Gems & Gemology

GIA

SPRING 1970

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IN THIS ISSUE

138 . . . . GIA Adds More Than 50% to Its Space at Los Angeles Headquarters

144 . . . . Glenn Nord and Bert Krashes Teach Overseas

148 . . . . Developments and Highlights in GIA's Lab in Los Angeles
by Richard T. Liddicoat, Jr.

156 . . . . Developments and Highlights in GIA's Lab in New York
by Robert Crowningshield

165 . . . . Diamond Firms Fined

166 . . . . A Diamond and Precious-Stone Stock Exchange Planned in Idar-Oberstein

166 . . . . Sapphires Cause New Mining Boom

170 . . . . Book Reviews

172 . . . . Omission

GIA Adds More Than 50% to Its Space at Los Angeles Headquarters

The Gemological Institute of America has added greatly to its space in Los Angeles, primarily to train the ever-increasing number of full-time resident students. For those familiar with Los Angeles Headquarters, approximately 2400 square feet were added over the two stores leased by GIA to retail businesses, and two stories were added across the back of the patio, adding another 1500 square feet.

The architectural work was done by the famous firm of Richard and Dion Neutra. Richard Neutra (who died recently) was one of the more famous American architects. A protege of Frank Lloyd Wright, Mr. Neutra became famous first in Southern California and then internationally for his modern style of architecture keyed to the needs of the occupant. Richard Neutra and his son, Dion, and their associates, designed the original GIA building, constructed in 1955, so it was natural that they were chosen again to design the addition to the space. The photographs accompanying this article show some of the unique features of the building, both in its original form and in the new addition.

When the original building was designed, the Institute handled only one or two full-time resident students annually, but now, about 100, from many different countries, are trained each year. Recently, the Institute had 40 full-time students at one time on the premises, representing 10 different countries. In the last three years, more than 20 students from Japan have been trained, as well as several from Central and South America, and many more from Europe, Canada and the Far East.

Those who complete the training successfully earn the coveted GIA's Graduate Gemologist in Residence Diploma, recognized throughout the world.

One of the features of the original building was a spiral staircase that

Figure 1

Front view of the Institute, showing the addition over the two leased stores.

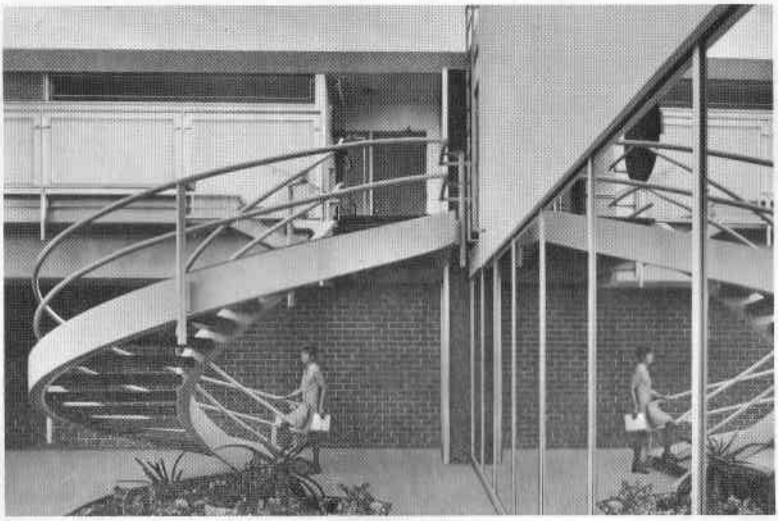


Figure 2

A view of part of the patio, showing the mirrors on the right.

appeared in architectural books and magazines published in many languages, so the Neutras–father and son–felt that this should continue to be featured in the new building. Since it was cut off from view from the rear entrance by the two-story wing across the back of the patio, they decided that mirrors on the lower floor of the wing would reflect the staircase and add apparent width to the attractive patio area.

The front elevation of the building is much more imposing than formerly.

The full-time resident program is growing very rapidly in a natural manner, since it has had no publicity whatever. Its growth has been entirely on a word-of-mouth basis. With this in mind, it seems very likely that GIA will soon outgrow its present quarters. Fortunately, the two leased stores on the lower floor can be utilized when future growth requires that additional space is necessary.

Figure 3

Another view of the patio.

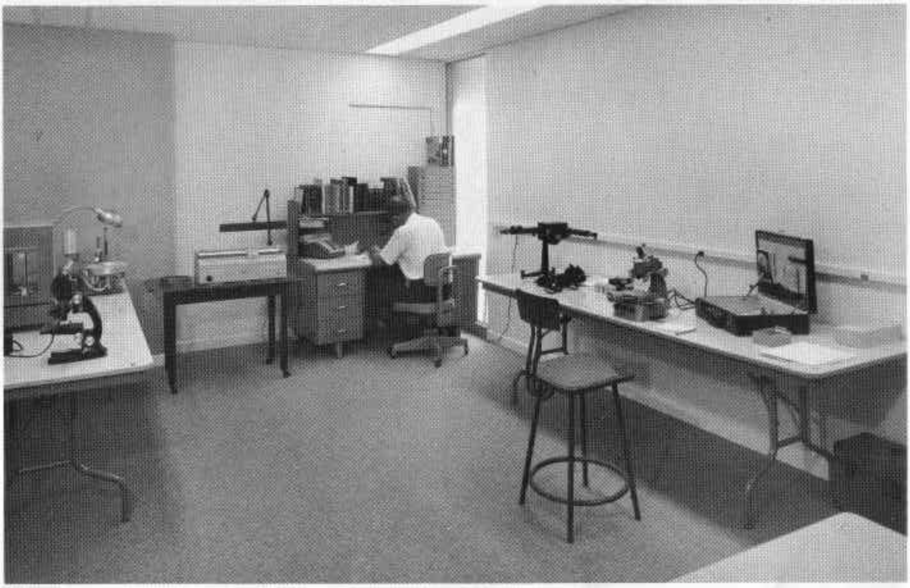


Figure 4

A room adjoining the present Laboratory, used for offices and additional testing space.

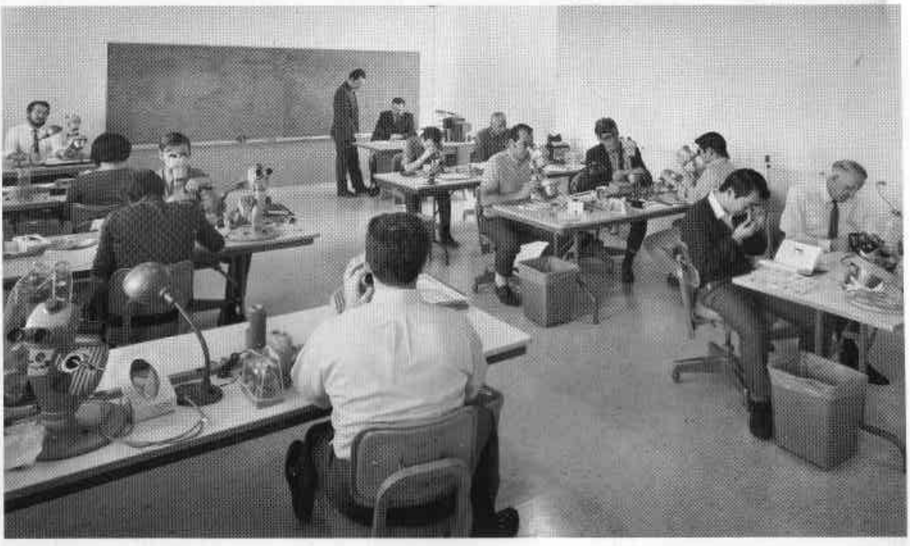


Figure 5

The classroom-laboratory for students of Gem-Identification.

Figure 6
The Bookkeeping Department.

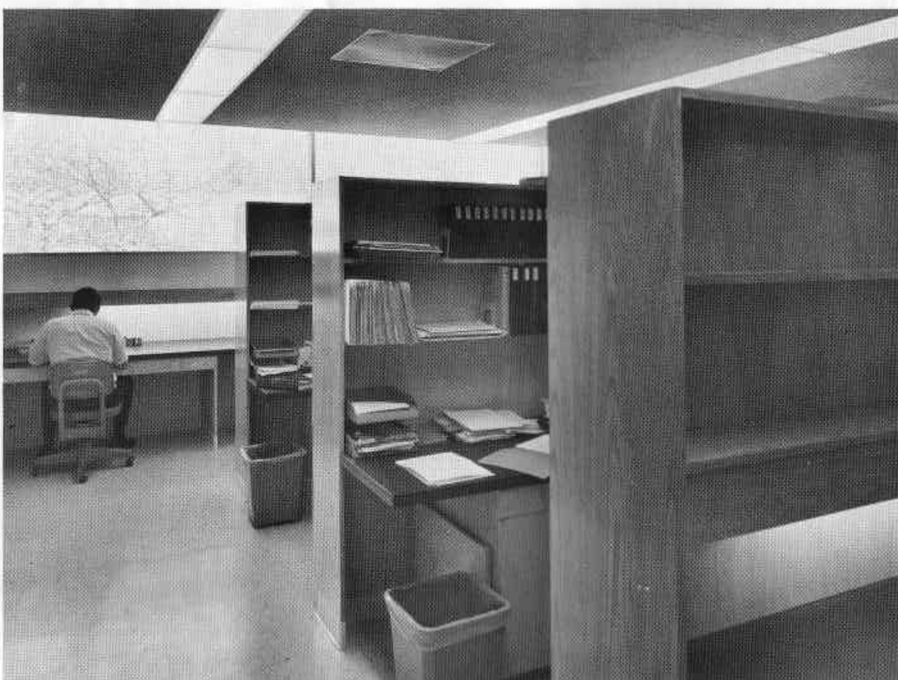


Figure 7
A portion of the instructors' offices.

