V. CRYSTALLIZATION MONOCLINIC.

A. Luster Unmetallic.

	Specific Gravity.	Hardness.
Natron (p. 366)	1·44	1–1·5
Mirabilite (p. 531)	1·48	1·5–2
Whewellite (p. 542)		2·5
Stercorite (p. 510)	1·615	2
Aluminite (p. 537)	1·66	1–2
Alunogen (p. 535)	1·6–1·8	1·5–2
Borax (p. 520)	1·69–1·72	2–2·5
Boussingaultite (p. 535)	1·70	
Apjohnite? (p. 535)	1·78	1·5
Fibroferrite? (p. 536)	1·84	2–2·5
Melanterite (p. 534)	1·90	2
Halotrichite? (535)	1·9–2·0	
Pickeringite (p. 535)		
Hydroboracite (p. 521)	1·9–2·0	2
Gay-lussite (p. 366)	1·94	2–3
Kröhnkite (p. 536)	1·98	2·5
Diadochite (p. 516)	2·035	3
Botryogen (p. 537)	2·04–2·14	2–2·5
Mordenite (p. 453)	2·08	3–4
Kainite (p. 530)	2·07–2·19	2·5–3
Quetenite? (p. 538)	2 08–2·14	3
Copiapite (p. 536)	2·10	2·5
Trona (p. 367)	2·12	2·5–3
Picromerite (p. 535)	2·1–2·2	
Castanite (p. 536)	2·12	3
Quenstedtite (p. 535)	2·12	2·5
Heintzite (p. 520)	2·13	4–5
Hydromagnesite (p. 367)	2·16	3·5
Stilbite (p. 456)	2·16–2·20	3·5–4
Scolecite (p. 462)	2·16–2·4	5–5·5
Brushite (p. 510)	2·21	2–2·5
Heulandite (p. 454)	2·18–2·22	3·5–4
Darapskite (p. 517)	2·20	2–3
Phillipsite (p. 455)	2·2	4–4·5
Mesolite (p. 462)	2·2–2·4	5
Blödite (p. 535)	2·25	2·5
Epistilbite (p. 454)	2·25	4–4·5
Gismondite (p. 457)	2·26	4·5
Laumontite (p. 457)	2·25–2·36	3·5–4
Metabrushite (p. 510)	2·29	2·5–3
Wellsite (p. 455)	2·28–2·37	4–4·5
Gypsum (p. 531)	2·31–2·33	1·5–2
Gibbsite (p. 351)	2·3–2·4	2·5–3·5
Petalite (p. 369)	2·39–2·46	6–6·5
Colemanite (p. 519)	2·42	4–4·5
Hautefeuillite (p. 508)	2·435	2·5
Brewsterite (p. 454)	2·45	5
Harmotome (p. 456)	2·44–2·5	4·5
Hœrnesite (p. 508)	2·47	1
Wapplerite? (p. 510)	2·48	2–2·5
Serpentine (p. 476)	2·50–2·65	2·5–4
Calcioferrite (p. 514)	2·52–2·53	2·5
Eudidymite (p. 369)	2·55	6
Orthoclase (p. 370)	2·57	6
Kieserite (p. 531)	2·57	3–3·5
Vivianite (p. 508)	2·58–2·68	1·5–2
Syngenite (p. 534)	2·60	2·5
Kaolinite (p. 481)	2·6–2·63	2–2·5
Pharmacolite (p. 510)	2·64–2·73	2–2·5
Clinochlore (p. 473)	2·65–2·78	2–2·5
Pectolite (p. 395)	2·68–2·78	5
Augelite (p. 513)	2·7	4·5–5
Glauberite (p. 523)	2·7–2 85	2·5–3
Polyhalite? (p. 535)	2·77	2·5–3
Muscovite (p. 464)	2·76–3	2–2·5
Lepidolite (p. 467)	2·8–2·9	2·5–4
Biotite (p. 467)	2 7–3·1	2·5–3
Phlogopite (p. 469)	2·78–2 85	2·5–3
Prochlorite (p. 475)	2·78–2·96	1–2
Hyalophane (p. 373)	2·805	6–6·5
Ganophyllite (p. 452)	2·84	4–4·5
Zinnwaldite (p. 467)	2·82–3·20	2·5–3
Cuspidine (p. 442)	2·86	5–6
Liroconite (p. 514)	2 88	2–2·5
Wollastonite (p. 394)	2·8–2·9	4·5–5
Pyrophyllite (p. 482)	2·8–2·9	1–2
Prosopite (p. 323)	2·89	4·5
Corundophilite (p. 475)	2·90	2·5
Isoclasite? (p. 511)	2·92	1·5
Carpholite (p. 447)	2·93	5–5 5
Datolite (p. 435)	2·9–3·0	5–5·5
Pachnolite (p. 323)	2 93–3	3
Thomsenolite (p. 323)	2·93–3	2–3
Cryolite (p. 321)	2·95–3	2·5
Mosandrite (p. 487)	2·93–3	4
Erythrite (p. 509)	2·95	1·5–2·5
Symplesite (p. 508)	2 96	2·5
Cabrerite (p. 509)	2·96	2
Beraunite (p. 513)	2·98	
Herderite (p. 503)	2·99–3·01	5
Margarite (p. 470)	2·99–3·08	3·5–4·5
Amphibole (p. 399)	2·9–3·4	5–6
Lazulite (p. 506)	3·06	5–6
Wagnerite (p. 502)	3·07	5–5·5
Xanthophyllite (p. 471)	3·09	4·6
Seybertite (p. 471)	3–3·1	4–5
Köttigite (p. 509)	3·1	2·5–3
Euclase (p. 436)	3·10	7·5
Glaucophane (p. 403)	3.10–3·11	6–6·5
Ludlamite (p. 513)	3·12	3–4
Herrengrundite (p. 536)	3·13	2·5
Churchite? (p. 509)	3·14	3–3·5
Chondrodite (p. 443)	3·1–3·2	6–6·5
Clinohumite (p. 443)	3·1–3·2	6–6·5
Prolectite (p. 443)		
Spodumene (p. 393)	3·13–3·2	6·5–7
Hureaulite (p. 510)	3·185	5
Johannite (p. 538)	3·199	2–2·5
Pyroxene (p. 387)	3·2–3·6	5–6
Neptunite (p. 487)	3·23	5–6

