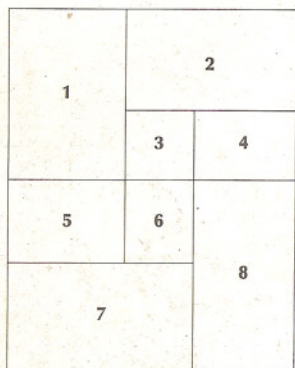


GEMS IN COLOR

PLATE I Mineral Carvings



1 JADE (jadeite)

2 SODALITE
Sculptured bird.

3 BLUE SAPPHIRE
The Lincoln head is 6 cm high and weighs 1318 carats. Sculptor, Norman Maness. The Kazanjian Foundation, Beverly Hills, California.

4 CHALCEDONY
Chinese carving.

5 JADE (nephrite)

6 AGATE
Chinese snuff bottle.

7 CHALCEDONY
Carved bowls.

8 CORAL

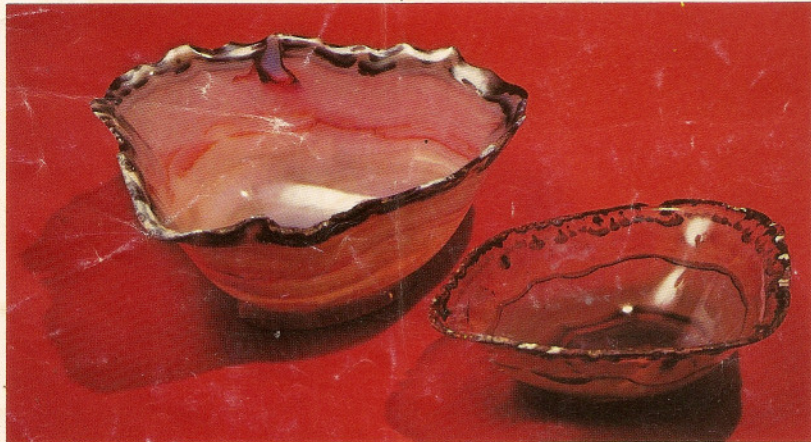
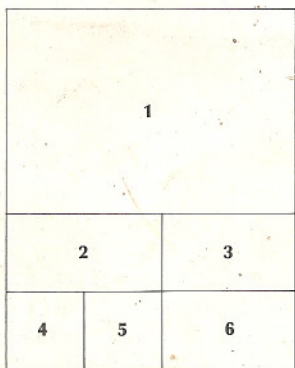


PLATE II Diamond, Ruby, Sapphire, and Zircon



1 DIAMOND

Diamond sizes range from 4 carats (*center*) to 0.05 carat.

2 DIAMOND

A diamond in a kimberlite matrix, South Africa.

3 RUBY

A ruby in a marble matrix, Burma.

4 STAR RUBY

Rossen Reeves star ruby, 168 carats.

5 SAPPHIRE

Star of Asia sapphire, 330 carats.

6 ZIRCON

Photograph 1 is of the DeBeers Colored Diamond Collection, courtesy of N. W. Ayer ABH International.

Photographs 2, 4, 5, and 6 courtesy of the Smithsonian Institution, Washington, D.C.

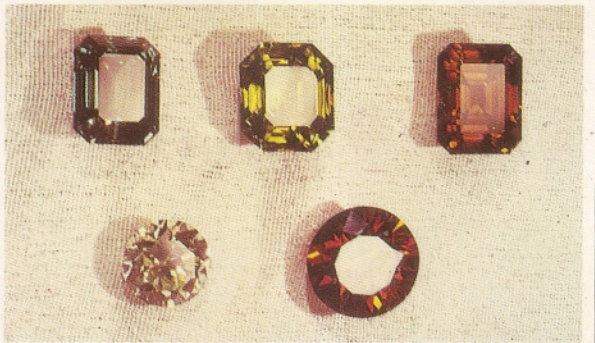
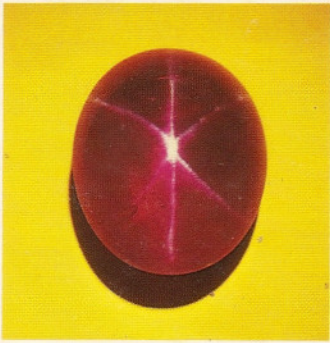
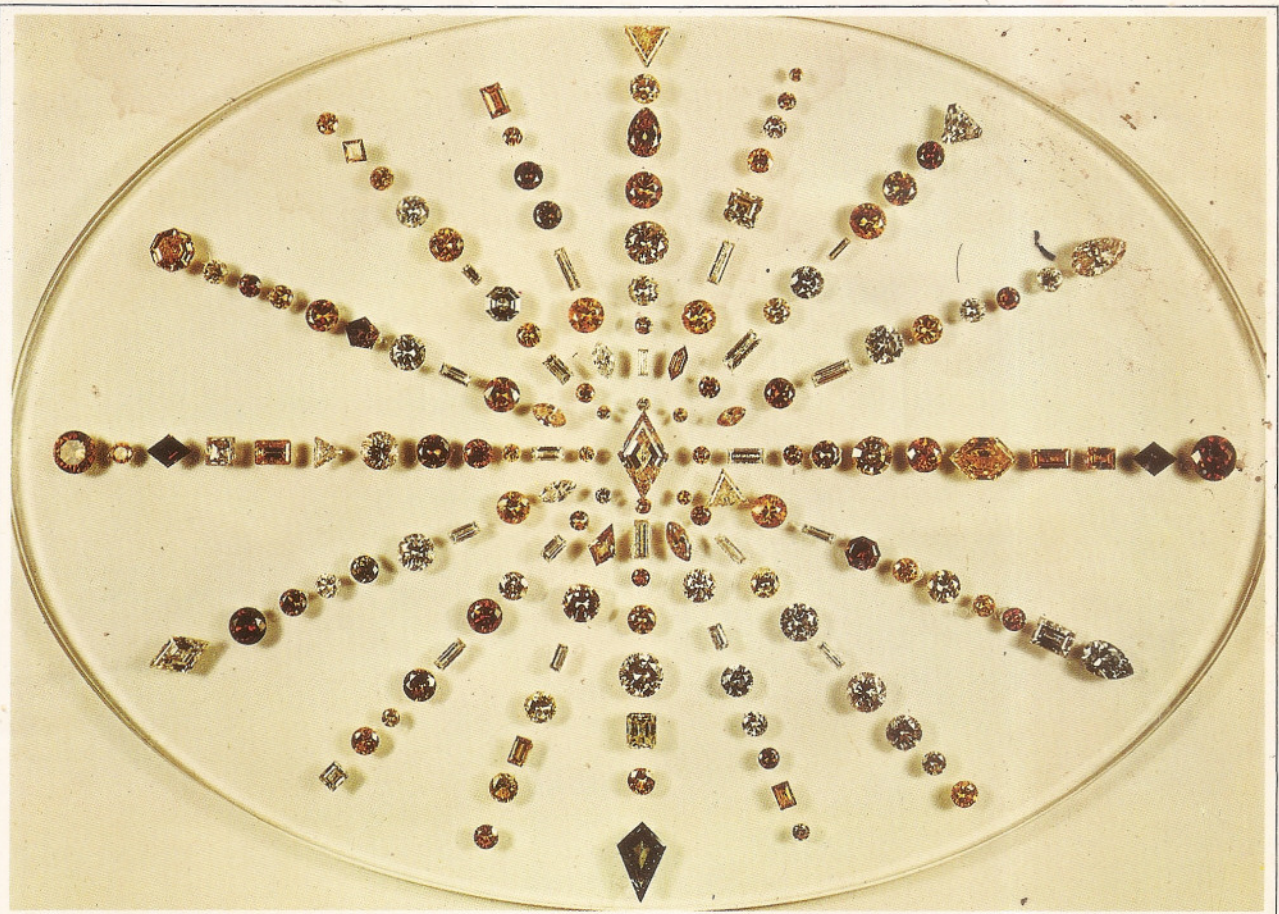


