# CATALOGUE

OF THE

# GOVERNMENT CENTRAL MUSEUM,

## MADRAS.

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ARRANGED AND COMPILED

BY

EDWARD BALFOUR, Esq., Surgeon, Madras Army,

OFFICER IN CHARGE.

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## PHYSICAL AND CHEMICAL CHARACTERS

OF

# MINERALS.

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BY ORDER OF THE GOVERNMENT

OF

*MADRAS.*



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MADRAS:

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# MINERALOGY.

## A. PHYSICAL CHARACTERS OF MINERALS.

# MINERALS

TO ILLUSTRATE

## STRUCTURE AND IMITATIVE SHAPES.

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KALKSPATH. CALCIT. *(Haid).*
CHAUX CARBONATEE. *(Haüy).*
*from Töplitz, Bohemia.*

**(Columnar, texture.)**

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ROTOHEISENSTEIN.
FER OLIGISTE: *Hœmatite.*
*from Tilkerode in the Hartz.*

**(Divergent-Columnar, Radiated.)**

No. 3. GRAY OXIDE of MANGANESE.
MANGANIT. *(Haid).* GRAU BRAUNSTEIN *(Hausm).*
ACERDESE. *(Beud).*
*from Ihlefeld in the Hartz.*

**(Concentric Columnar.)**

No. 4. COMMON QUARTZ.
GEMEINER QUARZ.
*from the Fragrathal, Tyrol.*

**(In long fibres.)**

No. 5. RED IRON ORE, HAEMATITE.
ROTHEISENSTEIN.
FER OLIGISTE.
*from Frgang, Bohemia.*

**(Fibrous.)**

No. 6. FIBROUS GYPSUM.
FASRIGER GYPS.
CHAUX SULFATEE FIBREUSE.
*from Rüdersdorf near Berlin.*

**(In very thin fibres.)**

No. 7. COMMON ASBESTUS.
ASBEST. *(Werner).*
ASBEST DUR.
*from Greiner in the Tyrol.*

**(Reticulated, or net-like.)**

No. 8. TIN WHITE COBALT. *(Phillips).*
SPEISKOBALT *(Werner).* SMALTIN *(Haid).*
COBALT ARSENICAL. *(Haüy).*
*from Schneeberg in Saxony.*

**(Stellated, or star-like.)**

No. 9. WAVELLITE. *(Jameson).*
WEAVELIT. *(Werner).*
ALUMINE PHOSPHATEE. *(Haüy).*
*from Zbirow near Beraun, Bohemia.*

**(Lamellar.)**

No. 10. MICA.
MUSCOVITE. *(Dana).*
ZWEIAXIGER GLIMMER.
*from Tennville in Transylvania.*

(**Coarse grained.**)

No. 11. CARBONATE of LIME. (*Phill*).
KALKSPATH. CALCIT. (*Haid*).
CHAUX CARBONATEE. (*Haüy*).
*from Targas Finland.*

(**Granular.**)

No. 12. GRANULAR LIMESTONE.
KORNIGER KALK.
CALCAIRE SACCHAROIDE.
*from Carrara.*

(**Curved Conchoidal, with radiated texture.**)

No. 13. LAMELLAR HEAVY-SPAR. (*Jameson*).
KRUMMSCHALIGER SCHWERSPATH. (*Werner*).
BARYTE SULFATEE CRISTALLISEE. (*Hy*).
*from Freiberg.*

(**Curved Conchoidal.**)

No. 14. IRON MICA.
EISENGLIMMER.
FER OLIGISTE ECAILLEUX.
*from Sala, Sweden.*

(**Crystalline, Conchoidal.**)

No. 15. TUNGSTATE of IRON. (*Phillips*).
WOLFRAM. (*Werner*).
SCHEELIN FERRUGINEUX. (*Haüy*).
*from Zinnwald in Bohemia.*

(**Scaly.**)

No. 16. LEPIDOCROKIT. (*Ullmann*).
*from Herdorf near Siegen.*

(**Compact.**)

No. 17. COMPACT HEAVY-SPAR. (*Jameson*).
DICHTER SCHWERSPATH. (*Werner*).
BARYTE SULFATEE COMPACTE.

(**Globular.**)

No. 18. AGATE.
ACHAT.
*from Tefeld Harz.*

(**Knobby.**)

No. 19. MENILIT.
QUARTZ RESINITE. (*Leberopal.*
*from Menil Montant, near Paris.*

(**Botryoidal.**)

No. 20. RED IRON-ORE. (*Jameson*).
ROTHEISENSTEIN. (*Werner*).
FER OLIGISTE. (*Haüy*).
*from Eibenstock in Saxony.*

(**In joined globules.**)

No. 21. PISIFORM LIMESTONE.
ERBSENSTEIN. (*Werner*).
CHAUX CONCRETIONEE CARB. (*Globuliforme*).
*from Carlsbad.*

**(Oolitic.)**

No. 22. CLAY IRON STONE.
THONEISENSTEIN.
FER OXYDE ARGILIFERE.
*from Aalen, Wurtemberg.*

**(Lentil shaped.)**

No. 23. CLAY IRON STONE.
THONEISENSTEIN.
FER OXYDE ARGILIFERE.
*from Radnitz, Bohemia.*

**(Reniform.)**

No. 24. BLACK MANGANESE ORE. (*Jam*).
HARTMANGANERZ.
MANGANESE OXYDE.
*from Langeberg near Schwarzenberg.*

**(Stalactitic).**

No. 25. FIBROUS BROWN HEMATITE.
FASRIGER BRAUNEISENSTEIN.
LIMONITE FIBREUSE.
*from Lobenstein in the Russias.*

**(Shrub shaped.)**

No. 26. ARRAGONITE.
EISENBLUTHE. (*Werner*).
FLOSFERRI.
*from Eisenerz in Steyermark.*

**(Acicular.)**

No. 27. NEEDLE ZEOLITE.
MESOTYPSPATH-NATROLITH in Klingstein.
ZEOLITE EN AIGUILLES.
*from Aussig in Bohemia.*

**(Forming plates.)**

No. 28. OCTOHEDRAL COPPER.
GEDIGEN KUPFER.
CUIVRE NATIF.
*from Rheinbrietbadh.*

**(Cellular.)**

No. 29. RADIATED PYRITES.
STRAHLKIES. (*W.*)
PYRITE RAYONNEE (*Brochant*).
*from Bodenmait, Bavaria.*

**(Porous.)**

No. 30. GLASSY-PUMICE. (*Jameson*).
BIMSTEIN.
LAVE VITREUSE PUMICEE.
*from the Volcano.* (*Lapari Island*).

**(Drusy.)**

No. 31. NEEDLE ZEOLITE.
NADEL-MESOTYP in Basalt.
ZEOLITHE in Aiguilles.
*from Linz, Rhine.*

**(Drusy.)**

No. 32. TOADSTONE.
MANDELSTEIN with Zeolite.
PIERRE AMYGDALOIDE.
*from Kaiserstahl in Baden.*

**(Drusy.)**

No. 33. TOADSTONE.
MANDELSTEIN, with green earth and zeolites.
PIERRE AMYGDALOIDE.
*from Far Oer.*

**(Marbled.)**

No. 34. OTTRELITE IN CLAY SLATE.
KIESEL-THON-EISENOXYD.
MANGANOXYD. WASSER.
*from Ottrez in Limburg.*

**(Marbled.)**

No. 35. ARENACEOUS LEAD ORE.
MINE DE PLOMB ARENACE.
BLEISANDERZ. KNOTEMERZ.
*from Commeru in the Eifel.*

**(Forming a thin cover.)**

No. 36. CHROMATE OF LEAD. (*Phill*).
ROTHBLEIERZ. KALLOCHROM.
(*Hausur*).
PLOMB CHROMATE. (*Haüy*).
*from Beresowsk in the Ural.*

**(Polished by nature.)**

No. 37. TIN WHITE COBALT. (*Phillips*).
SPEISKOBALT.
SMALTIN. (*Haid*). (*Werner*).
COBALT ARSENICAL. (*Haüy*).
*from Schneeberg in Saxony.*

**(Flowery leaved.)**

No. 38. PRISMATIC FELSPAR. (*Jameson*).
FELDSPATH (W.) ORTHOKLAS.
(*Breith*).
ORTHOSE. (*Beud*).
*from Brietenbrann Saxony.*

**(With corroded surface.)**

No. 39. BASALTIC HORNBLENDE.
BASALTISCHE HORNBLENDE.
(*Werner*).
AMPHIBOLE BASALTIQUE.
*from Schima in Bohemia.*

**(Flowered.)**

No. 40. GALENA.
BLEIGLANZ. (*Werner*).
GALENE ; PLOMB SULFURE.
(*Hauy*).
*from Freiberg in Saxony.*

# CRYSTALLOGRAPHY.

THE regular forms assumed by minerals are well known under the name of crystals, and the part of mineralogy which refers to it is thence called CRYSTALLOGRAPHY, or a description of Crystals. Each substance usually exhibits a peculiar crystalline form of its own, although occasionally the same substance crystallises in two distinct and incompatible forms, in which case it is said to be *dimorphous,* from *(dis)* twice and *(morphé)* form. Some times also two substances are found having the same crystalline form and they are then said to be isomorphous, from (isos) like and (morphe) form.

Pseudo-morphism (*pseudos,* false, *morphé,* form,) or the occurrence of a mineral in a form not its own, and not obtained by the regular process of crysallisation, occurs in various minerals, and is chiefly owing to external conditions which have limited the direction and extent of the development of the mineral.