A. Luster Unmetallic.

	Specific Gravity.	Hardness.
Johnstrupite (p. 487)	3·29	
Epidote (p. 438)	3·25–3·5	6–7
Rosenbuschite (p. 395)	3·3	5–6
Trögerite (p. 515)	3·3	
Ottrelite? (p. 471)	3·3	6–7
Clinohedrite (p. 447)	3·33	5·5
Jadeite (p. 393)	3·33–3·35	6·5–7
Homilite (p. 436)	3·38	5
Dickinsonite (p. 507)	3·34	3·5–4
Piedmontite (p. 440)	3·40	6·5
Wöhlerite (p. 395)	3·41–3·44	5·5–6
Sapphirine (p. 451)	3 42–3·48	7·5
Riebeckite (p. 404)	3·43	
Fillowite (p. 507)	3·43	4·5
Triplite (p. 502)	3 44–3·8	4–5·5
Orpiment (p. 282)	3 4–3·5	1·5–2
Rinkite (p. 487)	3·46	5
Arfvedsonite (p. 405)	3·44–3·45	6
Synadelphite (p. 506)	3·45–3·50	4·5
Titanite (p. 485)	3·4–3·56	5–5·5
Acmite (p. 391)	3·5–3 55	6–6·5
Veszelyite (p. 511)	3·53	3·5–4
Låvenite (p. 395)	3·51–3·55	6
Chloritoid? (p. 471)	3·52–3·57	6·5
Keilhauite (p. 487)	3·52–3·77	6·5
Dietzeite (p. 517)	3·70	3–4
Triploidite (p. 502)	3·7	4·5–5
Realgar (p. 282)	3·6	1·5–2
Barytocalcite (p. 364)	3·65	4
Adelite, Tilasite (p. 502)	3·74	5
Chalcomenite (p. 538)	3·76	
Azurite (p. 365)	3·77–3·83	3·5–4
Allactite (p. 506)	3·83–3·85	4·5
Allanite (p. 440)	3·5–4·2	5·5–6
Claudetite (p. 330)	3·85–4·15	2·5
Malachite (p. 364)	3·9–4·03	3·5–4
Durangite (p. 503)	3·94–4·07	5
Partschinite (p. 419)	4·0	6·5–7
Gadolinite (p. 436)	4·0–4·5	6·5–7
Barylite (p. 408)	4·03	7
Tagilite (p. 511)	4·08	3–4
Dihydrite (p. 505)	4–4·4	4·5–5
Sarkinite (p. 502)	4·18	4–5
Pyrostilpnite (p. 312)	4·2	2
Clinoclasite (p. 505)	4·19–4·36	2·5–3
Kermesite (p. 305)	4·5–4·6	1–1·5
Lautarite (p. 517)	4·59	
Monazite (p. 495)	4·9–5·3	5–5·5
Linarite (p. 530)	5·3–5·45	2·5
Lorandite (p. 308)	5·53	2–2·5
Baddeleyite (p. 346)	5·5; 6·025	6·5
Vauquelinite (p. 529)	5·8–6·1	2·5–3
Crocoite (p. 529)	5·9–6·1	2·5–3
Agricolite (p. 419)	6·0?	
Tenorite (p. 332)	5·8–6·25	3–4
Leadhillite (p. 530)	6·26–6·44	2·5
Lanarkite (p. 530)	6·3–6·4	2–2·5
Atelestite (p. 507)	6·4	3–4·5
Fiedlerite (p. 322)		
Hübnerite (p. 539)	7·2–7·5	5–5·5
Raspite (p. 541)		