Figure 8

Rear entrance to patio, leased shops and second floor.

Figure 9

Parking area, showing rear of building.

GLENN NORD AND BERT KRASHES TEACH OVERSEAS

In November, 1969, Richard T. Liddicoat, Executive Director of the Gemological Institute of America, and Glenn Nord, Faculty Supervisor, were invited by the Diamond Control Center of the Israeli diamond industry to visit Tel Aviv and discuss the possibility of conducting diamond-appraising and gem-identification classes in April and May, 1970.

Classes were planned and scheduled to begin just after Passover, and Nord was selected as instructor. Six classes of 20 students each began in late April in Ramat-Gan, a suburb of Tel Aviv, at the 28-story Diamond Exchange.

We have heard from several sources that the classes were the talk of the industry in Israel. Israeli diamond men were particularly pleased with the Rapid-Sight system of diamond grading and evaluation.

Mr. Nord followed an exceedingly heavy schedule during his teaching effort. Each class was given in 10 3½-hour sessions. The first class daily was conducted from 8:30 A.M. until noon, the second from 3 P.M. until 6:30, and the third from 7 P.M. until 10:30. During his stay in Tel Aviv, Nord taught 4 Diamond-Grading and Appraising classes and two Gem-Identification classes to a total of 120 students.

Further classes are planned for either November or early in 1971.

Nord remained in Israel until completion of the classes on May 27. He then returned to the United States to begin a series of classes in Minneapolis, Milwaukee and Topeka.

At about the same time, Bert Krashes, of GIA's New York staff, began a three-day seminar for the retail jewelers of Ponce, Puerto Rico.

The staff of the Gemological Institute of America is delighted to have these opportunities to extend its instruction beyond the continental limits of North America.

The full-time resident instruction, given in Los Angeles, has continued to attract students throughout the world. The program is growing very rapidly, so that the instructors are having increasingly greater opportunities to plumb the interests of overseas jewelers.

Figure 1
From the left: Elazar Shalev, Diamond Control Center, who has all but completed GIA courses; Glenn R. Nord, GIA Faculty Supervisor; Schlomo Winnikow, President, Diamond Brokers Association; R. T. Liddicoat, Executive Director, GIA; Moshe Schnitzer, President, World Federation of Diamond Bourses; A. Ben Moshe, Deputy Director, Diamond Division, Ministry of Commerce and Industry; Amnon Ben Zeev, Director, Diamond Division, Ministry of Commerce and Industry.

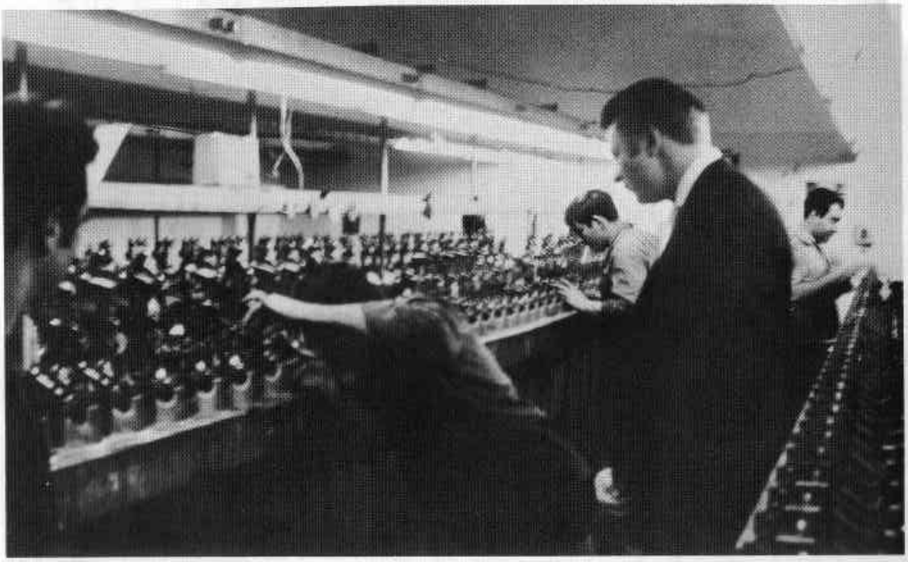


Figure 2
Glenn Nord inspects a sawing plant near the Diamond Exchange.

Figure 3
Mr. Nord and an official of the Diamond Control Center with the Israeli Diamond Exchange in the background.

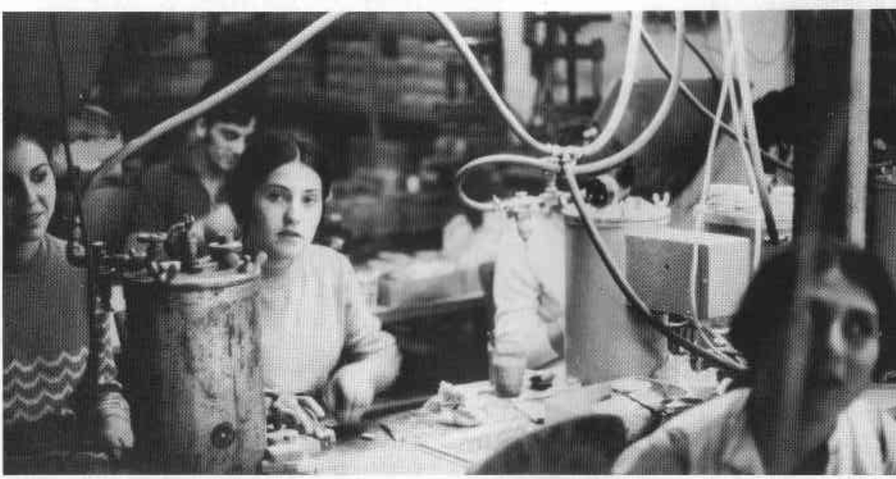


Figure 4
A gold casting plant in Jaffa near Tel Aviv.

Figure 5
Nord and Liddicoat at Capernaum on the Sea of Galilee. Capernaum dates from the pre-Christian era.

Figure 6
The Sea of Galilee from Capernaum.

Developments and Highlights at GIA's Lab in Los Angeles

by

RICHARD T. LIDDICOAT, JR.

Unusual Opals

In the Fall, 1969, issue of *Gems & Gemology*, we reported some opals with very low properties: refractive indices about 1.37 to 1.38 and specific gravities on the order of 1.42. The black opals with these properties we found very suspicious, but we did not have any real basis for calling them treated. During the time we were testing this material, we discovered that the point of a pin indented the opal readily, and then the indentation disappeared after the point was removed. In addition, we noted that it was exceedingly soft and that a scratch did not have the normal ragged appearance that we would expect from an opal.

We also tested some white opal we believed to have come from Mexico. It was so porous that it absorbed water and moisture from the tongue at a very rapid rate. We have learned since that someone has been impregnating this white opal with a black plastic. The impregnated material assumes a black body color but with its play of color unimpaired, and, if anything, enhanced. The result is a very beautiful, doctored black opal. We expect to see much more of this material on the market in the near future, because it is so attractive; and it is, to date at least, quite inexpensive. With its plastic treatment, it is quite durable and makes a very attractive gem substitute.

Detection is possible using a razor blade or some other sharp point of like hardness against the back of the material, because it grooves the plastic-impregnated opal rather than scratching it, in the ordinary sense. In addition, a drop of concentrated sulphuric acid leaves a whitened spot.

Interesting Beryl Inclusion

Figure 1 shows one of the most interesting inclusions we have seen in some time. A colorless beryl crystal had a large, hexagonal negative crystal with a very long tube extending from the point of the crystal. It was an

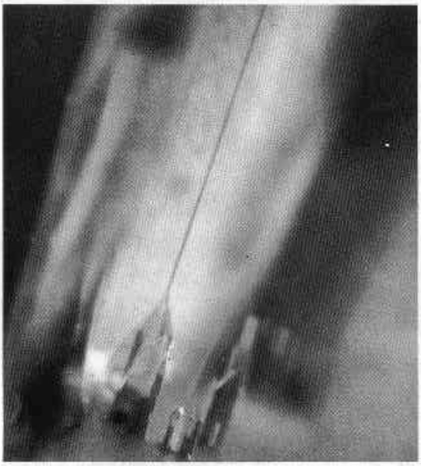


Figure 1

unusual shape for a beryl crystal, with no basal pinacoid. It has often been said that tubes in beryl are parallel to the c axis, and this proves very well that this is the case. In other words, the long tube is a negative crystal parallel to the c axis (usually the long direction in beryl).