# MINERALS

TO ILLUSTRATE

## PSEUDOMORPHISM.

No. 1. TIN STONE, in the form of felspar.
*from St. Agnes, Cornwall.*

No. 2. CARBONATE OF LIME, in the form of Gay Lassite.
*from Sangerhausen, Thuringia.*

No. 3. GYPSUM, in the form of Rock Salt.
*from Gosling, Upper Austria.*

**(Assuming the form of Nepheline.)**

No. 4. LIEBENERIT, (*Stotter*) in *Porphyry.*
*from Predazzo in Tyrol.*

No. 5. STEATITE, (taking the form of Spinel).
*from the Monzoni in South-Tyrol.*

**(Assuming the form of Iolite : syn: Dichroite.)**

No. 6. CHLOROPHYLLITE. (*Jackson*).
*from Kaddam, Connecticut.*

**(Assuming the form of Red Copper Ore.)**

No. 7. MALACHITE.
*from Chessy near Lyons.*

No. 8. SERPENTINE, in the form of Felspar.
*from Tredazzo, Tyrol.*

No. 9. QUARTZ, in the form of Fluor Spar.
*from Breonde, Department of the Haute Loire.*

No. 10. HORNSTONE, in the form of Calcite.
*from Schneeberg, Saxony.*

No. 11. SANDSTONE, in the form of Rock salt.
*from Geoolstein, Eifel.*

No. 12. HEMATITE, in the form of Pyrites.
*from the Spitzleite in Erzgebirge.*

No. 13. QUARTZ, in the form of Barytes.
*from Toplitz Bohemia.*

**(With impressions of Barytes.)**

No. 14. IRON PYRITES.
*from Tavistock in Devonshire.*

**(Passing into Mica.)**

No. 15. PRISMATIC ANDALUSITE. (*Jameson*).
*from Lisenz in Tyrol.*

**(Decomposed to brown Iron Ore.)**

No. 16. HEXAHEDRAL IRON-PYRITES. (*Jameson*).
*from Beresowsk, Ural.*

No. 17. QUARTZ, in the form of Anhydrite.
*from Geyer, Saxony.*

**(Assuming the form of Pyroxene.)**

No. 18. GREEN-EARTH.
*from the val di Fassa in Tyrol.*

No. 19. CARBONATE OF LIME, in the form of Felspar.
*from Mamback, Thuringia.*

No. 20. QUARTZ, covering crystals of heavy spar.
*from Tavistock Devonshire.*

# MINERALS

TO ILLUSTRATE

## TWIN CRYSTALS.

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IN their primitive forms crystals never present re-entering angles,—but such appearances are not unfrequent when two or more crystals grow as it were out of one base. Sometimes there is a certain degree of symmetry in the way in which individuals of a group collect themselves together, as in the crop-like form, usually assumed by the mineral called staurotide, and usually Twin Crystals as such cases are sometimes called, called also 'macles,' exhibit distinct marks of their origin.

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## TWIN CRYSTALS.

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No. 1. AUGITE. (*Jameson*).
GEMEINER AUGIT. (*Werner*).
PYROXENE. (*Haüy*).
*from Schöna in Bohemia.*

No. 2. SPHENE. (*Haüy*).
SPHEN (*Karsten*) ; TITANIT (*Klapr*).
*from St. Gotthard.*

No. 3. GYPSUM.
GYPS.
CHAUX SULFATÉE.
*from Girgenti, Sicily.*

No. 4. CARBONATE OF LEAD.
WEISSBLEIERZ.
PLOMB CARBONATÉ.
*from Diepenlienchen near Aix la Chapelle.*

No. 5. PYRAMIDO-PRISMATIC ZEOLITE. (*Jam*).
HARMOTOM, KREUTZSTEIN. (*Werner*).
PIERRE CRUCIFORME.
*from Andreasberg in the Harz.*

No. 6. LEVYNE. (*Brewster*).
*from Leipa in Bohemia.*

No. 7. TINSTONE.
ZINNSTEIN. (*Werner*).
ETAIN OXYDE. (*Haüy*).
*from Schlackenwalde in Bohemia.*

**Twin faces (Miller.)**

No. 8. PRISMATIC FELSPAR. (*Jameson*).
ADULAR. (*Werner*).
FELDSPATHE. (*Haüy*).
*from St, Gotthardt,*

No. 9. PRISMATIC FELSPATH. (*Jameson*).
FELDSPATH. (*W*) ORTHOKLAS. (*Breith*).
ORTHOSE. (*Beud*).
*from Hirschberg in Silesia.*

No. 10. MAGNETIC IRON.
MAGNETEISEN. (*Werner*).
FER OXYDULE.
*from Greiner, Tyrol.*

No. 11. CLEAVELANDITE.
ALBITE, TETARTIN.
*from Shezing, Tyrol.*

No. 12. PRISMATIC FELSPAR. (*Jameson*).
ADULAR. (*Werner*).
FELDSPATHE. (*Haüy*).
*from St. Gotthardt.*

# MINERALS

TO ILLUSTRATE

## AGGREGATION AND FRACTURE.

ALTHOUGH by proper management and a skilful hand, by splitting off parallel faces of various thickness or by removing edges or angles which may have replaced faces, it is possible to obtain an ultimate or primitive form of each crystal,—simple minerals are often so constructed and built up of like parts, aggregated as it is termed, as to appear in forms dissimilar to the ultimate or primitive crystals.

When a mineral breaks in a direction different from the cleavage planes it forms fracture surfaces, and the form of the fracture may be *conchoidal, even, uneven, smooth, splintery, hackly*, or *earthy*.

## AGGREGATION.

**(Rhombohedrons aggregated to globular.)**

No. 1. CARBONATE OF LIME. *(Phill).*
KALKSPATH. CALCIT. *(Haid).*
CHAUX CARBONATEE. *(Haüy).*
*from Maxen near Dresden.*

**(Rhombohedrons aggregated to skalene dodecahedrons.)**

No. 2. CARBONATE OF LIME. *(Phill).*
KALKSPATH. CALCIT. *(Haid).*
CHAUX CARBONATEE. *(Haüy).*
*from Freiberg in Saxony.*

**(Hexahedrons aggregated to dodecahedrons.)**

No. 3. FLUOR SPAR.
FLUSSSPATH.
CHAUX FLUATEE.
*from Ehrenfriedersdorf, Saxony.*

**(On Orthoclase.)**

No. 4. CLEAVELANDITE. *(Brooke).*
ALBIT.
TETARTIN. *(Breithaupt).*
*from Hirschberg in Silesia.*

**(On orthoclase, in regular situation.)**

No. 5. CLEAVELANDITE. *(Brooke).*
ALBIT.
TETARTIN. *(Breithaupt).*
*from Hirschberg in Silesia.*

**(On Orthoclase.)**

No. 6. CLEAVELANDITE. *(Brooke).*
ALBIT.
TETARTIN. *(Breithaupt).*
*from Hirsehberg in Silesia.*

No. 7. GRANITE, GRAPHIC.
SCHRIFTGRANIT.
*from Zweiesel, Bavaria.*

**(On Iron glance.)**

No. 8. PRISMATO-PYRAMIDAL-TITANIUM ORE.
RUTIL.
TITANE OXYDE.
*from St. Gothard.*

**(Joined with Starbide.)**

No. 9. PRISMATIC KYANITE. (*Jameson*).
KYANIT. (*Werner*). KYANITH. (*Breith*).
DISTHENE. (*Haüy*).
*from St. Gotthardt.*

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## FRACTURE.

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**Very difficult to break by striking with a hammer.)**

No. 10. OCTOHEDRAL COPPER.
GEDIEGEN KUPFER.
CUIVRE NATIF.
*from Katherinenberg in the Ural.*

**(Very difficult to break by striking with a hammer.)**

No. 11. NEPHRITE.
CERAUNITE.
JADE NEPHRITIQUE. (*Haüy*).
*from China.*

**(Very difficult to break.)**

No. 12. FIGURE-STONE, AXE STONE. (*James*).
BEILSTEIN. (*Werner*). BILDSTEIN.
TALC GLAPHIQUE.
*from Ochsenkopf in Saxony.*

**(Very difficult to break by the strokes of a hammer.)**

No. 13. COMMON ASBESTUS.
ASBEST GEMEINER.
*from Sala, Sweden.*

**(Very difficult to break by the strokes of a hammer.)**

No. 14. FIBROLITE. (*Bournon*).
FASERKIESEL.
*from Bodenmais in Bavaria*).

**(Difficult to break.)**

No. 15. BASALT.
OLIVIN UND TITANEISEN EINSCHTIESSEND.
*from Unkel on the Rhine.*

**(Difficult to break.)**

No. 16. MEERSCHAUM.
MAGN : CARB : SILICIF : SPONSIEUSE.
ECUME DE MER.
*from Natalia.*

**(Less difficult to break.)**

No. 17. HORNSTONE.
HORNSTEIN.
QUARTZ AGATE GROSSIER.
*from Rugen.*

**(Easily broken.)**

No. 18. SEMI-OPAL.
HALBOPAL.
*from Bilin, Bohemia.*

**(Very easily broken.)**

No. 19. PRISMATIC SULPHUR.
SOUFRE. *(Haüy).*
SCHWEFEL. NATURLICHER.
*from Girgenti in Sicilia.*

**(Friable.)**

No. 20. PORCELAIN-EARTH.
KAOLIN, PORZELLANERDE.
*(Werner).*
FELDSPATH DECOMPOSE.
*(Haüy).*
*from Aue in Saxony.*

**(Flowing with difficulty.)**

No. 21. BLACK MINERAL OIL. *(Jameson).*
THEERIGES ERDOL. *(Werner)*
BITUME LIQUID NOIR *(Haüy)*
*from Salso in Parma.*

**(Liquid.)**

No. 22. YELLOW MINERAL OIL. *(Jameson).*
GELBES ERDOL. *(Werner).*
BITUME LIQUIDE JAUNE.
*(Haüy)*
*from Miamo in Parma).*

**(Feeling rough.)**

No. 23. TRIPOLI.
TRIPEL. *(Werner).*
*from Meissen Berg near Prague.*

**(Feeling soft.)**

No. 24. MYELIN. *(Breith).*
TALKSTEINMARK. *(Freiesleben).*
*from Rochlitz in Saxony.*

