly lamellar and partly fibrous, and of a pitch-black colour, traversed by thin seams of copper pyrites; on chlorite. Cornwall.

SECTION XVIII.

MOLYBDIDES.

MOLYBDIC OCHRE.

FORMULA.—MoO_3.

NOT FOUND IN CRYSTALS.

1792. Of a lemon-yellow colour, accompanied by molybdenite; on flesh-red felspar.

MOLYBDATE OF LEAD.—YELLOW LEAD ORE.

FORMULA.—PbO, MoO_3.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1793. In octahedrons of a wax-yellow colour and resinous lustre; on a limestone with seams of calcareous spar. Bleiberg, Carinthia.

1794. In tabular crystals of a waxy lustre and olive-green colour, such forms being the result of the deep truncation of the two apices of the octahedron. Planes also are visible, indicating the truncation of the terminal edges of the octahedron, conducting to another octahedron of the second class. Bleiberg, Carinthia.

1795. Massive, and in waxy crystals of a yellow colour, the more regular of which are right square tabular prisms. Bleiberg, Carinthia.

1796. Of a foliated structure and greenish-yellow colour. Bleiberg, Carinthia.

RED MOLYBDATE OF LEAD.

In this a little of the Molybdic is replaced by Chromic Acid.

1797. In tabular right square prisms, transparent, and of a beautiful crimson colour; accompanied by earthy minium. Retzbanya, Hungary.

BASIC MOLYBDATE OF LEAD.

FORMULA.—$3PbO, MoO_3$.

DOES NOT OCCUR IN CRYSTALS.

1798.

SECTION XIX.

VANADIDES.

VANADINITE.—VANADATE OF LEAD.

FORMULA.—$PbCl + 3(3PbO, VO_3)$. (*R. D. Thomson.*)

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1799. A crust composed of continuous globular concretions of a reddish-yellow colour; on calamine. Wanlok Head, Dumfrieshire.

VOLBORTHITE.

A Vanadate of Copper, which, however, has not been analyzed.

DOES NOT OCCUR IN DISTINCT CRYSTALS.

1800.

SECTION XX.

CHROMIDES.

CHROME OCHRE.

FORMULA.—Cr_2O_3.

NOT FOUND IN CRYSTALS.

1801. An amorphous coating of an apple-green colour; on quartz. Siberia.

1802. A coating of a light apple-green colour; on sandstone conglomerate. Saone et Loire.

1803. Of a grass-green colour and somewhat crystalline structure; on close-grained granite, with pink-coloured felspar. Autun.

CHROMIC IRON.

FORMULA.—$(FeO, MgO), (Cr_2O_3, Al_2O_3)$.

CRYSTALLINE SYSTEM, THE REGULAR.

1804. Massive, with uneven fracture, of an iron-black colour, and sub-metallic lustre. Bare Hills, Baltimore.

1805. Massive, of a brownish-black colour and granular structure; in serpentine. Department of the Var, France.

1806. Massive, with granular texture and brown colour; accompanied by interspersed chlorite and a little lamellar calcareous spar. Limoges, France.

1807. In regular octahedrons of a dark colour, accompanied by crystals of augite; on green coarsely granular augite. Montagne, Piedmont.

CHROMATE OF LEAD.

Formula.—PbO, CrO_3. (*Herman.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1808. In oblique prisms of a hyacinthine-red colour, with only two of the faces of the corresponding octahedron. Also massive, with a few accompanying crystals of quartz; on quartz rock. Beresof Mine, Catharineberg, Siberia.

1809. In oblique rhombic prisms, with terminations similar to those of preceding specimen; of a hyacinthine-red colour. Also massive, and of a yellow colour; disseminated through quartz rock. Beresof Mine, Catharineberg, Siberia.

1810. Massive, and in minute crystals, the former being yellow, the latter yellowish-red; on crystallized carbonate of lead. Leadhills, Scotland.

MELANOCHROITE.

Formula.—3PbO, $2CrO_3$.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1811.

VAUQUELINITE.

Formula.—3CuO, $2CrO_3 + 2(3PbO, 2CrO_3)$. (*Berzelius.*)

CRYSTALLINE SYSTEM, THE OBLIQUE PRISMATIC.

1812. In minute acicular prisms of a siskin-green colour, accompanied by crystals of chromate of lead, a little black lead ore, and quartz crystals; on sandstone, containing numerous ikositetrahedrons of hepatic pyrites. Beresof, Siberia.

1813. In mammillary concretions, some of which are studded on the surface with acicular crystals of a dark grayish-green colour; accompanied by very perfect rhombic prisms of chromate of lead. Beresof, Siberia.

