

# GEMMOGRAPHICAL TABLES

FOR THE USE OF

Diamond & Gem Merchants, \*



Jewellers & Students.



Exhibiting in Tabulated Form. ● ●

● The distinguishing characteristics

OF

Rough and Cut Gems,

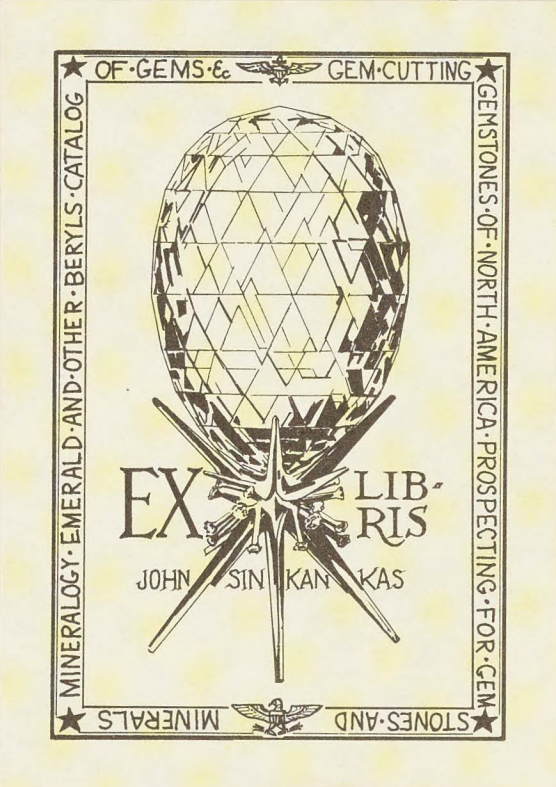
BY

W. J. Lewis Abbott, F.G.S.

cat 302

23157

Gordon Andrews  
July 11, 1967



John Sinikan Kas

RZ 918731

*Sam Barnett*

*1896*

# Gemmographical Tables,

GIVING THE

Chemical Composition, Optical and  
Physical Properties

OF THE

*John S. Kirkby*  
*7/67*

**GEMS.**

Tables of Specific Gravities, Hardness, Crystalline Forms, Cleavage, &c.

Illustrations and Descriptions of Crystalline Forms of Gems.

Names and Colors of Two Hundred Varieties.

Twin Colors of Gems as seen in the Dichroscope.

(Arranged in Tables to be removed and framed for constant reference when desired).

BY

**W. J. LEWIS ABBOTT, F.G.S., &c.**

Lecturer on Gemmology at the Polytechnic Institute, Regent Street, W.

London:

HEYWOOD & CO., Ltd., 150 HOLBORN, E.C.

*Price 1/6 Nett.*

10/28/47



TABLE I.