**(Feeling greasy.)**

No. 25. RHOMBOIDAL GRAPHITE.
GRAPHIT.
GRAPHITE.
*from Ceylon.*

**(Feeling greasy.)**

No. 26. AGALMATOLITE.
*from Saczka, Banat.*

**(Dissolving in water.)**

No. 27. FULLERS EARTH.
WALKERDE
TERRE A FOULON.
*from Reifenstein near Cilly.*

**(Becoming translucent in water.)**

No. 28. EHRENBERGIT. *(Nöggerath).*
*from Drachenfels in the Siebengebirge.*

**(Writing.)**

No. 29. ROTHEL. (CLAY MIXED WITH RED OXYD OF IRON).
*from Eiberstock, Saxony.*

**(Writing.)**

No. 30. BLACK CHALK.
*from Osnabruck.*

**(Elastic.)**

No. 31. MICA.
ZWEIAXIGER GLIMMER.
MUSCOVITE. *(Dana).*
*from Miask in the Ural.*

**(Elastic.)**

No. 32. ELASTIC BITUMEN.
ELATERIT. (*Hausmann*).
BITUME ELASTIQUE. (*Haüy*).
*from Castleton in Derby-shire.*

**(Elastic, sounding.)**

No. 33. GYPSUM.
GYPS,
CHAUX SULFATEE.
*from Montmartre near Paris.*

**(Ductile.)**

No. 34. HEXAHEDRAL SILVER-GLANCE. (*Jameson*).
GLASERZ. (*Werner*). SILBERGLANZ. (*Breith*).
ARGENT SULFURE. (*Haüy*).
*from Freiberg.*

**(Ductile.)**

No. 35. SILVER HORN-ORE. (*Jameson*).
HORNERZ. (*Werner*).
ARGENT MURIATE. (*Haüy*).
*from Cogniapo, Chile*).

**(Less Ductile.)**

No. 36. NONTRONIT. (*Berthier*).
*from Andreasberg in the Harz.*

**(Ductile.)**

No. 37. OZOKERITE. (*Glocker*).
ERDWACHS.
*from Slanik in Moldavia.*

**(Less Ductile.)**

No. 38. BITUMEN. (*Dana*).
ASPHALT; ERDPECH.
BITUME GLUTINEUX.
*from Lobsan, Dpt. of the Bas-Rhin.*

**(Less Ductile.)**

No. 39. VITREOUS COPPER. (*Jameson*).
KUPFERGLANZ, KUPFERGLAS. (*Werner*).
CUIVRE SULFURE. (*Haüy*).

**(Mild Sextile.)**

No. 40. GALENA. (*Phill*).
BLEIGLANZ. (*Werner*).
PLOMB SULFURE. (*Haüy*).
*from Freiberg, Saxony.*

**(Mild.)**

No. 31. STEATITE. (*Jameson*). SOAPSTONE.
SPECKSTEIN. (*Werner*). STEATIT.
TALC STEATITE. (*Haüy*).
*from Wunsiedel in Bavaria.*

**(Malleable.)**

No. 42. HEXAHEDRAL SILVER. (*Jameson*).
GEDIEGEN SILBER.
ARGENT NATIF. (*Haüy*).
*from Schneeberg, Saxony.*

**(Flexible.)**

No. 43. AXIFRANGIBLE GYPSUM. (*James*).
FRAUENEIS. (*Gyps*). (*Werner*).
CHAUX SULFATEE. (*Haüy*).
*from Eisleben.*

**(Brittle.)**

No. 44. KEROLITE.
KEROLITH. (*Breith*). HYDROSILICIT. (*Kuh*).
*from Frankenstein in Silesia.*

**(Weak.)**

No. 45. ASPHALT.
BITUME SOLIDE.
*from Merthyr Tydvill, Devon.*

**(Even fracture.)**

No. 46. RIBBON JASPER.
BANDJASPIS.
JASPE RUBANE.
*from Lerbach in the Harz.*

**(Even fracture.)**

No. 47. COMMON SERPENTINE.
SERPENTIN.
OPHIOLITE.
*from Reichenstein, Silesia.*

**(Even and Splintery.)**

No. 48. HELIOTROPE.
HELIOTROP. (*Werner*).
QUARZ AGATHE PONCTUE.
*from the East.*

**(Even fracture.)**

No. 49. GALENA.
BLEISCHWEIF.
PLOMB SULFURE.
*from Clausthal.*

**(Uneven fracture.)**

No. 50. LEPTYNITE. (*Z. Th.*)
HORNFELS.
*from Andreasberg in the Harz.*

**(Uneven and Splintery.)**

No. 51. COMMON QUARTZ.
GEMEINER QUARZ.
*from Freiberg, Saxony.*

**(Uneven fracture.)**

No. 52. COMMON QUARTZ—FRESHWATER QUARTZ.
GEMEINER QUARZ.
*from Muffindorf near Bonn, on the Rhine.*

**(Uneven fracture.)**

No. 53. TRACHYTE.
TRACHYT.
*from der Rosenau in the Siebengebirge.*

**(Uneven fracture.)**

No. 54. PORCELAIN JASPER.
PORZELLAN-JASPIS. (*Werner*).
JASPE PORCELLAINE.
*from Töplitz.*

**(Uneven fracture.)**

No. 55. HEXAHEDRAL IRON-PYRITES. (*Jameson*).
SCHWEFELKIES. (*Werner*).
FER SULFURE. (*Haüy*).
*from Traverrella, Piedmond.*

**(Splintery.)**

No. 56. ALABASTER.
GESSO.
KORNIGER GYPS.
ALABATRE.
*from Castellina in Tuscany.*

**(Splintery fracture.)**

No. 57. ANHYDRITE. (*Jameson*).
ANHYDRIT DICHTER. (*Werner*).
CHAUX SULFATEE ANHYDRE. (*Hy*).
*from Sulz in Neckar.*

**(Splintery.)**

No. 58. COMMON SERPENTINE.
SERPENTIN.
OPHIOLITE.
*from Pfanders, Tyrol.*

**(Splintery fracture.)**

No. 59. COMPACT FELSPAR.
FELDSTEIN. ADINOLE. HALLEFLINTE.
PETROSILEX. (*Beud*).
*from Sala Sweden.*

**(Splintery fracture.)**

No. 60. HORNSTONE.
HORNSTEIN. (*Werner*).
QUARZ AGATHE GROSSIER.
*from Frankenstein in Silesia.*

**(Splintery.)**

No. 61. COMMON CALCEDONY.
CALZEDON.
CALCEDOINE.
*from Oberstein.*

**(Splintery fracture inclining to Conchoidal.)**

No. 62. COMMON QUARTZ.
GEMEINER QUARZ.
*from Zinnwald, Bohemia.*

**(Conchoidal fracture.)**

No. 63. HORNSTONE. (Brown Coal formation).
HORNSTEIN.
QUARTZ AGATE GROSSIER.
*from Rolt near Bonn.*

**(Conchoidal fracture.)**

No. 64. FLINT.
FEUERSTEIN.
SILEX PYROMAQUE.
*from Schonen.*

**(Conchoidal fracture.)**

No. 65. JASPER.
KUGELJASPIS.
JASPE.
*from Kandern in Baden.*

**(Conchoidal fracture.)**

No. 66. SEMI OPAL.
HALBOPAL.
*from Königswinter on the Rhine.*

**(Conchoidal fracture.)**

No. 67. OBSIDIAN. (*Werner*).
OBSIDIENNE.
*from the Lipari Islands.*

**(Conchoidal fracture.)**

No. 68. MAGNESITE. (*Jameson*).
MAGNESIT, TALKERDE. (*Werner*).
MAGNESIE CARBONATEE.(*Haüy*)
*from Frankenstein in Silesia.*

**(Earthy fracture.)**

No. 69. LITHOMARGE. (*Freiesleben.*)
STEINMARK. (*Werner*).
ARGILE LITHOMARGE. (*Haüy*).
*from the Harz.*

**(Slaty.)**

No. 70. DEVONIAN CLAY-SLATE.
THONSCHIEFER.
ARDOISE.
*from Caub on the Rhine.*

# MINERALS

TO ILLUSTRATE

## CLEAVAGE.

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Minerals are found to vary much in the degree of coherence existing among the various parts of which they consist,—and whilst some can with difficulty be broken, others yield to the slightest blow. Even in the same species cohesion varies in different directions and there are certain planes at right angles to which it seems to be at a minimum, so that the mineral separates along or parallel to these planes far more readily than in any other direction. This property is termed Cleavage, and the planes thus formed, Cleavage planes.

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## CLEAVAGE.

No. 1. Fluor-Spar.
Flussspath.
Chaux fluatee.
*from Beer-Alston Devonshire.*

No. 2. Tungstate of Iron. (*Phillips*).
Wolfram. (*Werner*).
Scheelin ferrugineux. (*Haüy*).
*from Zinnwald in Bohemia.*

No. 3. Prismato-pyramidal Titanium Ore.
Rutil.
Titane oxyde.

