

# Gems & Gemology

A bi-monthly periodical, without paid advertising, supported by subscriptions from Gemologists and other gem enthusiasts, aims to increase the gem merchant's knowledge and ability in order that he may protect more thoroughly his customers' best interests.

VOLUME I

MAY-JUNE, 1934

NUMBER 3

## *In This Issue:*

A Comparison of the Cullinan and Jonkers Diamonds, <i>J. R. Sutton</i> .....	72
The Gem for Mother on Her Day, <i>B. W. Bell</i> .....	73
The Gem Collection in Field Museum, <i>Dr. Oliver C. Farrington</i> .....	75
Jade.....	80
Gem Lusters, <i>Robert M. Shipley</i> .....	83
Biographical Sketches—Prof. Paul F. Kerr, <i>Robert Shipley, Jr.</i> .....	84
Gemological Encyclopedia, <i>Henry E. Briggs, Ph.D.</i> .....	85
Gems of the Century of Progress, <i>G. Frederick Shepherd</i> .....	87
Gemological Glossary.....	89
The Nassak Diamond, <i>Robert M. Shipley</i> .....	93
Pleochroism in the Determination of Gem Minerals, <i>Dr. René Engel</i> .....	95
Selected Bibliography.....	97
Book Reviews, <i>Robert Shipley, Jr.</i> .....	98
Two Large Diamonds, <i>H. T. Dickinson</i> .....	99
Eight New Qualifying Certified Gemologists.....	100
Graduate Members of the American Gem Society.....	100

*Published by*

THE GEMOLOGICAL INSTITUTE OF AMERICA

3511 W. Sixth Street



Los Angeles, Calif.

---

*Gems and Gemology* is the official organ of the American Gem Society and with it is included the Bi-Monthly Confidential Service of the Gemological Institute of America. It is published as a part of the educational gem and jewelry program of the American Gem Society by the Gemological Institute. The Gemological Institute of America is a non-profit educational institution directed by voluntary boards consisting of international gem authorities and appointees of American jewelry trade associations. It confines its activities to the furnishing of education, books, instruments and educational publicity material of a gemological or jewelry nature. In harmony with its policy of maintaining an unbiased and uninfused position in the gem and jewelry trade, no advertising is accepted in this or any other of its publications. *Gems and Gemology* will not overlap the field of any other periodical in America or England.

---



## IN OUR NEXT ISSUE

The story of the Sancy Diamond, perhaps the most-pawned gem of all time, will be related.

Dr. Thomas Clements, of the University of Southern California, will appear in *Gems & Gemology* again.

Dr. Henry E. Briggs, in his Gemological Encyclopedia, completes his discussion of the physical properties of gems and begins his interesting chapter on optics.

A short article by Dr. R. C. Emmons explains the gemological instruction presented at the University of Wisconsin.

The Glossary, Bibliography and Book Reviews will be printed, and if space permits, another gem species will be reviewed.

There will be an article on the security value of gem stones.

---

## EDITORIAL FORUM

WE HAVE FAILED our readers. In an effort to print material of immediate value, we have promised more than we can print. An article on microscopes and another on display were planned for this number, and they could not appear. They will be held for the issue after this one.

— ● —

A QUICK LOOK through these pages shows that there just isn't room for another twenty words. After all, thirty-two pages will hold only a certain amount of type, even with the assistance of an obliging printer. We have retained in this issue the material which will result in the greatest service to the greatest number of readers.

— ● —

THE STAFF at the Institute's headquarters is in something of a twit as we go to press. The reason—the furthest-distant enrollment has just been received. Mr. Max Cooper of Cape Town, South Africa—clear around on the opposite side of the world—has just sent in his contract.

— ● —

SPEAKING OF SOUTH AFRICA reminds us of diamonds, and a display we saw at the Chicago World's Fair, at the head of the Diamond Mine near the exhibit of Famous Diamonds. It is called "The Nature of the Diamond", and it shows at a glance more about the geological nature of the South African diamond deposits than an half-hour lecture, even by a fast talker, could explain.

— ● —

AFTER A. McC. BECKLEY'S ARTICLE, *The Scientists' View of the Cultivated Pearl*, published in our last issue, we expected to hear a response from aroused dealers in natural pearls. But even though we encouraged,

even solicited, these dealers to write their reasons for not considering a cultivated pearl to be genuine, we received but two replies, both letters, and not enough to make a convincing article.

---

WE FEAR that the conclusion of our readers may be that there is no argument to be advanced against calling the cultivated pearl genuine. If there is one—and surely there must be—we urge someone to write it to us. We will keep open our promise to print any article received which presents the genuine pearl dealers' views which conflict with those of the scientists as expressed in the above-mentioned article.

---

DURING the past three years a constant effort has been made to increase the interest in gems among the public. Definite results of this effort are now being felt. Radio stations are presenting programs with the aid of material prepared by the G. I. A. treating with colored stones and diamonds. KFAC Los Angeles, is presenting a serial on famous diamonds. Clubs are asking Graduate Members A. G. S. and Qualifying Certified Gemologists to speak before their organizations. There has even been filmed "The Mystery of Mr. X", starring Robert Montgomery; a motion picture which tells the fate of a large diamond.

---

THE RADIO, the movies, and the popular magazines are perhaps the best barometers of the public mind. With the re-appearing of the so-called "jewel-thief" story in these mediums, we have a very positive indication that the American public is renewing its interest in gems.

---

WHAT is a Jager? How is this trade grade of diamond defined, and how does it differ from a River? The replies to a questionnaire sent to a number of American retail jewelers have proved confusing rather than enlightening. A reply from Illinois states that the Jager is a blue-white stone which ranks below the River in quality. A contradictory answer from the same state classes the Jager as the "superior stone because of the tint of blue." A Californian tells us that the River is a fine blue and that the Jager shows a violet tint, and from a New York dealer comes the statement that the two terms are now synonymous. The definition of a Jager *must* be established if the retailer and his customers are to be protected.

---

### Cornflower Blue Not Best Color

The most valued colour (of sapphire) is an intense royal blue. (Deep, but not too dark.) This colour must not darken or change in any way by artificial light. Such stones are rare, and will realize far higher prices than those of a cornflower-blue colour which are also much appreciated, but for value cannot be compared with the above superfine stones which come exclusively from Burma.—Note by Major J. F. HALFORD-WATKINS, *Mogok, Upper Burma.*

## A COMPARISON OF THE CULLINAN AND JONKERS DIAMONDS

Oaklands, Binfield, Berks, England, March 20, 1934.

Dear Sir:

I have delayed answering your letter of Feb. 1, '34 until I could see the newly-found Jonker diamond. This I have seen, and have compared it with the fine glass model of the Cullinan. Also I have discussed the matter of the latter stone with Mr. E. Weatherby, valuator to the Diamond Corporation, who had examined it carefully after it was found.

The resemblance between the Cullinan and Jonker stones is remarkable. In fact, if the latter were four times its actual size the two would almost be twin brothers. Each stone has the same broad base ("cleavage plane!"). Each has suffered some damage by splintery fracture; and what is significant, the base on each is surrounded by a small rounded bevel mainly conforming to the dodecahedral plane, both about 1/10 of an inch across. The chief difference is that whereas the base on the Cullinan is not absolutely plane, though smooth, the base of the Jonker is not smooth and carries some small projections.