SECTION XXI.

URANIDES.

URAN OCHRE.

FORMULA.—U_2O_3, *in combination with Water.*

NOT FOUND IN CRYSTALS.

1814. In roundish dots, some of a siskin-green, some of a straw-yellow colour; on pitchblende, traversed by veins of reddish quartz. Johanngeorgenstadt, Saxony.

PITCHBLENDE.

FORMULA.—UO, U_2O_3, *but also contains about five per cent. of Silex, and minute quantities of various basic Oxides.*

NOT FOUND IN CRYSTALS.

1815. Of a colour between pitch-brown and pitch-black, a low degree of lustre, and sub-conchoidal fracture, with some dots of uran ochre. Johanngeorgenstadt, Saxony.

1816. Of a dark colour, resinous lustre, and flat conchoidal fracture. Johanngeorgenstadt, Saxony.

1817. Massive, and of a pitch-black colour; accompanied by leek-green prase, with adhering particles of chrysocolla. Schneeberg, Saxony.

1818. Massive, of a pitch-black colour and pitchy lustre; accompanied by reddish-brown felspar, with some intermixed particles of iron pyrites. Joachimstahl, Bohemia.

SECTION XXII.

MAGNESIDES.

PERICLASE.

FORMULA.—MgO.

CRYSTALLINE SYSTEM, THE REGULAR.

1819.

HYDRATE OF MAGNESIA.—BRUCITE.

FORMULA.—MgO, HO.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL OR RIGHT PRISMATIC.

1820. Crystalline, highly translucent, and presenting lamellæ of a pearly lustre, with adhering yellowish-green serpentine. Shetland.

1821. Colour white with a tinge of green or blue, and exhibiting, at some points, an appearance of efflorescence; accompanied by a little yellowish-green serpentine. Hoboken, New Jersey.

SECTION XXIII.

MANGANIDES.

BRAUNITE.

FORMULA.—Mn_2O_3.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1822. Massive, and in octahedrons of a dark gray colour and strong metallic lustre; with a little adhering grayish-white sulphate of barytes. Ilmenau, Thuringia.

MANGANITE.

FORMULA.—Mn_2O_3, HO.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1823. Massive, and in large crystals composed of right rhombic prisms aggregated parallel to each other. Ilefeld, Hartz.

1824. A mass composed of confusedly aggregated prismatic crystals of a steel-black colour, with a little adhering sulphate of barytes of a lamellar structure.

HAUSMANNITE.

FORMULA.—Mn_3O_4.

CRYSTALLINE SYSTEM, THE RIGHT SQUARE.

1825. An aggregate of granular crystals, some of which present octahedral facets, of a brownish-black colour, with adhering particles of carbonate of manganese and a little heavy spar. Ilefeld, Hartz.

1826. Massive, and in octahedrons of a dark brown colour and sub-metallic lustre, with some adhering, lamellar heavy spar. Ilefeld, Hartz.

PYROLUSITE.

FORMULA.—MnO_2.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1827. Massive, and in minute diverging prisms of a bluish-black colour and metallic lustre. Kefel, Hartz.

1828. A mass composed of flat and confusedly diverging prisms of a bluish-black colour and sub-metallic lustre. Elgersburg, Thuringia.

1829. Partly massive, partly in crystals, which are aggregated right rhombic prisms of a metallic lustre and steel-gray colour. Ilmenau, Hartz.

MIXED OXIDES OF MANGANESE.

Composed of Manganite and Pyrolusite.

1830. A mass of prismatic crystals of a steel-gray colour and metallic lustre. Ilefeld, Hartz.

1831. A mass of confusedly aggregated rhombic prisms of a light steel-gray colour and metallic lustre; accompanied by a little pearl-gray heavy spar. Ilefeld, Hartz.

AMORPHOUS OXIDES OF MANGANESE.

1832. Massive, with a curious structure and bluish-black colour; traversed by numerous acicular pearly prisms of carbonate of lead. Zellersfeld, Hartz.

1833. Massive, of a compact structure and gray colour, with shining streak. Includes silex. Ilmenau, Hartz.

1834. Nodular, compact, and exceedingly hard, intermixed with brown hematite. Howth.

1835. Massive and botryoidal, and of an iron-black colour; contains barytes. Macon.

1836. Massive, botryoidal, and of a dark blue colour, with a little adhering yellowish-red clay; contains peroxide of iron and a little silex. Glandore, Cork.

1837. Somewhat crystalline and of an iron-gray colour. In some places mammillary, of a dark brown colour, and cortical structure. Both portions are composed of pyrolusite intermixed with a little peroxide of iron.