No. 4. Gray Oxide of Manganese.
Manganit. (*Haid*). Grau-braunstein. (*Hausm*).
Acerdese. (*Beud*).
*from Ihlefeld in the Harz.*

No. 5. Prismatic Felspar. (*Jameson*).
Feldspath (W.) Orthoklas. (*Breith.*)
Orthose. (*Beud*).
*from Lunguarruk (Greenland).*

No. 6. Criolite.
Kriolith, Eisstein.
Alumine fluatee alcaline,
*from Ivikaet in West Greenland.*

No. 7. CUBE SPAR, PRISMATIC GYPSUM. *(Jam.)*
ANHYDRITSPAR, MURIAZIT. *(Werner)*.
CHAUX SULFATEE ANHYDRE. *(Haüy)*.
*from Hall, Tyrol.*

No. 8. SCAPOLITE.
SKAPOLITH. *(Wernerit)*.
*from Guljöe, Sweden.*

No. 9. HEXAHEDRAL ROCK-SALT. *(Jam.)*
STEINSALZ.
SOUDE MURIATEE. *(Haüy)*.
*from Wieliczka.*

No. 10. HEAVY SPAR: BARYTES.
SCHWERSPATH; BARYTE.
BARYTE SULFATEE.
*from Töplitz, Bohemia.*

No. 11. COMMON BERYL.
GEMEINER BERYLL.
EMERAUDE; BERIL.
*from Limoges in Francouid.*

No. 12. GALENA.
BLEIGLANZ. *(Werner)*.
GALENE; PLOMB SULFURE. *(Haüy)*.
*from Freiberg in Saxony.*

No. 13. SULPHURET OF ZINC.
ZINK BLENDE.
ZINC SULFURE.
*from the Harz.*

No. 14. CELESTINE.
COELESTIN. *(Werner)*.
STRONTIANE SULFATE.
*from Strontian.*

No. 15. CARBONATE OF LIME. *(Phill.)*
KALKSPATH. CALCIT. *(Haid.)*
CHAUX CARBONATEE. *(Haüy)*.
*from Borion Westphalia.*

No. 16. TRIPHANE.
SPODUMEN.
LITHION-SPODUMEN.
*from Sterling, Massachussets.*

No. 17. MICA.
GLIMMER. *(Werner)*. ZWEI-AXIGER.
*from Zinnwald in Bohemia.*

No. 18. AXIFRANGIBLE GYPSUM. *(James.)*
FRAUENEIS. *(Gyps)* *(Werner)*.
CHAUX SALFATEE. *(Haüy)*.
*from Eisleben.*

No. 19. COMMON AMPHIBOLE.
HORNBLENDE IN TRACHYTE.
AMPHIBOLE COMMON.
*from Stenzelberg in the Siebengebirge.*

No. 20. ICHTHYOPHTHALMITE.
APOPHYLLIT, TESSELIT. *(Brewster)*.
APOPHYLITE. *(Haüy)*.
*from Andreasberg in the Harz.*

# MINERALS

TO ILLUSTRATE

## MOHS' AND BREITHAUPT'S DEGREES OF HARDNESS.

The hardness of minerals, or the power of resisting any attempt to separate their parts, is an important character, and being a purely relative distinction two scales have been formed by *MM. Breithaupt* and *Mohs*, composed of well known minerals of which each preceding one is scratched by those preceding it while the latter does not scratch the former. Mohs' scale reckons ten and Breithaupt's twelve degrees of hardness.

## MOHS' AND BREITHAUPT'S DEGREES OF HARDNESS.

**(Hardness—1 Breithaupt; 1 Mohs.)**

No. 5. PRISMATIC TALC MICA. (*Jameson*).
TALK. (*Werner*).
TALC. (*Haüy*).
*from Greiner in the Tyrol.*

**(Hardness—2 Breithaupt; 2 Mohs.)**

No. 12. GYPSUM.
GYPS.
CHAUX SULFATEE.
*from Eslében.*

**(Hardness—3 Breithaupt; 2·5 Mohs.)**

No. 11. MICA.
GLIMMER, ZWEIAXIGER. (*Werner*).
*from Zinnwald in Böhemia.*

**(Hardness—4 Breithaupt; 3 Mohs.)**

No. 2. CALCITE, (*Dana*); CALCAREOUS SPAR.
KALKSPATH.
CHAUX CARBONATEE.
*from Andreasberg in the Harz.*

**(Hardness—5 Breithaupt; 4 Mohs.)**

No. 6. FLUOR-SPAR.
FLUSS SPATH.
CHAUX FLUATEE.
*from Stallberg, Harz.*

**(Hardness—6 Breithaupt; 5 Mohs.)**

No. 9. RHOMBOHEDRAL APATITE. (*Jameson*).
APATIT. (*Werner*).
CHAUX PHOSPHATEE. (*Haüy*).
*from Arendal Norway.*

**(Hardness—7 Breithaupt; 5·5 Mohs.)**

No. 4. GLASSY ACTINOLITE.
GLASSIGER STRAHLSTEIN.
AMPHIBOLE VITREUX.
*from Greiner in the Tyrol.*

**(Hardness—8 Breithaupt; 6 Mohs.)**

No. 3. PRISMATIC FELSPAR. *(Jameson.)*
ADULAR. *(Werner).*
FELDSPATHE. *(Haüy).*
*from St. Gothard.*

**(Hardness—9 Breithaupt; 7 Mohs.)**

No. 1. ROCK CRYSTAL.
BERG KRISTALL,
QUARZ HYALIN.
*from Järischan in Silesia.*

**Hardness-10 Breithaupt; 8 Mohs.)**

No. 8. PRISMATIC TOPAS.
TOPAS. *(Werner).*
ALUMINE FLUATEE SILICEUSE.
*from Villa Rica in Brasil.*

**(Hardness-11 Breithaupt; 9 Mohs.)**

No. 7. RHOMBOIDAL CORUNDUM. *(Jameson).*
KORUND. DEMANTSPATH. *(Werner).*
CORINDON. *(Haüy).*
*from China.*

**(Hardness--12 Breithaupt; 10 Mohs.)**

No. 10. OCTOHEDRAL DIAMOND.
DEMANT. *(Werner).*
DIAMANT. *(Haüy).*
*from Minas Geraes in Brasil.*

# MINERALS

TO ILLUSTRATE

## LUSTRE AND COLOUR.

THE optical property of minerals are such as depend on light and are only observable in its presence. They include Lustre and Colour.

Lustre depends on the nature of the surface of a mineral, which causes light to be reflected in different ways and to a different extent. There are thus various kinds of lustre, Metallic, Vitreous, Resinous, Pearly, Silky, and Adamantine, and many degrees of Lustre as Splendent, Shining, Glistening, Glimmering and Dull.

*Nos.* 1—35. *Metallic Lustre and Colours.*
36—111. *Non-Metallic Colours.*
112—120. *Tarnish, Dichroism or Polychroism.*

## METALLIC LUSTRE.

**(Metallic lustre.)**

No. 1. GRAY ANTIMONY ORE.
ANTIMONGLANZ.
ANTIMOINE SULFURE.
*from the Caspari-Zeche near Arensberg.*

**(Metallic lustre,)**

No. 2. IRON PYRITES.
SCHWEFELKIES. (*Werner*).
PYRITE.
*from Traversella in Piedmont.*

**(Sub-metallic lustre.)**

No. 3. TUNGSTATE OF IRON.(*Phillips*).
WOLFRAM. (*Werner*).
SCHEELIN FERRUGINEUX.
(*Haüy*).
*from Zinnwald in Böhemia.*

**(Sub-metallic lustre.)**

No. 4. COAL HOUILLE.
STEINKOHLE. BLATTERKOHLE.
*from Essen on the Ruhr.*

**(Vitreous lustre.)**

No. 5. ROCK CRYSTAL. (*Jameson*).
BERGKRYSTALL.
QUARZ-HYALIN. (*Haüy*).
*from St. Gothard.*

**(Vitreous lustre.)**

No. 6. CALCITE. (*Dana*); CALCAREOUS SPAR.
KALKSPATH.
CHAUX CARBONATEE.
*from Adreasberg in the Harz.*

**(Resinous lustre.)**

No. 7. VESUVIAN. (*Jameson*).
VESUVIAN. (*Werner*).
(FETTGLANZ.) IDOCRASE. (*Haüy*).
*from Vesuvius.*

**(Resinous lustre,)**

No. 8. PITCHSTONE.
PECHSTEIN.
PIERRE DE POIX.
*from Buschbad near Meissen.*

**(Resinous lustre.)**

No. 9. SEMI OPAL.
HALBOPAL.
*from Königswinter on the Rhine.*

**(Wavy lustre.)**

No. 10. SEMI OPAL.
HALBOPAL.
*from Königswinter on the Rhein.*

**(Pearly lustre.)**

No. 11. STILBITE. (*Dana*).
DESMIN. (*Breithaupt*);
STRAHLZEOLITH.
STILBIT. (*Haüy*)
*from Faröe.*

**(Pearly lustre.)**

No. 12. MARGARIT. (*Fuchs*).
PERLGLIMMER. (*Mohs*).
*from Pfitsch-Thal in Tyrol.*

**(Pearly lustre.)**

No. 13. GILBERTIT. (*Thomson*).
*from St. Just in Cornwall.*

**(Metallic pearly.)**

No. 14. COMMON SCHILLER-SPAR. (*Jam.*)
SCHILLERSPATH.
DIALLAGE METALLOIDE.
*from the Baste in the Harz.*

**(Metallic pearly lustre.)**

No. 15. DIALLAGE (WITH SAUSSURITE).
BRONCITE.
*from Imprunella, Tuscany.*

**(Silky lustre.)**

No. 16. FIBROUS GYPSUM.
FASRIGER GYPS.
CHAUX SULFATEE FIBREUSE.
*from Nordhausen Thuringia.*

**(Adamantine lustre.)**

No. 17. SULPHURET OF ZINC.
BLENDE.
ZINC SULFURE.
*from Neudorf, Harz.*

**(Splendent.)**

No. 18. IRON GLANCE.
EISENGLANZ.
FER OLIGISTE.
*from Rio, Elba.*

**(Splendent.)**

No. 19. ROCK CRYSTAL.
BERGKRISTALL.
QUARZ HYALIN.
*from Järischän in Siberia.*

**(Shining.)**

No. 20. CELESTINE.
COELESTIN. (*Werner*).
STRONTIANE SULFATEE.
*from Girgenti in Sicilia.*

**(Glistening.)**

No. 21. CARBONATE OF IRON. CHALYBITE. (*Miller*).
SPATHEISENSTEIN. SIDERIT. (*Haid*).
FER OXYDE CARBONATE. (*Haüy*).
*from Lobenstein.*

**(Glimmering.)**

No. 22. COMMON CALCEDONY.
CALZEDON.
CALCEDOINE.
*from Island.*

**(Glimmering.)**

No. 23. HELIOTROPE.
HELIOTROP. (*Werner*).
QUARZ AGATHE PONCTUE.
*from the Sriat.*

**(Dull.)**

No. 24. PLASMA. (*Werner*).
QUARTZ AGATE VERT.
*from Ofenburg in Baden.*

**(Dull.)**

No. 25. STRIPED JASPER.
BANDJASPIS. (*Werner*).
JASPE RUBANNE.
*from Gnandstein near Altenburg.*

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## METALLIC COLOURS.