Alexandritelike Synthetic Spinel

Perhaps the most elusive of the synthetic materials is alexandritelike synthetic spinel. Occasionally, we see one—much less than once a year on an average. We encountered one the other day with a beautiful color change and decided to record the spectrum (*Figure 2*). It very closely resembled the cobalt spectrum in ordinary synthetic spinel.

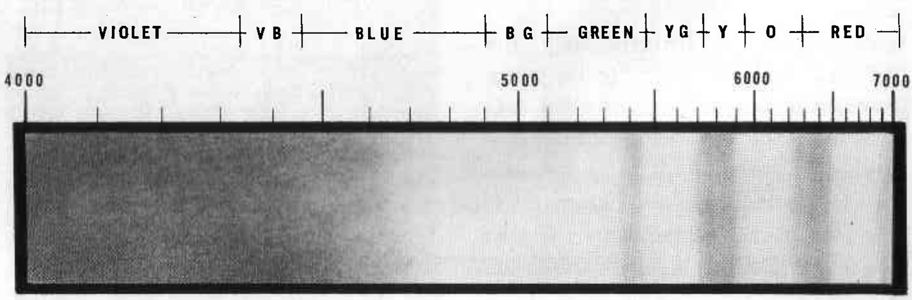
Vegetable Ivory?

Occasionally, we encounter organic materials with rather odd properties. One was button shaped and showed very strong banding at right angles to the axis that passed through the center of the dome. The photograph, taken through the side, shows the banding rather well (*Figure 3*). When the same concretion was photographed from the top, a sort of hexagonal pattern was shown (*Figure 4*). We assume that this is some kind of vegetable (?) ivory that we have seen on numerous occasions in the past, but with a less pronounced structure.

Fanciful Inclusions

Don Williams of Holland, Michigan, showed us a diamond in which a pattern that he labeled "CG" (for Certified Gemologist) appeared on the

Figure 2



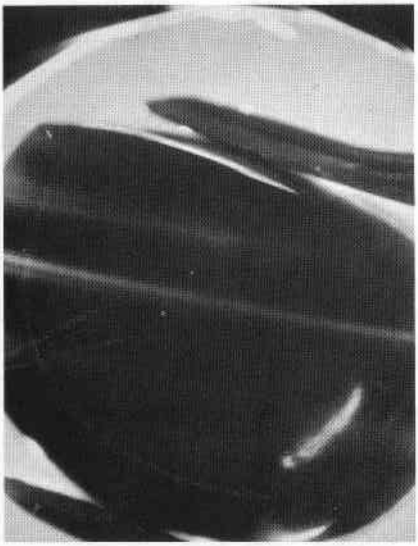


Figure 3

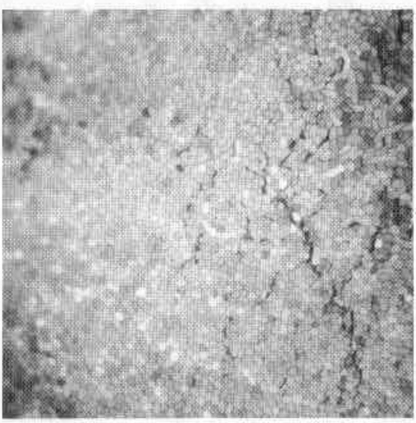


Figure 4

table (*Figure 5*). Unfortunately, the "C" and the "G" seem to be juxtapositioned, but it is quite clear that both letters are present in the photograph.

Rare Star Peridot

After a note in a recent lab column about cat's-eye peridot, our instructor on leave, Frank Golden, sent us some pictures of star peridot. *Figure 6* shows a six-rayed star, *Figure 7* a four-rayed star, and *Figure 8* one view of the inclusions, the reflection from which causes the star effect.

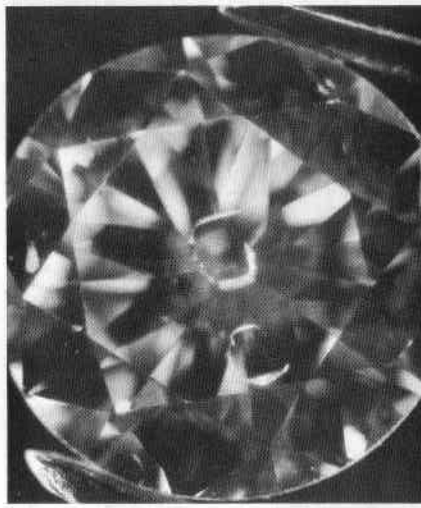


Figure 5

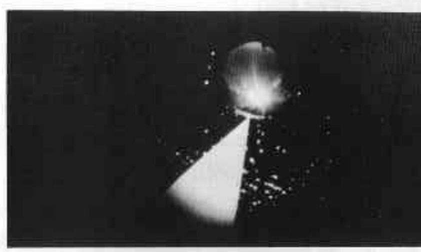


Figure 6

Figure 7

Parallel Growth in Emerald

Very frequently we encounter, especially in early Gilson synthetic emeralds, a parallel growth with the crystals oriented in the same direction, so that when a large, flat piece of rough is examined under polarized light a mosaic effect is noted. We tested a natural emerald in which a similar, but more pronounced, parallel-growth condition was encountered. *Figure 9* shows three different lighter crystals in an emerald-cut emerald. The darker areas had a very rich green color, and the overall effect was of a fine color; but in dark-field illumination the three distinctly lighter crystals were evident in the optic-axis direction. It is clear that a chromium-rich beryl surrounded, during growth, three chromium-poor beryl crystals, and that the final stone was cut to include all four. This is something rare in our experience, so we recorded it photographically.

Figure 8

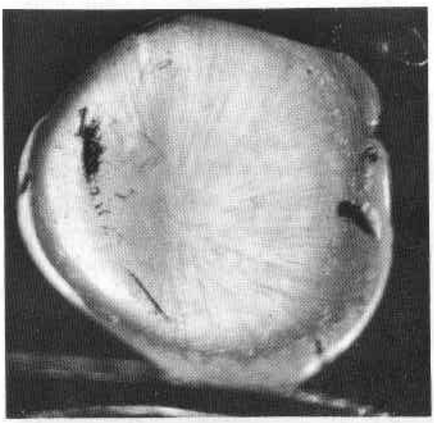


Figure 9

Green-Grossularite Inclusion

The new transparent, green-grossularite garnets are not particularly common, so when we had an opportunity to study quite a number under magnification, we decided to record one distinctive kind of inclusion. These are small, flat negative crystals, because in the right direction they reflect light brightly. Two are shown in *Figure 10*, one with the light reflecting from it, so it appears as a bright oval; the other (arrow), with light passing through, is very difficult to see.

Conch Pearl

Figure 11 shows an especially attractive conch pearl, in which the flamelike pattern of bright reflections is particularly obvious.

Odd Inclusion

Homer Holland, Graduate Gemologist of Selma, Alabama, sent us this picture of the Apollo (?) he took in a purple stone (*Figure 12*). We assume from the nature of the inclusion that it probably was a synthetic sapphire.

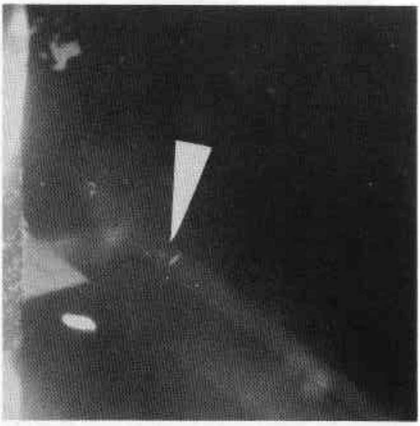


Figure 10

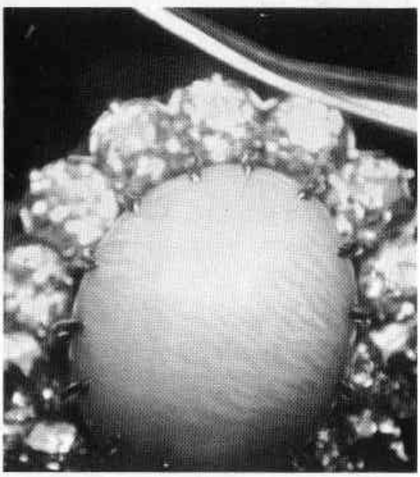


Figure 11

Silklike Inclusions in a Natural Spinel

We usually think of natural spinel as having very few inclusions, other than the little octahedral crystals that most persons associate with spinel. We encountered one recently that had a large number of silklike inclusions (*Figure 13*). They were found throughout the stone and were quite unlike any spinel inclusions in our memory.