# NAMES AND

*Arranged by*

## TRANSPARENT.

NAME.	COLORS.	NAME.	COLORS.
Achroite ...	White.	Lederite ...	Browns, etc.
Alexandrite ...	Leaf or dark olive green by natural light, raspberry by artificial light.	Ligurite ...	Apple green.
Almandine ...	Brownish red, scarlet to purple.	Love's Arrows ...	Colorless, with variously colored filaments.
Amber ...	Yellow to hyacinth.	Marekanite ...	Browns, blues.
Amethyst ...	Purple.	Melanite ...	Black.
Anatase ...	Browns, blue-black.	Microlite ...	Yellows, browns, reds.
Andalusite ...	Dark greens to browns.	Muller's glass ...	Colorless.
Aquamarine ...	Colorless to sea greens and blues.	Natronspodumene ...	Colorless to pink.
Arendalite ...	Dark green.	Nephelite ...	Colorless, greens, browns.
Asparagus Stone ...	Asparagus yellow.	Nova Mina ...	Colorless.
Axinite ...	Puce clove and plum brown.	Obsidian ...	Dark green, browns, reds.
Balas-Ruby ...	Amethystine pink.	Oisanite ...	Yellowish green.
Beryl ...	Yellows, blues, browns.	Olivine ...	Greens.
Beryllonite ...	Colorless.	Ouvarowite ...	Emerald green.
Bobrowska Garnet ...	Brownish green.	Peridot ...	Pistachio green.
Brilliant ...	All colors.	Phenacite ...	White.
Cairngorm ...	Smoky yellows.	Pictite ...	Yellow, reddish green.
Cat's eye ...	Yellows, browns, greens, reds.	Pyrope ...	Dark red.
Chlorospinel ...	Grass green.	Quartz ...	Colorless, browns, yellows, etc.
Chrysoberyl ...	Yellows, greens, browns, blues.	Rose Quartz ...	Pink.
Chrysolite ...	Yellows.	Romanzovite ...	Brown.
Cinnamon-stone ...	Cinnamon color.	Rhodonite ...	Pink to greenish yellow.
Citrite ...	Citron color.	Ruby ...	Reds.
Cordierite ...	Lavender blue.	Rubicelle ...	Yellow, orange, red.
Cymophane ...	Silky yellows, etc.	Rubellite ...	Pink.
Cyprine ...	Sky blue.	Sagenite ...	Colorless, with colored lines.
Damburite ...	Yellow.	Spessarite ...	Hyacinth red to violet.
Delphinite ...	Yellowish green.	Sphene ...	Fiery yellows, browns, etc.
Diamond ...	Black, white, and every color.	Spinel ...	Violet, blues, greens, pinks, etc.
Diaspore ...	Colorless, yellows, browns.	Spodumene ...	Yellows.
Dichroite ...	Violet.	Staurolite ...	Reddish brown.
Dioptase ...	Emerald green.	Succinite ...	Amber.
Disthene ...	Blues and whites.	Titanite ...	Yellows, browns.
Emerald ...	Greens.	Thallite ...	Yellowish green.
Epidote ...	Bottle greens to brown.	Thulite ...	Rose red.
Escherite ...	Yellowish and greenish brown.	Topaz ...	Yellows, pinks, hyacinths, etc.
Essonite ...	Cinnamon color.	Topazolite ...	Yellow.
Euclase ...	Colorless, greens, blues.	Tourmaline ...	Dark blues, greens, pinks, etc.
False Topaz ...	Yellows.	Triphane ...	Light yellows.
Fleches d'amour ...	Colorless with colored lines.	Uwarowite ...	Green.
Garnet ...	Reds, purple, browns, yellows, greens	Vesuvianite ...	Hair brown, dark greens.
Greenovite ...	Rose red.	White Sapphire ...	White.
Grossularite ...	Yellowish green.	White Topaz ...	White.
Hiddenite ...	Emerald green.	Withamite ...	Reds, yellows.
Hyacinth ...	Hyacinth red.	Wiluite ...	Greens, etc.
Idocrase ...	Hair brown, dark greens.	Xanthite ...	Yellowish brown.
Indicolite ...	Indigo blue.	Yanolite ...	Violet.
Iolite ...	Lavender to dark blue.	Yellow Beryl ...	Brown.
Jacinth ...	Tawny cinnamon.	Yellow Sapphire ...	Yellow.
Jargoon ...	Whites, yellows, greens, etc.	Yttergarnet ...	Yellows, greens, browns, etc.
Kyanite (cyanite) ...	White to sapphire blue.	Zianite ...	Blue.
		Zircon ...	Almost all colors.

# COLORS OF GEMS.

W. J. LEWIS ABBOTT, F.G.S.

## NON-TRANSPARENT.

NAME.	COLORS.	NAME.	COLORS.
Adularia ...	Sheeny white.	Moonstone...	Chatoyant.
Agate ...	In bands of various hues.	Moss Agate ...	Slightly milky, with moss-like markings of various hues.
Agatised Wood ...	Browns, reds, etc.	Nephrite ...	Greens, whites.
Amber ...	All shades of yellow to hyacinth red.	Nicolo ...	Bluish.
Amazonite...	Green white spangles.	Obsidian ...	Greens, reds, white.
Aphrizite ...	Black.	Odontolite...	Sky blue.
Asteria ...	White, blues, browns, reds.	Oligoclase ...	Whites, etc.
Aventurine ...	Brown spangled.	Onyx ...	Black and white.
Beryl ...	Yellow brown.	Opal ...	Milky iridised.
Bronzite ...	Browns, dark blues, etc.	Opal Agate ...	Reds, browns, etc.
Bloodstone...	Green with red spots.	Orthoclase...	Pinks, whites, etc.
Breccia ...	Angular patches of various colors.	Pearls ...	Blacks, whites, and nearly every hue.
Cacholong ...	Bluish white.	Peristerite ...	Iridescent (like a pigeon's neck).
Callaite ...	Blue.	Pisolite ...	Rings of all colors.
Callanite ...	Blue.	Pistacite ...	Blues, browns, etc.
Carbuncle ...	Reds.	Plasma ...	Leek-green.
Cat's eye ...	Yellows, greens, browns.	Pleonast ...	Black.
Cylonite ...	Black.	Prase ...	Leek-green.
Chalcedony ...	Blues, whites.	Quartz ...	Colorless and variously colored.
Chalcedonyx ...	Layers of blues and whites.	Quartz Cat's-eye ...	Greys, yellows, browns with rays.
Chlorastrolite ...	Green with lighter green stars.	Quartz Conglomerate	White spotted.
Chlorophane ...	Iridescent under water.	Rhodonite ...	Pink.
Chrysophase ...	Apple green.	Rose Quartz ...	Pink.
Coral ...	White, pinks, black.	Rose Opal ...	Pink to brown.
Cornelian ...	Reds, whites, etc.	Ruby Cat's-eye ...	Pink with white line.
Crocidolite...	Blues, greens, yellows, reds.	Sapphire Cat's-eye	Blue-white ray.
Dendrites ...	Milky, with tree-like markings.	Saussurite ...	Green.
Egyptian Jasper ...	Mixed browns.	Sard ...	Reds and browns transmitting red.
Feldspars ...	Whites, yellows, pinks.	Sardonyx ...	Colored layers of Sard.
Fibrolite ...	Grey, browns, greens.	Semi-opal ...	Whites, yellows, reds.
Fire Opal ...	Iridised pinks.	Star-Garnet ...	Red, with white star.
Fossil Coral ...	Pinks, yellows, etc.	Star-Ruby ...	Light red, with white star.
Girasole ...	Bluish white with fiery reflections.	Star-Sapphire ...	Blue, with white star.
Häüynite ...	Blues, asparagus green.	Sunstone ...	Golden and brown iridised spangle
Heliotrope...	Green, spotted red.	Turquoise ...	Blue.
Hydrophane ...	Iridescent under water.	Ultramarine ...	Dark blue.
Hypersthine ...	Greenish brown.	Vaalite ...	Dark green.
Jade ...	Blue, green, white.	Verd Antique ...	Mixed light and dark green.
Jasper ...	Red, yellow, green, blue.	Williamsite ...	Greens.
Jet ...	Black.	Wood Opal ...	Reds, browns, etc.
Krokidolite ...	Violets to red.	Xenolite ...	Browns, gray, green.
Labradorite ...	Grey, with rainbow reflections.	Xylonite ...	Browns, yellows, etc.,
Lapis Lazuli ...	Blue, red, green.	Yellow Beryl ...	Yellow.
Lumachella ...	Grey, with fiery rainbow reflections.	Yellow Jasper ...	Yellow.
Lunaria ...	White sheen (moonstone).	Zoisite ...	Apple, also transparent green, etc.
Lydite ...	Black.	Zonochlorite ...	Banded yellows.
Malachite ...	Greens.		
Microcline...	Greens.		