*By colour is meant the colour of the entire mineral.*

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**(Copper red.)**

No. 26. OCTOHEDRAL COPPER.
GEDIEGEN KUPFER.
CUIVRE NATIF.
*from the Lizard in Cornwall.*

**(Bronze yellow.)**

No. 27. MAGNETIC PYRITES. (*Jameson.*)
MAGNETKIES.
FER SULFURE.
*from Bodenmais in. Bavaria.*

**(Brass yellow.)**

No. 28. COPPER PYRITES. (*Phill.*)
KUPFERKIES. CHALKOPYRIT. (*Haid*).
CUIVRE PYRITEUX. (*Haüy.*)
*from Tavistock, Devonshire.*

**(Silver white.)**

No. 29. HEXAHEDRAL SILVER. (*Jameson*).
GEDIEGEN SILBER.
ARGENT NATIF. (*Haüy*).
*from Schneeberg, Saxony.*

**(Silver white.)**

No. 30. AXOTOMOUS ARSENIC PYRITES. (*Jameson*).
ARSENIKKIES. AXOTOMER. (*Mohs*).
FER ARSENICAL. (*Haüy*).
*from Reichenstein in Ilesia.*

**(Gold yellow.)**

No. 31. HEXAHEDRAL GOLD. (*Hy.*)
GEDIEGEN GOLD. (*Werner*).
OR NATIF. (*Haüy*).
*from Veraspatak, Hungary.*

**(Tin white.)**

No. 32. HEXAHEDRAL COBALT PYRITES.
GLANZKOBALT. (*Werner*).
COBALTE GRIS. (*Haüy*).
*from Tunaberg in Sweden.*

**(Lead gray.)**

No. 33. SULPHURET OF MOLYBDENA. (*Jameson*).
MOLYBDAENGLANZ. WASSERBLEI. (*Werner*).
MOLYBDENE SULFURE. (*Haüy*).
*from Altenberg in Saxony.*

**(Lead gray inclining to redish.)**

No. 34. GALENA. (*Phill*).
BLEIGLANZ. (*Werner*).
PLOMB SULFURE. (*Haüy.*)
*from Neudorf, Harz.*

**(Steel gray.)**

No. 35. NATIVE PLATINA. (*Jameson*).
GEDIEGEN PLATIN. (*Werner*).
PLATINE NATIF. (*Haüy*).
*from Tagilsk in the Ural.*

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*Nos.* 36 *to* 111.

## NON-METALLIC COLOURS.

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**(Snow white.)**

No. 36. (ARRAGONITE.)
EISENBLUTHE. (*Werner*).
FLOS FERRI.
*from Eisenerz in Steyermark.*

**(Yellowish white.)**

No. 37. STALACTITE.
KALKSINTER.
TROPFSTEIN.
*from Unkel near Bonn.*

**(Grayish white.)**

No. 38. GRANULAR LIMESTONE.
KORNIGER KALK.
CALCAIRE SACCHAROIDE.
*from Auerbach on the Bergstrasse.*

**(Greenish white.)**

No. 39. FLUOR-SPAR.
FLUSSSPATH.
CHAUX FLUATEE.
*from Freiberg, Saxony.*

**(Milky white.)**

No. 40. COMMON-OPAL.
GEMEINER OPAL. (*Werner*).
QUARZ RESINITE COMMUN.
*from Baumgarten in Silesia.*

**(Bluish gray.)**

No. 41. COMMON CALCEDONY.
CALZEDON.
CALCEDOINE.
*from Oberstein.*

**(Pearly gray.)**

No. 42. COMMON QUARTZ.
GEMEINER QUARZ.
*from Tunaberg.*

**(Smoke gray.)**

No. 43. FLINT.
FEUERSTEIN.
SILEX PYROMAQUE.
*from Schonen.*

**(Greenish gray.)**

No. 44. WHETSTONE-SLATE.
WETZ SCHIEFER.
SCHISTE COTICULE.
*from Sciffersdorf near Freiberg.*

**(Yellowish gray.)**

No. 45. FLINT.
FEUERSTEIN.
SILEX PYROMAQUE.
*from Rúgen.*

**(Ash gray.)**

No. 46. MOUNTAIN SOAP.
BERGSEIFE.
SAVON DE MONTAGNE.
*from Kusterschütz in the Mittelgebirge.*

**(Ash gray.)**

No. 47. ZOISITE. (*Jameson.*)
ZOISIT. (*Werner.*)
EPIDOTE. (*Haüy.*)
*from Gefrees in Bavaria.*

**(Grayish black.)**

No. 48. BASALTE.
BASALT.
*from Linz, Rhine.*

**(Velvet black.)**

No. 49. OBSIDIAN. (*Werner*).
OBSIDIENNE.
*from the Lipari Islands.*

**(Greenish black.)**

No. 50. Hornblende. (*Werner*).
Amphibole. (*Haüy*).
*from Pargas Finnlaud.*

**(Greenish black.)**

No. 51. Hornblende. (*Werner*).
Amphibole. (*Haüy*).
*from Arendal, Norway.*

**(Brownish black.)**

No. 52. Brown-Coal. (*Jameson*).
Braunkohle. (*Werner*).
Houille brun. (*Haüy*).
*from Töplitz.*

**(Brownish black.)**

No. 53. Mica.
Muscovite. (*Dana*).
Zweiaxiger Glimmer.
*from Miask in the Ural.*

**(Bluish black.)**

No. 54. Oxide of Cobalt.
Erdkobalt.
Cobalt oxyde.
*from Saalfeld in Thüringia.*

**(Azure blue.)**

No. 55. Blue Copper Ore.
Kupferlasur. (*Werner*).
Azurite. (*Beudant*).
*from Moldawa, Bauat,*

**(Violet blue.)**

No. 56. Amethyst.
Amethyst.
Quarz hyalin violet.
*from Oberstein.*

**(Lavender blue.)**

No. 57. Ferruginous Lithomarge.
Eisensteinmark.(*Freiesleben*).
*from Planitz near Zwickau.*

**(Prussian blue.)**

No. 58. Prismatic Kyanite. (*Jameson*).
Zyanit. (*Werner*). Kyanit. (*Breith*).
Disthene. (*Haüy*).
*from Greiner in the Tyrol.*

**(Smalte blue.)**

No. 59. Common Calcedony.
Calzedon.
Calcedoine.
*from Trestyan, Transylvania.*

**(Smalte blue.)**

No. 60. Anhydrite. (*Jameson*).
Anhydrit dichter (*Werner*).
Chaux sulfatee anhydre (*Haüy*).
*from Sulz, on the Neckar.*

**(Indigo blue.)**

No. 61. Earthy Blue Iron (*Jameson*).
Blaueisenerde (*Werner*).
Fer phosphate terreux (*Haüy*).

**(Indigo blue.)**

No. 62. INDIGO COPPER.
KUPFERINDIG. (*Breithaupt*).
COVELLINE. (*Beudant*).
*from Donzbach near Dillenburg in Nassau.*

**(Sky blue.)**

No. 63. BLUE COPPER.
KUPFERLASUR. (*Werner*).
AZURITE. (*Beudant*).
*from Rhein-breitbach.*

**(Verdigris green.)**

No. 64. SILICO-CARBONATE OF COPPER (*Thomson*). On heavy spar.
CHRYSOCOLLA. KIESELKUPFER.
*from Salfeld, Thuringia.*

**(Celandrine green.)**

No. 65. GREEN EARTH.
GRUNERDE.
TERRE VERTE.
*from Monte Baldo near Verona.*

**(Mountain green.)**

No. 66. NOBLE BERYL.
EDLER BERYLL. (*Werner*).
EMERAUDE. (*Jameson*).
*from Nertschink, Siberia.*

**(Leek green,)**

No. 67. PRASE. (*Jameson*).
PRASEM. (*Werner*).
QUARZ HYALIN VERT OBSCUR. (*Haüy*).
*from Brietenbrann, Saxony.*

**(Emerald green.)**

No. 68. FIBROUS MALACHITE.
MALACHIT FASRIGER. (*Werner*).
CUIVRE CARBONATE VERT SOYEUX. (*Haüy*).
*from Katherinenburg in the Ural.*

**(Apple green.)**

No. 69. CHRYSOPRASE.
*from Frankenstein, in Silesia.*

**(Grass green.)**

No. 70. GLASSY ACTINOLITE.
GLASIGER STRAHLSTEIN.
AMPHIBOLE VITREUX.
*from Greiner in the Tyrol.*

**(Grass green.)**

No. 71. GREEN PHOSPHATE OF LEAD.
GRUNBLEIERZ (*Werner*)
PLOMB PHOSPHATE VERT. (*Haüy*).