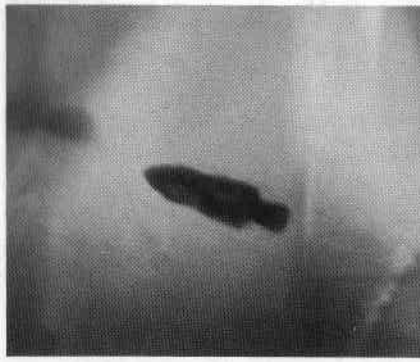


Figure 12

Hydrothermal Emerald Inclusions

A rather interesting inclusion in a Linde synthetic emerald is shown in *Figure 14*. One of the large cavities resembles a hand and wrist. Extending from the fingers to the wrist is a large bubble not too clearly seen in the photograph. However, it is proof, because of its two-phase nature, that this is a hydrothermal synthetic emerald.

Rare Inclusions in Synthetic Emerald

Recently, yet another manufacturer of hydrothermal synthetic emerald

Figure 13

was called to our attention. This gentleman, a former Linde man, is apparently making synthetic emeralds as a hobby. The specimen we examined showed the two-phase spicule inclusion capped by a phenakite crystal, as we expect in a hydrothermal emerald. It also had inclusions that looked somewhat wispy, after the nature of the Linde product. However, some were totally unlike what we have seen in this kind of emerald: a group of small needles under the table. Refractive indices were approximately 1.575-1.580, a specific gravity near 2.68, and fluorescence weak.

Needlelike Inclusions in Diamond

Another stone we examined was a diamond that had some very unusual inclusions. They had the look of needles, which is unusual in diamonds, so this stone almost had a star effect (*Figures 15* and *16*).

Figure 14

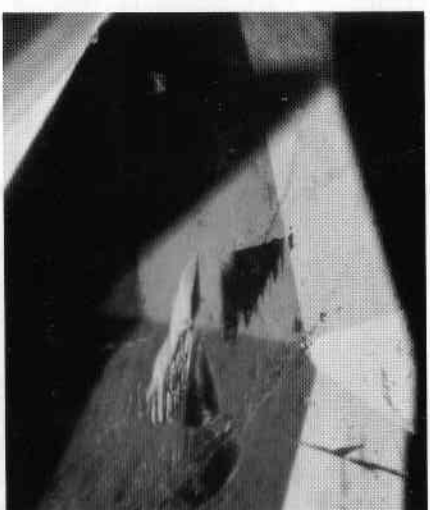


Figure 15

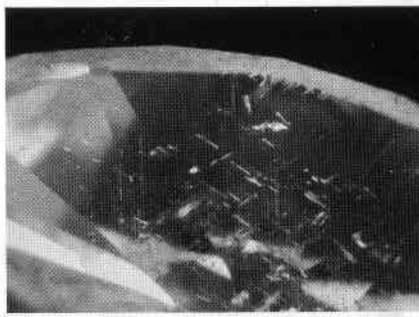


Figure 16

Large Knot in Diamond

We were grading a round brilliant-cut diamond and noticed two bright streaks on the table that we first thought were deep scratches, but soon realized they were feathers. When we examined the stone with vertical light on the table, it became clear that these were delineating the edges of a huge knot in the table. The bright streaks are shown in *Figure 17*, and at least a portion of the knot is visible in *Figure 18.* Arrows have been placed on the photograph to show the four corners of the knot. We have seen many large knots in diamonds, but this is the first time that their sides have been outlined by such bright feathers.

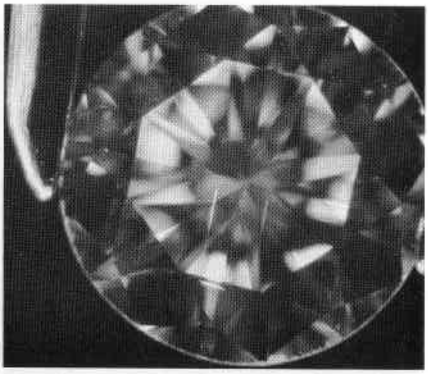


Figure 17

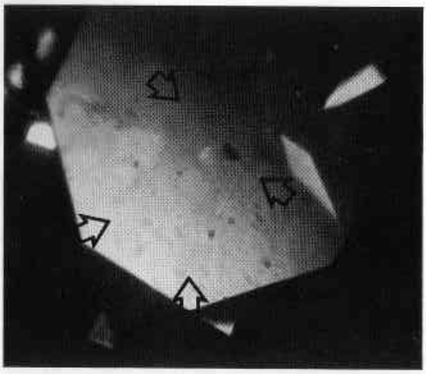


Figure 18

Acknowledgments

We wish to express our sincere appreciation for the following gifts:

To **Herb Walters**, Craftstones, Ramona, California, for 50 pounds of tumble-polished agate, amethyst, aventurine, nephrite, carnelian, rhodonite and jasper. The material was used to make an attractive decorative effect in a portion of an exterior stairway of GIA's new addition to its headquarters office in Los Angeles.

To student **E. F. Borgatta**, Cab Lab, Madison, Wisconsin, for 10 pounds of topaz cleavage fragments, which will be a welcome addition to our student study sets.

To student **S. Sarnay**, Holbrook, Massachusetts, for an oval brilliant-cut citrine.

To student **Kenneth Norris**, San Diego, California, for a large selection of rough axinite, turquoise cabochons, faceted glass, rough spessartite, etc., all of which will be useful in the classroom.

To **Walter Herz** of Herz & Lewis, Los Angeles, California, for a .26-carat diamond with interesting iron-stained cleavages.

To **William S. Preston, Jr.**, CG, F. J. Preston & Son, Inc., Burlington, Vermont, for a ½-carat faceted demantoid garnet, complete with a well-formed "horsetail" inclusion. It will be valuable for classroom study.

To **Martin Ehrmann**, gem-and-mineral dealer, Los Angeles, California, for several faceted Tanzanites, faceted quartz, faceted sphene, rough sapphire, green grossularite and a large ruby crystal from a new location in Yugoslavia. These stones will make a welcome addition to our study sets.

To Graduate Gemologist **Ben Gordon** of Gordon Jewelry Co., Houston, Texas, for a helpful selection of stones consisting of jadeite, nephrite, black star sapphires, quartz and others.

To student **Pierre Gilson, Jr.**, Pierre Gilson, S.A., Lapidaries, Pas-de-Calais, France, for a parcel of 28 carats of Gilson synthetic emerald. These stones will make an important addition to

our study sets.

To **John Patrick** of Geo-Aids International, Richmond, California, for a specimen of Russian jet.

To **Lazare Kaplan & Sons, Inc.**, diamond cutters, New York City, for a canary marquise diamond that shows beautiful needlelike inclusions resembling the rutile needles in corundum.

To **Stanley E. Church**, Church & Co., Bloomfield, New Jersey, for a huge assorted lot of colored stones. These will be put to immediate and good use in our testing sets.

To **Mike Koven**, L. Larson Co., Scottsdale, Arizona, for two treated opals of the kind described in this issue of *Gems & Gemology*. They proved very useful in working out means by which these black plastic-treated opals could be detected.

To **Gordon Hill**, chief jeweler, Maui Divers of Hawaii, Ltd., Honolulu, for a lovely cabochon of angel-skin coral.

To student **Lowy Breckinridge**, Anaheim, California, for a cabochon of labradorite.

To **George C. Houston**, gemstone importer and cutter, Los Angeles, California, for several thousand garnet-and-glass doublets and a large number of faceted zircons. These stones will fill a major need at the Institute.

To Gemologist **Frank E. Mabry**, E. A. Mabry, Inc., Akron, Ohio, for three broken diamond melee.

Developments and Highlights at GIA's Lab in New York

by

ROBERT CROWNINGSHIELD

Hydrothermal Pink Sapphire

We were happy that we had for comparison purposes the hydrothermal pink-sapphire crystal shown in *Figure 1*. It was a gift from Airtron Division of Litton Industries. Later, a pink cabochon was submitted for testing. With the veils and wisps resembling those of a flux-fusion synthetic emerald, we were somewhat puzzled by its color and size. However, when compared with the crystal under ultraviolet they behaved the same. Under long wavelength they both fluoresced a very strong red; under short wavelength the fluorescence was a weak red with a whitish overtone, or "bloom." We doubt that the material will be produced commercially for jewelry, since it resembles the light corundum from Brazil, which seems to be in sufficient supply to meet a modest demand.

Black Cultured Pearl

The black pearl in the ring shown in *Figure 2* was purchased in Japan as a "natural black pearl." Routine testing indicated the possibility that it was, since it glowed reddish brown under long-wave ultraviolet—a characteristic not associated with dyed or cultured pearls. Because of the mounting, the X-radiograph was inconclusive, and we asked permission to have the pearl removed from the peg.

Meanwhile, a mention in *The National Geographic Magazine* last year that Japanese cultured-pearl growers were beginning to produce cultured pearls grown in the black-lip *Martensii* came to mind. As can be seen in *Figure 3*, the pearl was cultured but "naturally" black.

Cultured-pearl dealers in this country have yet to receive any of these for sale or display, and their source is being investigated. If they had been introduced even so short a time ago as 10 years, I am sure we would be much more excited than we are.

Milky Diamond

We were very happy to acknowledge receipt of a 2½-carat milky-white diamond from student Marie Hooper, jeweler in Spring Lake, New Jersey.