EARTHY COBALT.

Formula.—(CoO, CuO), $2MnO_2 + 4HO$. (*Rammelsberg.*)

DOES NOT OCCUR IN CRYSTALS.

1838. Two specimens, the one earthy, on sandstone; from Thuringia. The other botryoidal; locality unknown. Both exhibit the characteristic shining streak.

1839. Earthy, and of a dark colour; on the surface of a fragment of granite. Furstenberg, Suabia.

WAD.

Formula.—MnO_2, HO, *but in addition includes small quantities of Peroxide of Iron, Barytes, and Lime.*

NOT FOUND IN CRYSTALS.

1840. A soft dark brown mass, with an arborescent structure on one side, and reniform on the other. Siegen, Nassau.

1841. A light reniform mass of a brown colour and subresinous lustre. Siegen, Nassau.

PSILOMELANE.

FORMULA.—MnO, MnO_2, HO, *a portion of* MnO *being replaced by Barytes and Potash.*

NOT FOUND IN CRYSTALS.

1842. Botryoidal, of a dark colour and sub-metallic lustre; resting on compact wad. Hartz.

1843. Botryoidal, of a dark colour and sub-metallic lustre; forming a coating on compact hematite. Ilefeld, Hartz.

1844. Botryoidal, of a dark blue colour on its fractured surface, and exhibiting externally the sub-metallic lustre. Cornwall.

1845. Botryoidal, of a dark brown colour and sub-metallic lustre. Siegen, Nassau.

1846. Stalactitic, of a dark colour and sub-metallic lustre on surface. Siegen, Nassau.

SECTION XXIV.

SIDERIDES.

NATIVE IRON.

Iron combined with a little Carbon, and containing occasionally traces of Lead and Copper, but no Nickel.

FOUND ONLY IN GRAINS OR THIN PLATES.

1847.

METEORITES.

The heavy masses whose occasional fall through the atmosphere, though long doubted, is now well established. They consist of two distinct parts, an earthy mineral and a metal. The former is, with few exceptions, a mixture of two minerals analogous, as to composition, to Augite and Olivine. The latter is an alloy of Iron, with about five per cent. of Nickel, a little Cobalt, and traces of Chromium, Tin, and Copper. When such masses are chiefly earthy, they are called Meteoric Stones. When the metallic constituent preponderates, the term Meteoric Iron *is applied to them.*

METEORIC STONES.

1848. Exterior coating of a dark brown colour, and exhibiting the appearance of semifusion. Fracture surface granular, gray, and presenting a few metallic points of a light colour and metallic lustre. Adare, County Limerick, where it fell September 10, 1813.

1849. Ash-gray colour and coarse granular fracture, with some yellowish-brown spots, and numerous imbedded particles of meteoric iron; external crust brown and glazed. Limerick, September 10, 1813.

1850. Fracture surface of a granular structure and gray colour, with yellowish spots and numerous shining imbedded particles of meteoric iron. Patrick's Well, Limerick, September 10, 1813.

1851. Glazed on the surface, and of a dark brown colour. Fracture surface of a light gray colour, with rounded imbedded particles of meteoric iron tarnished superficially. Benares, East Indies.

1852. Fracture surface gray, coarsely granular, and presenting numerous imbedded particles of bright meteoric iron. Exterior film brown and semivitrified. Catalonia, July 8, 1811.

1853. Exterior film dark brown and glazed. Fractured surface of a rust colour, with imbedded particles of bright meteoric iron. Aigle, Normandy.

1854. Exterior tunic dark brown and glazed. Surface of fracture finely granular and of a light gray colour, with yellow spots and numerous imbedded particles of meteoric iron. Charlonville, Orleans. Fell November 23, 1810.

1855. Composed of fine, granular, distinct concretions of a pearl-gray colour with tinge of green, and containing imbedded minute particles of a pitch-black mineral, feebly magnetic; external film brown and strongly magnetic. Chaffigny, Pic De Landres. Fell October 3, 1815.

1856. Of a granular structure and light gray colour, with a few yellowish spots, and numerous minute glistening particles of meteoric iron; external surface glazed and of a brown colour. Maryland. Fell, unaccompanied by any other stone, February 10, 1825.

1857. A small interior fragment of a gray colour with imbedded particles of meteoric iron. Forsyth, Georgestown, North America.

1858. An interior fragment of a gray colour and granular structure, with imbedded meteoric iron. Weston, Connecticut.

1859. Colour gray with numerous metallic globules; imbedded in an earthy matrix. The globules are generally tarnished on the surface. Massachussets.