Table II.

## Table of the Chemical Composition

ARRANGED BY

	Silica.	Alumina.	Glucina.	Lime.	Carbon.	Phosphoric Acid.	Zirconia.	Magnesia.	Iron Oxyds.	Water.	Titanum Oxyd.	Soda.	Potash.	Chromium Oxyd.	Fluorine.	Boron Trioxyd.	Lithia.	Copper Oxyd.	Manganese Oxyds.
Diamond ...	...	...	...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Corundum—																			
Ruby ...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sapphire ...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spinel ...	...	72	...	...	...	...	...	28	...	...	...	...	...	...	...	...	...	...	...
Chrysoberyl ...	...	76	18	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...
Rutile ...	...	...	...	...	...	...	...	...	1.53	...	98.4	...	...	...	...	...	...	...	...
Diaspore ...	...	83	...	...	...	...	...	...	3	14.8	...	...	...	...	...	...	...	...	...
Quartz Family ...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spodumene ...	64	29	...	...	...	...	...	...	4	...	...	...	...	...	...	...	6	...	...
Beryls—																			
Emerald ...	66.8	19.1	14.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Aquamarine ...	66.8	19.1	14.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Olivine ...	41	...	...	...	...	...	...	50	9	...	...	...	...	...	...	...	...	...	...
Phenacite ...	54.2	...	45.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Garnets—																			
Essonite ...	40	23	...	30	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...
Almandine ...	36	21	...	2	...	...	...	4	34	...	...	...	...	...	...	...	...	...	1
Uwarowite ...	37	6	...	33	...	...	...	...	...	...	...	...	...	23	...	...	...	...	...
Zircon ...	33	...	...	...	...	...	67	...	...	...	...	...	...	...	...	...	...	...	...
Idocrase ...	37.5	18.5	...	33.7	...	...	...	3	6.2	...	...	...	...	...	...	...	...	...	...
Epidote ...	38	22	...	23	...	...	...	...	25	2	...	...	...	...	...	...	...	...	...
Axinite ...	43	16	...	20	...	...	...	2	10	...	...	...	1	...	...	5	...	...	3
Iolite ...	49	32	...	...	...	...	...	9	7	...	...	...	...	...	...	...	...	...	...
Lapis Lazuli ...	46	14.5	...	17.5	...	...	...	...	3	2	...	...	...	...	...	...	...	S 4	C 10
Feldspars—																			
Labradorite ...	55.7	26.5	...	11	...	...	...	...	1.2	.5	...	4	...	...	...	...	...	...	...
Oligoclase ...	61.3	22.8	...	4.8	...	...	...	...	.3	...	...	8.5	1.3	...	...	...	...	...	...
Orthoclase ...	64	19.4	...	.4	...	...	...	.2	...	...	...	...	14.9	...	...	...	...	...	...
Tourmaline ...	38	34	...	.6	...	.1	...	11.2	1.4	...	...	2.5	.5	...	.2	9.4	...	...	...
Cyanite ...	36.4	63.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Topaz ...	34	58.4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Euclase ...	41	35	17	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...
Sphene ...	31	...	...	27	...	...	...	...	1	...	41	...	...	...	...	...	...	...	...
Diopase ...	36.6	...	...	...	...	...	...	...	1	12.3	...	...	...	...	...	...	...	44.9	...
Chlorastrolite ...	37	25.5	...	20	...	...	...	...	6.5	7.2	...	3.5	...	...	...	...	...	...	...
Turquoise ...	...	40.2	...	...	...	32.8	...	...	2	19	...	...	...	...	...	...	...	5.3	4
Callinite ...	...	30.8	...	...	...	42.4	...	...	...	24	...	...	...	...	...	...	...	...	...