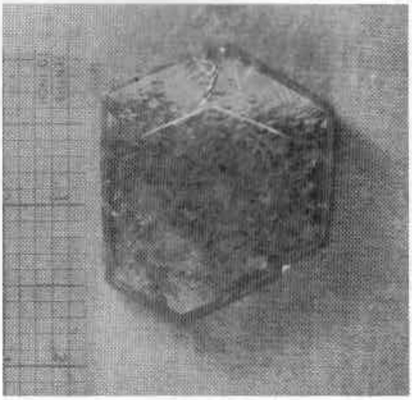


Figure 1

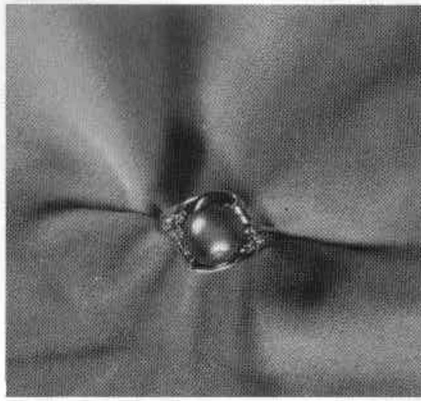


Figure 2

The misty quality of the stone can be seen in *Figure 4*. What cannot be seen is that the "mist" occurs in definite zones and under magnification can be seen to be made up of exceedingly small "pinpoints," much as dust in the atmosphere.

We were reminded of certain important diamonds we have graded recently that were just slightly misty but in which no zones nor parallel bands could be seen and no particles whatever, even under highest magnification. Two such stones were top color and free of any imperfections otherwise. It was acknowledged that the slightly lower transparency did affect the value, but we have been at a loss how to arrive at a meaningful grade. It is possible that these stones represent a new source of gem diamonds. If so, we must arrive at an acceptable grade for them, so as to be fair both to the diamond and to potential customers.

Unusual Diamonds

Two additional unusual diamonds came in the same day and were the same greenish-gray color—a color that would not normally prompt a gemologist to use the conductometer, since only blue and laminated blue and brown diamonds are thought to be conductive. However, the fifth stone

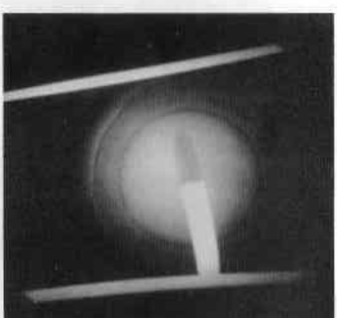


Figure 3

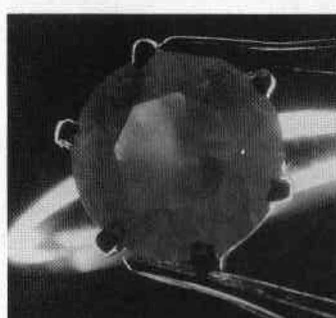


Figure 4

from the clasp end of the bracelet in *Figure 5* glowed strongly after short-wave ultraviolet was turned off, suggesting the phosphorescence of a Type IIB diamond. It proved to be a strong conductor, as was a loose 1-carat marquise of the same color. The fifth stone from the other end of the bracelet was also conductive but expectably so, since it was a soft blue in color. The other 12 stones comprised a strikingly beautiful collection of natural fancy-colored gems.

Figure 5

Chrome Aventurine

Figure 6 is the absorption spectrum of a beautiful green quartz that, for lack of terminology, we called chrome aventurine. The translucency and rich color made the stone pass as jadeite, until one more knowledgeable dealer became suspicious because the stone felt "too light." The spectrum at first made one think of a dyed stone, until it was noted that red was transmitted beyond 7000 Å. The fine-grained aventurine structure could be detected only under high magnification.

Gilson Synthetic Emerald

Figure 7 is a Photoscope picture of a section of a very large Gilson synthetic emerald crystal we had the pleasure to examine when Pierre Gilson, Jr., was in class recently. The platinum wire can be seen clearly, and near it what must be an included crystal of phenakite.

Chatham Synthetic Emerald

We are indeed grateful to Mrs. M. Stuart of Created Gemstones, Inc., New York City, for the group of Chatham flux-fusion emerald crystals

Figure 6

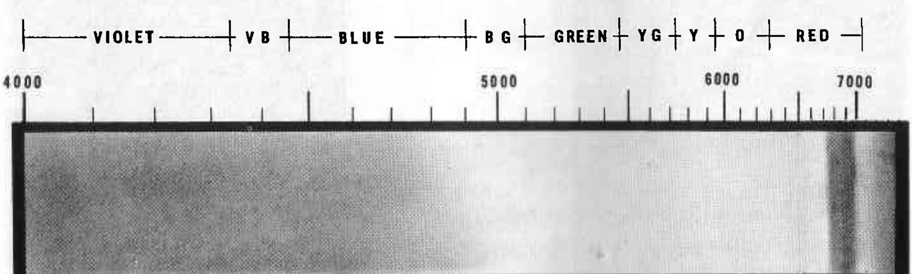


Figure 7

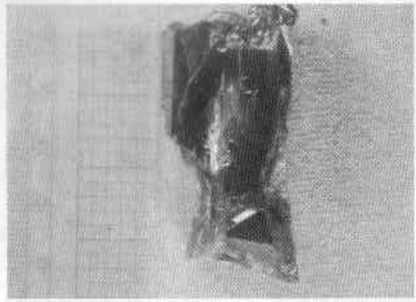


Figure 8

shown in actual size in *Figure 8*. An unusual feature of the specimen was the presence of colorless crystals in openings and depressions. It was assumed that they were phenakite and should be of interest to the avid micromount collector (*Figures 9* and *10*).

Figure 9

Figure 10

Diamond Inclusion in Diamond

In *Figure 11* an included crystal of diamond just beneath the table of a round diamond brilliant can be readily seen. The faces of the crystal were so smooth that they contributed unexpected flashes of brilliancy as the stone was turned. Our thanks to Irwin Moed, diamond dealer, New York City, for allowing us to study this stone.

Name the Cutting Style

We were at a loss for the name of the cut of the diamond shown in *Figure 12*. The crown and pavilion were identical and were each like the pavilion alone of a "modified double brilliant, cushion antique in shape."

Mammoth Ivory?

Occasionally, we are presented with an item to test that we are sure is

Figure 11

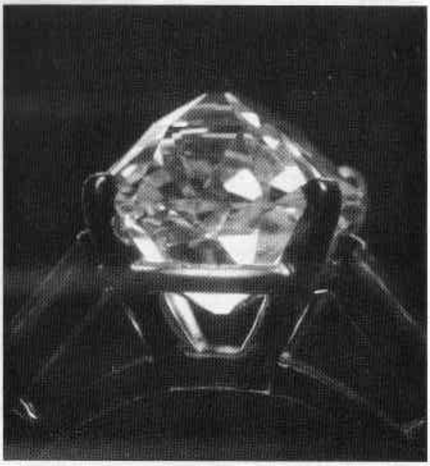
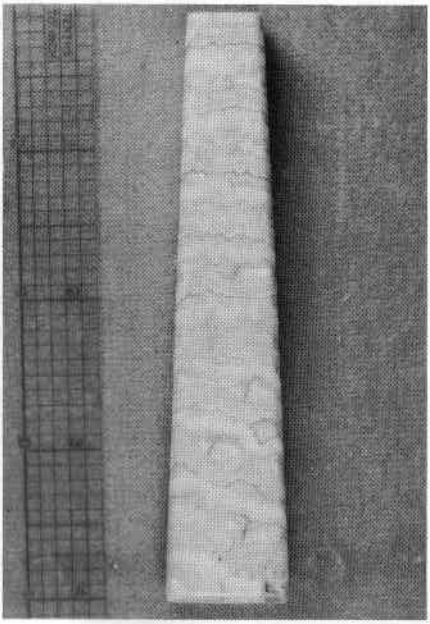


Figure 12

outside our field. One such item, shown in *Figure 13* approximately actual size, was an irregularly banded knife handle in tan, yellowish and nearly white. It was clear that the different colors were of different hardness, because of the apparent undercutting. The white portion was the hardest and proved to have the higher refractive index (1.61), whereas the yellowish to tan areas gave readings of 1.55 or 1.56. We were quite sure it was organic, but the owner had shown it to several museum curators who had pronounced it "Mexican onyx," "banded marble" and "early plastic." With this confusing information to spur us on we undertook its identification–and a return to the old textbooks.

Meanwhile, to assist us, our client returned several days later with a sawed chunk of the material, which gave similar readings and appeared the same in ultraviolet light: banded white and yellow fluorescence. He was told the chunk was mammoth molar. With this as a clue, we found a reference to elephant-molar ivory in Robert Webster's admirable book: "This molar ivory often shows cracks along the division of the enamel and the cement, which produces a weakness in the

Figure 13



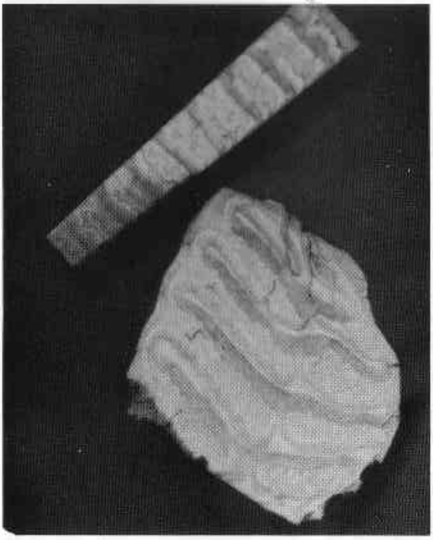


Figure 14

Figure 15

material. Such ivory is sometimes used *for the production of knife handles.*" (Now we knew we were on the right track!) We had noted the cracks and suspected the different layers to be different in hardness. Webster continued: "This characteristic structure is due to the teeth being composed of vertical plates of dentine separately enveloped with enamel and cemented together by the cement."