Mr. Weatherby is emphatic that the Cullinan is not a cleavage piece in the mineralogical sense. He never had any doubts that it was a whole stone as Nature made it, saving minor accidents. All this confirms me in my opinion.

Of the authors you quote\* is there one who can be regarded as an expert in the study of the natural diamond, especially diamond cleavage? Is there one whose knowledge is equal to say, a week's work in a big diamond office? They have all seen, in museums and elsewhere, and Crookes experimented somewhat on, the stone. But their united testimony only comes to this: That one copies what the other has said, all taking Corstorphine's "technical description" as gospel. (Just as this person copies what the other says about diamonds *exploding!*)

I have seen an unbroken diamond fresh from the mine which I would wager diamond to paste that every one of the same authors would have said had been roughly shaped by a cutter. Most of them seem not able to tell diamond from zircon at sight. I know of three cases—one in Canada, and two in South Africa—where the geologists have reported diamond finds:—actually zircon in one, garnet in another, and probably zircon in the third.

My definition of cleavage would be *the opened face of a split diamond*. "Cleavage" as a trade term includes both broken diamonds and unbroken misshapen lumps. Both the Cullinan and the Jonker would be trade cleavages.

I left Corstorphine's technical description behind in South Africa; but speaking from memory there was no suggestion in it of a proper examination of the "cleavage" faces. With few exceptions octahedron faces of the diamond crystal carry triangular indentations. But on occasional so-called "glassies" one may look in vain for these markings; the surfaces being as mirror-like as a cleavage face.

All things considered, it seems to me that those who claim the Cullinan as a piece of a much bigger stone have a stiff proposition to prove.

Yours faithfully,

J. R. SUTTON,

*Author of "Diamond, A Descriptive Treatise."*

P. S. The Jonker and Cullinan clearly grew under identical conditions. Therefore, the Jonker not being a portion of a much bigger stone, it is a fair argument that the Cullinan also is not a fragment.

\*Messrs. Hatch and Corstorphine, Cattelle, Kraus, Smith, Wagner, and others have made the statement in their books that the Cullinan had suffered cleavage before it was found.—

## THE GEM FOR MOTHER ON HER DAY

B. W. BELL

When the idea of selecting a gem suitable for Mother on her day was first suggested, it seemed that without question, Amethyst would be chosen. Being old enough to be the mother for whom this gem might be chosen I instinctively thought of my mother and Amethyst is the gem I would select for her. Would this not be the gem perhaps more suitable for the grandmother? Is it not associated with lavender and old lace?

The gem suitable for all mothers of all ages. This was the gem to be considered carefully by our members—a gem which could be procured in a wide price range—one which could be used as a ring stone, for earrings, clips, brooches, beads, as a color accent to costumes. The smarter and deeper green shades of Jade can be selected for the younger mother—the white, lighter green and lavender shades for the older mother. There have been many collectors of Jade and the first Mothers' Day gift may be the beginning of a Jade collection. Jade probably received the greatest number of votes because unlike any other gem, it offers opportunities for successive gifts during the years. The Chinese rank Jade above all precious stones and they believe it unites in itself the five cardinal virtues—Charity (which is love), Modesty, Courage, Justice, and Wisdom. These virtues are surely the attributes of Mother. Ornaments, desk fittings, boxes all come in the less precious varieties of Jade—an almost inexhaustible selection suitable for all tastes and purses. As the first votes came, Amethyst led, but later a surprising number of votes were cast for Jade and the final count showed Jade to have the first place.

The selection of a Mothers' Day gem offers a fine opportunity for the jeweler with imagination, even though his stock be limited to one or two pieces of Jade. These pieces may be used as the nucleus of a window display which will create interest and produce sales of his merchandise suitable for Mothers' Day gifts. It is the first opportunity the jeweler has had to focus the interest associated with Mothers' Day upon his window and merchandise. This year the time is too short to build up the prestige and interest which this gem should receive. All the jeweler can hope to do is to plant the seed for sales next year and many years to come. The window should, I believe, carry if possible a print of Whistler's "Mother". This print can be borrowed from an art store in your community or purchased through the National Jeweler magazine. The background of the window should be white. Don't fail to remember the present vogue for white. There is no more arrestingly beautiful combination for display than Jade-green, white, and silver. The Mothers' Day card which has been sent to all Associate Members of the American Gem Society can be effectively placed in the window either unframed or framed in silver. The postage stamps which the Government is issuing for the first time this year could also be a part of the window display. I believe that the jeweler should avoid putting too much in the window. Restraint, dignity and beauty should be the keynote of this display—it honors Mother on her day. Crowded windows never sell sentiment merchandise.

We solicit your help and cooperation in the Mothers' Day campaign for next year. Send window display suggestions, photographs of your window,

to be used by this magazine. Save this year's sign and another will be sent next year.

A gem for Mother on her day has been selected—a Real Gift for a Real Mother—let us not lose sight of the fact that at least ninety per cent of the gems sold through the ages have been sold because of love of some one—the most universal of all love is the love of a Mother.

All the many signs tying in with campaigns and sent with *Gems & Gemology* which you receive from us will be of the same size as the one sent for the Mother's Day gem sign. A silver or leather frame, probably from your stock, in which is placed this Mother's Day sign pasted upon a suitable background (light green or ivory preferred) will add to the attractiveness of the display. A frame has been especially designed for these signs. It is an artistic one, of platinum and gold finish. It has a grey cardboard easel back and will be delivered to you for \$1.25, postage prepaid, upon receipt of remittance to A. DeBarr, Jr., 1816 Glendale Blvd., Los Angeles.

### Plans to Be Made for Fathers' Day Gift

The keen interest shown by Members of the American Gem Society in selecting a gem for Mothers' Day has made the selection of a similar gift for Fathers' Day desirable.

A preliminary discussion of the plan has produced the suggestion that some article of jewelry, for instance a particular type of fathers' ring, cuff buttons, or even desk or writing equipment might be more appropriate than some certain gem. However, it must fall within the province of the jewelers' activities. This is, of course, merely a suggestion; the selection will be made from the votes of the Members of the A. G. S.

Fathers' Day falls on June 17; therefore, it will not be possible to publish the announcement of the selection in time to be of use this year. However, the nature of the Fathers' Day gift to be featured by Members of the A. G. S. may be carefully chosen now, and plans intelligently laid for a sales campaign in connection with a Mothers' Day campaign in 1935. Below is a coupon by which you are urged to enter your choice of a Fathers' Day gift, be it a gem stone or some other article of jewelry, and send it to the headquarters of the A. G. S.

-----  
**American Gem Society,**  
**555 South Alexandria.**  
**Los Angeles, California.**

My choice for a Fathers' Day gift is:

.....  
 .....  
 (*Gem stone or other article of jewelry*)

Name .....

Address .....

City .....