In the above Table the composition of the species or type of a division is given without reference to Ruby, "Oriental Topaz," "Oriental Emerald," and "Oriental Amethyst," as the slight differences that have been the same whether it be the clear, Cat's Eye, or Alexandrite varieties. The Quartz family is given as being composed crystalline varieties, such as Amethysts, "Scotch Topazes," Cairngorms, Rock Crystal, &c.; as well as the Cryptosame, with the addition of a slight and varying quantity of water. In the optical qualities, M equals monochroic,

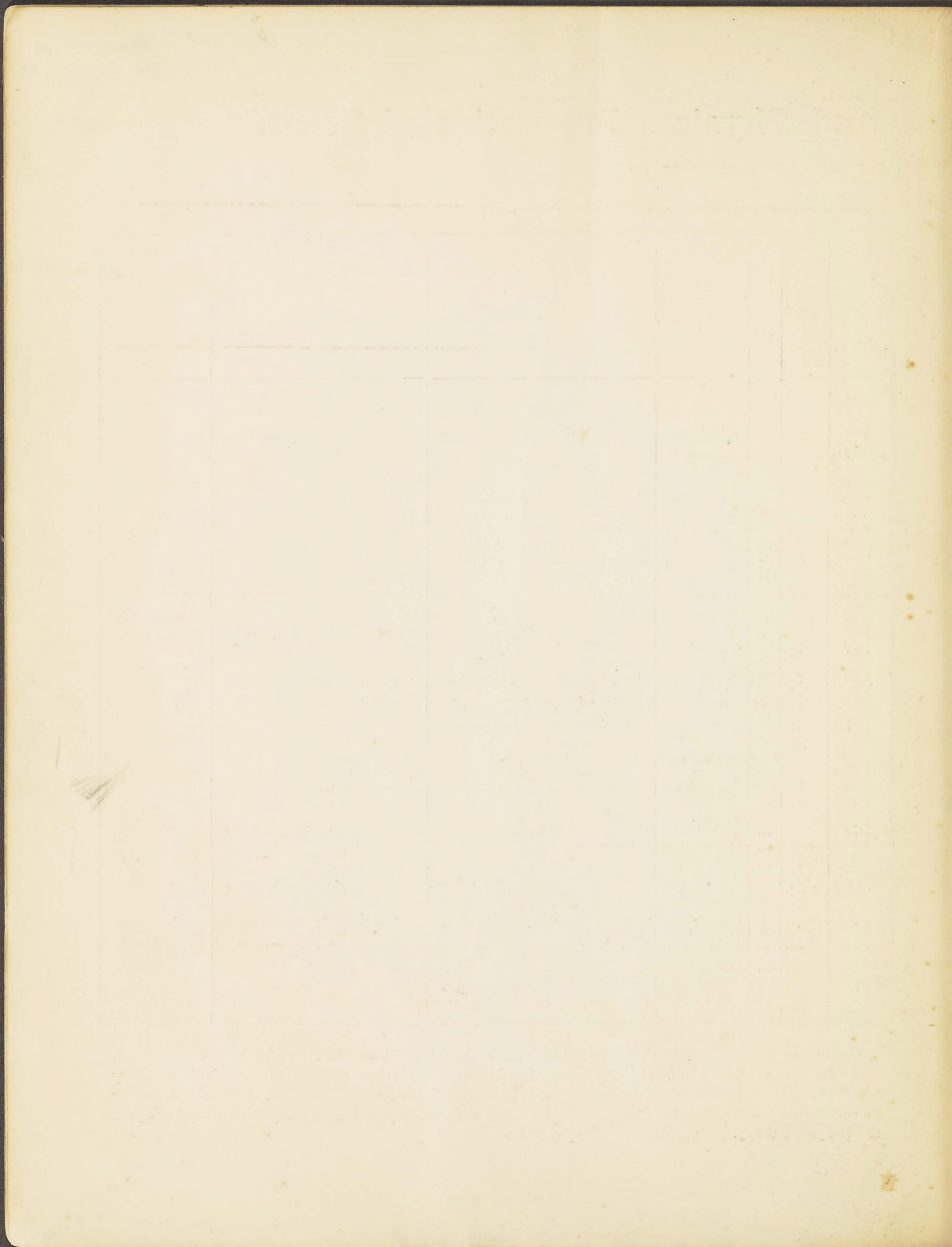
# and Physical Properties of Gems.