1860. White, friable, with adhering glassy glaze and imbedded particles of a dark colour which are magnetic.

METEORIC IRON.

1861. A cellular mass, externally brown, with sub-metallic lustre, internally of a brilliant grayish-white colour and crystalline structure. Siberia.

1862. Structure crystalline, externally of an amber-brown, and in parts of a golden colour and metallic lustre. Tennessee, North America.

1863. Of a dark brown colour and plaited structure. Tennessee, North America.

1864. A rhombohedral fragment, polished on one of its faces.

1865. A rectangular fragment, two of whose faces have been polished, but are now slightly tarnished.

1866. A fragment, on the polished surface of which are exhibited, very distinctly, the outlines of parallelograms the angles of which are very nearly 60° to 120°. Lockport, New York, North America.

1867. The polished surface of this fragment exhibits figures with curved outlines. Burlington, New York, North America.

1868. The polished face of this fragment exhibits numerous minute figures with a tendency to rectilinear outlines. Walker County, Alabama, North America.

1869. A flat plate polished on both surfaces.

1870. A cubic fragment with three faces polished. Scriber, Oswego, New York, North America.

SPECULAR IRON.—FER OLIGISTE.

FORMULA.—Fe_2O_3.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1871. A mass of lamellar crystals, which are rhombohedrons modified on the edges and angles, of a dark iron-gray colour and strong metallic lustre; magnetic with poles. Elba.

1872. In modified rhombohedrons with iridescent surfaces, of a steel-gray colour and strong metallic lustre; accompanied by crystals of quartz; magnetic with poles. Elba.

1873. Of a steel-gray colour, partly massive, and partly in thin lenticular crystals with iridiscent surfaces; magnetic and polar. Elba.

1874. A mass of crystals, the greater number of which are obtuse rhombohedrons with channelled surfaces. A single large crystal exhibits the faces of the hexangular dodecahedron whose summits are truncated; magnetic and polar. Elba.

1875. A mass composed of modified rhombohedrons with tarnished surfaces; magnetic and polar. Elba.

1876. In thin hexagonal laminæ of a steel-gray colour and splendent lustre; upon a rock composed of quartz and greenish mica. Frammont, Alsace.

1877. In distinct lustrous crystals, several of which are rhombohedrons, with their faces striated parallel to the shorter diagonal, accompanied by green fluor; on compact hematite. Frammont, Alsace.

1878. In flat capillary prisms of considerable lustre, traversing the cavities of a dark brown porous lava. Vesuvius.

MICACEOUS IRON ORE.

This differs from Specular Iron only in being softer and having a micaceous structure.

1879. A mass of steel-gray colour, finely lamellar structure, and metallic lustre, with a little adhering malachite; on quartz; magnetic and polar. Coosheen, Skull.

1880. Composed of curved lamellæ of considerable lustre, forming a thin coating on quartz; magnetic and polar. County Kilkenny.

1881. An irregular mass, composed of curved laminæ, having the colour and lustre of galena; magnetic and polar. Frammont, Alsace.

1882. A laminar mass of the colour and lustre of burnished steel, very easily crushed into minute shining scales, and exhibiting on the surfaces of the laminæ something of the granular texture; magnetic and polar. Hawley, Massachussets.

1883. In this specimen the laminæ are so disposed that their edges constitute its upper surface.

RED HEMATITE.

As respects composition this is identical with Specular Iron.

1884. A globular mass of a fibrous structure, partly of an ochre and partly of a dark red colour, with a nucleus of ochre-red compact hematite. Cumberland.

1885. A globular mass of a dark-red colour, composed of concentric layers of a very fine fibrous structure. Ulverston.

1886. A portion of one of the concentric layers constituting a spheroidal mass, with fibrous structure. Cumberland.

1887. A portion of a globular mass, with a few minute rock crystals of a blood-red colour adhering to its exterior surface. Cumberland.

1888. A curved fragment of fibrous structure and dark-red colour. Lancashire.

1889. An irregular conical fragment of a dark red colour, its surface of fracture being deeply sulcated as a consequence, apparently, of its fibrous structure. The base of the cone is replaced by two oblique planes, constituting a portion of the external surface of the specimen, and on these are distinctly traced the outlines of rude hexagonal figures. Cumberland.

1890. A concretionary mass, composed of spheroidal crusts of hematite cemented together by pearl spar. Cumberland.

1891. Reniform on the surface, of a dark red colour, and fibrous structure, with an interspersed stratum of compact hematite. Lancashire.