## THE GEM COLLECTION IN FIELD MUSEUM

BY THE LATE DR. OLIVER C. FARRINGTON

The collection of gems and jewels displayed in Higinbotham Hall of Field Museum of Natural History, Chicago, is one of the most complete and valuable in existence. It contains nearly every known variety of gems and of precious and semi-precious stones in the finest cut examples and as crystals, cleavages and rolled grains. Many of the specimens are of historic interest and world-wide reputation. The major part of the collection was brought together for Tiffany and Company of New York by the brilliant efforts of that prince of collectors, George F. Kunz. It was exhibited by the Tiffany firm at the World's Columbian Exposition in Chicago in 1893, where it formed one of the most notable exhibits shown. At the close of the exposition, the collection was purchased by the late H. H. Higinbotham of Chicago and presented by him to the Field Museum of Natural History (or the Field Columbian Museum as it was known at that time). Additions have been made to the collection from time to time as desirable pieces have been obtained by Museum expeditions or Museum benefactors have donated them. Among the latter, William J. Chalmers of Chicago has been a generous contributor, presenting a number of fine specimens. A number of notable Brazilian gems were also added to the collection by the Marshall Field Expedition to Brazil made in 1922-23.

### An Engraved Diamond

One of the most important specimens in the collection is a diamond remarkable for having engraved on it in intaglio form the bust of King William II of Holland. The work is so skilfully executed that an excellent likeness of the king is presented. The diamond itself is pear-shaped and one-half of an inch in length. Its weight is about ten carats. It has a setting of gold, part of which is in the form of a crown, which caps the head of the king. The reverse of the stone and all edges are finished with facets which illumine the interior. The whole is fastened to a pin in such a manner that it can be used as a scarf pin. The engraving and mounting of the stone were the work of the famous diamond cutter De Vrees of Amsterdam and so exacting and laborious was his task that it consumed all his spare time for five years. The diamond was first exhibited to the public at the Paris Exposition in 1878, and later at the World's Columbian Exposition in Chicago in 1893.

### Rough Diamonds

Other representative diamonds in the collection include four cut Brazilian diamonds, the largest of which weighs four carats and another which

shows the characteristic luminescence and greenish-yellow color of some of the Bahia diamonds. Also twenty rough Brazilian diamonds illustrate different colors and forms of these stones. Four black diamonds or "carbonados", the occurrence of which is almost exclusively confined to the state of Bahia, are also shown. There is also a large cut black diamond from the state of Bahia. Except for the engraved stone previously described, South African diamonds are represented only by rough stones. The largest of these is a transparent octahedron, which with some adhering bort, weighs fifty-five carats. A bort from South Africa of spherical form in the collection is three-quarters of an inch in diameter and weighs forty-one and 19/32 carats. A diamond in matrix which was in the collection of John Ruskin is of historical interest. It is supposed to have been from one of the early finds in South Africa.

### Many Emeralds Are Here

Representing emeralds, there are crystals from the Ural Mountains, from Bom Jesus des Meiras, Bahia, and from Alexander County, North Carolina. Of these crystals, those collected by the Marshall Field Expedition at Bom Jesus des Meiras, Brazil, in 1923 are the most important. One of the crystals weighs 175 grams, is three inches long and one and one-half inches in diameter, another weighs 151 grams, is three inches long and one and one-quarter inches in diameter, and a third weighs 128 grams, is five inches long and one inch in diameter. The first two are terminated by one basal plane each, while the third has a low pyramidal and basal plane termination. All are of rich emerald green color and contain many transparent portions. Another perfectly clear crystal of this series is paler in color but beautifully terminated by two sets of pyramids. It weighs twenty-seven grams, is one and three-quarters inches long and three-quarters inch in diameter. From Alexander County, North Carolina, three crystals are shown ranging from one and one-half to three inches in length and about one inch in diameter. They have a total weight of ninety-four grams. Two, small, cut emeralds are also shown from this locality. The Columbian emeralds are represented by a crystal one inch in length and three-quarters inch in diameter, embedded in a matrix of bituminous limestone and by a cut stone of rich color weighing four and 7/32 carats and having the dimensions,  $\frac{9}{16} \times \frac{7}{16}$  of an inch. Eight small, cut emeralds, weighing altogether four carats, from Takovaya, Ural Mountains, illustrate the color of the fine Siberian emeralds.

Sapphire is represented by a large number of cut stones varying widely in size and color. Most of the larger stones have Ceylon as their place of origin. The series of Star sapphires is especially important, and includes six large stones. Of these, one weighs 134 carats and has a diameter of  $\frac{7}{8}$  inch and a like depth. Three from Kandy, Ceylon, have a total weight of 219 15/32 carats, and two others weigh 130 and 135 carats respectively. Blue sapphire is illustrated by a circular cut stone weighing fifty-four carats. Its diameter is  $\frac{1}{2}$  of an inch and its depth  $\frac{5}{8}$  of an inch. Smaller blue sapphires are also shown. Two large brilliant cut yellow sapphires shown weigh, one, ninety-nine and one-half and the other, sixty-two and one-half carats. The first has the dimension of  $\frac{1}{2} \times \frac{1}{2}$  of an inch on the table



end and a depth of  $\frac{11}{16}$  of an inch, and the second is one inch x  $\frac{11}{16}$  of an inch on the table end and has a depth of  $\frac{5}{8}$  inch.

A fine ruby spinel shown has the dimensions on the girdle of  $\frac{7}{8}$ x $\frac{3}{4}$  of an inch and weighs thirty-one and  $\frac{7}{32}$  carats. It is from the Irawaddy district, Burmah.

#### Beryls of Several Colors

The series of cut aquamarines in the collection presents a number of specimens unusual for their size and fine color. Of these the largest is a Siberian stone of beautiful sea-green tint. It weighs 331 $\frac{1}{2}$  carats, is oval in form and is  $2\frac{1}{4}$ x $1\frac{5}{8}$  inches on the girdle and  $\frac{1}{8}$  inches deep. It is from Adun Tschilon, Siberia and was at one time in the Henry Philip Hope collection. Next to this in size is one of a rich blue color with no trace of green. It is circular in outline, weighs 190 carats and measures one and one-half inches in diameter with a depth of  $\frac{7}{8}$  of an inch. This gem is from Arasuahy, Minas Geraes, Brazil, and was obtained in 1923 by the Marshall Field Expedition to that country. The finest aquamarine ever produced in the United States is also preserved in this collection. This stone measures one and  $\frac{3}{8}$  inches by one and  $\frac{3}{8}$  inches by three-quarters inch (35x35x20mm). Its color is bluish green and it weighs 133  $\frac{25}{32}$  carats. It was cut from a crystal found in 1881 at Stoneham, Maine. Another large cut aquamarine is from Mursinka, Perm, Russia. It is of English cutting, rectangular in form and weighs 111 $\frac{1}{4}$  carats. The table of the stone measures  $1\frac{1}{2}$ x1 inch. Its color is green, but much paler than that of the larger stones above mentioned. A cut section of aquamarine from Nortschinsk, Russia, shown in the collection is three inches in diameter and  $\frac{3}{8}$  of an inch thick. It is perfectly transparent, sea-green in color, and finished on two broad surfaces, but otherwise rough.

A cut stone of golden beryl collected by the Marshall Field Expedition to Brazil is remarkable for its deep, rich, golden color. It is oval in outline,  $\frac{9}{16}$ x $\frac{5}{8}$  of an inch in dimension and weighs six carats. Another cut beryl, pale yellowish green in color, from Siberia, is circular in outline, one inch in diameter and weighs forty carats. A number of smaller cut stones and crystals illustrate other localities and colors of beryl.