**(Pistachio green.)**

No. 72. PRISMATOIDIAL AUGITE. (*Jameson*).
PISTACIT (*Werner*).
EPIDOTE (*Haüy*).
*from Arendal, Norway.*

**(Asparagus green.)**

No. 73. CONCHOIDAL APATITE. (*Jameson*).
SPARGELSTEIN (*Werner*).
CHAUX PHOSPHATEE (*Haüy*).
*from Greiner in the Tyrol.*

**(Blackish green.)**

No. 74. COCCOLITE. (*Jameson*).
KOKKOLITH. (*Werner*).
PYROXENE GRANULEUX.
*from Arendal in Norwegia.*

**(Oil green.)**

No. 75. CHRYSOLITE (*Phillips*).
OLIVIN.
PERIDOT GRANULIFORME.
(*Haüy*).
*from Dreis in the Eifel.*

**(Oil green.)**

No. 76. PITCHSTONE.
PECHSTEIN.
PIERRE DE POIX.
*from Buschbad near Meissen.*

**(Siskin green.)**

No. 77. URANITE.
URAN GLIMMER.
KALKHALTIGER.
*from Fohann Georgenstadt, Saxony.*

**(Sulphur yellow.)**

No. 78. PRISMATIC SULPHUR.
SCHWEFEL, NATURLICHER.
SOUFRE (*Haüy*).
*from Girgenti in Sicilia.*

**(Straw yellow.)**

No. 79. SCHORLITE. (*Jameson*).
PIKNIT. (*Werner*).
PICKNITE. (*Haüy*).
*from Altenberg in Saxony.*

**(Wax yellow.)**

No. 80. SULPHURET OF ZINC.
BLENDE.
ZINC SULFURE.
*from Kapnik, Hungary.*

**(Honey yellow.)**

No. 81. SEMI OPAL.
HALBOPAL.
*from Libethen, Hungary.*

**(Honey yellow.)**

No. 82. HONEYSTONE. (*Jameson*).
HONIGSTEIN. (*Werner*).
MELLITE. (*Haüy*).
*from Artern in Thüringen.*

**(Lemon yellow.)**

No. 83. PRISMATOIDAL SULPHUR.
(*Jameson*).
GELBES RAUSCHGELB. (*Werner*).
ARSENIC SULFURE JAUNE.
(*Haüy*).
*from Persia.*

**(Lemon yellow.)**

No. 84. URAN-OCHRE. (*Jameson*).
URANOCKER. (*Werner*).
*from Joachimsthal in Böhemia.*

**(Ochre yellow.)**

No. 85. IRON-OCHRE.
EISENOCKER.
FER OXIDE TERREUX.
*from Elba.*

**(Wine yellow.)**

No. 86. PRISMATIC TOPAS. (*Jameson*).
TOPAS. (*Werner*).
ALUMINE FLUATÉE SILCEUSE. (*Haüy*).
*from the Schneckenstein in Saxony.*

**(Cream yellow.)**

No. 87. MYELIN. (*Breith.*)
TALKSTEINMARK. (*Freissleben*).
*from Rochlitz in Saxony.*

**(Orange yellow.)**

No. 88. PYRAMIDAL LEAD-SPAR. (*Jameson*).
GELBBLEIERZ. (*Werner*).
PLOMB MOLYBDATE. (*Haüy*).
*from Bleiberg in Carinthia.*

**(Aurora red.)**

No. 89. CHROMATE OF LEAD (*Phill.*).
ROTHBLEIERZ KALLOCHROM (*Hausm.*)
PLOMB CHROMATE. (*Haüy*).
*from Beresowsk in the Ural.*

**(Hyacinth red.)**

No. 90. HYACINTH. (*Werner*).
HYACINTE.
*from Ceylon.*

**(Brick red.)**

No. 91. STILBITE. (*Haüy*).
FOLIATED ZEOLITE. (*Jameson*).
BLATTER-ZEOLITH. (*Werner*).
*from Val di Fassa in the Tyrol.*

**(Scarlet red.)**

No. 92. PRISMATIC RHOMBOIDAL RUBI-BLENDE.
ZINNOBER (*Werner*).
MERCURE SULFURÉ (*Haüy.*)
*from Wolfstein, Rhinish Bavaria.*

**(Blood red.)**

No. 93. PYROPE.
GRENAT ROUGE DU FEU.
*from Meronitz in Bohemia.*

**(Flesh red.)**

No. 94. PRISMATIC FELSPAR. (*Jameson*).
FELDSPATH. (*W.*) ORTHOKLAS. (*Breith.*)
ORTHOSE. (*Beud.*).
*from Hirschberg in Silesia.*

**(Carmine red.)**

No. 95. DODECAHEDRAL CORUNDUM. (*Jameson*).
SPINEL. (*Werner*).
SPINELLE. (*Haüy*).
*from Ceylon.*

**(Rose red.)**

No. 96. ROSE QUARTZ.
ROSENQUARZ.
QUARZE ROSE.
*from Rabenstein in Bavaria.*

**(Rose red.)**

No. 97. NEEDLE ZEOLITE.
MESOTYPSPATH. Natrolith in Klingstein.
ZEOLITE EN AIGUILLES.
*from Aussig in Bohemia.*

**(Peach blossom red.)**

No. 98. LEPIDOLITE. LITHIA MICA.
LEPIDOLITH. LITHIONGLIMMER.
*from Rozena near Kradisks in Moravia.*

**(Peach blossom red.)**

No. 99. RED COBALT OCHRE. (*Jameson*).
KOBALTBESOCHLAG (*Werner*).
COBALTE ARSENIATE PULVERULENT. (*Haüy*).
*from Schneeberg.*

**(Columbine red.)**

No. 100. PRECIOUS-GARNET ; IRON-GARNET (*Dana*).
EDLER GARNAT.
ALMANDINE (*Beudant*).
*from Greenland.*

**(Cherry red.)**

No. 101. PRISMATIC ANTIMONY-BLENDE. (*James*).
ROTHSPIESGLASERZ (*Werner*).
ANTIMOINE OXYDE SULFURE. (*Haüy*).
*from Bräunsdorf near Freiberg.*

**(Brownish red.)**

No. 102. FERRUGINOUS QUARTZ.(*Dana*).
EISENKIESEL. (*Werner*).
QUARZ HYALIN HEMATOIDE ; SINOPLE.
*from Schellerhau in Saxony.*

**(Reddish brown.)**

No. 103. FERRUGINOUS QUARTZ(*Dana*).
EISENKIESEL. (*Werner*).
QUARZ HYALIN HEMATOIDE ; SINOPLE.
*from Schellerhau in Saxony.*

**(Clove brown.)**

No. 104. SMOKY QUARTZ.
RAUCH-QUARZ ; BERGKRYSTALL.
QUARZ HYALIN ENFUME.
*from St. Gotthard.*

**(Hair brown.)**

No. 105. YELLOW HYDRATED OXIDE OF IRON.
GELBEISENSTEIN.
FER OXYDE HYDRATE JAUNE.
*from Klein Schmalkalden.*

**(Chesnut brown.)**

No. 106. JASPER (*Jameson*)
JASPIS (*Werner*)
QUARZ JASPE. (*Haüy*).
*from Cairo.*

**(Yellowish brown.)**

No. 107. HORNSTONE.
HORNSTEIN.
QUARTZ AGATE GROSSIER.
*from Schneeberg Saxony.*

**(Pinchbeck brown.)**

No. 108. HEMIPRISMATIC SCHILLER-SPAR. (*Jam.*)
BLATTRIGER ANTHOPHILIT. (*Werner*)
DIALLAGE METALLOIDE. BRONZIT. (*Haüy*).
*from Kupferberg in Bavaria.*

**(Wood brown.)**

No. 109. ROCK-WOOD.
BERGHOLZ. (*Werner*).
BOIS DE MONTAGNE.
*from Sferzing in the Tyrol.*

**(Liver brown.)**

No. 110. SEMI OPAL.
HALBOPAL.
*from Bilin in Böhemia.*

**(Blackish brown.)**

No. 111. BROWN-COAL. (*Jameson*).
BRAUNKOHLE. (*Werner*).
HOUILLE BRUN. (*Haüy*).
*from Töplitz.*

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*Nos.* 112 *to* 120.

## TARNISH. DICHROISM.

*Under the term of Iridescence may be included a play or change of colours, opalescence, iridiscence and tarnish, with other peculiarities often very remarkable and well distinguishing certain minerals.*

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**(Play of colour.)**

No. 112. PRECIOUS OPAL.
EDLER OPAL.
QUARZ RESINITE OPALIN.
*from Czerwenitza in Hungary.*

**(Play of colour.)**

No. 113. LABRADOR FELSPAR. (*Jameson*).
LABRADOR. (*Werner*).
FELDSPATH OPALIN. (*Haüy*).
*from Labrador.*

**(Opalescence.)**

No. 114. COMMON-OPAL.
GEMEINER OPAL. (*Werner*).
QUARZ RESINITE COMMUN.
*from Baumgarten in Silesia.*

**(Iridescence.)**

No. 115. AVANTURINE FELSPATHIC.
SUNSTONE FELSHATHIC SONNENSTEIN.
*from Twedestrand in Norway.*

**(Painted.)**

No. 116. ARRAGONITE.
SPRUDELSTEIN.
CHAUX CONCRETIONEE.
*from* (*Carlsband*).

**(With veins.)**

No. 117. COMMON SERPENTINE.
SERPENTIN.
OPHIOLITHE.
*from Zöblitz in Saxony.*

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*Polychroism is a property belonging to some prismatic crystals, presenting a different colour in different directions. The term dichroism is sometimes used, the colours occurring only in two directions, as in Iolite, hence called Dichroite.*

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**(Dichroism.)**

No. 118. PRISMATOIDIAL AUGITE. (*Jameson*).
PISTACIT. (*Werner*).
EPIDOTE (*Haüy*).
*from Dauphine.*

**(Dichroism.)**

No. 119. IOLITE.
CORDIERITE.
DICHROITE.
*from Haddam, Connecticut.*

**(Dichroism.)**

No. 120. TOURMALINE.
EDLER TURMALIN.
TOURMALINE.
*from St. Pietro, in Elba.*

# MINERALS

TO ILLUSTRATE

## DIAPHANEITY, REFRACTION AND PHOSPHORESCENCE.

---

TRANSPARENCY is the property which many substances possess of transmitting light, and such are termed transparent; semi-transparent; translucent; subtranslucent and opaque, according to the quantity of light transmitted.

---

*Nos.* 1 *to* 8.

### DIAPHANEITY.

(Transparent.)