W. J. LEWIS ABBOTT, F.G.S

Specific Gravity.	Hardness.	Optical Qualities.	Crystalline System.	Common Forms.	Cleavage.	
3.52	10	M	Isometric	Octdra, fcttd. & plain, macles, twins	Octahedral, highly perfect	Diamond
3.94	8 $\frac{3}{4}$	D	Hexagonal	Six-sided & double pyramid prisms	Basal and rhombohedral	Corundum—
4.00	9	D	Hexagonal	do. do. do.	do. do.	Ruby
3.62	8	M	Isometric	Octahedra, tetrahedra, and macles	Octahedral, highly perfect	Sapphire
...	8 $\frac{1}{2}$	D	Trimetric	Flat prisms and macles	Prismatic, fair	Spinel
4.2	6	D	Dimetric	Octahedra, prisms and twins	do.	Chrysoberyl
3.39	7	D	Trimetric	Alcicular, oval in outline	Brachy-pinacoidal, perfect	Rutile
2.66	7	D	Hexagonal	Six-sided double pyds. and prisms	Highly imperfect	Diaspore
3.2	7	D	Monoclinic	Flat prisms with pyramids	Prismatic, highly perfect, & pydl.	Quartz Family
2.71	7 $\frac{3}{4}$	D	Hexagonal	Six and twelve-sided prisms	Extremely rare	Spodumene
2.70	8	D	Hexagonal	do. do.	do.	Beryls—
3.37	6 $\frac{1}{4}$	D	Trimetric	Short prisms with pyramids	Prismatic	Emerald
2.97	7 $\frac{1}{2}$	D	Hexagonal	Prisms and Rhombohedral	Rhombohedral	Aquamarine
3.66	7	M	Isometric	Rhombic&pentagonal dodecahedra	Rhombic dodecahedral	Olivine
4.27	7 $\frac{1}{4}$	M	Isometric	do. do. do.	do. do.	Phenacite
3.5	7 $\frac{1}{2}$	M	Isometric	do. do. do.	do. do.	Garnets—
4 to 4.8	7 $\frac{1}{2}$	D	Dimetric	Square prisms with low pyramids	Indistinct.	Essonite
3.4	6 $\frac{1}{2}$	D	Dimetric	do. do. do. do. do. & bsl. plns.	do.	Almandine
3.2—5	6 $\frac{1}{2}$	D	Monoclinic	Long, faceted flat prisms	Prismatic, perfect	Uwarowite
3.29	7	D	Triclinic	“Axe shape”	Prismatic fair	Zircon
2.63	7 $\frac{1}{4}$	D	Trimetric	Short prisms	Imperfect	Idocrase
2.4	5	...	Isometric	Massive	Dodecahedral, imperfect	Epidote
2.70	6	...	Triclinic	do.	Basal, perfect ; prismatic, less so	Axinite
2.6	6—7	...	Triclinic	do.	do. do.	Iolite
2.5	6 $\frac{1}{2}$	...	Monoclinic	do.	do. do.	Lapis Lazuli
3.15	7 $\frac{1}{2}$	D	Hexagonal	Facetted prisms with low pyramids	Rhombohedral, perfect	Feldspars—
3.5—7	5—7	D	Triclinic	Rhombic prisms	Basal, highly perfect	Labradorite
3.5	8	D	Trimetric	Long, flat prisms	Prismatic	Oligoclase
3.1	7 $\frac{1}{2}$	D	Monoclinic	do. do. with pyds.	Do. highly perfect ; basal imprfct.	Orthoclase
3.5	5 $\frac{1}{2}$	D	Monoclinic	Wedge-shape and twins	Prismatic	Tourmaline
3.35	5	D	Hexagonal	Six-sided prisms with three-sided pyds	Rhombohedral, perfect	Cyanite
3.2	6	...	Stellate	Rolled pebbles	None	Topaz
2.75	6	...	Amorphous	Pebbles, veins and incrustings	do.	Euclase
2.5	4	...	...	do. do. do.	do.	Sphene
						Dioptase
						Chloralastralite
						Turquoise
						Callinite

the numerous varieties of them that occur. Thus, the composition of Corundum will also be that of Sapphire, found are too insignificant and uncertain to mention. So with Chrysoberyl : the composition of the species is practically wholly of Silicia, as the amount of colouring matter in any variety is too small for tabulation. It includes all clear or crystalline, such as Cornelians, Sards, Onyxes, Chrysoprase, Bloodstone, Jaspers, &c., the composition of Opal being the and D equals dichroic.