PLATE III Inclusions in Gemstones

1	2	3
4	5	6
7	8	9
10	11	12

- 1 RUBY**
Flux inclusions in synthetic ruby.
- 2 RUBY**
Bubbles in synthetic ruby.
- 3 RUBY**
Hexagonal crystal inclusions in Chatham synthetic ruby.
- 4 DIAMOND**
Pyrope garnet in diamond.
- 5 DIAMOND**
Chrome diopside in diamond.
- 6 DIAMOND**
Grossular garnet in diamond.
- 7 CORUNDUM**
Fingerprint inclusions in natural corundum.
- 8 CORUNDUM**
Color zoning in natural corundum.
- 9 SAPPHIRE**
Curved striae in synthetic alexandrite-like sapphire.
- 10 GLASS**
Elongated bubble in glass.
- 11 GLASS**
Swirl lines in glass.
- 12 EMERALD**
Flux inclusions in Gilson synthetic emerald.

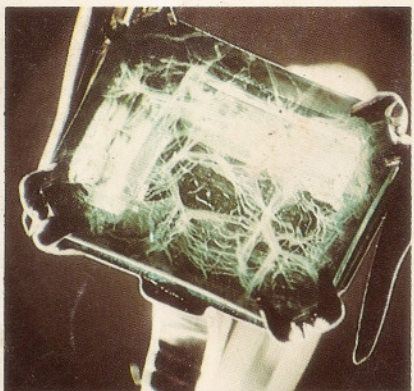
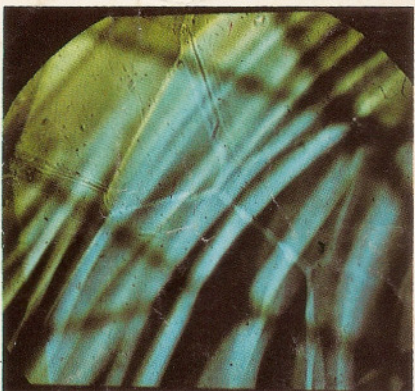
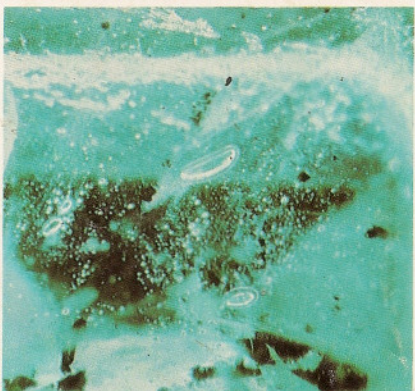
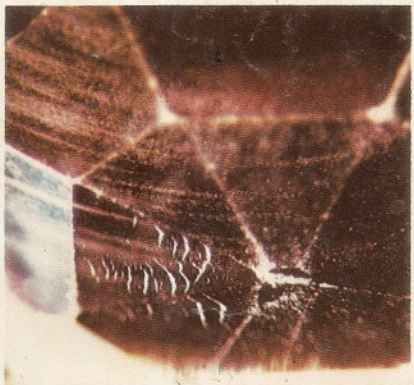
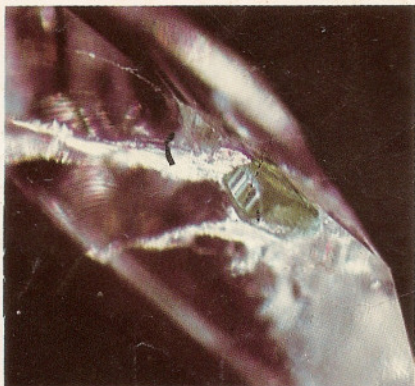
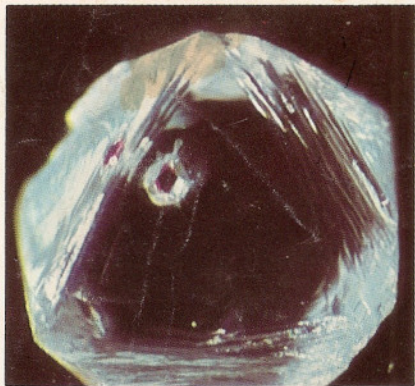
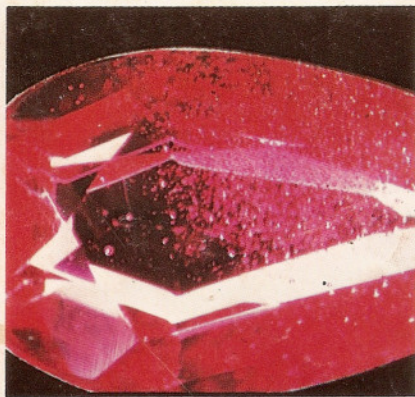
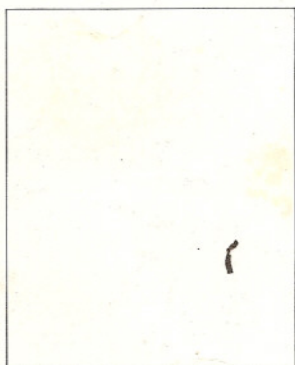
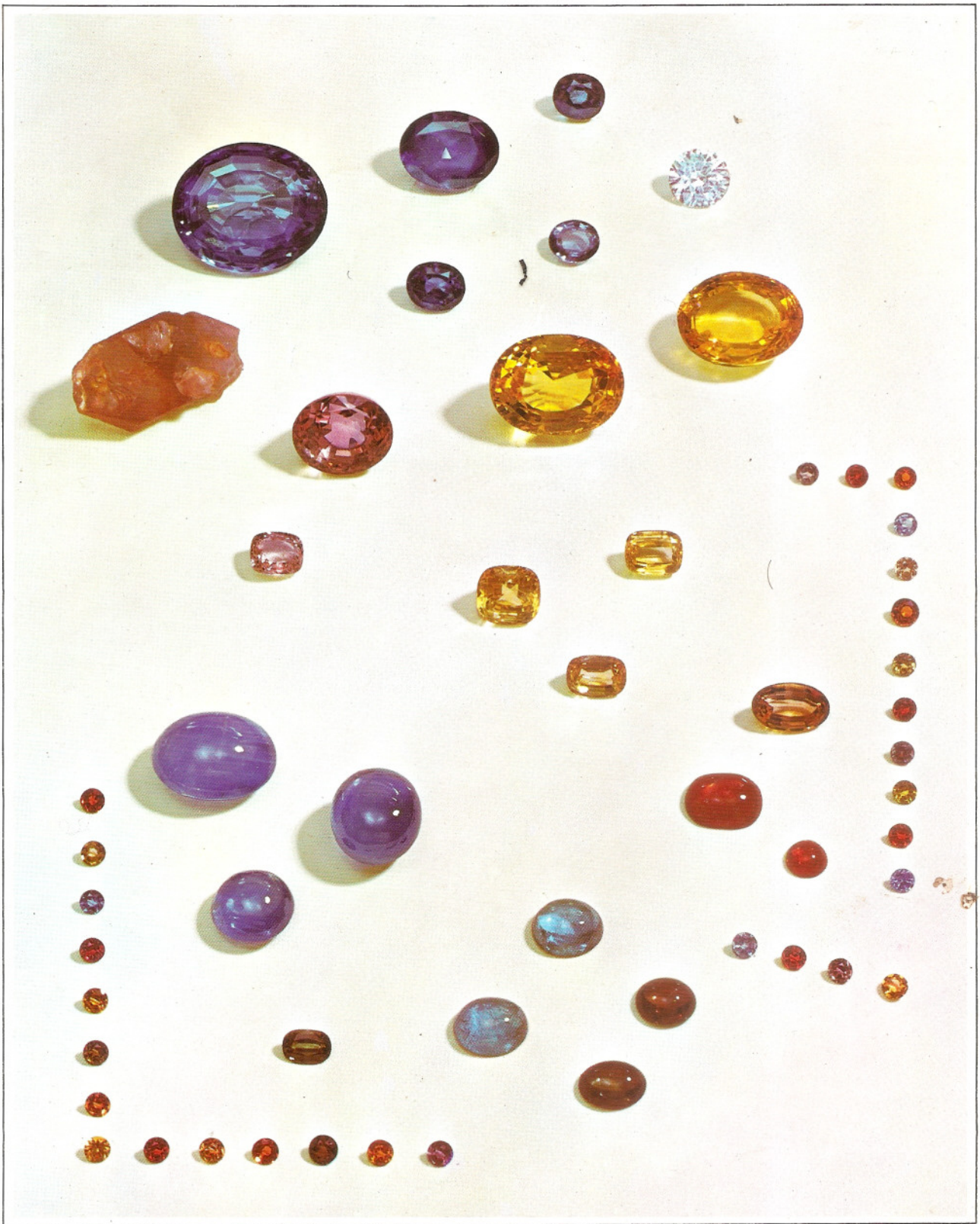