#### A Fine Collection of Topaz

The series of topazes is one of the most complete and important in existence, all principal localities and varieties being represented with especial fullness, both by crystals and by cut stones. The crystallized specimens include a giant mass from Marambaia, Minas Geraes, Brazil. It is in the form of a prismatic crystal, terminated by a steep dome at one end and by basal cleavage at the other. One of the prismatic sides is considerably water-worn. The dimensions of the prism on the cleavage face are seven by fifteen inches. The crystal weighs ninety pounds. Its clearness and transparency are nearly perfect, being interrupted only by a plane of inclusions which passes in an inclined direction through one portion. It is slightly yellowish in color. A number of fine crystallized specimens illustrate the rare blue topazes of Russia. Of these, three are groups, showing the characteristic association of this topaz with smoky quartz, mica and feldspar; the others are single crystals, no less than nine of large size being shown. Among cut

topazes various colors and localities are represented, many of the stones being of large size. The royal golden topaz of Brazil is illustrated by an oval stone, one inch in diameter, weighing fifty-three carats and by several smaller stones. The largest cut blue topaz in the collection is from Ceylon. It is of rectangular form, and deep for its breadth, its dimensions being  $1\frac{1}{2} \times 1\frac{1}{4}$  inches by 1 inch deep. It weighs 290 carats. From the Ural Mountains there is a table-cut stone of jade blue color, having the dimensions of  $1\frac{3}{8} \times 1\frac{1}{8} \times \frac{3}{4}$  inches. It weighs 165 carats. Smaller stones shown from the Ural Mountains range from 109 to  $74\frac{7}{8}$  carats in weight. There is also a blue topaz weighing thirty-five carats from the state of Minas Geraes, Brazil. White topaz is illustrated by a number of cut stones, the largest one being from Ceylon. It weighs 233 carats. It has a circular girdle and is  $1\frac{3}{8}$  inches in diameter. A white topaz from Russia shown weighs 91 carats. Altogether, seventeen large blue and white cut topazes are shown.

### Precious Opal

In the exhibit of precious opal, typical rough and cut stones from Australia, Mexico and the United States are shown. The most remarkable specimen from an historic standpoint is the so-called "Sun God" opal. This opal, in addition to its size and brilliancy, is famous for having been kept in a Persian temple for three centuries. Whether it played any part in the temple ceremonies is not known, but from the manner of its mounting and the name which tradition has ascribed to it, it may have been connected with the worship of the sun or have been itself an object of worship. The stone is of cabochon cut, with elliptical outline. Its length is one inch and width three-quarters of an inch. Its weight with the setting is ninety-five carats. It is carved to represent a human face and is mounted in a hemispherical cup of gold, the surface of which is inscribed with figures of black enamel in Oriental designs. From the border of the cup long, tapering prongs of gold extend radially outward. The resemblance of the whole to a miniature sun and its rays is thus quite striking. The material of the opal indicates a Mexican origin, but the carving does not have Aztec characteristics. The opal was acquired by the famous collector, Henry Philip Hope, in the early part of the nineteenth century, being listed in his catalogue of 1839. It is known to have brought £262 at the sale of the collection in London in 1886.

Tourmaline is illustrated by a number of cut stones and crystals representing the various colors of this gem and the more important localities of the United States, Brazil and Russia. One rubellite (red tourmaline) stone shown from Brazil is table cut,  $\frac{3}{8}$ -inch square, and weighs  $54\frac{1}{2}$  carats. It is of fine color. A green tourmaline from the same country is also table cut, weighs  $61\frac{1}{32}$  carats and has the dimensions  $1\frac{3}{8} \times \frac{3}{8}$  inches.

### Unusual Gem Quartz

The series of cut amethysts is remarkable for the fine color of the stones shown. There are eighteen stones which exceed 20 carats in weight and a number of smaller ones. Most of the specimens are from Brazil and have the deep, rich royal purple color characteristic of the best stones from that country. The largest cut stone weighs 320 carats and has the dimensions,  $2\frac{1}{2} \times 1\frac{1}{2}$  inches. A pair of table-cut stones have the dimensions,

1 $\frac{3}{16}$ x $\frac{5}{8}$  inches each, and together weigh 75 carats. A carved amethyst of Brazilian cutting, obtained by the Marshall Field Expedition, weighs 105 carats.

Smoky quartz and citrine or Spanish topaz are illustrated by specimens remarkable for their size and perfection both in cut and rough examples. The largest cut smoky quartz shown is a large brilliant from Colorado 3 $\frac{1}{2}$  inches in diameter and weighing nearly eighteen ounces. A large cut citrine from Brazil is 2 $\frac{1}{2}$  inches in diameter by 1 $\frac{5}{8}$  inches and weighs 755 carats. One from Spain has the dimensions 2x1 $\frac{1}{2}$  inches and weighs 225 $\frac{5}{16}$  carats.

The series of carved Rock Crystal contains a number of notable pieces. Most of them represent the work of Russian or Austrian lapidists. They include the following:

Rock Crystal Screen, "Finding of Moses." Engraved on a thin section of rock crystal 9 $\frac{3}{4}$  inches in diameter. Believed to be the largest section of its kind in existence. Executed in Vienna.

Jewel Casket. Composed of twenty-five engraved rock crystal slabs mounted in jeweled and enameled silver. Seventeenth century style. Original in the Ambrose collection, Vienna. The dimensions of this casket, exclusive of the feet, are 13x10 $\frac{1}{2}$ x5 inches.

Rock Crystal Seal. Arabic inscription on one end, Russian on the other end. Russian cutting.

Rock Crystal Tazza. Engraved to represent a marine festival. Ural Mountains, Russia. The bowl of the tazza is oval in form and six inches in its longest diameter. Its height is five inches.

Rock Crystal bust of Ivan Turgenieff. Russian cutting.

Rock Crystal tablet, 4 $\frac{1}{2}$ x4 $\frac{1}{4}$  inches square. Ancient carving, probably of Aztec origin. Found in an excavation near Cholula, State of Pueblo, Mexico. Evidently made to represent an inundation. The whole tablet represents the goddess of water, the lines indicating water. The inundation is given as the year "four flint".

Rock Crystal Balls. Eleven balls of rock crystal of remarkable transparency and finish are shown. Of these the largest is 5 $\frac{1}{2}$  inches in diameter. It was made from a crystal obtained at Mount Antero, Colorado.

This description was written by the late Doctor Farrington in 1927. It mentions only the more outstanding features of the collection and takes no account of the many specimens of lesser interest. Since the article was written the collection has increased. The most outstanding additions are a bowl, nine inches in diameter, carved from rose quartz, presented by M. R. T. Crane Jr., and a collection of fifty-five cut stones from Ceylon presented by Prince Salie of that island.—Note by Dr. H. W. Nichols.

## Los Angeles Group Completes Examination

One entire Los Angeles Vocational Research Group passed the *Qualifying Certified Gemologist* examination which was given at the headquarters of the Institute March 19. This adds Messrs. Gray, Jones, Kirk, Rapp, and Schneider to the swelling roll of students who have passed this difficult examination. The Los Angeles Group now plans to continue with the Diamond Course.