1892. Botryoidal, externally of a velvet-black, and internally of a chestnut-brown, with fibrous structure; upon compact brown iron-stone. Saxony.

1893. Of a dark colour and massive, accompanied by rhombohedrons of spathose iron with yellowish-red surfaces. Puy de Dome.

GÖTHITE.—RUBINGLIMMER.

FORMULA.—Fe_2O_3, HO.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1894. In right rhombic prisms terminated by pyramids of a different class, of a dark colour, and splendent lustre. Also in diverging acicular prisms, into which ordinary brown fibrous hematite appears to pass; accompanied by red hematite and crystals of quartz. Restormal Mine, Cornwall.

1895. In soft, copper-red, micaceous scales, attached to the surface of an iron-shot cellular quartz. Siegen, Westphalia.

1896. In soft, copper-red, micaceous scales, scattered over a mammillary oxide of manganese, intersected by thin veins of brown hematite. Pfortzheim, Baden.

BROWN HEMATITE.—BROWN IRON ORE.—LIMONITE.—PISOLITHIC IRON ORE.—BOG IRON ORE.

FORMULA.—$2Fe_2O_3$, 3HO.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1897. Massive, and in columnar concretions, black and glistening externally, of a dark chesnut-brown internally, and composed of fibres radiating from the centre. Saxony.

1898. A fibrous mass composed of concentric layers of different shades of chesnut-brown. Restormal Mine, Cornwall.

1899. Structure fibrous, colour hair-brown, invested externally with same massive, and of an ochre colour; with some imbedded amethystine rock crystals. Bristol.

1900. Of a brown colour and fibrous structure, the fibres being, in some places, stellularly arranged. Restormal Mine, Cornwall.

1901. Composed of nodular concretions of a brown colour and fibrous structure. Restormal Mine, Cornwall.

1902. Structure partly compact, partly earthy. Colour in some places black, in some ochre-red, in others brown. Contains silex.

1903. Compact, with a partial superficial coating of red ochre. Bieber, Hesse.

1904. This is the pisolithic iron ore. It is composed of small globular masses of the size of peas, imbedded in brown iron ore of a compact structure. Boffingen, Wurtemberg.

1905. A number of small detached globules of pisolithic iron ore. Burgundy.

1906. Bog iron ore. A cellular mass of a liver-brown colour and pitchy lustre, with numerous adhering particles of crystalline quartz. Lusatia.

1907. Bog iron ore. A porous botryoidal mass of a liver-brown colour, and exhibiting, at some points on the fractured surface, the pitchy lustre. Belmullet, Mayo.

MAGNETIC IRON ORE.—OXYDULATED IRON.

FORMULA.—FeO, Fe_2O_3.

CRYSTALLINE SYSTEM, THE REGULAR.

1908. A fragment of a large octahedral crystal of a pitch-black colour, deeply striated on its faces, with adhering particles of greenish-white talc, and a little yellow ochre. Elba.

1909. In octahedrons of a steel-gray colour, one of which is perfect; imbedded in talc slate of a leek-green colour. Zillerthal, Tyrol.

1910. Numerous small octahedrons with smooth and shining surfaces; imbedded in chlorite. Piedmont.

1911. In very regular rhombic dodecahedrons of a steel-gray colour and metallic lustre; on granular magnetic iron. Norway.

1912. Texture coarsely granular, as if composed of minute aggregated crystals, colour dark, lustre metallic. Kangerluardsuk, Greenland.

1913. Numerous regular octahedrons, having considerable lustre; attached to and scattered over the surface of trap. Muck Island, Antrim.

1914. Structure partly massive, partly crystalline and foliated, with strong metallic lustre. Norway.

1915. Massive, with scaly fracture, iron-black colour, and semi-metallic lustre. Norway.

1916. Massive, of a dark colour, low degree of lustre, and a scaly and lamellar structure. Sweden.

1917. Massive, of an iron-gray colour, and a structure partly granular and partly compact.

1918. Massive, with minute granular structure, of a gray colour, and containing disseminated particles of copper pyrites. Base of Croghan Kinshella Mountain, Wicklow.

FRANKLINITE.

FORMULA.—(ZnO, FeO, MnO) (Fe_2O_3, Mn_2O_3).

CRYSTALLINE SYSTEM, THE REGULAR.

1919. A mass of small cohering crystals of an iron-black colour, some few of which exhibit together the faces of the octahedron and rhombic dodecahedron; very feebly magnetic. New Jersey, North America.

RED OXIDE OF ZINC.