PLATE IV Sapphire





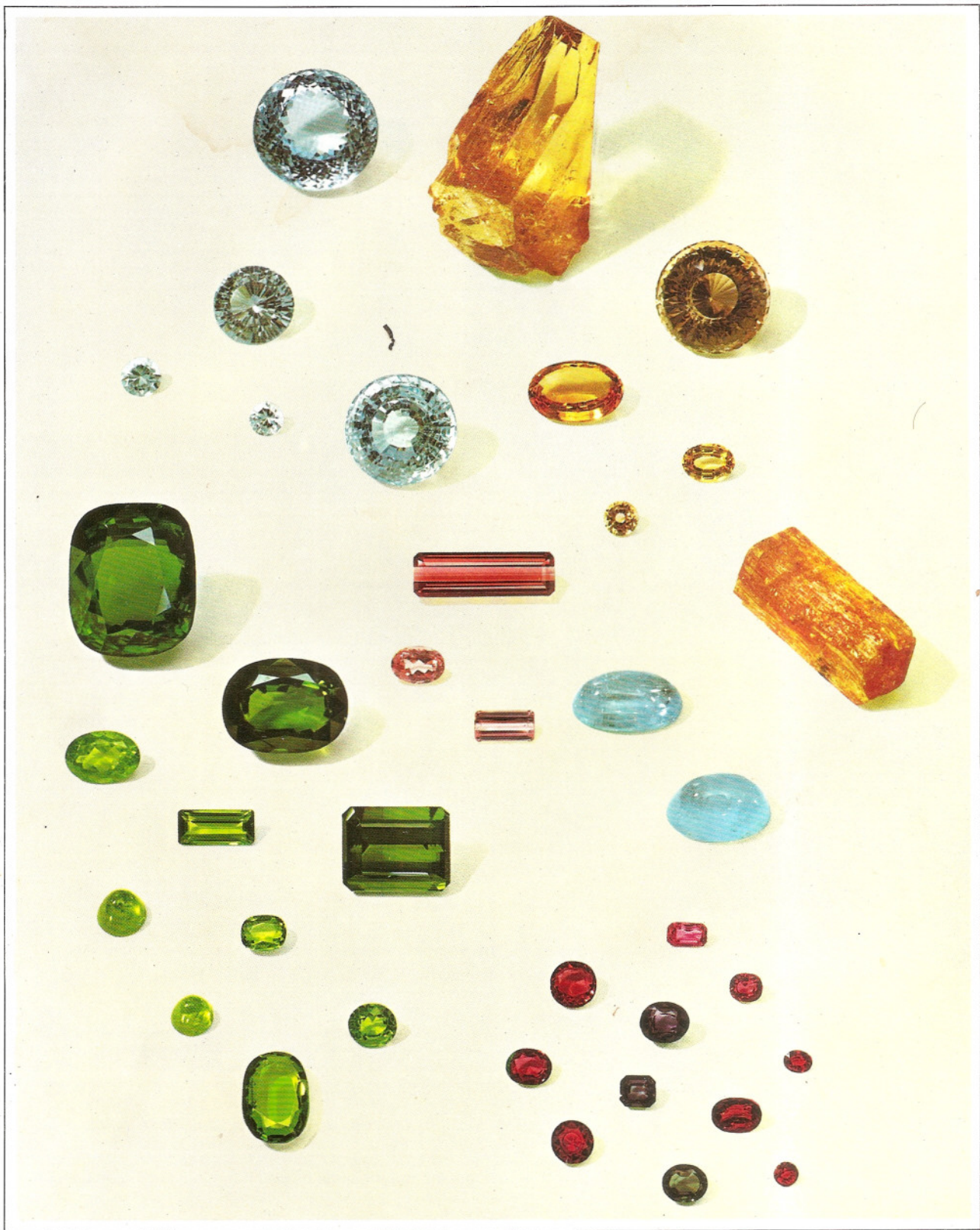
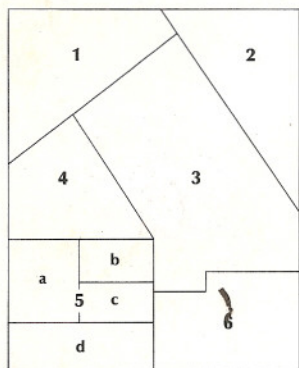


PLATE VI Spodumene, Zoisite, and Iolite



1 SPODUMENE CRYSTAL

2 KUNZITE CRYSTAL

3 KUNZITE

4 HIDDENITE

5 ZOISITE (tanzanite)

a. Crystal.

b. Without heat treatment.

c. Heat treated.

d. Pleochroism.