No. 1. AXIFRANGIBLE GYPSUM.
(*James.*)
FRAUENEIS. (*Gyps*). (*Werner*).
CHAUX SULFATEE. (*Hy*).
*from Eisleben.*

(Transparent.)

No. 2. ROCK-CRYSTAL. (*Jameson.*).
BERGKRYSTALL.
QUARZ-HYALIN. (*Haüy*).
*from St. Gotthardt.*

(Translucent.)

No. 3. COMMON QUARTZ.
GEMEINER QUARZ.
*from Freiberg, Saxony.*

(Translucent.)

No. 4. CALCITE. (*Dana*); CALCAREOUS SPAR.
KALKSPATH.
CHAUX CARBONATEE.
*from Andreasberg in the Hartz.*

(Translucent.)

No. 5. ROSE QUARTZ.
ROSENQUARZ.
QUARZ ROSE.
*from Rabenstein in Bavaria.*

(Semi-translucent.)

No. 6. ALABASTER
GESSO. KORNIGER GYPS.
ALABATRE.
*from Castellina in Tuscany.*

(Semi-translucent.)

No. 7. SEMI OPAL.
HALBOPAL.
*from Libelthen, Hungary.*

**(Semi-transluscent.)**

No. 8. FLINT.
FUERSTEIN.
SILEX PYROMAQUE.
*from Reigen.*

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*Nos.* 9 *to* 24.

## REFRACTION.

*A ray of light proceeding from any object and passing from any one medium or transparent substance to another is more or less bent out of its original direction and this bending is called* refraction. *But when a ray of light passes through certain minerals it is separated into two parts, each part undergoing a different refraction and ultimately emerging by itself. An object seen through such a mineral is seen double, and the phenomena is called double refraction.*

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**(Refractive and polarising.)**

No. 9. DOUBLE REFRACTING SPAR.
DOPPELSPATH.
CHAUX CARBONATEE.
*from the Eastern Coast Islands.*

**(Refractive.)**

No. 10. ARRAGONITE.
ARRAGONIT. (*Hy.*)
*from Bilin in Böhemia.*

**(Refractive.)**

No. 11. ROCK CRYSTAL. (*Jameson*).
BERGKRYSTALL.
QUARZ-HYALIN. (*Haüy*).
*from St. Gotthardt.*

**(Refractive.)**

No. 12. NOBLE BERYL.
EDLER BERYLL. (*Werner*).
EMERAUDE. (*Jameson*).
*from Nertschink, Siberia.*

**(Refractive.)**

No. 13. PRISMATIC TOPAS.
TOPAS. (*Werner*).
ALUMINE FLUATEE SILICENSE.
*from Villa Rica in Brasil.*

**(Refractive.)**

No. 14. FLUOR-SPAR.
FLUSSSPATH.
CHAUX FLUATEE.
*fram Bear Ashton, Devonshire.*

**(Refractive.)**

No. 15. PRISMATIC FELSPAR.(*Jameson*).
ADULAR. (*Werner*).
FELDSPATHE. (*Haüy*).
*from St. Gotthardt.*

**(Refractive.)**

No. 16. DIOPSIDE.
DIOPSID.
*from Rothenkopf, Tyrol.*

**(Tarnished by passing in brown Iron ore.)**

No. 17. IRON GLANCE.
EISENGLANZ.
FER OLIGISTE.
*from Rio, Elba.*

**(Tarnished.)**

No. 18. IRON GLANCE.
EISENGLANZ.
FER OLIGISTE.
*from Rio, Elba.*

**(Tarnished.)**

No. 19. HEXAHEDRAL IRON-PYRITES. (*Jameson*).
SCHWEFELKIES. (*Werner*).
FER SULFURE. (*Haüy*).
*from Santa fe de Bogota.*

**(Tarnished.)**

No. 20. OCTAHEDRAL BISMUTH. (*James.*)
GEDIEGEN WISMUTH. (*Werner*).
BRISMUTH NATIF. (*Haüy*).
*from Schneeberg, Saxony.*

**(Tarnished.)**

No. 21. NATIVE ARSENIC.
GEDIEGEN ARSENIK. (*Werner*).
ARSENIC NATIF. (*Haüy*).
*from Andreasberg in the Harz.*

**(Tarnished.)**

No. 22. VARIEGATED COPPER.
BUNTKUPFERERZ. (*Werner*).
CUIVRE PYRITEUX HEPATHIQUE. (*Haüy*).
*from Lauterberg in the Harz,*

**(Tarnished.)**

No. 23. ALLOPHANE.
ALLOPHAN (STROMEIER).
*from Saalfeld, Thuringia.*

**(Tarnished,)**

No. 24. FOLIATED COAL.
BLATTERKOHLE.
HOUILLE FEULLETE.
*from Waldenburg Selesia.*

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*Nos.* 25 *to* 30.

## PHOSPHORESCENCE.

*The property of remitting light, either by friction or when gently heated, is called* phosphorescence *and is possessed by several minerals.*

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**(Evolving light by friction.)**

No. 25. COMMON QUARTZ.
GEMEINER QUARZ.
*from Freiberg, Saxony.*

**(Phosphorescent by friction.)**

No. 26. SULPHURET OF ZINC.
BLENDE.
ZINC SULFURE.
*from Kaprik, Hungary.*

**(Phosphorescent by friction.)**

No. 27. AMPHIBOLE FIBREUX.
TREMOLITH. (*Werner*).
*from St. Gothard.*

**(Phosphorescent by means of heat.)**

No. 28. FLUOR SPAR.
FLUSSSPATH.
CHAUX FLUATEE.
*from Tavistock, Devonshire.*

**(Phosphorescent by means of heat.)**

No. 29. PHOSPHATE OF LIME.
PHOSPHORIT. (*Werner*).
CHAUX PHOSPHATE.
*from Logrosan in Estremadura.*

**(Phosphorescent by means of heat.**

No. 30. PREDAZZIT. (*Petzhold*).
*from Predazzo in the Tyrol.*

**INSTRUMENTS.**

**A delicate Electroscope.**
**A delicate Magnetoscope.**
**Senarmonts apparatus and crystals to illustrate the thermotic characters of minerals.**

# MINERALS

TO ILLUSTRATE

## TASTE AND ODOUR.

*Nos.* 1 *to* 7.

### TASTE.

**(Alkaline taste.)**

No. 1. CARBONATE OF SODA.
*from Chile.*

No. 2. OCTAHEDRALSALT-AMMONIAC. *(Jam.)*
SALMIAK. *(Werner).*
AMMONIAQUE MURIATEE. *(Haüy).*
*from Vesuvius (Eruptn of* 1834.)

**(Saline taste.)**

No. 3. ROCK-SALT.
STEINSALZ. *(Werner).*
SOUDE MURIATE.
*from Hall in Würtenberge.*

**(Cooling.)**

No. 4. NATRON. SALTPETRE.
SOUDE NITRATEE. *(Haüy).*
*from Chile.*

**(Sweetish astringent.)**

No. 5. ALUNOGENE. *(Beudant).*
KERAMOHALIT. *(Glocker).*
*from Schemnitz.*

**(Metallic astringent.)**

No. 6. RHOMBOIDAL VITRIOL. *(Jam).*
FER SULFATE. *(Haüy).*
EISENVITRIOL. *(Werner).*
*from Rammelsberg near Goslar in the Hartz.*

**(Bitter saline taste.)**

No. 7. EPSOM SALT.
*from Idria.*

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*Nos.* 8 *to* 20.

### ODOUR.

**(Bituminous odour.)**

No. 8. ASPHALT.
BITUME SOLIDE.
*from Limmer near Hanover.*

**(Sulphureous odour.)**

No. 9. PRISMATIC SULPHUR.
SCHWEFELD, NATURLICHER.
SOUFRE.
*from Wenzen, Hanover.*

**(Argillaceous odour.)**

No. 10. CLAY.
*from Lenz near Bonn on the Rhine*

**(Argillaceous odour.)**

No. 11. TRACHYTE.
*from Berkum near Bonn.*

**(Argillaceous odour.)**

No. 12. MICA.
GLIMMER. (*Werner*). ZWEI-AXIGER.
*from Zinnwald in Böhemia.*

**(Bitter Argillaceous odour.)**

No. 13. PIKROSMINE.
PIKROSMIN. (*Heidinger*).
*from Zöblitz in Saxony.*

**Fetid bituminous (by friction.)**

No. 14. ANTHRACONITE.
*from Andarum, Schönen.*

**Fetid bituminous (by friction.)**

No. 15. ANTHRACONITE. (*Lucullan*).
*from Sundaland.*

**Fetid bituminous (by friction.)**

No. 16. HEPATIT. (Sulphate of Barytes.)
*from Andrarum, (Schonen.)*

**Sulphureous odour (by friction.)**

No. 17. PYRITES.
SCHWEFELKIES.
FER SULFURE. (*Haüy*).
*from Marienberg near Bonn.*

**Alliaceous odour (by friction.)**

No. 18. PRISMATIC ARSENICAL PY-RITES. (*Jameson*).
ARSENIKKIES. (*Werner*).
FER ARSENICAL. (*Haüy*).
*from Freiberg.*

**(Aromatic odour.)**

No. 19. OZOKERITE.
ERDWACHS.
OZOKERIT. (*Glocker*).