Composed of ZnO, *combined with a small but variable quantity of an Oxide of Manganese, probably* Mn_2O_3. *From its analogy, in point of composition, to Franklinite, and the circumstance of its occurring always associated with it, it is placed here, though in strictness it should form a separate section.*

Not found in nature in distinct crystals, but hexagonal prisms terminated by pyramids have been observed in the Zinc furnaces near Liege. The crystalline system is considered to be, by some, the rhombohedral, by others the right prismatic.

1920. Massive, and in concretions of a deep red colour, intermixed with franklinite in indistinct rounded crystals. New Jersey, North America.

1921. Massive, and in cinnabar-red concretions, intermixed with franklinite in rounded granular crystals. New Jersey, North America.

1922. Massive, and in crystalline concretions of a deep red colour, with intermixed irregular crystals of franklinite. New Jersey, North America.

SECTION XXV.

C U P R I D E S.

NATIVE COPPER.

Symbol.—Cu.

CRYSTALLINE SYSTEM, THE REGULAR.

1923. In rounded, ill-defined, octahedral crystrals, tarnished on the surface; attached to a mass of calcareous spar. Lake Superior.

1924. Massive, and dotted over with particles of white granular limestone. Lake Superior.

1925. In granular particles, thin leaves, and fine strings; disseminated through a quartzose stone. Lake Superior.

1926. An amorphous irregularly laminar mass, dotted over with particles of white granular limestone. Lake Superior.

1927. A concretionary mass of cohering spherical nodules of a dull red colour. China.

1928. A porous lamina, composed of small cohering rounded particles of a dark, and, in some places, a greenish colour, from adhering black oxide and carbonate of copper. Cornwall.

1929. A thin cribriform lamina of a reddish-brown colour, composed of irregular crystals arranged in a dendritic form; with adhering quartz. Cornwall.

1930. Composed of cohering crystalline particles of a brownish-red colour; with imbedded particles of quartz. Huel Virgin Mine, Cornwall.

1931. A perfect dendritic specimen, partly reddish-brown, partly green, from adhering particles of carbonate of copper. Cornwall.

1932. Perfectly dendritic, the terminal point of several of the branches being pyramidal and of a brownish-red colour, and coated, at several points, with adhering whitish quartz. Huel Virgin Mine, Cornwall.

1933. Numerous detached ramuli, finely dendritic, several of them being coated by a thin investment of bluish clay. Ballymurtagh, County Wicklow.

1934. A large, irregular, laminar mass, whitened over the greater part of its surface by adhering calcareous spar. Lake Superior.

BLACK COPPER.

FORMULA.—CuO.

NOT FOUND IN CRYSTALS.

1935. Earthy, friable, and of a black colour, with accompanying copper glance in shining six-sided prisms. Cornwall.

1936. Earthy, friable, and of a black colour; on quartz. Cornwall.

1937. Intermixed with copper pyrites and quartz. Cronebane, County Wicklow.

1938. Of a dark colour and earthy structure, invested by a thin coating of carbonate of copper. Lackamore Mine, Newport, Tipperary.

RUBY COPPER.—RED OXIDE OF COPPER.

FORMULA.—Cu_2O.

CRYSTALLINE SYSTEM, THE REGULAR.

1939. In regular octahedrons of a deep crimson colour; accompanied by octahedral native copper and quartz. Cornwall.

1940. Massive, and in dark red lustrous octahedrons, modified on their angles by the faces of the cube; accompanied by quartz. Cornwall.

1941. Massive, and in dull cochineal-red octahedral crystals; accompanied by a little black copper and quartz, and intersected by numerous threads of native copper. Cornwall.

1942. Numerous dark, ruby-red, octahedral crystals, whose angles, and, in many cases, edges, are replaced by planes corresponding to the faces of the cube and dodecahedron; on quartz. Cornwall.

1943. In dark red octahedral crystals of little lustre, intermixed with ferruginous quartz. Cornwall.

1944. In dark red, lustrous, octahedral crystals; accompanied by native copper and quartz. Cornwall.

1945. In numerous, minute, cubic crystals of a copper-red colour and metallic lustre; disseminated through a cellular reddish-brown quartz. Cornwall.

1946. Dark red cubic crystals, accompanied by bright red capillary prisms, translucent, and intersecting generally at an angle of 90°; on hornstone. Siberia.

1947. In minute octahedrons, some of which are pavonized on the surface, while others exhibit a silky lustre; strung together in dendritic forms, on loose iron-shot quartz. Cornwall.

1948. Massive, with lamellar structure and of a colour between lead-gray and copper-red; accompanied by a little chrysocolla, azure copper, and tile ore, with a little adhering unctuous clay. Chessy, France.