The San Bernardino members are well along in the Diamond Course now. Their consistently fine work has not diminished. At their meeting Monday, April 16, they performed an experiment to illustrate the theory of the type of twinned crystal of diamond which is known as maacle. An octahedron was cut from an apple, then cut across parallel to one of the faces. By rotating one part of this "vegetable crystal" through 180°, the likeness of a maacle was produced.

## J A D E

Among the writings of Confucius was found the following statement: "In ancient times, men found the likeness of all excellent qualities in jade." This Chinese philosopher lived twenty-four centuries ago. Jade has ever been a gem of greatest esteem in China. There it is called "Yu" and is classed as the most precious of gems, ranking above ruby, emerald, and diamond. The term "Yu" in its broader meaning refers to all precious gems; specifically, it refers to jade.

There are two distinct minerals which are correctly termed jade—nephrite and jadeite. Nephrite is an amphibole mineral whose chemical composition is silicate of calcium, magnesium, and iron. It is a compact aggregate of tiny fibrous crystals and is very tough; even with a hammer it is difficult to damage it. The properties of nephrite—such as hardness, specific gravity, and refractivity—except for toughness, are slightly lower than those of jadeite. Jadeite is a pyroxene, a silicate of calcium and aluminum. It is a more granular aggregate than nephrite and its toughness is slightly less. Jadeite, which is the true "Chinese Jade", is harder and heavier than nephrite. Chloromelanite is a dark green to black variety of jadeite; its dark color is caused by the presence in its composition of a greater amount of iron.

The principal source of jadeite is the Mogaung district in Upper Burma; it is perhaps also found in China and Thibet. The principal nephrite deposit is in the Karakash Valley of Turkestan and it comes also from China, Siberia, New Zealand, and several other less important localities. A large portion of the jade produced in Turkestan and Upper Burma is sent to the jade markets in Canton and Peking (Peiping). These two cities are the center of the jade-cutting industry. Many shops are found in their streets, selling largely to tourists. However, the finer pieces are sold secretly and appear but rarely in these markets. The tourist's chance of securing a good piece of jade in a shop in Canton or Peiping is small. As is frequently the case with purchases of gems made by the layman in the Orient, much higher prices are paid than for the same gems from their home-town jeweler.

The name jade has evidently been derived from the Spanish *hijada*, which means kidney. The term was applied to jade because of its supposed power to remedy disorders of the loins. Similarly, the word nephrite has come from the Greek *nephros*, kidney. The Spaniards brought back many pieces of jade from their plunder of the Aztecs, in the mistaken belief that they were emeralds. The Aztecs valued jade highly, called it *Chalchituitl*; it is stated that Montezuma wore a fine specimen of the gem. The source of the jadeite of the Aztecs and Incas has never been found on the American continent, although several deposits of nephrite have been discovered.

The Maoris of New Zealand used axes and knives made of nephrite. Other ancient civilizations have also fashioned the jade minerals into weapons. In the ruins of the lake dwellings of Switzerland and among the relics of the ancient people of New Guinea, jade weapons have been found. Perhaps the most unusual use of jade was made by the Chinese at the time of Confucius; the material was used for the sounding blocks of a type of musical instrument. The tone of the jade was considered superior to that of any other stone used in the instrument. The tone of bells made of jade is repeatedly the subject of enthusiastic praise by the poets of China and other lands.

By the Chinese, jade is valued above all other worldly possessions; it is even used as specie in the payment of debts. The Chinese believe that the five cardinal virtues—charity (love), modesty, courage, justice, and wisdom—are united in this gem. It is considered the emblem of constancy, happi-



*Carved Jade Vases  
Courtesy Koke-Slaudt Company*

ness, and long life. The association of these virtues with jade make its choice as the gift for Mother's Day a particularly happy one.

The Chinese bury the dead with a piece of jade beneath the tongue; the heart of the deceased supposedly enters the gem and is thus preserved eternally. Many old Chinese tombs which have been opened have yielded jade which has been turned rust red by the iron in the earth. These specimens are known as "grave-old" jade and are so highly prized by collectors that they are often produced artificially.

The Chinese still apply the ancient method of jade cutting. The material is sawed to a convenient size by two men using a thin wire upon which an abrasive, usually powdered corundum, is dropped. The pieces are then carved and polished by hand. Many of the carvings on Chinese jade are symbolic. A bat is the figure which denotes happiness; the butterfly

is the symbol of immortality; a Phoenix bird worn by a girl is an indication that she is eligible for marriage. Chinese love to carry a pocket-piece of jade. These they finger gently when they wish to concentrate; to the experienced touch of any person, and especially to a Chinese, the feel of jade is delightful.

The most common color of both jadeite and nephrite is green. There are many shades of green; the Chinese jade expert distinguishes over fifty of them. However, the most valued color in China is that hue of white jade which has been described as "mutton-fat". There is also silvery white jadeite which is highly esteemed in all lands. The most prized color in America is emerald-green; a variety which is known in China as Imperial Jade. Other varieties of jadeite and nephrite include yellow, yellowish-brown, reddish brown, lavender, and bluish lavender. The existence of a true jade of blood-red color is questionable. The reddish brown colors are sometimes called red in the trade. Thus jade offers a wide range of colors as a gift for Mother on her Day.

The value of jade is lessened by dark-colored inclusions and by variation in color. The Chinese lapidary is extremely skillful at working inclusions and spots of a different color from the body of the stone into the design which he carves. For this reason, pierced jade is not so valuable as a fine-colored specimen which is cut in the simple cabochon form. An unpierced, flawless piece of jade, in the desirable emerald green color may find a ready sale at a price of several hundred dollars.

Jade may be used in many ways. It is suitable for almost any form of jewelry, lends itself with equal charm to earrings, brooches, and rings. It is also carved to form a number of ornamental objects. Chinese snuff bottles are often used in other countries as perfume bottles. Jade vases and bowls are seen. A prized collector's piece is an old Mandarin belt-buckle; it may also be effectively used as a dress clasp. Jade articles set in precious metals may be purchased at prices from \$1.00 to \$80,000.

Persons of culture in America and European nations to whom the unusual properties and fascinating background of jade have been revealed frequently become jade collectors. Each specimen has a beauty of its own. Lovers of jade throughout the world are quietly building collections. As a gift for Mother on her Day, many sons and daughters may now begin, with the guidance of their jewelers, to buy jade. Even a small piece will start a collection; it may be added to each year. Mother's jade may soon be the visual evidence of the devotion of her children.

---

### Adamantine-Spar Corundum

Brown (Silky) corundum stones are known as Adamantine-spar. They are not at all common, but may be found in any deposit of corundum. They are nearly always chatoyant, and more rarely asteriated. They are so greatly esteemed by the Chinese that they seldom reach other markets.—Note by MAJOR J. F. HALFORD-WATKINS, *Mogok, Upper Burma.*

## GEM LUSTERS\*

ROBERT M. SHIPLEY

In many cases properties of rough minerals are quite changed when the minerals are cut and polished as gems. For this reason there is often a difference between the gemological and mineralogical interpretations of a property. This difference is nowhere better illustrated than in the case of luster.