# FORMS OF GEMS.

W. J. LEWIS ABBOTT, F.G.S. —

Hexagonal System.

## RUBY & SAPPHIRE.

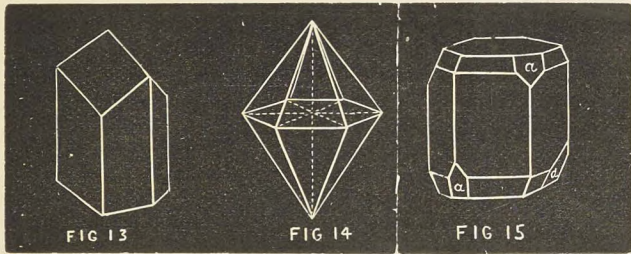


FIG 13  
Hexagonal prism and rhombohedron.

FIG 14  
Double hexagonal pyramid.

FIG 15  
Hexagonal prism, pyramids, and basal pl.

Hexagonal System.

## EMERALD.

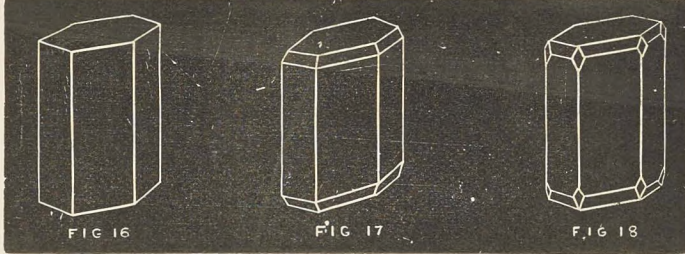


FIG 16  
Hexagonal prism and basal pl.

FIG 17  
Hexagonal prism, do. pyd., and basal pl.

FIG 18  
Hexagonal prism, pro. and d. pyd., and basal pl.

Viewed Obliquely.

Hexagonal System.

## QUARTZ, AMETHYST.

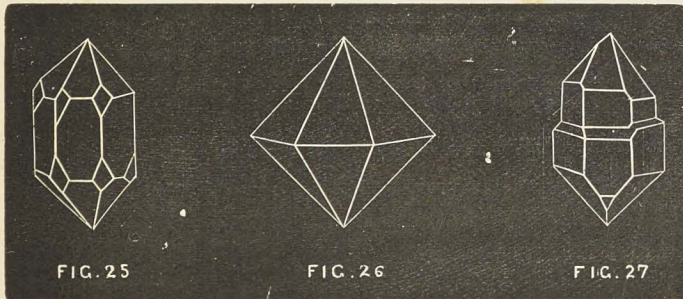


FIG 25  
Prism d pyramids.

FIG 26  
Double pyramid.

FIG 27  
Parallel or step form.

Hexagonal System.

## PHENACITE.

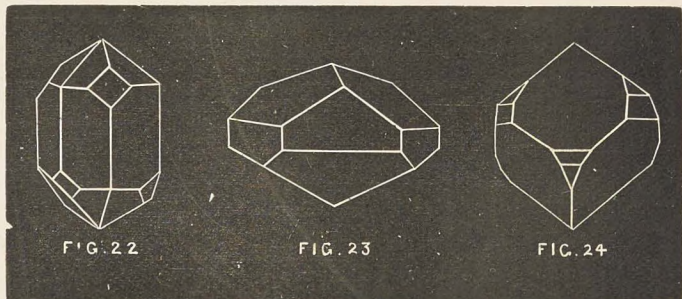


FIG 22  
Prism with pyramids and hemimorphic ditto.

FIG 23  
Prism with alternate rhombohedra.

FIG 24  
Truncated rhombohedron.

Hexagonal System.

## TOURMALINE.

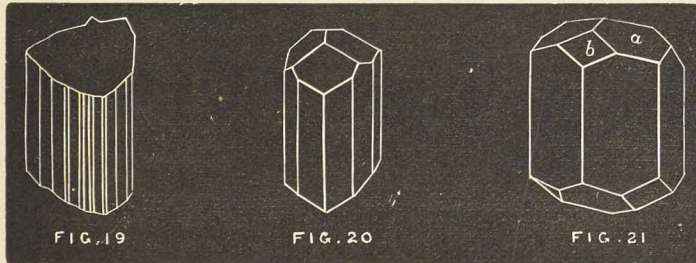


FIG 19  
Striated distorted prism.

FIG 20  
Prism with rhombohedral termination.

FIG 21  
Prism with double rhombohedral terminations.

Monoclinic System.

## EPIDOTE.

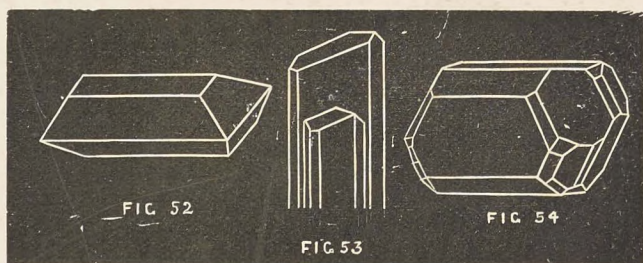


FIG 52  
Horizontal prism.