B. Luster Metallic (and Submetallic).

Allanite (p. 440)	3·5–4·2	5·5–6
Crednerite (p. 343)	4·9–5·1	4·5
Miargyrite (p. 308)	5·1–5·3	2–2·5
Plagionite (p. 308)	5·4	2·5
Rittingerite (p. 312)	5·63	2–2·5
Semseyite (p. 309)	5·95	2–3
Polybasite (p. 314)	6·0–6·2	2–3
Pearceite (p. 315)	6·15	3
Freieslebenite (p. 309)	6·2–6·4	2–2·5
Jordanite (p. 313)	6·39	3
Wolframite (p. 539)	7·2–7·5	5–5·5
Sylvanite (p. 304)	7·9–8·3	1·5–2

VI. CRYSTALLIZATION TRICLINIC.

A. Luster Unmetallic.

Sassolite (p. 352)	1·48	1
Lansfordite (p. 367)	1·54	2·5
Hannayite (p. 510)	1·89	
Amarantite (p. 536)	2·11	2·5
Chalcanthite (p. 534)	2·12–2·30	2·5
Römerite (p. 536)	2·17	3–3·5
Microcline (p. 373)	2·54–2·57	6–6·5
Albite (p. 377)	2·62–2·65	6–6·5
Oligoclase (p. 378)	2·65–2·67	6–6·5
Andesine (p. 379)	2·68–2·69	6–6·5
Labradorite (p. 379)	2·70–2·72	6–6·5
Anorthite (p. 380)	2·74–2·76	6–6·5
Monetite (p. 507)	2·75	3·5
Inesite (p 452)	3 03	6
Amblygonite (p. 503)	3·01–3·09	6
Fairfieldite (p. 507)	3·10	3·5
Messelite (p. 507)		3·5
Chalcosiderite (p. 514)	3·11	4·5
Axinite (p. 441)	3·27	6·5–7
Hiortdahlite (p. 396)	3·27	5–5·6
Babingtonite (p. 396)	3·35–3·37	5·5–6
Celsian (p. 381)	3·37	6–6·5
Rhodonite (p. 395)	3·4–3·68	5·5–6·5
Trimerite (p. 424)	3·47	6–7
Chloritoid? (p. 471)	3·52–3·57	6·5
Roselite (p. 507)	3·5–3·6	3·5
Cyanite (p. 434)	3·56–3·67	5–7·25
Brandtite (p. 507)	3·67	5–5·5
Ænigmatite (p. 405)	3·85	
Walpurgite? (p. 515)	5·76	3·5

II. CRYSTALLINE HABIT.

I. ISOMETRIC SYSTEM.

In the following lists some species are enumerated whose crystalline habit is often so marked as to be a distinctive character.