6 IOLITE

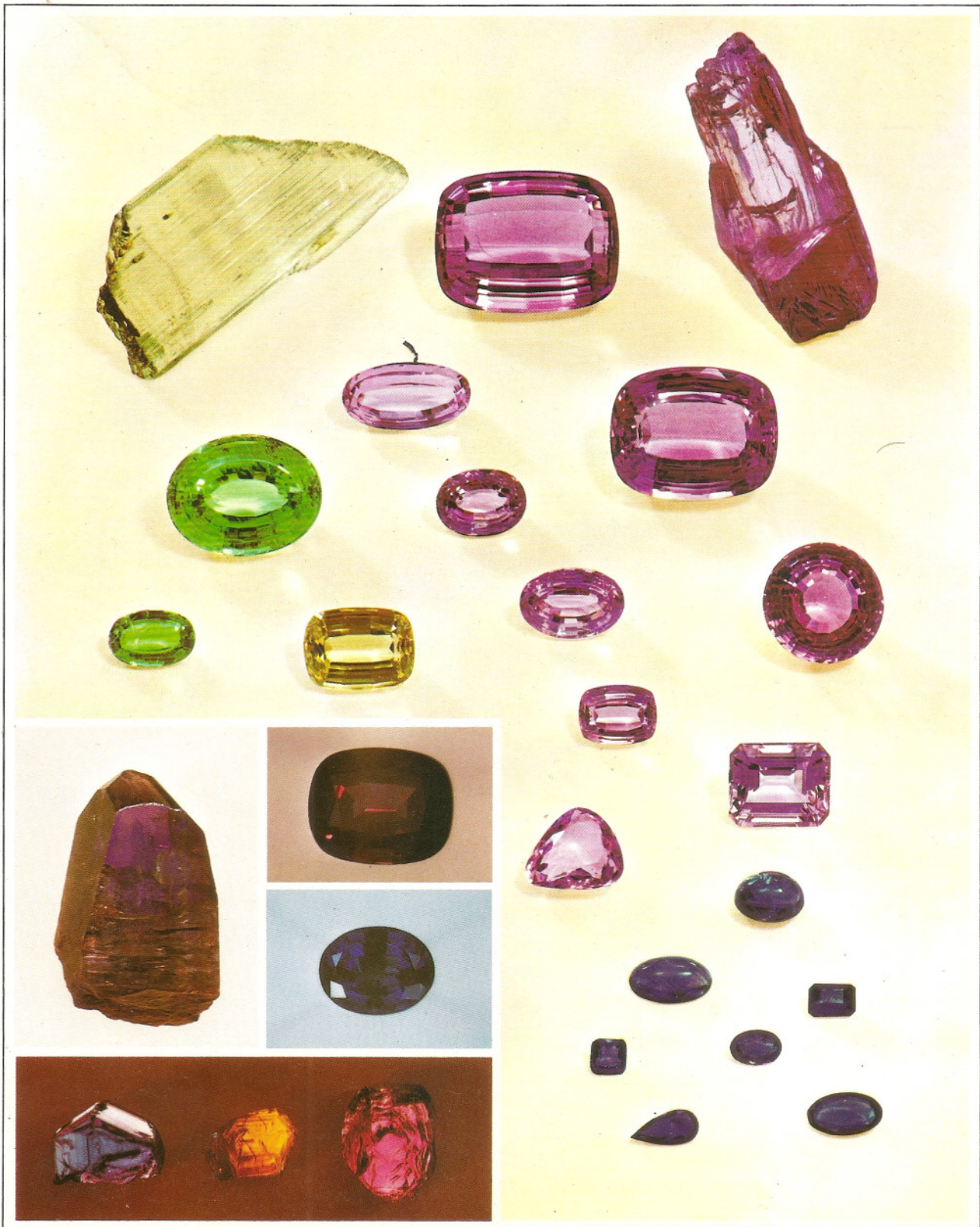
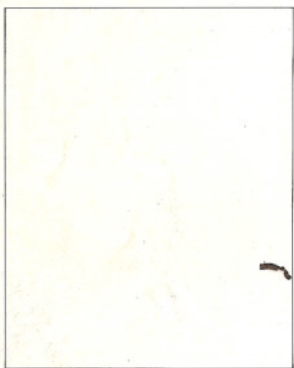
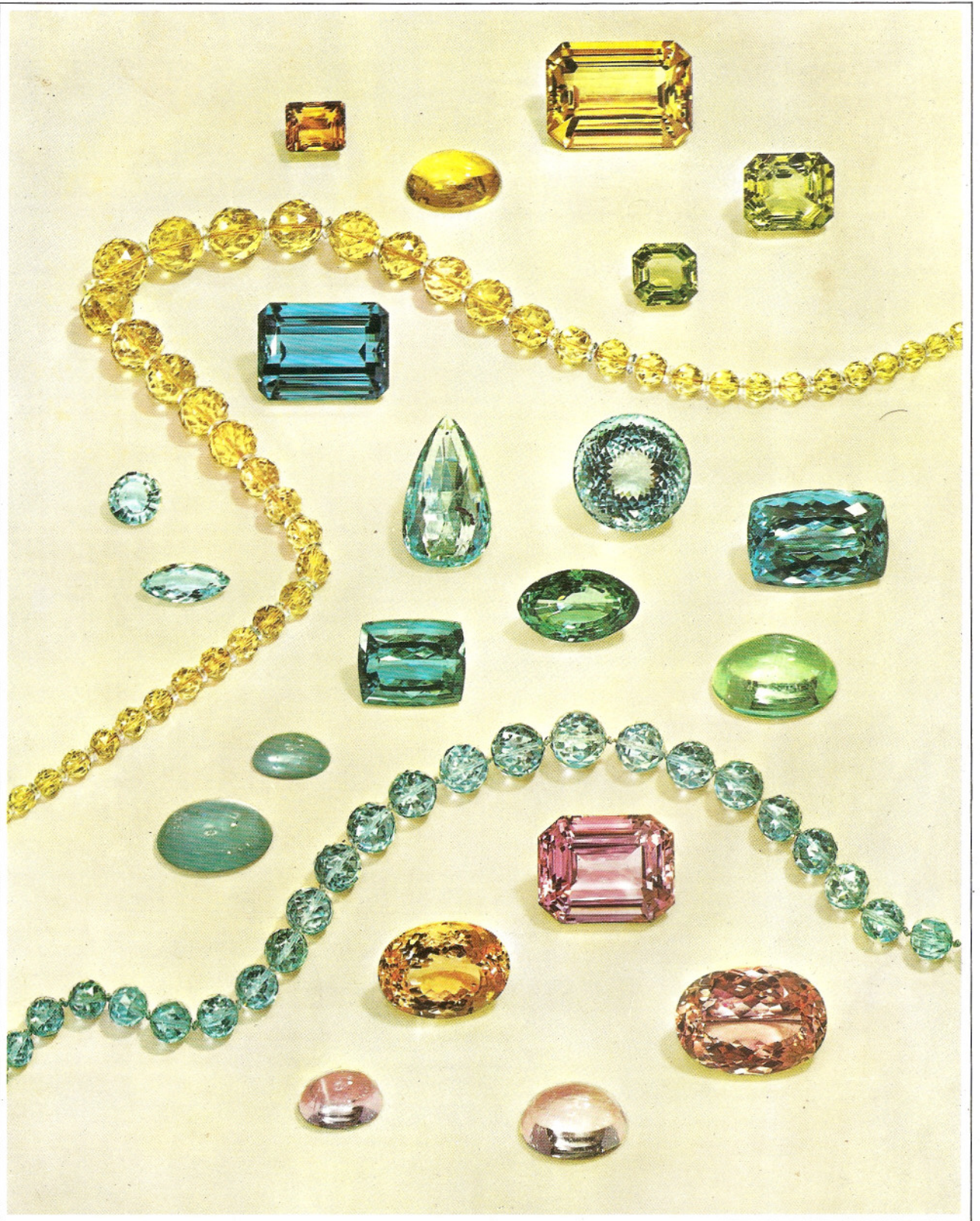