**(Horseradish odour.)**

No. 20. SELENIURET OF LEAD.
SELENBLEI. CLAUSTHALIT. (*Haid*).
SELENIURE DE PLOMB.
*from Tilkerode in the Harz.*

# MINERALS

TO ILLUSTRATE

## ELECTRICITY AND MAGNETISM.

*No.* 1 *to* 28 *becoming + electr. by friction.* *No.* 33 *to* 38 *electr. by heat.*
*No.* 29 *to* 32 *becoming — electr. by friction.* *No.* 39 *to* 50 *Magnetism.*

*Becoming + electr. by friction, viz.*
*No.* 1 *to* 28—*Becoming positive electric, by friction.*

No. 1. HEXAHEDRAL ROCK-SALT. (*Jam*).
STEINSALZ.
SOUDE MURIATEE. (*Haüy*).
*from Wieliczka.*

No. 2. GYPSUM.
GYPS.
CHAUX SULFATEE.
*from Montmartre, near Paris.*

No. 3. ANHYDRITE. (*Jameson*).
ANHYDRIT DICHTER. (*Werner*).
CHAUX SULFATEE ANHYDRE. (*Haüy*).
*from Sulz a Neckar.*

No. 4. FLUOR-SPAR.
FLUSSSPATH.
CHAUX FLUATEE.
*from Derbyshire.*

No. 5. ARRAGONITE.
ARRAGONIT. (*Haüy*).
*from Bilin in Bohemia.*

No. 6. CARBONATE OF LIME. (*Phill.*).
KALSPATH-CALCIT. (*Haid.*).
CHAUX CARBONATEE. (*Haüy*).
*from Auerbach-Saxony.*

No. 7. MIEMITE.
*from Tuscany.*

No. 8. CARBONATE OF STRONTIAN.
STRONTIANIT.
STRONTIANE CARBONATEE.
*from Hamm in Westphalia.*

No. 9. CARBONATE OF BARYTES.
WITHERIT (*Werner*).
BARYTE CARBONATEE. (*Haüy*).
*from Alston in Cumberland.*

No. 10. HEAVY SPAR ; BARYTES.
SCHWERSPATH ; BARYTE.
BARYTE SULFATEE,
*from Freiberg in Saxony.*

No. 11. CELESTINE.
COELESTIN. (*Werner*).
STRONTIANE SULFATEE.
*from Strontian.*

No. 12. CARBONATE OF LEAD.
WEISSBLEIERZ.
PLOMB CARBONATE.
*from the Grabe Kurfürst Ernst of Boenkhausen near Arensberg.*

No. 13. CALAMINE.
GALMEI. ZINKSPATH.
ZINC CARBONATE (*Haüy*).
*from Dagdnadzka, Banat.*

No. 14. MICA.
ZWEIAXIGER GLIMMER.
MUSCOVITE. (*Dana*).
*from Miask in the Ural.*

No. 15. PRISMATIC KYANITE. (*Jameson*).
ZYANIT. (*Werner*). KYANIT (*Breith.*).
DISTHENE. (*Haüy*).
*from Greiner in the Tyrol.*

No. 16. STILBITE. (*Dana*).
DESMIN,(*Breithaupt*); STRAHLZEOLITH.
STILBIT. (*Haüy*) PARTIM.
*from Faröe.*

No. 17. AXIFRANGIBLE ZEOLITE. (*Jameson*).
ICHTHIOPTHALM (*Werner*).
APOPHILLITE. (*Haüy*).
*from the Seisser-Alp in the Tyrol.*

No. 18. HEXAHEDRAL ZEOLITE. (*Jameson*).
ANALZIM. (*Werner*).
ANALCIME. (*Haüy*).
*from the Seisser-Alp in the Tyrol.*

No. 19. ELÆOLITH.
PIERRE GRASSE.
*from Brenig in Norway.*

No. 20. PRISMATIC FELSPAR, (*Jameson*).
ADULAR. (*Werner*).
FELDSPATHE. (*Haüy*).
*from St. Gotthardt.*

No. 21. BASALTIC HORNBLENDE.
BASALTISCHE HORNBLENDE (*Werner*).
AMPHIBOLE BASALTIQUE.
*from Schima in Böhemia.*

No. 22. AUGITE. (*Jameson*).
GEMEINER AUGIT. (*Werner*).
PYROXENE (*Haüy*).
*from Schima in Böhemia.*

No. 23. EPIDOTE (*Haüy.*).
PISTACIT. THALLIT. (*Hausm.*).
*from Arendal in Norway.*

No. 24. Blue Spinell.
Blauer Spinell.
Spinelle blue.
*from Aoker in Sweden.*

No. 25. Iolite.
Cardierite.
Dichroit. Steinheilit, Peliom.
*from Orijarfvi Einnland.*

No. 26. Rock crystal.
Bergkristall.
Quarz hyalin.
*from Jarischau in Silesia.*

No. 27. Egerane. (var: from Vesuvius.)
Egeran (*Werner*).
*from Haslan near Eger in Böhemia.*

No. 28. Precious garnet; Iron-garnet (*Dana*).
Edler Granat.
Alamandine (*Beudant*).
*from Greenland.*

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## MINERALS NEGATIVE ELECTRIC BY FRICTION.

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**(Negative electric by friction.)**

No. 29. Prismatic Sulphur.
Schwefeld, naturlicher.
Soufre. (*Haüy*).
*from Girgenti in Sicily.*

**(Negative electric by friction.)**

No. 30. Schlaggy Mineral Pitch. (*Jameson*).
Schlackiges Erdpech. (*Werner*).
Bitume Solide. (*Haüy*).
*from Asphalte lake.*

**(Negative electric by friction.)**

No. 31. Yellow Mineral-Resin (*Jameson*).
Bernstein. (*Werner*).
Succin. (*Haüy*).
*from the shores of the Indian Ocean.*

**(Negative electric by friction.)**

No. 32. Honeystone. (*Jameson*).
Honigstein. (*Werner*).
Mellite. (*Haüy*).
*from Artern in Thüringia.*

**(Positive electric by compression.)**

No. 33. Double refracting spar.
Doppelspath.
Chaux carbonate.
*from the Island of the Eastern Coast*

**(Polar electric by heat.)**

No. 34. Rhomboidal Tourmaline. (*Werner*).
Schorl, Turmalin. (*Werner*).
Tourmaline. (*Haüy*).
*from Elba.*

**(Polar electric by heat.)**

No. 35. TOURMALINE.
EDLER TURMALIN.
TURMALINE.
*from St. Pietro and Elba.*

**(Polar electric by heat.)**

No. 36. BORATE OF MAGNESIA.
BORACIT.
MAGNESIE BORATEE. (*Haüy*).
*from Kalkberg near Lüneburg.*

**(Polar electric by heat.)**

No. 37. PRISMATIC TOPAS.
TOPAS. (*Werner*).
ALUMINE FLUATEE SILICEUSE.
*from Villa Rica in Brasil.*

**(Polar electric by heat.)**

No. 38. ELECTRIC CALAMINE. (*Dana*).
KIESELGALMEI. (*V. Kob*); ZINKGLAS. (*Hausm*).
ZINC SILICATE. *Dufrénoy*).
*from Altenberg near Aachen.*

**(Magnetic minerals.)**

No. 39. NATIVE LOADSTONE.
ATTRACTORISCHES MAGNETEISEN.
FER OXYDULE. (*Haüy*).
*from Monte Calamita, Elba.*

**(Attracts.)**

No. 40. MAGNETIC IRON ORE.
MAGNETEISEN; MAGNETIT. (*Haid.*)
FER OXYDULE. (*Haüy*); AIMANT. (*Beud*).
*from Arendal in Norway.*

**(Attracts.)**

No. 41. MAGNETIC IRON ORE.
MAGNETEISEN (*Werner*); MAGNETIT. (*Haid.*)
FER OXYDULE. (*Haüy*); AIMANT. (*Beud.*).
*from Phillippstadt in Sweden.*

**(Attracts.)**

No. 42. RHOMBOIDAL IRON-ORE. (*Jameson*).
MAGNETEISENSTEIN. (*Werner*).
FER OLIGISTE. (*Haüy*).
*from Breitenbrun in Saxony.*

**(Attracts.)**

No. 43. MAGNETIC IRON.
MAGNETEISEN. (*Werner*).
FER OXYDULE.
*from Greinec in the Tyrol.*

No. 44. CHROMIC IRON. (*Dana*).
CHROMEISENSTEIN; CHROMIT. (*Haid*).
SIDEROCHROME. (*Beudant*).
*from Grachan, Silesia.*

No. 45. TITANIFEROUS IRON, in Basalt.
TITANEISEN in Basalt.
TITANATE DE FER in Basalt.
*from Unkel on the Rhine.*

No. 46. TITANIFEROUS IRON.
TITANEISENERZ.
FER TITANE.
*from Egersund, Norway.*

No. 47. ISERINE.
*from Riesengeberge.*

No. 48. FRANKLINITE.
*from Sparta in New-Jersey.*

No. 49. MAGNETIC PYRITES, (*Jameson.*)
MAGNETKIES.
FER SULFURE.
*from Bodenmais in Bavaria.*

No. 50. IRON GLANCE.
EISENGLANZ.
FER OLIGISTE.
*from Rio, Elba.*

# B. CHEMICAL CHARACTERS OF MINERALS.

# MINERALS

TO ILLUSTRATE

## KOBELL'S SCALE OF FUSIBILITY.

No. 1. PRISMATIC FELSPAR. (*Jameson*).
ADULAR. (*Werner*).
FELDSPATHE. (*Haüy*).
*from St. Gothardt, Switzerland.*

No. 2. GRAY ANTIMONY ORE.
ANTIMONGLANZ.
ANTIMOINE SULFURE
*from the Caspari Zeche near Arensberg.*

No. 3. HEMIPRISMATIC SCHILLER-SPAR. (*Jam.*)
BLATTRIGER ANTHOPHILIT. (*Werner*).
DIALLAGE METALLOIDE. BRONZIT. (*Haüy*).
*from Kupferberg in Bavaria.*

No. 4. PRECIOUS GARNET; IRON-GARNET. (*Dana*).
EDLER GRANAT.
ALAMANDINE. (*Beudant*).
*from Greenland.*

No. 5. GLASSY ACTINOLITE.
GLASIGER STRAHLSTEIN.
AMPHIBOLE VITREUX.
*from Greiner in the Tyrol.*

No. 6. NEEDLE ZEOLITE.
MESOTYPSPATH. NATROLITH in Klingstein.
ZEOLITE EN AIGUILLES.
*from Aussig in Bohemia.*