Cubes.—METALLIC LUSTER: Galena; Pyrite.
UNMETALLIC LUSTER: Fluorite; Cuprite; Cerargyrite; Halite; Sylvite; Boracite; Pharmacosiderite. Also Percylite; Cerargyrite; Perovskite.
Cube-like forms occur with the following: Apophyllite (tetragonal); Cryolite (monoclinic). Also with the rhombohedral species: Chabazite: Alunite; Calcite; rarely Quartz and Hematite.

Octahedrons.—METALLIC AND SUBMETALLIC LUSTER: Magnetite; Franklinite; Chromite; Uraninite. Also sometimes, Galena; Pyrite; Linnæite; Dysanalyte.
UNMETALLIC LUSTER: Spinel (incl. Hercynite and Gahnite); Cuprite; Diamond; Pyrochlore and Microlite; Ralstonite; Periclase; Alum.
Forms somewhat resembling regular octahedrons occur with some tetragonal species, as Braunite; Hausmannite; Chalcopyrite; Zircon, etc.; also with some rhombohedral species, as Dolomite.

Dodecahedrons.—METALLIC LUSTER: Magnetite; Amalgam.
UNMETALLIC LUSTER: Garnet; Cuprite; Sodalite.

Trapezohedrons.—UNMETALLIC LUSTER: Garnet; Leucite; Analcite.

Pyritohedrons.—METALLIC LUSTER: Pyrite; Cobaltite. Also Gersdorffite; Hauerite (submetallic).

Tetrahedrons.—METALLIC LUSTER: Tetrahedrite.
UNMETALLIC LUSTER: Sphalerite; Boracite; Helvite; Eulytite; Diamond.
The tetragonal sphenoids of Chalcopyrite may resemble tetrahedrons.

II. TETRAGONAL SYSTEM.

Square Pyramids.—SUBMETALLIC LUSTER: Braunite; Hausmannite.
UNMETALLIC LUSTER: Zircon; Wulfenite; Vesuvianite; Octahedrite; Xenotime.

Square Prisms.—UNMETALLIC LUSTER: Zircon; Vesuvianite; Scapolites; Apophyllite; Phosgenite.
Square tabular crystals occur with Apophyllite; Wulfenite; Torbernite.
Prisms nearly square are noted with a number of orthorhombic species, e.g., Topaz; Andalusite; Danburite.

III. HEXAGONAL SERIES.

Hexagonal Prisms.—UNMETALLIC LUSTER: Beryl; Apatite; Pyromorphite; Vanadinite; Mimetite (usually indistinct rounded forms. Also Nephelite; Milarite; Tysonite, and others.
Hexagonal prisms are also common with the *rhombohedral species*: Quartz; Calcite; Tourmaline; Willemite; Phenacite; Dioptase, etc. Again, with the Micas, etc. Numerous rare species could be included here.
Many *orthorhombic* (or *monoclinic*) species having a prismatic angle of about 60° (and 120°) simulate this form both in simple crystals and still more as the result of twinning. Thus, Aragonite; Strontianite; Leadhillite; Iolite. It is also to be noted that the *isometric* dodecahedron, e.g., of Garnet, has often the form of a hexagonal pyramid with trihedral terminations (cf. Fig. 442, p. 134).
Tabular hexagonal prisms are noted with various species. Thus, METALLIC LUSTER: Hematite; Ilmenite; Pyrrhotite. UNMETALLIC LUSTER: Tridymite.

Hexagonal Pyramids.—Apatite; Corundum (rhombohedral); Quartz (rhombohedral-trapezohedral); Hanksite.
This form is often simulated by various *orthorhombic* species, in part as the result of twinning. For example, METALLIC LUSTER: Chalcocite; Stephanite; Polybasite; Jordanite, etc. Also Brookite (Fig. 301, p. 94)
UNMETALLIC LUSTER: Witherite; Bromlite; Cerussite; Iolite.

Trigonal Prism.—Tourmaline.

Rhombohedrons.—Angle 75° (and 105°): Calcite; Dolomite; Siderite; Rhodochrosite. Angle not far from 90°: Chabazite; Alunite.