Luster is defined as the appearance of the surface of a mineral in reflected light. In mineralogy the surface is that of a fracture or a cleavage. Gemological luster cannot apply to fracture or cleavage surfaces, because the whole of the mineral is carefully polished and the facets so arranged as not to coincide with cleavage planes. Therefore, the act of polishing often entirely changes the type of luster.

It is usually found that polishing a specimen increases the luster. Peridot and some garnets show distinctly greasy on fractured surfaces; polishing can increase this rather dull surface to a bright vitreous luster. However, low polish on peridot allows some of the greasy character to remain. Thus a well polished peridot, mineralogically classed as greasy, may show a more vitreous luster than a fine piece of jadeite, classed mineralogically as vitreous. The dull, waxy luster of rough, black chalcedony is raised to a mirror-like vitreous polish.

Many rough gem species are less affected by polishing. Thus the adamantine diamond, the vitreous quartz, and the resinous amber retain their mineralogical luster no matter whether they are rough or highly polished.

Luster, to be of value in gemology, cannot refer to the surfaces of the rough mineral or of cleavages, as it does in mineralogy, since gemologists other than lapidaries rarely deal with such surfaces. Luster in a gemological sense refers to the appearance of polished surfaces. It is much more important that we know whether a certain gem is capable of "taking a high polish", whether that polish be adamantine or vitreous or whether it retains all or a certain amount of its original (mineralogical) luster.

In the mineralogical reference tables, the luster of jadeite is described as vitreous (glass-like) or silky. Polishing jadeite alters the luster to greasy. Therefore, in the case of jadeite, the luster of the rough specimen is *reduced* in brilliancy by polishing. The subdued luster of polished jadeite is preferred by some people to the brilliant adamantine luster of diamond.

The degree of surface reflection has been shown to be more or less dependent upon the refractive power of the specimen. Especially is this true if the mineral is polished. When light falls upon the surface of a gem, part of it is reflected from the surface and part of it enters the stone, being refracted or bent as it enters. As a general rule, the higher the refractive power of the stone, the greater is the portion of the light reflected from the surface. From the very definition of luster, an increase in the amount of light reflected can be seen to increase the brilliancy of the luster.

\*A. G. S. Research Service.

# BIOGRAPHICAL SKETCHES

PROF. PAUL F. KERR

ROBERT SHIPLEY, JR.

Professor Paul F. Kerr of Columbia University, New York City, is the latest member of the G. I. A. Advisory Board. He received both his B. S. and his Ph.D. in California, the former from Occidental College, the latter from Stanford University. His first teaching experience was at Stanford where he was acting instructor in mineralogy during 1923-1924.

In the Fall of 1924, Dr. Kerr joined the faculty of Columbia University. His rise has been rapid; he is now an associate professor in that institution. Dr. Kerr's joining the teaching force at Columbia has not entirely destroyed his allegiance to Stanford; he has been an assistant professor at the latter school during Summer sessions since 1926. His book, *Thin Section Mineralogy*, in collaboration with Professor Rogers of Stanford, was published in 1933.

Professor Kerr served as a member of the committee on clay materials of the National Research Council. He has featured prominently in mineralogical circles; among other honors, he has been Councillor and is now Secretary of the Mineralogical Society of America. He is also past president of the New York Mineralogical Club.

Professor Kerr's work with gems is well known. He is considered one of the foremost authorities in America in the identification of both colored stones and pearls. His course, presented at Columbia, on Gems and Precious Stones, has been attended by many jewelers living in the vicinity of New York City.



Professor Paul F. Kerr

## Red Jade

I am very much surprised at your statement about the result of your questionnaire on red jade. I have been working with jades for the last ten years and have found many excellent specimens of beautiful red jade, jadeite, NaAl (SiO<sub>3</sub>)<sub>2</sub>. I have tested many pieces of red jade and found them always to be true jadeite. The color pink you mentioned is probably the mauve jade. This is also a jadeite, whereas all the other colors of jade such as lemon yellow, black, and dark grey are usually always nephrite, Ca(MgFe)<sub>3</sub> (SiO<sub>3</sub>)<sub>4</sub>. These variations in color usually occur in small spots intermixed with the more common colors of white and green.—Note by MARTIN L. EHRMANN, *New York*.



# A GEMOLOGICAL ENCYCLOPEDIA

*(Continued from last issue)*

HENRY E. BRIGGS, Ph.D.

## Asterism

Asteriated minerals when held in a strong light show a certain chatoyancy which takes the shape of a six pointed star. It is most often met with in the corundums.

## Chatoyancy

That changeable or undulating silky luster which is sometimes met with in certain fibrous minerals is called "chatoyancy". If we look at a fine cabochon of albite or moonstone we will better see chatoyancy than it can be described in words.

## Luster

Luster is the quality and intensity of light reflected from the surface of a mineral. The intensity of lustre is described as: glimmering, glistening, shining and splendant. The quality or type of luster is described as: Adamantine (diamond), vitreous (quartz), metallic (pyrites), silky (tiger-eye) satiny (satin-spar) pearly (star-sapphire on the basal plane) nacreous (pearl) greasy (poor lapis lazuli) waxy (turquoise) resinous (common garnet).

## Transparency

Transparency is the ability of a substance to transmit light. It is distinctly separate from color. Transparency is often confused with the color of a substance. Yet it has nothing to do with the color; a gem may be absolutely colorless and yet, due to imperfect crystalization, be of very poor transparency. A gem may be of some light color and still be very transparent. Transparent objects transmit light readily and objects are easily and clearly seen through them in detail. Lesser degrees of transparency are described as sub-transparent, translucent etc.

## Color

Most gems depend more or less upon their color for their beauty and charm. The color of a mineral is either inherent to that particular combination of elements which make up the gem in question, when it is called idiochromatic; or it is allochromatic or due to certain foreign matter which have the properties of imparting color or colors to the mineral.

The gems which have copper as an important part of their composition, as turquoise, azurite, malachite etc., are idiochromatic, that is the color is due to certain essential parts of the mineral rather than to foreign matter.

Gems such as amethyst, topaz, diamond, beryl, etc., are colorless when they are pure but owe their beautiful colors to certain impurities. These minerals are called allochromatic minerals for they owe their color to foreign matter.

Color is distinctly separate from transparency, but if the color of a mineral is very deep it will, of course, cut down on the transparency accordingly as it grows deeper.

Color is often in bands in minerals and often unevenly distributed, which usually cuts down the value of the gem. Not always, however, for some gems owe their value to the fact that color is unevenly distributed in a novel manner, as the dark markings in moss agate, etc.

Gems often have inclosed in them other crystals as rutile in quartz crystal or tourmaline crystals in quartz. These crystals are often bunched in one spot but nevertheless such gems are often fairly valuable considering the price of the ordinary gems of their kind.

The cause of color will be discussed again under the heading "Optical Properties".

### Fluorescence and Phosphorescence

Some minerals will react to ethereal vibrations such as heat, light, electricity, X-rays, gamma rays, etc.

When a piece of mineral such as fluorite is heated it will glow like a coal of fire. Where this phenomenon continues only during the duration of the heat it is called Fluorescence. If it continues after the cause has been removed it is called phosphorescence.