PLATE VII Beryl





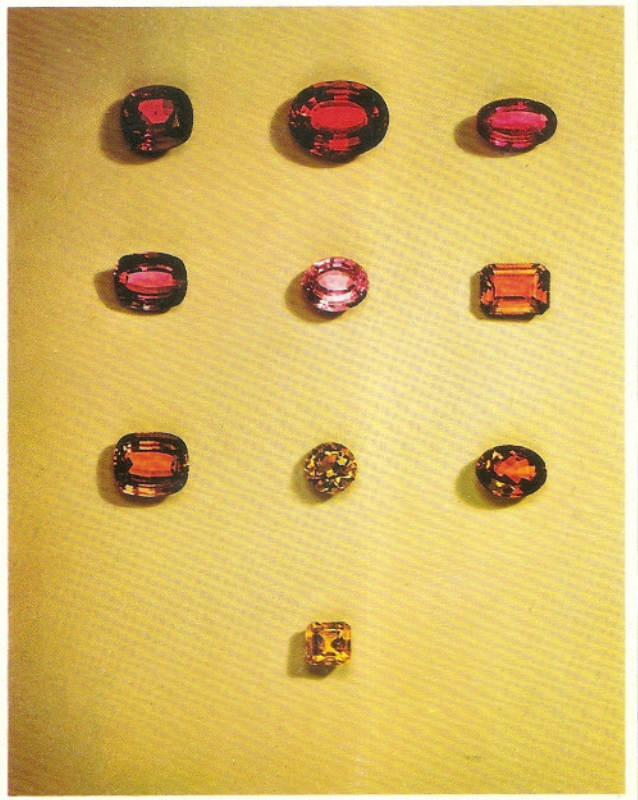
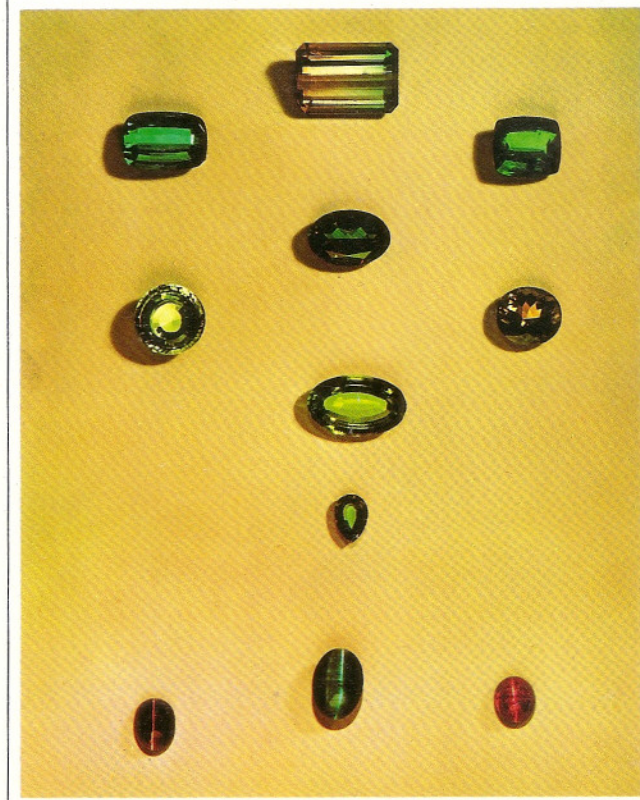
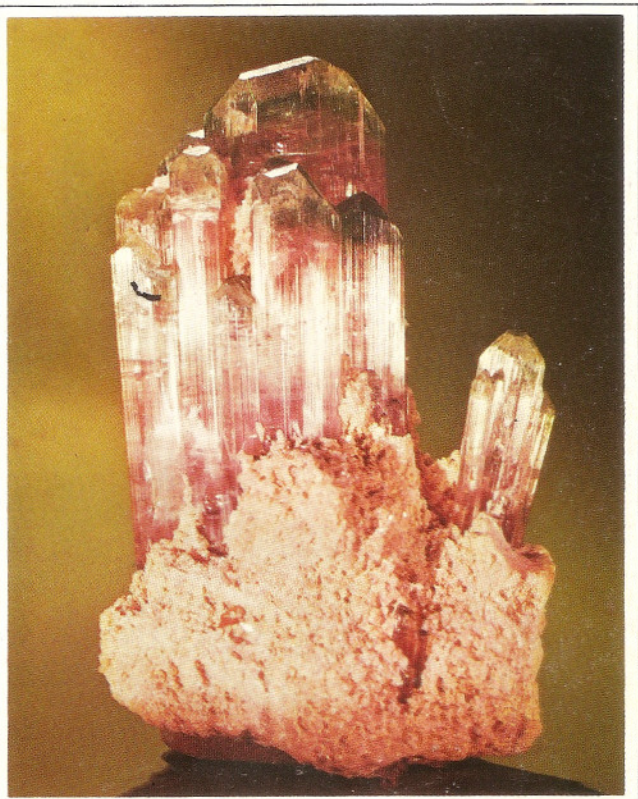


PLATE IX Uncommon gems

1		
2		3
4	5	6
7	9	
8	10	
11	13	14
12		

- 1 FLUORITE
- 2 SPHALERITE
- 3 PETALITE
- 4 AMBLYGONITE
- 5 SINHALITE
- 6 DIOPSIDE
- 7 DIOPTASE
- 8 APATITE
- 9 EUCLASE
- 10 ENSTATITE
- 11 BARITE
- 12 PHENAKITE
- 13 BRAZILIANITE
- 14 SCHEELITE