Scalenohedrons.—Calcite and allied Carbonates; Proustite.

IV. ORTHORHOMBIC, MONOCLINIC AND TRICLINIC SYSTEMS.

Prismatic Crystals.—METALLIC LUSTER: Stibnite; Arsenopyrite; Bournonite; Manganite; Göthite, etc.
UNMETALLIC LUSTER: (*orthorhombic*) Topaz; Staurolite; Andalusite; Barite; Celestite; Danburite. Also (*monoclinic*) Pyroxene; Amphibole; Orthoclase, and many others.
Epidote crystals are often prismatic in aspect (Fig. 850, p. 438).

Tabular Crystals.—Barite; Cerussite; Calamine; Diaspore; Wollastonite.

Acicular Crystals.—METALLIC LUSTER: Stibnite; Bismuthinite; Millerite; Jamesonite; Aikinite, and other species.
UNMETALLIC LUSTER: Pectolite; Natrolite; Scolecite; Thomsonite, and other Zeolites. Also Aragonite; Strontianite; less often Calcite. Also many other species.

Twin Crystals.—The habit of the twins occurring with many species is very characteristic. Reference is made to pp. 118 to 130 and the accompanying figures for a presentation of this subject.

III. STRUCTURE OF MASSIVE MINERALS.

Fibrous.—*Fibers separable:* Asbestus (amphibole); also the similar asbestiform variety of serpentine (chrysotile); Crocidolite (color blue).
Fibers not separable, chiefly straight: Calcite; Gypsum. Also Aragonite; Barite; Celestite; Anhydrite; Brucite; Enstatite; Wollastonite; Dufrenite; Vivianite. See also *Columnar* below.

Fibrous-Radiated.—Wavellite; Thomsonite; Natrolite; Stilbite, and other Zeolites; Göthite; Malachite.

Columnar.—METALLIC LUSTER: Stibnite; Hematite; Jamesonite; Zinkenite, etc.
UNMETALLIC LUSTER: Limonite; Göthite; Aragonite; Amphibole (tremolite, actinolite, etc.); Epidote; Zoisite; Tourmaline; Sillimanite; Natrolite and other Zeolites; Strontianite; Witherite; Topaz.
Cyanite has often a *bladed* structure.
Fibrous and columnar varieties pass into one another.

Lamellar-Stellate.—Gypsum; Pyrophyllite.

Foliated.—METALLIC LUSTER: Graphite; Molybdenite; Tetradymite; Sternbergite; Nagyagite.
UNMETALLIC LUSTER: Talc; Orpiment; Gypsum; Pyrophyllite; Serpentine; Gypsum.

Micaceous.—The Micas, p. 463; also the Brittle Micas, p. 470, and the Chlorites, p. 472. Also Brucite; Orpiment; Talc; Torbernite; Autunite.

Granular.—METALLIC LUSTER: Galena; Hematite. Many sulphides, sulpharsenites, etc., have varieties which are fine-granular to compact and impalpable.
UNMETALLIC LUSTER: Pyroxene (coccolite); Garnet; Calcite; Barite, etc.

Botryoidal, Mammillary, Reniform, etc.—METALLIC LUSTER: Hematite; Arsenic; Allemontite.
UNMETALLIC LUSTER: Malachite; Prehnite; Calamine; Smithsonite; Chalcedony; Hyalite; Sphalerite, etc.

Stalactitic.—METALLIC LUSTER: Limonite: Psilomelane; Marcasite.
UNMETALLIC LUSTER: Calcite; Aragonite; Gibbsite; Chalcedony.

IV. PHYSICAL CHARACTERS.

I. CLEAVAGE.

Cubic.—METALLIC LUSTER: Galena.
UNMETALLIC LUSTER: Halite; Sylvite. The cleavage of Anhydrite (also of Cryolite) simulates this. Cf. also Corundum, p. 333.

Octahedral.—Fluorite; Diamond. Magnetite (also Franklinite) has often distinct octahedral parting.

Dodecahedral.—Sphalerite.

Rhombohedral.—Calcite and other species of the same group, pp. 354-360.

Square Prismatic (90°).—Scapolite; Rutile; Xenotime.