1949. Partly massive, and partly in minute octahedral crystals, mixed with fibrous malachite and enclosed within chrysocolla, to the surface of which there adheres a little whitish clay. Chessy, France.

1950. Massive, and of a reddish-brown colour; accompanied by minute quantities of the green and blue carbonates of copper. Adelaide, Australia.

TILE ORE.

This is an earthy form of the Red Oxide, and is usually mixed with Peroxide of Iron.

1951. Earthy and of a tile-red passing into brownish-red; intermingled with copper glance in six-sided prisms. Cornwall.

1952. Earthy, and of a brownish-red colour; intermixed with fibrous malachite and copper pyrites. Cumberland.

1953. Of an ochre-yellow colour, with disseminated green carbonate of copper, and adhering crystals of calcareous spar. Siberia.

SECTION XXVI.

PLUMBIDES.

NATIVE LEAD.

SYMBOL.—Pb.

CRYSTALLINE SYSTEM, THE REGULAR.

1954.

LEAD EARTH.—PLUMBIC OCHRE.

FORMULA.—PbO, *with a little* PbO, CO_2.

NOT FOUND CRYSTALLIZED.

1955.

MINIUM.

FORMULA.—Pb_3O_4.

CRYSTALLINE SYSTEM, THE RIGHT PRISMATIC.

1956. Massive, and of a deep red colour, intersected by a thin seam of dark-coloured iron stone; slightly magnetic.

PEROXIDE OF LEAD.

FORMULA.—PbO_2.

NOT FOUND IN CRYSTALS.

1957.

BEUDANTITE.

Composed of the Oxides of Lead and Iron.

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1958. In very minute crystals of a greenish-yellow colour, lining a cavity in a quartzose rock, and accompanied by brown hematite and pyrolusite. Horhausen, on the Rhine.

SECTION XXVII.

HYDRARGYRIDES.

NATIVE MERCURY.

SYMBOL.—Hg.

CRYSTALLINE SYSTEM, THE REGULAR.

1959. In numerous fluid globules scattered through a clay-slate; accompanied by crystallized cinnabar. Idria.

AMALGAM.

FORMULA.—$AgHg_2$; *also* $AgHg_3$.

CRYSTALLINE SYSTEM, THE REGULAR.

1960. Colour white with very slight brassy tinge, lustre metallic, and fracture conchoidal; on a schistoze rock intersected by veins of calcareous spar. Moschel, Rheinbaiern.

1961. Of a silver-white colour and pearly lustre; imbedded in sparry iron ore. Moschellandsberg, Deux Ponts.

ARQUERITE.

FORMULA.—Ag_6Hg.

CRYSTALLINE SYSTEM, THE REGULAR.

1962. Massive, and of a silver-white colour; upon dark gray limestone with attached calcareous spar, partly red and partly white. Arqueros, Chili.

SECTION XXVIII.

ARGYRIDES.

NATIVE SILVER.

SYMBOL.—Ag.

CRYSTALLINE SYSTEM, THE REGULAR.

1963. A mass composed of numerous, cohering, semi-crystalline, and rounded particles of a white colour and metallic lustre, with several interspersed crystals of calcareous spar. South America.

N. B.—The entire mass from which this specimen was taken weighed fifty-seven pounds, and contained 88 per cent. of silver.

1964. Dendritic and musciform, and partially tarnished on the surface, with interposed pearl-white heavy spar. Freyberg, Saxony.

1965. In metallic specks of a yellowish-white colour, appearing on the polished surfaces of a lamina of jaspery quartz, and accompanied by a little of the brittle silver ore. Johanngeorgenstadt, Saxony.

1966. In circularly curved wires, tarnished on the surface, and imbedded in dark coloured vitreous silver ore with mammillary surface; accompanied by quartz. Mexico.

1967. In long contorted wires, tarnished on the surface, with attached, massive, brittle silver ore and white calcareous spar. Freyberg, Saxony.

1968. Of a dendritic and hackly shape, with attached particles of calc spar, in which substance also the silver is imbedded; resting on hornblende schist. Kongsberg, Norway.

1969. Hackly, and in rectangular prisms blackened on the surface; on a stone composed principally of white and gray calcareous spar, with attached crystals of quartz and a little purple fluor. Kongsberg, Norway.

1970. Capillary and musciform, within a cavity lined with crystals of calcareous spar; accompanied by a stratum of galena resting on a gray schistose rock. Freyberg, Saxony.

1971. In grayish-white twisted threads of tolerable thickness; imbedded in quartz with some adhering galena. Ballycorus, County Dublin.

SECTION XXIX.