The only thing we could not prove was whether it was from an extinct or existing elephant. We suspect that mammoth molar would be darker in color.

One test we did was not mentioned by Webster and may be significant: a drop of hydrochloric acid caused gentle effervescence, especially at the cracks. *Figure 14* shows the knife handle and the sliced molar. *Figure 15* is an enlarged photograph of a section of the handle, which was very kindly donated to the Institute by our client, student A. Zacharya, Stamford, Connecticut.

Unpolished Girdles

In the last column, we mentioned that an unpolished girdle on a marquise or pear-shaped diamond that draws color will tend to enhance the color from the white frosted-girdle reflections near the end. A clever diamond cutter can use the same principle to give brilliancy to an extremely thin stone.

A marquise shown to us recently by diamond cutter Ralph Shapiro had a depth percentage of less than 40%, yet, because of the girdle reflections being nearly half way to the culet, it was alive with what Mr. Shapiro called "false brilliancy" – reflections from a slightly thick, faceted girdle.

We are, incidentally, grateful to Mr. Shapiro for several fine pink-conch shells, souvenirs no doubt from a West Indian vacation.

Alexandritelike Garnet

What may well be one of the rarest gem materials at the moment was identified as alexandritelike garnet. It was a rolled pebble weighing approximately three carats. It changed color dramatically from green in daylight to red-purple in artificial light. We are indebted to Dr. John Saul of Nairobi, Kenya, for the chance to study this specimen and for the gift of unusual rough Tanzanian minerals. Thus far, our staff lapidary, Jerry Call, has cut brown transparent idocrase, yellow diopside, light-green plagioclase and rich-blue kyanite.

Figure 16

New Materials

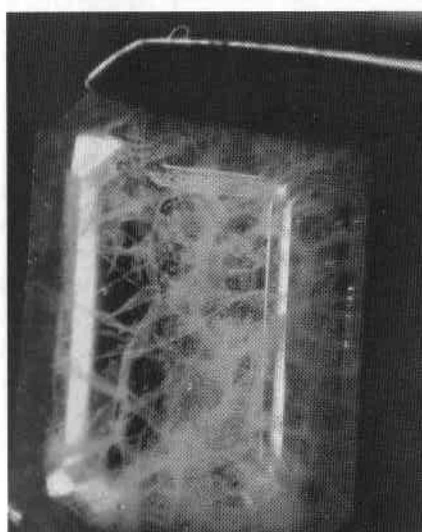
Jerry vacationed in Brazil recently and returned with several mineral specimens, among which was a cluster of rose-quartz crystals – our first – a gift to the Institute from student Jules Sauer of Rio de Janeiro. Call also had rock crystal with black dendritic inclusions along healed fractures (*Figure 16*).

Zerfass Synthetic Emerald

We would like to express our thanks to Pierre Gilson, Jr., for the gift of a Zerfass synthetic emerald that he sent after his return to France following his residence-class study recently. We had mentioned that we had not encountered any stones from this small manufacturer, and were delightfully surprised to receive one for study.

In the microscope it has the appearance of the usual flux-fusion synthetic (*Figure 17*). It fluoresces red under ultraviolet and has the usual refractive index of 1.560-1.564 and floats in a 2.67 specific-gravity liquid. In other words, it is indistinguishable from other fluorescent synthetic emeralds of flux manufacture.

Figure 17



Diamond in Conglomerate

An important addition to the GIA collection was received recently from Allan Caplan, colored-stone importer, New York City. It consisted of two Brazilian diamond-in-matrix specimens. *Figure 18* is one of the specimens, a coarse conglomerate in which at least five minerals can be recognized. The diamond (arrow in *Figures 19* and *20*) is just one of the pebbles in the mix. The other specimen is sandstone in which the diamond is nearly embedded (arrow, *Figure 20*). We were delighted to find that both specimens were authentic, not of the "cemented-in" type frequently encountered.

Odd Opal

Figure 21 illustrates a natural greenish opal that on sight one would call black treated. The color spots were circular and many of them had a dark spot in the center that could be made to be yellow, green or blue by rotating the stone.

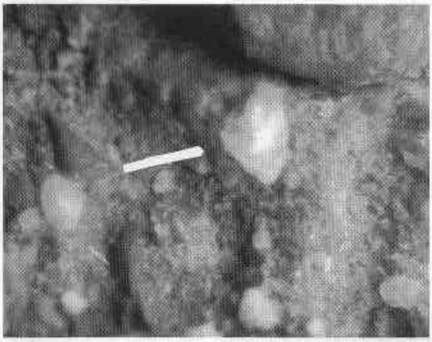


Figure 19

Further Acknowledgments

In addition to the above-mentioned gifts, we wish to express our sincere appreciation for the following:

To Church & Co., Bloomfield, New

Figure 18

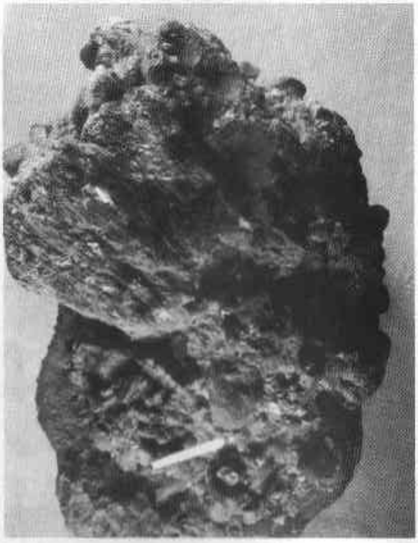
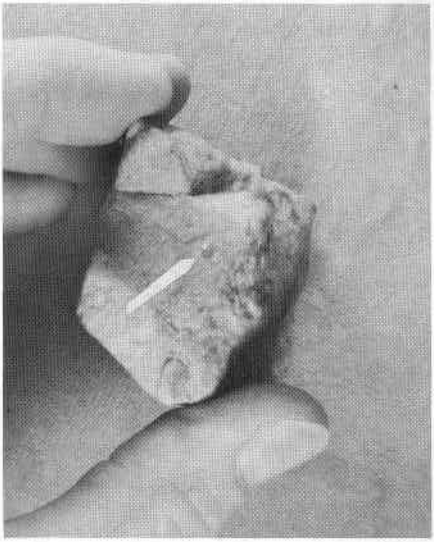


Figure 20



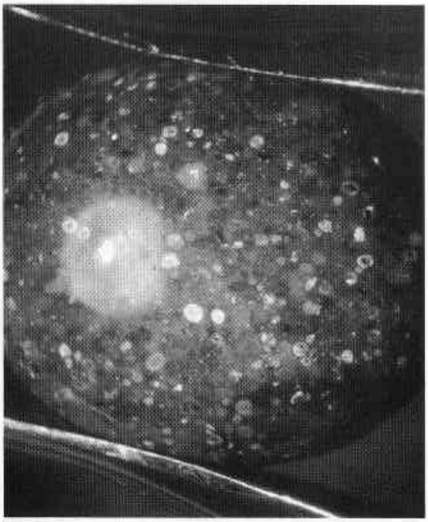


Figure 21

Jersey, for a great number of stones of many species and varieties.

To **Allan Caplan** for many Brazilian and other stones.

To Vartanian & Sons, Inc., colored-stone importers, New York City, for opals and green-dyed chalcedony in sizes that closely resemble Trapiche emeralds.

To student **Murray Darvik** for some handsome dioptase crystals, which brought to mind again how unfortunate that this beautiful green mineral is not tough enough to cut and wear.

To **Walter Arnstein**, gem dealer, New York City, for a specimen of the alexandrite and emerald mentioned in the last column.

Gemological Digests

DIAMOND FIRMS FINED

The following is a news release, dated April 10, 1970, from the office of Louis J. Lefkowitz, Attorney General of New York County:

" 'Diamonds may be a girl's best friend, but one retail diamond concern and two diamond-appraisal companies are definitely not,' Attorney General Louis J. Lefkowitz said yesterday when he obtained an order in Supreme Court, New York County, enjoining the firms from alleged deceptive practices in supplying inflated appraisals of diamonds to prospective buyers.

"The order, signed by Justice Frederick Backer, was consented to by Furman & Meyers, Inc., 1196 6th Ave., New York City, and the appraisal companies, J. Simpson & Co., Inc., 1176 6th Ave., New York City, and Al Edelstein of the New York Diamond & Jewelry Appraisal Service, 29 W. 47th St., New York City.