Prismatic.—Barite; Celestite; Amphibole (54° and 126°), etc.

Basal.—METALLIC LUSTER: Graphite; Molybdenite.
UNMETALLIC LUSTER: Apophyllite; Topaz; Talc; the Micas and Chlorites; Chalcophyllite, etc. Pyroxene often shows marked basal parting.

Pinacoidal.—METALLIC LUSTER: Stibnite.
UNMETALLIC LUSTER: Gypsum; Orpiment; Euclase; Diaspore, etc.

II. HARDNESS.

1. **Soft Minerals.**—The following minerals are conspicuously *Soft*, that is, H = 2 or less; they hence have a *greasy* feel. (See further the Tables, pp. 557 to 563.)
METALLIC LUSTER: Graphite; Molybdenite; Tetradymite; Sternbergite; Argentite; Nagyagite; some of the Native Metals (Lead, etc.).
UNMETALLIC LUSTER: Talc; Pyrophyllite; Brucite; Tyrolite; Orpiment; Cerargyrite; Cinnabar; Sulphur; Gypsum.
Also Calomel, Arsenolite, and many hydrous sulphates, phosphates, etc.

2. **Hard Minerals.**—Minerals whose hardness is equal to or greater than 7 (Quartz = 7).
The following minerals are here included:

LUSTER UNMETALLIC.

Quartz (p. 324)	7	Hambergite (p. 518)	7·5
Tridymite (p. 328)	7	Zircon (p. 428)	7·5
Barylite (p. 408)	7	Andalusite (p. 432)	7·5
Dumortierite (p. 449)	7	Beryl (p. 405)	7.5–8
Danburite (p. 430)	7–7·25	Lawsonite (p. 447)	7·5–8
Boracite (p. 518)	7	Phenacite (p. 423)	7·5–8
Zunyite (p. 415)	7	Gahnite (p. 339)	7·5–8
Cyanite (p. 434)	5–7·25	Hercynite (p. 339)	7·5–8
Tourmaline (p. 447)	7–7·5	Spinel (p. 338)	8
Garnet (p. 415)	6·5–7·5	Topaz (p. 431)	8
Iolite (p. 407)	7–7·5	Rhodizite (p. 518)	8
Staurolite (p. 450)	7–7·5	Chrysoberyl (p. 342)	8·5
Schorlomite (p. 419)	7–7·5	Corundum (p. 333)	9
Sapphirine (p. 451)	7·5	Diamond (p. 271)	10
Euclase (p. 436)	7·5		

The following minerals have hardness equal to 6 to 7, or 6·5—7.
LUSTER METALLIC: Iridosmine (p. 280); Iridium (p. 280); Sperrylite (p. 302).
LUSTER UNMETALLIC: Ardennite (p. 445); Axinite (p. 441); Betrandite (p. 446); Cassiterite (p. 344); Chrysolite (p. 420); Diaspore (p. 348); Elpidite (p. 407); Epidote (p. 438); Forsterite (p. 422); Gadolinite (p. 436); Jadeite (p. 393); Partschinite (p. 419); Sillimanite (p. 433); Spodumene (p. 393); Trimerite (p. 424).

III. SPECIFIC GRAVITY.

Attention is called to the remarks in Art. **280** (p. 158), on the relation of specific gravity to chemical composition. Also to the statements in Art. **281** as to the *average* specific gravity among minerals of metallic and unmetallic luster respectively. The species in each of the separate lists of Table I. of minerals classified with reference to crystallization are arranged according to ascending *specific gravities*. Hence the lists give at a glance minerals distinguished by both low and high density.

IV. LUSTER. (See Art. **338**, p. 188.)

Metallic.—Native metals; most Sulphides; some Oxides, those containing iron, manganese, lead, etc.

Submetallic.—Here belong chiefly certain iron compounds, as Ilmenite; Ilvaite; Columbite; Tantalite (and allied species); Wolframite, etc. Also Uraninite, etc.

Adamantine.—(*a*) Some *hard* minerals: Diamond; Corundum; Cassiterite; Zircon; Rutile. (*b*) Many compounds of lead, also of silver, copper, mercury. Thus, Cerussite, Anglesite, Phosgenite, etc.; Cerargyrite; Cuprite; some Cinnabar, etc. (*c*) Also certain varieties of Sphalerite, Titanite and Octahedrite.