A mineral which is one color in reflected light and another in transmitted light is also called a fluorescent mineral.

Many gems are easily classified by their degree of transparency under X-rays. X-rays also have a marked effect upon many of the gems, colorless quartz will become smoky and diamonds will take on a greenish cast if subjected for a long time to the action of X-rays or gamma rays (radium rays). X-rays will set the color often times in gems which show a tendency to fade. However these experiments should only be performed by one who is experienced in the handling of such radiant energy. In the hands of the novice a fine gem may be ruined and not only that but the life of the operator who is inexperienced may be seriously endangered by using such powerful agencies.

The accompanying table will help in using X-rays for the determination of gems.

<b>Entirely Transparent under X-rays</b>	<b>Almost Entirely Transparent under X-rays</b>	<b>Semi-Transparent under X-rays</b>
Diamond	Corundums	Opal
Jet		Andalusite
Amber		Cyanite
Copal		Chrysoberyl

*(To be continued)*

## GEMS OF THE CENTURY OF PROGRESS

G. FREDERICK SHEPHERD

*Technical Assistant in Geology,  
Museum of Science and Industry, Chicago, Illinois*

Important as was the Diamond Exhibit at A Century of Progress, it would be unfair to say that there were no other exhibits of special interest to the Gemologist. In the Republic of China, for example, was the beautiful altar of the Green Jade Pagoda, truly the pride of China. Carved from a single block of pure jade, nearly nine cubic feet in size, is this beautiful masterpiece, the result of 1,500,000 hours of expert craftsmanship. The pagoda has been universally acclaimed as a great wonder in artistic achievement.

A striking display of the famous Mikimoto seed pearls was exhibited in the Japanese Pavilion. Here it was shown how the Japanese raise oysters on great farms in shallow waters, insert a tiny pearl in a sac of oyster tissue, and leave the oyster to create a large pearl in its own natural way. The resulting pearl seems as beautiful as an uncultivated one. Unique and extraordinary is the gorgeous replica of Mount Vernon in pearls and mother-of-pearl. This model was constructed as a token of good-will and, as such, certainly achieved its object if one can judge by the enormous crowds of people who went especially to see it and who were awed by its splendor.

Thus one could trace through building after building seeing exhibits of gems, jewels, and precious stones. In the Czechoslovakian Building was a case of native pyrope and almandine garnets, beautiful dodecahedrons arranged in necklaces, rings, and other pieces of jewelry. In an adjacent case were lovely specimens of precious opal from the Czerwenitz locality. As I mentioned in a previous article,<sup>1</sup> this field formerly was within the political boundary of Hungary, and the early extraction of the Hungarian opals made that country famous until the discovery of the Australian mines, some fifty years ago, made a deep cut in the Hungarian market.

Early in the season the Mexican train, exhibited near the Travel and Transport Building, attracted great crowds to see the famous Monte Alban jewels and gems. Among the precious stones and metal trinkets, all removed from one tomb, were jade, turquoise and opal. An unusually large pearl was also included in this exhibit. Some varieties of gems were shown which are not known to occur anywhere in Mexico and indicate foreign barter of a very early date.

<sup>1</sup>Shepherd, G. Frederick: "The Story of Opal". *Rocks and Minerals*, Vol. 8, No. 1, March, 1933, pp. 5-6.

Of all concessions selling precious and semi-precious stones, Montana Agates, Inc., exhibiting and selling merchandise in the General Exhibits Building, might be cited as an example. Beautifully cut and polished pieces of agate were mounted in anything from rings and stick pins to lamp shades and fireplace decorations. But were I even to list all dealers in this field, I would have an almost endless task and not an altogether profitable one.

If the gemologist is interested in the broader field of mineralogy, there are many more exhibits which should be considered. I shall mention a few of them.

In the Geology Section of the Hall of Science was a collection of some of the most beautiful fluorescent minerals in the world. Assembled by the Philadelphia Academy of Science, the collection consisted of specimens selected from among the thousands which best displayed the mysterious luminescent qualities under ultra-violet light. Two Cooper-Hewitt lamps were operated on a flasher to alternate the ultraviolet with white light, so that the public could see how the uninteresting gray, black, or sometimes highly-colored rocks would change to an incomparable array of gorgeous hues under the weird effect of the ultra-violet light.

Several exhibits in the Court of States contained mineral displays. Georgia had probably the best selection of all, of unique interest, perhaps, being the small, twinned, cruciform staurolites. In the Arkansas exhibit was an unusually fine group of quartz crystals; and other states, such as Illinois and Missouri made an effort to portray to the public their mineral resources along with their agricultural, industrial, and cultural advantages. Brazil had in their exhibit in the Travel and Transport Building a case of some unusual minerals native to that country. But space does not permit a description of the many mineral exhibits that fall in this class.

In closing I would like to call attention to one type of exhibit of which I made a special study: source maps. In more than a score of industrial exhibits throughout the Fair were maps showing the sources of raw materials used in some product. Several of these were accompanied by mineral specimens. Westinghouse Electric employed excellent exhibit technique in their display showing the raw materials used in the manufacture of the tungsten lamp. On the wall was a large United States map with small electric lamps marking the sources of the various ores. Below the map were about twenty minerals, labelled as to ore and the refined product. The visitor had merely to press a button near the specimen in which he was interested to see where it was mined, and simultaneously a transparency of a tungsten lamp was illuminated to show the function of that mineral in the manufacture of the lamp. This is but one example of the many different types of source maps that were to be seen at the Fair.

The Science of Gemology can well feel proud of the important part it played in the great International Exposition of 1933. It is to be hoped that the Gemologists of this country will accept the challenge of this year's success by cooperating to increase their usefulness in this field of public education.

# GEMOLOGICAL GLOSSARY

(Continued from last issue)

(The key to pronunciation will be found in the January issue.)