"The investigation, by the Bureau of Consumer Frauds & Protection of the Attorney General's office, assisted by the Gemological Institute of America and the Jewelers' Vigilance Committee, used undercover shoppers who went to Furman & Meyers, Inc., and were shown diamonds in a requested price range and chose one. Before a price was given they were steered to J. Simpson & Co., Inc., where an appraisal was made. On their return to Furman & Meyers, Inc., the shoppers were directed to the 'official state appraiser,' New York Diamond & Jewelry Appraisal Service, where another appraisal, almost identical with Simpson's appraisal, was made. Only then was a sales price quoted by Furman & Meyers.

"According to the affidavit of Assistant District Attorney Stephen Mindell, who handled the case for the Attorney General's office, Furman & Meyers, Inc., and J. Simpson & Co., Inc., have identical officers and stockholders, although this was unknown to diamond purchasers. Furthermore, the investigation revealed that the appraisals were substantially higher, by as much as 50 percent, than those given by other appraisers subsequently consulted by the Attorney General's office. Of course, New York Diamond & Jewelry Appraisal Service was not an 'official state appraiser,' the Attorney General said.

"The order prohibits the named firms from misrepresentation in the appraisal and sale of diamonds, and prohibits the use of such terms as 'slightly imperfect,' 'full brilliance,' 'excellent brilliance,' 'fine white color,' 'commercial white,' 'clean' or similar terms in a misleading manner. The order also requires affirmative disclosure to the public of the close relationship between the firms, and the appraisers must provide prospective purchasers with a value figure based on a *bona fide* estimation of the present approximate retail replacement cost of an identical item.

"Attorney General Lefkowitz praised the Jewelers' Vigilance Committee and the Gemological Institute of America for their assistance in the investigation.

" 'There is enough uncertainty in determining the value of the diamond without having to be concerned with collusion between retailers and appraisers,' the Attorney General noted. He emphasized that size, shape, clarity and other factors affect the value of the diamond, and there may be differences of opinion as to value even among reputable firms.

"The firms paid $2400 in costs and consented to the entry of the order, but denied any violation of law."

A DIAMOND AND PRECIOUS-STONE STOCK EXCHANGE PLANNED IN IDAR-OBERSTEIN

Idar-Oberstein, the well-known German gemstone center, is planning the establishment of a diamond and precious-stone stock exchange.

A committee for founding the stock exchange was formed in January of 1970, consisting of Germany's oldest and largest diamond-cutting plants, wholesalers and lapidaries.

The building housing the Exchange will consist of a postoffice, a travel agency, a stock-exchange assembly room, board rooms, bank branches, a large restaurant, and 150 offices. The structure will be 14 stories high.

About 800 to 1000 reputable gem dealers will be in the Exchange, and drafting the final constitution will take place in the near future. The *Verband der Edelstein und Diamantindustrie* will assume the organizational tasks.

SAPPHIRES CAUSE NEW MINING BOOM

The following is a news release, dated March 30, 1970, from the Press & Information Officer at the Australian Consulate General's office, San Francisco:

"In the excitement of the current Australian mining boom, with enormous finds of nickel, uranium and other minerals sending Australian stock-market prices spiraling, another mining boom has gone virtually unnoticed. In the New England district of

New South Wales, soaring land prices and the scramble for mining leases have heralded a revival of Australia's sapphire-mining industry. The boom has followed recent finds of top-quality sapphires and an increasing world demand for the gems in the wake of falling production in Asia.

"It is estimated that sapphires worth over $200,000 are being won monthly from the sapphire-bearing fields in the rich pastoral district around the towns of Glen Innes and Inverell, about 400 miles northwest of Sydney. This figure will rise sharply in the near future, when mining syndicates and public companies take up their new leases and production begins on a large scale.

"Until now, sapphire mining has been a minor industry carried on by family businesses, small syndicates or partnerships and individuals, using a variety of outdated and sometimes primitive methods. The boom is already effecting a transformation of the area, since the industry is being put on a modern footing in line with other mining ventures. Modern drag shovels and huge mechanical excavators will soon be brought into service to replace old dredging methods of mining.

"The gem industry in Australia in the past has been a comparatively minor one, representing only a fraction of one percent of Australia's total mineral production. Opals have been the major money earner. The total value of sapphires found to date represents only a few million dollars, although precise figures are unknown, since a large number of stones found by fossickers (an Australian term for a miner who gleans what has been left on abandoned workings, mostly on the surface) and weekend prospectors are undeclared.

"In the past, the northern state of Queensland yielded the greatest volume of stones, but now the majority come from the Glen Innes-Inverell fields in northern New South Wales. In the Inverell district, commercial mining operations began at Nullamanna, about 12 miles from the town of Inverell, in 1958. Two years later, mining was resumed at Sapphire, 17 miles from Inverell, after a lapse of 40 years. It was, however, only on a small scale, the official total value of production for the district being only $168,000 to 1965. In the Glen Innes district, commercial sapphire mining began at Reddestone (*Figure 1*), about 7 miles from the town, in 1960, and total value of production to 1965 was $71,000.

"After 1965, production dwindled as drought gradually gripped the area and the streams feeding the sapphire dredges dried up. Last year, when the drought finally broke, rusty equipment was coaxed back into operation and mining resumed. With the increasing demand for sapphires, production rose to $526,635 for the year.

"Mr. Jack Gaukroger, head of a family business that is currently one of the largest producers, estimates that between $100,000 and $150,000 is flooding into the town of Inverell each month as a result of sapphire mining. He declined to disclose the value of his own production, but he said that 14 gem buyers from Sydney and Brisbane now regularly visit the town.

"Until the present boom attracted the large companies, mining methods

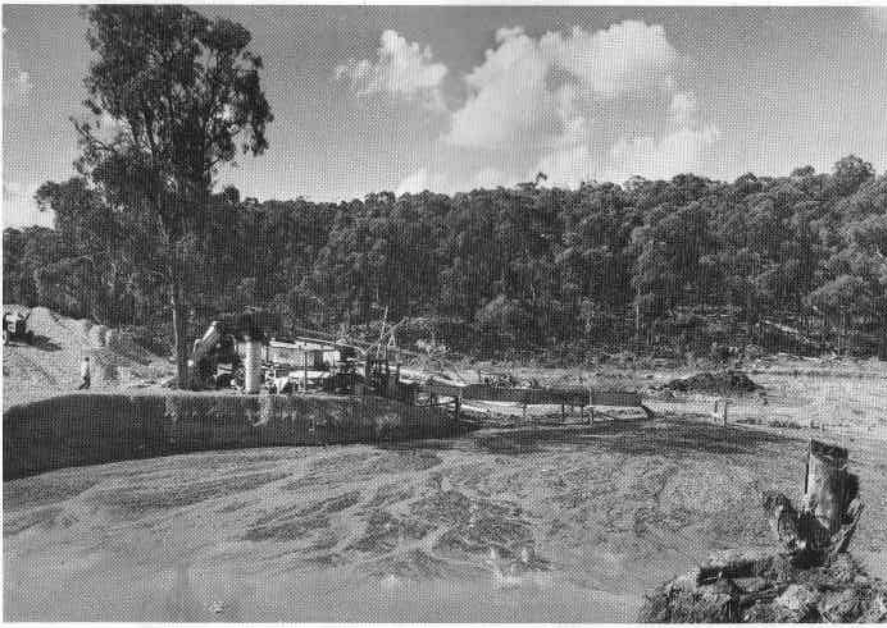


Figure 1

differed little from those used 40 years ago.

"The sapphires are won from stream gravels and alluvial deposits along the creeks that meander through lush properties where cattle and sheep graze. The old hydraulic method involves washing down the creek beds with a high-pressure hose and sucking up the dislodged earth and gravel with a gravel pump. The slurry is then pumped into a trummel, or revolving drum, perforated with various-sized holes, which separate the larger, valueless stones. The 'refined' slurry runs over a series of sluice boxes to a pulsator, which is a large metal box with a bottom of fine mesh. Water forced up and down through the slurry in the box causes the heavier stones to fall to the bottom. The sapphires, having a higher specific gravity than the other rocks, gather at the bottom along with garnets, zircons and other gemstones of lesser value. The boxes are emptied once a week or once a day, depending on their size, and the stones collected are washed in a hand sieve. Any valueless stones still remaining have to be taken out by hand.

"Modern mechanical excavators will place the raw material scooped from the creek beds directly into the pulsators, speeding production and eliminating the need for large quantities of water.

"There are still many miners in the area working on their own, using a simple pan and sieve. One man from Glen Innes found enough sapphires in a few weeks to pay for a new motor car.

"News of the boom has also brought a large number of fortune

Figure 2

hunters and tourists into the district from all over Australia. They have been warned, however, that they are liable to a fine of $1000 for mining without a lease.

"Rough sapphires are sorted according to size and quality, either on the spot or in homes around the town (*Figures 2* and *3*), and the graded stones are then sold to buyers from Sydney and Brisbane or directly overseas.

"Sapphires from the Glen Innes-Inverell fields occur in deep blue, green, yellow and opaque black or bronze colors and in sizes varying from one-tenth to half an inch and occasionally larger.