Metallic-Adamantine.—Pyrargyrite; some varieties of the following: Cuprite, Cerussite, Octahedrite, Rutile.

Resinous or Waxy.—Sphalerite; Elæolite; many Phosphates.

Vitreous.—Quartz and many Silicates, as Garnet, Beryl.

Pearly.—The foliated species: Talc, Brucite, Pyrophyllite. Also (on cleavage surfaces) conspicuously the following: Apophyllite, Stilbite, Heulandite. Also, less prominent: Barite; Celestite; some Feldspar, and others.

Silky.—Some fibrous minerals, as Gypsum, Calcite; also Asbestus.

V. COLOR.

The following lists may be of some use in the way of suggestion. It is to be noted, however, that especially in the case of metallic minerals a slight surface change may alter the effect of color. Further, among minerals of unmetallic luster particularly, no sharp line can be drawn between colors slightly different, and many variations of shade occur in the case of a single species. For these reasons no lists, unless inconveniently extended, could make any claim to completeness.

(*a*) METALLIC LUSTER.

Silver-white, Tin-white.—Native silver; Native Antimony, Arsenic and Tellurium; Amalgam; Arsenopyrite and Löllingite; several sulphides, arsenides, etc., of cobalt or nickel, as Cobaltite (reddish); some Tellurides. No sharp line can be drawn between these and the following group.

Steel-gray.—Platinum; Manganite; Chalcocite; Sylvanite; Bournonite.

Blue-gray.—Molybdenite.

Lead-gray.—Many sulphides, as Galena (bluish); Stibnite; many Sulpharsenites, etc., as Jamesonite, Dufrenoysite, etc.

Iron-black.—Graphite; Tetrahedrite; Polybasite; Stephanite; Enargite; Pyrolusite; Magnetite; Hematite; Franklinite.

Black (with submetallic luster).—Ilmenite; Limonite; Columbite; Tantalite, etc.; Wolframite; Ilvaite; Uraninite, etc. The following are usually brownish black: Braunite; Hausmannite.

Copper-red.—Native copper.

Bronze-red.—Bornite (quickly tarnished); Niccolite.

Bronze-yellow.—Pyrrhotite; Pentlandite; Breithauptite.

Brass-yellow.—Chalcopyrite; Millerite (bronze.) Pale brass-yellow: Pyrite; Marcasite (whiter than Pyrite).

Gold-yellow.—Native gold.

Streak.—The following minerals of metallic luster are notable for the color of their *streak*:
Cochineal-red: Pyrargyrite.
Cherry-red: Miargyrite.
Dull Red: Hematite (also Cuprite).
Scarlet: Cinnabar (usually unmetallic).

Dark Brown: Manganite; Franklinite; Chromite.
Yellow: Limonite.

Tarnish. — The following are conspicuous for their bright or variegated tarnish: Bornite; Chalcopyrite; Tetrahedrite; some Limonite.

(*b*) Unmetallic Luster.

Colorless.—In Crystals: Quartz; Calcite; Aragonite; Gypsum; Cerussite; Anglesite; Albite; Barite; Adularia; Topaz; Apophyllite; Natrolite and other Zeolites; Celestite; Diaspore; Nephelite; Meionite; Calamine; Cryolite; Phenacite, etc.
Massive: Quartz; Calcite; Gypsum; Hyalite (botryoidal).

White.—Crystals: Amphibole (tremolite); Pyroxene (diopside, usually greenish).
Massive: Calcite; Milky Quartz; Feldspars, especially Albite; Barite; Cerussite; Scapolite; Talc; Meerschaum; Magnesite; Kaolinite; Amblygonite, etc.

Blue.—Blackish Blue: Azurite; Crocidolite.
Indigo-blue: Indicolite (Tourmaline); Vivianite.
Azure-blue: Lazulite; Azurite; Lapis Lazuli; Turquois.
Prussian-blue: Sapphire; Cyanite; Iolite; Azurite; Chalcanthite and many copper compounds.
Sky-blue, Mountain-blue: Beryl; Celestite.
Violet-blue: Amethyst; Fluorite.
Greenish Blue: Amazon-stone; Chrysocolla; Calamine; Smithsonite; some Turquois; Beryl.