FIG 53  
Usual chisel edge shape.

FIG 54  
Complex horizontal prism.

Triclinic System.

## AXINITE.

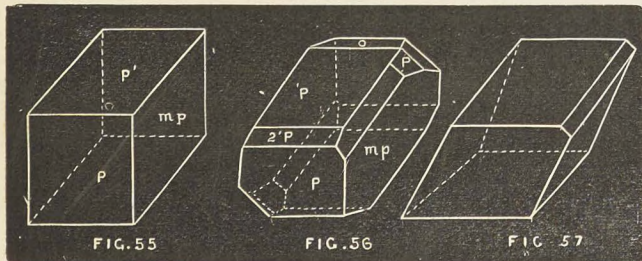


FIG 55  
Macropinacoid prism and pyramid.

FIG 56  
Mac. pin. prism pyd. and basal pl.

FIG 57  
Usual axe-like form.

Triclinic System.

## CYANITE.

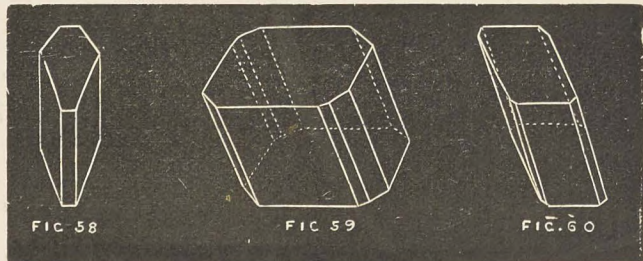


FIG 58

FIG 59

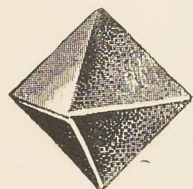
FIG 60

Various doubly oblique prisms.

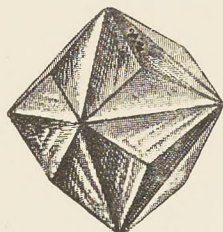
Table IV.

# THE CRYSTALLINE FORMS OF DIAMONDS.

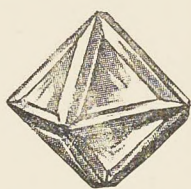
Collected and Arranged by W. J. LEWIS ABBOTT, F.G.S.



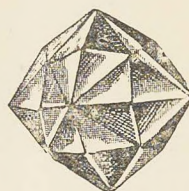
Simple octahedron.



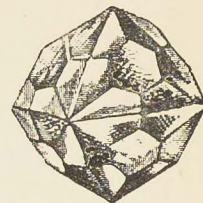
Three-faced octahedron.



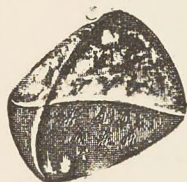
Three-faced octahedron combined with octahedron.



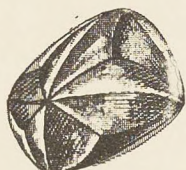
Six-faced octahedron.



Six-faced octahedron, combined with octahedron.



Curved three-faced octahedron with triangular depressions.



Curved three-faced octahedron.



Curved six-faced octahedron.



Curved rhombic dodecahedron.



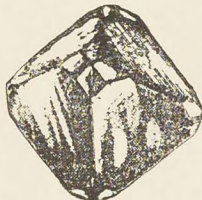
Water-worn diamond, perfectly oval.



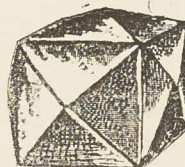
Octahedron combined with the cube.



Octahedron combined with the dodecahedron.



Octahedron combined with the four-faced cube.



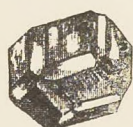
Four-faced cube.



Octahedron combined with cube and rhombic dodecahedron.



Rhombic-dodecahedron.



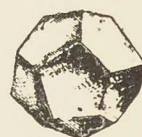
Rhombic-dodecahedron combined with deltahedron.



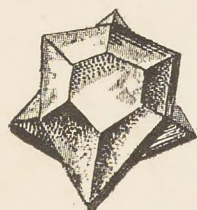
The same with the former faces less developed.



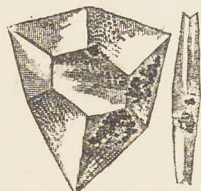
The deltahedron.



The pentagonal dodecahedron.



Double macle, showing faces of the octahedron and six-faced do.



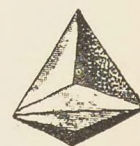
Single macle, showing same faces.



Octahedral macle.



Tetrahedron.



Three-faced tetrahedron.