"Australian sapphires are recognized as being of top quality and bring high prices in world markets. Most are exported in the rough to be cut in Thailand and France, although an increasing number are being cut in Sydney and Brisbane."

Figure 3

Book Reviews

CONTEMPORARY JEWELRY, by Philip Morton. Published by Holt, Rinehart & Winston, New York City, 1970. Clothbound. 308 pages. Illustrated with 500 black-and-white photographs and line drawings and 16 full-page color plates. Price: $9.95.

To quote the author, "Contemporary jewelry, like painting or sculpture, is an art form – and one that has found brilliant expression in the present century. It reflects the ideas, forms and relationships of the world we live in today. Its artistic roots lie in the tradition of modern art, and its character is based on the creative observation of the art images of our times, as well as on a mastery of techniques that can express those images in jewelry. Such jewelry often demonstrates a nonobjective sculptural means of expression."

According to Morton, "Contemporary jewelry appears unusual to many people, not because it is abstract but because its shapes and forms differ from those of the jewelry they have commonly seen and worn. These shapes and forms derive from the modern world, just as those of traditional jewelry derive from the world of the past."

Contemporary Jewelry, a most attractive and well-executed book, covers the evolution of jewelry from pre-Columbian and ancient Near East times to the present and discusses the style, design and esthetics of contemporary jewelry as well as the materials and processes for working expressly in this form.

The book is divided into two main parts. The first, a general introduction to the fundamental aspects of working in contemporary jewelry, includes sections on the history of jewelry and on the elements and principles of design.

In the second and major part of the book, the fundamental processes for creating contemporary jewelry (most of which were known and used in early times) are presented. Here, Morton has assembled a series of sequences in which procedures for achieving a desired form or effect are described and illustrated step by step, from raw materials to finished work. The author says that many of the demonstrational sequences, particularly those for the link bracelet and tie clasp, are entirely within the range of the beginning jeweler.

There are also chapters on gemstones, tools and their construction and, for more advanced students and mature artists, on marketing and production. Appendices provide a record of historical exhibits of contemporary jewelry, information on findings and supplies, and a wide range of technical data.

Anyone who wears, admires or wishes to make modern jewelry will wish to give this new book a prominent place in his library.

THE ART OF ENAMELING, by Margaret Seeler. Published by Van Nostrand Reinhold Co., New York City, 1969. 128 pages. Clothbound. Illustrated profusely with black-and-white and 18 color photographs. Price: $14.95.

Written for the novice and the advanced craftsman alike, this beautifully illustrated and comprehensive book explains how to shape precious metal and decorate it with cloisonné, champlevé, plique-à-jour, grisaille, mercury gilding and other techniques. Over 30 pages of specific projects show in a very clear manner how design, enamel, copper, precious metals and skill combine to produce attractive and useful objects.

Countless questions are posed and answered lucidly; e.g., what workspace and equipment are required for metalworking and enameling? how do different metals affect the process of enameling? what kind of cloisonné wire should be used on gold, silver and copper? can the flat, shining appearance of opaque enamels be enriched? where can grisaille white be obtained? what enamels are best for backgrounds? what are the various methods that can be used to prepare metals for champlevé enameling? how can flaws be repaired that develop during firings of an intricate plique-à-jour piece? how are uniform gold balls made for grain enameling? what safety precautions must be taken when gilding with mercury?

A handy appendix lists suppliers and methods of transferring designs, counter-enameling, using acids, repairing flaws, and fitting pinstems and findings.

Margaret Seeler is a teacher of enameling and a graduate of the Academy of Fine & Applied Arts in Berlin, Germany's finest art school.

MODERN JEWELRY–DESIGN & TECHNIQUES, by Irena Brynner. Published by Reinhold Book Corp., New York City, 1969. Clothbound. 95 pages. Illustrated with black-and-white photographs and four color plates. Price $7.95.

The author of this modest but very enlightening book began her career as a sculptor, but her interest in abstract design led her away from portraits in clay, stone and paints to unusual creations in constructed, forged and cast jewelry.

Largely self-taught, Irena Brynner describes in the first part of the book her training in the jewelry profession. With a great deal of talent and perseverance and a minimum amount of equipment, she soon began to sell her unique jewelry to stores in San Francisco. A few years later she moved to New York City, where she gave a number of shows, including a one-man exhibition at the Museum of Contemporary Crafts. Her modern gold and silver stone-set jewelry has also been shown in London, Munich and other European cities.

In the second part of the book, Brynner discusses step-by-step methods of constructing, forging, working with sheet wax and making a ring. The discussion is based on the assumption that the reader already has a basic knowledge of jewelry making, and thus the book is not for beginners. The last chapter illustrates examples of her metal sculpture and free-form iron, gold and silver designs.

Irena Brynner now designs and manufactures her jewelry for private customers.

JADE–ESSENCE OF HILLS & STREAMS, by Professor H. Howard Hansford. Published by American Elsevier Publishing Co., Inc., New York City, 1970. Clothbound. 220 pages. Illustrated with numerous black-and-white and color photographs. Price: $25.

Professor Hansford, who has written extensively on jade (viz., *Chinese Jade Carving* and *Chinese Carved Jades*), has based his current book on the world-famous von Oertzen Collection of carved jades, one of the most important and valuable collections of its kind extant.

Its importance lies not so much in its size as in its historical range and in the many unique and beautiful pieces it contains. It is representative of the best in jade design and craftsmanship throughout the ages, from the neolithic of thousands of years ago to the mid-twentieth century. Possibly the most distinguished group is that of the numerous small carvings of the Eastern Chou period, over 2000 years old. The best of these are not surpassed in quality by any to be seen in the museums of Europe and America.

The first part of the book consists of a brief discussion of jade in general, touching on such topics as colors of jade, jadeite vs. nephrite, prehistoric tools of jade, jades from the new world, sources of the material, magic weapons of jade, gems and ornaments, the dating of Chinese jades, court costume and heraldry, motif and symbolism, the mystery of jade carving, and archaic jades and fondling pieces.

Following this, the major part of the book is devoted to black-and-white and color photographs of the von Oertzen Jade Collection, showing examples of carved jades from the legendary Hsia Dynasty to the present People's Republic.

This book will prove worthwhile for all those interested in Oriental art in general and jade in particular.

OMISSION

In the Summer, 1969, issue of *Gems & Gemology*, in the article entitled *On the Nature of Mineral Inclusions in Gemstones*, by Gübelin, page 43, line 26, left-hand column, between the words "minerals" and "from," the following material was inadvertently omitted:

"... that had been settled on the former crystal faces or had grown freely within the solidifying melt.

"With atomic spacings (lattice constants) in the guest and host crystals being virtually equal, the mineral embraced will coordinate itself in relevant crystallonomic directions pertaining to its host mineral. An example of this is furnished by olivine, whose pinacoidal face (010) adheres onto the octahedral face (111) of the diamond in such a manner that the long axis of the olivine that is elongated after the diagonal [110] runs parallel to the edge of the octahedron. The identity period for the structure of the olivine along the direction [110] is $\sqrt{a^2 = b^2}$ = 7.75 Å, in the diamond $a_o \cdot \sqrt{2}$ = 5.04 Å (private information from Prof. Dr. H. Strunz, Berlin). Other known examples are supplied by the oriented rutile needles in almandite and the exsolved fine rutile needles (silk) in corundum.

"As opposed to preëxistent and syngenetic mineral inclusions, 'epigenetic mineral inclusions' do not form until after the growth of the host crystal is fully completed. Their formation must be ascribed to the well-known process of exsolution. This is a subsequent separation of one or even of several components (that may likewise exist, and have in fact been identified, as independent minerals) ..."

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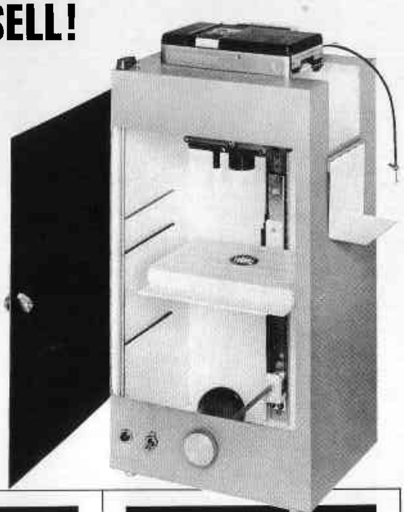

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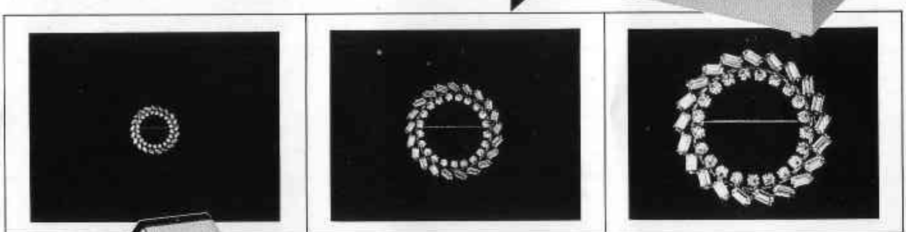

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