AURIDES.

NATIVE GOLD.

Composed of Gold united to Silver, the formula varying from AuAg *to* Au_4Ag, *this latter compound being the most common.*

CRYSTALLINE SYSTEM, THE REGULAR.

1972. A gilt model in lead of a lump of native gold which weighed 22·7 ounces, and was found at the base of Croghan Kinshella Mountain, County Wicklow.

1973. This specimen, which is penetrated by several cavities, weighs 815·2 grains. Croghan Kinshella Mountain, County Wicklow.

1974. An irregular wrinkled mass weighing 180·8 grains. Croghan Kinshella Mountain, County Wicklow.

1975. A small mass weighing 11·5 grains, and composed of five cohering crystals, some of which exhibit, though indistinctly, octahedral facets. Transylvania.

1976. A thin lamina with reticulated surface, owing to minute crystals with which it is studded; on common crystallized quartz of a gray colour. Abrabanya, Transylvania.

1977. A number of minute particles, generally flattened, and weighing together 149·6 grains, including some particles of quartz, iron sand, and a black mineral resembling augite.

1978. Washed gold in flattened particles, one of which is of an oval form and much larger than the rest; weight, 102·9 grains. Tifmani, Peru.

1979. Foliated and somewhat dendritic; on a schistose quartz porphyry, iron-shot, and having adhering to it a little greenish-white clay. Brazil.

1980. In small imbedded crystalline particles, slightly foliated; on a thin stratum of bluish rock crystals resting on claystone, through which are disseminated minute crystals of iron pyrites. Abrabanya, Transylvania.

1981. In octahedrons, some of which have the apex truncated, and in crystalline laminæ on white crystalline quartz, resting on a grayish claystone, containing numerous disseminated crystals of iron pyrites. Transylvania.

1982. In crystalline and reticulated lamellæ, accompanied by a little silver fahlerz and galena; on pearl-gray quartz attached to the surface of a sandstone porphyry, containing numerous small disseminated crystals of iron pyrites. Koespatack Mine, Transylvania.

1983. In clustered minute laminæ, having something of a dendritic arrangement; on a thin stratum of bluish mammillary quartz resting on claystone. Transylvania.

1984. Massive, also crystalline, and of a brass-yellow colour, accompanied by a little corneous silver; on a crust of smoke-gray common quartz, resting on ash-gray siliceous claystone.

N. B.—This variety of native gold is the electrum of Klaproth.

1985. In lamellæ, and constituting a fine musciform incrustation; on a crust of quartz resting on graystone. Transylvania.

1986. An electrum, in lamellæ of a light yellow colour, rough on the surface; accompanied by heavy spar and a little sulphuret of silver. Schangenberg, Siberia.

1987. A thin crust of a musciform structure, and a gold-yellow, passing into brass-yellow colour; on a thin film of gray quartz, covering graystone. Offenbanya, Transylvania.

RHODIUM GOLD.

This contains from 34 *to* 43 *per cent. of Rhodium.* (*Del Rio.*)

CRYSTALLINE SYSTEM, THE REGULAR?

1988.

SECTION XXX.

PLATINIDES.

NATIVE PLATINUM.

This, besides Platinum, includes 11 *per cent. of Iron,* 5 *per cent. of Iridium, and traces of Rhodium, Palladium, and Copper.*

CRYSTALLINE SYSTEM, THE REGULAR.

1989. In irregular flattened grains of a steel-gray colour; slightly magnetic. Choco, Peru.

1990. In irregular flattened grains, several of which are very minute; intermixed with a little iron sand.

SECTION XXXI.

PALLADIDES.

NATIVE PALLADIUM.

Contains, beside Palladium, a little Platinum and Iridium.

CRYSTALLINE SYSTEM, THE REGULAR.

1991.

SECTION XXXII.

IRIDIDES.

IRIDOSMINE.

Composition variable, some varieties having the formula IrOs, *some* $IrOs_3$, *and some* $IrOs_4$. *About* 5 *per cent.*, *however, of a new metal called Ruthenium, is associated with the Iridium.*

CRYSTALLINE SYSTEM, THE RHOMBOHEDRAL.

1992. In flattened grains of tolerable size and having a tin-white colour; not magnetic. Choco, South America.

1993. In small flattened grains of a tin-white colour; not magnetic. Choco, South America.

IRITE.

Composed of the Oxides of Iridium, Osmium, Chromium, and Iron.

CRYSTALLINE SYSTEM NOT KNOWN.

1994. In grains and foliated scales of a dark colour and much lustre; slightly magnetic. Tajilk, Ural.

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