Green.—Blackish Green: Epidote; Serpentine; Pyroxene; Amphibole.
Emerald-green: Beryl (Emerald); Malachite; Dioptase; Atacamite; and many other copper compounds; Spodumene (hiddenite); Pyroxene (rare); Gahnite; Jadeite and Jade.
Bluish Green: Beryl; Apatite; Fluorite; Amazon-stone; Prehnite; Calamine; Smithsonite; Chrysocolla; Chlorite; some Turquois.
Mountain green: Beryl (aquamarine); Euclase.
Apple-green: Talc; Garnet; Chrysoprase; Willemite; Garnierite; Pyrophyllite; some Muscovite; Jadeite and Jade; Pyrophyllite.
Pistachio-green: Epidote.
Grass-green: Pyromorphite; Wavellite; Variscite; Chrysoberyl.
Grayish Green: Amphibole and Pyroxene, many common kinds; Jasper; Jade.
Yellow-green to Olive-green: Beryl; Apatite; Chrysoberyl; Chrysolite (olive-green); Chlorite; Serpentine; Titanite; Datolite; Olivenite; Vesuvianite.

Yellow.—Sulphur-yellow: Sulphur; some Vesuvianite.
Orange-yellow: Orpiment; Wulfenite; Mimetite.
Straw-yellow, also Wine-yellow, Wax-yellow: Topaz; Sulphur; Fluorite; Cancrinite; Wulfenite; Vanadinite; Willemite; Calcite; Barite; Chrysolite; Chondrodite; Titanite; Datolite, etc.
Brownish Yellow: Much Sphalerite; Siderite; Göthite.
Ocher-yellow: Göthite; Yellow ocher (limonite).

Red.—Ruby-red: Ruby (corundum); Ruby spinel; much Garnet; Proustite; Vanadinite; Sphalerite; Chondrodite.
Cochineal-red: Cuprite; Cinnabar.
Hyacinth-red.—Zircon.
Orange-red: Zincite.
Orange-red to aurora-red: Realgar; Wulfenite.
Crimson-red: Tourmaline (rubellite); Spinel, Fluorite.
Scarlet-red: Cinnabar.
Brick-red: Some Hematite (red ocher).
Rose-red to Pink: Rose quartz; Rhodonite; Rhodochrosite; Erythrite; some Scapolite. Apophyllite and Zoisite; Eudialyte; Petalite; Margarite.
Peach-blossom Red to Lilac: Lepidolite; Rubellite.
Flesh-red: Some Orthoclase; Willemite (the variety troostite); some Chabazite; Stilbite and Heulandite; Apatite; rarely Calcite; Polyhalite.
Brownish Red: Jasper; Limonite; Garnet; Sphalerite; Siderite; Rutile.

Brown.—Reddish Brown: Some Garnet; some Sphalerite; Staurolite; Cassiterite; Rutile.
Clove-brown: Axinite; Zircon; Pyromorphite.
Yellowish Brown: Siderite and related carbonates; Sphalerite; Jasper; Limonite; Göthite; Tourmaline; Vesuvianite; Chondrodite; Staurolite.
Blackish Brown: Titanite; some Siderite; Sphalerite.
Smoky Brown: Quartz.

Black: Tourmaline; black Garnet (melanite); some Mica (especially biotite); also some Amphibole, Pyroxene and Epidote (these are mostly greenish or brownish black); further, some Sphalerite and some kinds of Quartz (varying from smoky brown to black); also Allanite; Samarskite. Some black minerals with submetallic luster are mentioned on p. 433.

Streak.—The *streak* is to be noted in the case of some minerals with unmetallic luster. By far the majority have, even when deeply colored in the mass (e.g. Tourmaline), a streak differing but little from white. The following may be mentioned:
Orange-yellow: Zincite, Crocoite.
Cochineal-red: Pyrargyrite and Proustite.
Scarlet red: Cinnabar.
Brownish red: Cuprite; Hematite.
Brown: Limonite.
The streak of the various copper, green and blue minerals, as Malachite, Azurite, etc., is about the same as the color of the mineral itself, though often a little paler.