**Table V.**

# The Twin Colors of Gems, as seen in the Dichroscope.

Arranged by W. J. LEWIS ABBOTT, F.G.S.

NOMINAL COLOR.	TWIN COLORS.	NOMINAL COLOR.	TWIN COLORS.
<b>RUBES—</b>		<b>SAPPHIRES—Continued.</b>	
"Fine," slightly amethystine	{ Deep violet lake. Rosy salmon pink.	Purple ... ..	{ Red purple. Violet blue.
"Fine," slightly violet ...	{ Amethystine purple. Rose pink.	Yellowish green .. ..	{ Yellowish green. Bluish green.
"Fine," pigeon's blood... ..	{ Aurora red. Carmine red.	<b>CHRYSOBERYLS—</b>	{ Golden brown. Greenish yellow.
"Fine," rather dark ... ..	{ Magenta lake. Light madder, scarlet lake	Yellow ... ..	{ Sherry brown. Greenish yellow.
Good pale magenta ... ..	{ Deeper magenta. Glossy flesh pink.	Greenish... ..	{ Raspberry red. Sage green.
Fair, slightly violet, turbid ...	{ Violet purple. Tawny sherry.	Alexandrite by night ... ..	{ Deeper yellow. Greenish straw.
Dark, rose pink ... ..	{ Mauvish pink. Brownish straw.	<b>SPODUMENE—</b>	{ Light yellow ... ..
Pink, slightly dirty ... ..	{ Salmon pink. Straw yellow.	<b>EMERALD—</b>	{ Fine green ... ..
Pale pink, slightly violet ...	{ Purple. Light flesh pink.	Aquamarine ... ..	{ Bluish green. Yellowish green.
Light violet red ... ..	{ Amethystine purple. Glossy rose pink.	<b>CHRYSOLEITE—</b>	{ Lemon yellow ... ..
Amethystine rose pink... ..	{ Amethystine. Purple.	Lemon yellow ... ..	{ Chrome yellow. Green lemon.
Mauvish red ... ..	{ Brilliant purple. Tawny sherry.	Sage green, dirty ... ..	{ Sea green. Yellowish green.
Siam ... ..	{ Red violet. Violet red.	Peridot ... ..	{ Brown yellow. Pea green.
Violet shaded pink ... ..	{ Darker than specimen. Lighter than specimen.	<b>ZIRCON—</b>	{ Green ... ..
<b>SAPPHIRES—</b>		Green ... ..	{ Yellowish green. Emerald green.
Blue, fine along optic axis ...	{ Dark blue. Dark blue.	Brown ... ..	{ Pistachio green. Brownish straw.
Blue, fine across optic axis ...	{ Dark blue. Greenish grey.	<b>IOLITE—</b>	{ Lavender ... ..
Blue, ideal ... ..	{ Ultramarine. Greenish straw.	<b>TOURMALINE—</b>	{ Red ... ..
Bluish green, Australian ...	{ Dark blue. Emerald green.	Red ... ..	{ Dark pink. Salmon.
Do. do. do. lighter	{ Blue. Light green.	Blue... ..	{ Indigo. Gray.
Do. do. do. still lighter	{ Light blue. Yellow.	Dark green ... ..	{ Peacock blue. Straw.
Blue, slightly amethystine ...	{ Amethystine blue. Light greenish yellow.	Green ... ..	{ Blue green. Pistachio.
Fair blue... ..	{ Dark blue. Greenish slate.	Dark yellow ... ..	{ Light golden brown. Yellow.
Medium blue ... ..	{ Darker blue. Glossy slate.	<b>TOPAZ—</b>	{ Yellow ... ..
Lightish blue... ..	{ Darkish bright blue. Steel grey.	Yellow ... ..	{ Orange yellow. Lemon yellow.
Light blue, bright ... ..	{ Darkish blue. Glossy pale slate.	Brownish ... ..	{ Yellowish green. Puce.
Amethystine blue ... ..	{ Purple. Violet blue.	Pink ... ..	{ Rose pink. Yellow.
		Sherry pink ... ..	{ Golden yellow Rose pink.
		Sauce d'or ... ..	{ Violet pink. Marcasite yellow.

## THE USE OF THE DICHSROSCOPE.

**DICHSROIC GEMS:**—In using the Dichroscope first focus up the instrument. The specimen must not be viewed along an optic axis, as in this direction all gems are **monochroic**, and both squares of the instrument will appear of the same hue, as pointed out in the case of the fine blue Sapphire. In any other direction a Dichroic Gem will give **different colors** in the two squares. Daylight is best, but an opal covered light will answer, allowance being made for the Phenomenon of **Noctichroism**. The hues of the squares alternate four times in each revolution.

**MONOCHROIC GEMS:**—A Monochroic Gem, such as a Spinel, will always give two squares of the **same hue**, in **whatever direction it is viewed**. It also presents a far lighter and clearer field, and usually shows **decomposition** in one of the squares.