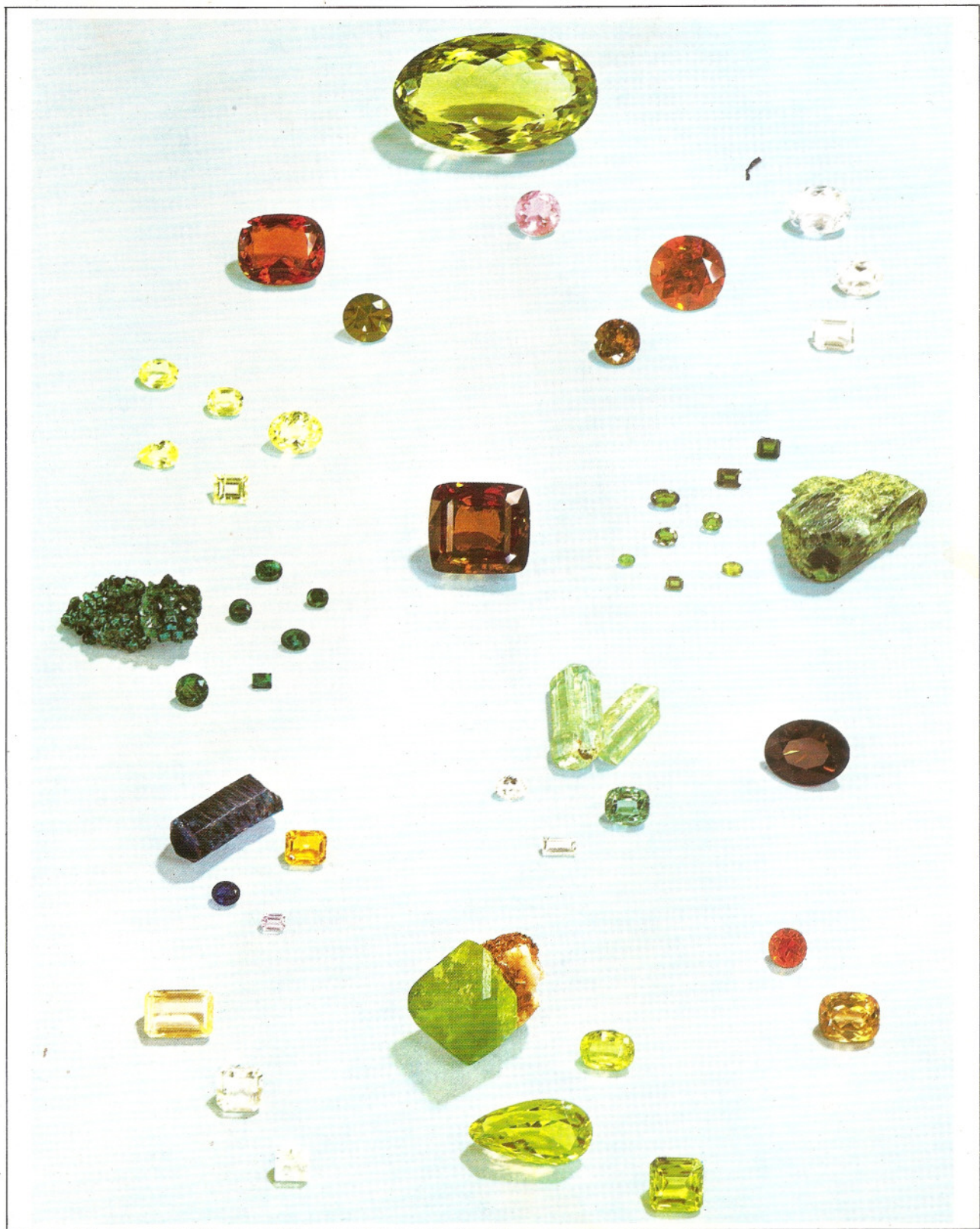


PLATE X Opal

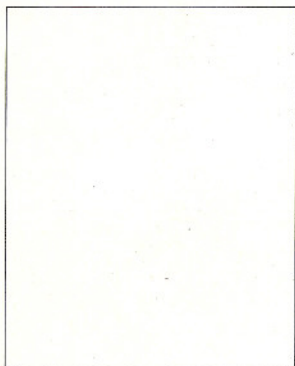
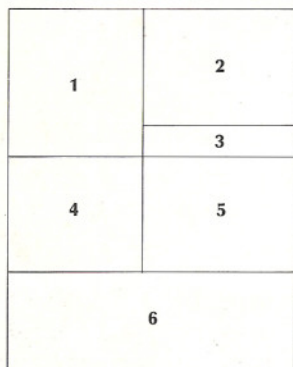




PLATE XI Quartz, Garnet, and Sphe



1 AMETHYST CRYSTALS

2 GARNET

Top center: Yellow-orange grossular. Top left: Almandine. Bottom left and top right: Green grossular. Center: Hessonite. Bottom center: Spessartine. Bottom right: Brown grossular.

3 SPHENE

4 QUARTZ

Top center and bottom left: Citrine. Top right and left: Amethyst. Center: Rutilated quartz. Bottom right: Maderia red quartz. Bottom center: Smoky quartz.

5 SYNTHETIC QUARTZ

Quartz has been synthesized in many colors some of which, for example, the blue and green, do not occur in nature. The elongated crystal (*upper right*) is 7 in. long.

6 DYED AGATE

A single slice of agate sectioned and reassembled after each section has been dyed a different color. The left end is the natural color.

Photographs 1 and 3 courtesy of the Smithsonian Institution, Washington, D.C. Photograph 1 by Lee Boltin.

The photographs of cut stones appeared in the 1977 Spring issue of *Gems and Gemology* and are reproduced here by courtesy of the Gemological Institute of America.

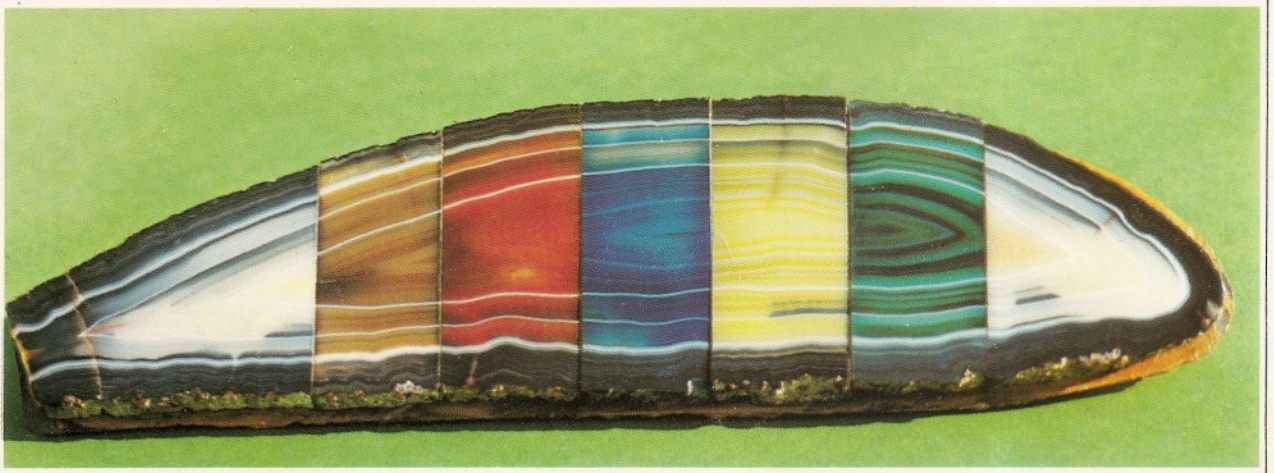
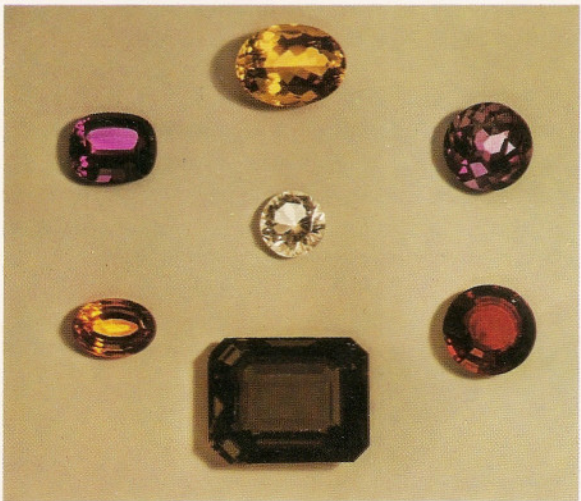
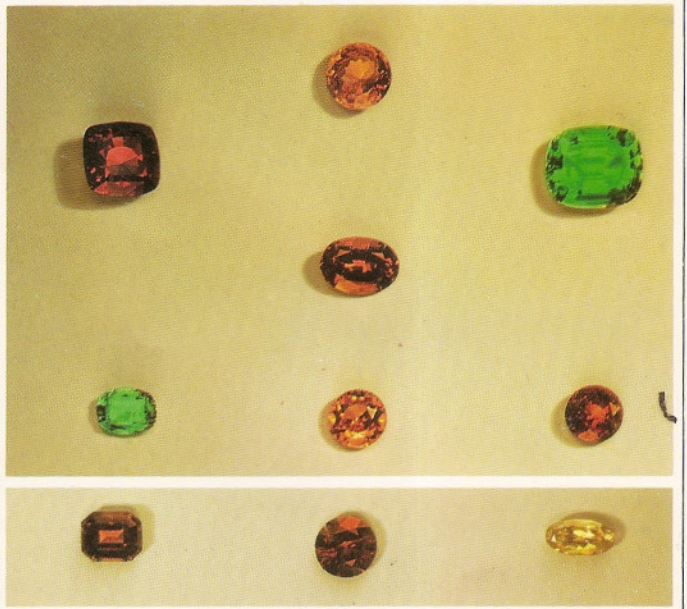
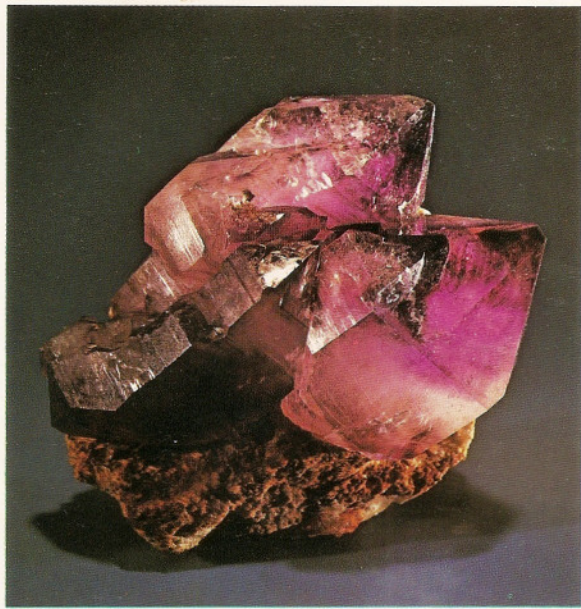


PLATE XII Synthetic, Treated, and Imitation Gems

1	4
2	5
3	6
	7

1 CORUNDUM

Variouly colored boules of synthetic corundum with gemstones cut from similar material.

2 TURQUOISE

Center: Natural turquoise. *Left, top and bottom:* Natural turquoise impregnated to improve color and porosity. *Left, center:* Turquoise apparently made by cementing turquoise powder (by Gilson). *Right:* Three simulated turquoises made of plastic.

3 COLOR CHANGE BY RADIATION

These natural gem materials were essentially colorless before irradiation. *Left:* Three topaz stones, blue and brown. *Center, top:* Blue-black pearl. *Center:* Greenish-yellow quartz. *Bottom, center:* Smoky quartz and amethyst (amethyst is synthetic). *Right:* Three beryls.

4 EMERALD

Cluster of Gilson flux-grown emeralds.

5 YAG

Faceted gemstones cut from flux-grown crystals.

6 RUBY

Flux-grown ruby and cut stone (X3).

7 OPAL (simulated)

Simulated opals made by J. L. Slocum. Courtesy J. L. Slocum, Rochester, Michigan.

Numbers 2 to 6 courtesy of K. Nassau Bell Laboratories.