- Aventurine** (a-ven'tue-rin). A massive variety of opaque crystalline quartz. Green, brown, or red with small flakes of hematite or mica.
- Aviculidae** (av'i-kue'li-de). Wing-shells, or pearl oysters.
- Axinite** (ak'si-nite). A transparent to translucent brown, yellow-brown, or violet species of gem mineral.
- Axis** (ak'sis). Axes or planes of crystals or other minerals, as explained in crystallography.
- Aztec Stone** (az'tek). See Chalchuite).
- Azurite** (or chessylite) (azh'ure-ite, a'zhure-ite). A translucent to opaque blue species rarely used as a gem stone; also called "Blue Malachite".
- Azurlite** or **Azurchalcedony** (azh'ure-lite, a'zhure-lite). Chalcedony colored blue by chrysocolla, from Arizona, used as a gem stone. See chrysocolla quartz.
- Baby**. A trough or cradle in which gravel was washed for diamonds by early So. African diamond prospectors.
- "Baffa Diamond"**. Rock Crystal.
- Bague** (bag'). French for a ring.
- Baguette** (ba-get'). A style or shape in which gems are cut.
- Bahia** (ba-ee'a). A gem bearing state or territory in Brazil. Also a name for diamonds from this territory.
- Bakelite** (bae'ke-lite). A manufactured substance. Derives its name from Baekelite, the inventor. A "synthetic resin" or, more properly, a resinoid made by action of pheno or formaldehyde. Used as substitute of amber, celluloid, galalith, etc.
- "Balas Ruby"** (bal'as). Rose-red spinel.
- Ballas**. An important industrial variety of the diamond. Spherical masses of minute diamond crystals arranged more or less concentrically. Does not cleave easily—hard and tough.
- Ball Pearl**. Name given to round pearl by pearlers at the inland fisheries of the United States.
- Baltic Amber** (succinite or gedanite). Baltic amber constitutes the greater bulk of genuine amber in the trade, and is claimed by its producers to be the only genuine amber. See also Bastard, Bone, Clear, Cloudy, Fatty, Foamy, Massive and Pit Amber.
- Banded Agate**. Agate with colors usually disposed in parallel bands, which are more or less wavy.
- Baroque** (ba-roke'). Any pearl of very irregular form.
- Basal** (base'al). Parallel to the basal pinacoid of a crystal; across the length of a prism.
- Basalt** (ba-solt' or bas'olt). Basic igneous rock, dark and compact.
- Basanite** (baz'a-nite). Lydian stone, or Touch Stone. Velvety black quartz. Not a gem.
- Base**. "Foundation price of a one-grain pearl from which to reckon price of pearls of other weights. The price of pearls is quoted by the grain and reckoned by the square. Example: a two-grain pearl at three dollars base would be twice two-grain, or six dollars per grain "flat"; and two grains at six dollars would be twelve dollars, the cost of the pearl." (Cattelle's Precious Stones).
- Base**. The portion of a cut stone which is below the girdle. The basal plane of a crystal.

**Basic Igneous Rocks.** Those low in silica; heavy and generally dark-colored.

**Baskets** (bas'ket or kit). Brass sieves used in Ceylon for separating pearls of different sizes.

**Bastard Amber** (bas'tard). Cloudy amber.

**Bastite** (bas'tite). Variety of bronzite.

**Beekite.** Same as Beekite.

**Beef Blood Ruby.** Term used in England for a subdivision of Burma rubies. Deeper shade of red than pigeon's blood. See Pigeon Blood.

**Beekite** (beek'ite). Silicified coral.

**Benitoite** (be-nee'toe-ite). A transparent pale blue to deep blue colored gem species found only in San Benito County, Calif. In color resembles the sapphire but is easily distinguished because of inferior hardness and distinctly different twin colors.

**"Bengal Amethyst"** (ben-gol'). Purple Sapphire.

**Berkeyite.** A blue gem stone from Brazil, afterwards identified as Lazulite. See Lazulite.

**Bernstein** (bern'shtine). "The stone which burns." German name for Amber.

**Beryl** (ber'il). A gem species that includes the emerald, aquamarine, golden beryl, morganite, helidor, and other colored beryl.

**Berylite** (ber'il-ite). A rose-colored synthetic spinel.

**Beryllonite** (be-ril'o-nite). A mineral little used as a gem. Hardness,  $5\frac{1}{2}$  to 6; Specific Gravity 2.85; R. I. 1.56. Transparent and colorless to yellow.

**Beryllium Glass** (be-ril'i-um). Consisting either of same chemical composition as that of the mineral Beryl, or so closely approaching it as to be analysis proof, but not crystalline.

**Beryl Triplet.** Correct name for genuine triplet. Made from two portions of greenish or colorless Beryl with a cemented layer of green coloring matter between them, often incorrectly called "Emerald Triplet."

**Bezel** (bez'el or bez'il). The upper portion, above the girdle, of a brilliant cut gem.

**Bezel Facets.** These eight facets on the crown of a round brilliant cut gem, the upper points of which join the table and the lower points, the girdle. If the stone is cushioned shape brilliant, four of these bezel facets are called corner facets.

**Biaxial** (bei-ak'sal or bei-ak'si-al). Substances crystallizing in the orthorhombic, monoclinic, and triclinic systems, having two isotropic directions or optical axes.

**Bicycle Tires** (bei'si-k'l). Brilliant cut diamonds with girdles which are too thick.

**Bierne.** German meaning a ball. A pear or carrot-shaped mass of alumina that forms during the production of synthetics.

**Bijouterie** (Fr.) (bee'zhoo't'ree'). General term applied to all jewelry, in which metal work is most important. See also Joallerie.

**Bike or Boke.** A "pale quince" colored coral from Japan.

**Binarite.** An obsolete synonym of Marcasite.

**Biological** (bee'oe-loj'i-kal). Of or referring to Biology.

**Biology** (bei-ole'o-ji). The science of life; the branch of knowledge which treats of organisms, includes fishes and pearls.

**Bird's Eyes.** Term applied by American fishermen to pearls which have slight imperfection on the best surface.

**Birefringence** (bei're-frin'jenz). The strength of double refraction. The word is sometimes used in a loose sense to mean double refraction.

**Bishop's Stone** (bish'up). Amethyst.

**Bivalve** (bei'valv). A shell fish. A mollusk distinguished by the shell consisting of a right valve and a left valve connected by a dorsal hinge.

**Bixbite** (biks'bite). Rose-colored beryl from Utah.

Bizel. Same as Bezel.

"Black Amber." Jet.

Black Diamond. Carbonado. Also may refer to almost black gem diamond. Also incorrectly used for hematite.

"Black Diamond." Hematite.

"Black Opal." Opal exhibiting colors in a dark matrix.

"Black Onyx." Onyx stained black to represent black layers of Onyx, or any black-stained chalcedony.

"Black-shell Pearl." Oyster shells of which nacreous lining has a black edge.

Bladed. Having long flattened crystals resembling knife blades.

Blebbly. Containing bubble cavities or vesicles.

Blemishes (on diamonds) (blem'ishes). Surface imperfections on fashioned diamonds; scratches; "nicks;" "knots;" "naturals" on the girdle.

Blister Pearl. Pearls attached to the shell and therefore not true pearls. Flattened, irregular and sometimes contain clay, water, etc., and occasionally a true pearl.

Block Amber. Natural amber, as it has been found; not compressed amber.

Blood Agate. Flesh-red, pink, or salmon-colored agate from Utah.

Blood Jasper. Bloodstone.

Bloodstone (Blud'stone). A variety of impure quartz, also, an ancient name for hematite.

Blue Asbestos. See Crocidolite.

Bluebacks. Shell of a variety of *Halotis*.

Blue Bird Diamond. A trade-marked name applied by an American importing firm to the diamonds advertised and sold by it.

Blue Chalcedony. See Sapphirine.

Blue Chrysoptase. Chalcedony stained blue with chrysocolla (natural).

"Blue Earth". A marine glauconite in which amber occurs. Glauconite (a dull green amorphous

silicate of iron and potassium) occurring abundantly in greensand.

Blue Ground. An unoxidized gray-blue rock in which the diamonds are found in the "pipes".

Blue Jasper. See "Swiss Lapis".

Blue John. Variety of fluor.

"Blue Moonstone". Blue chalcedony.

"Blue Opal". A synonym for lazulite, which is a hydrous iron, aluminum magnesium phosphate.

Blue Pearls. Dark-colored pearls of opaque slate-blue color. Also a trade term meaning a pearl containing mud or clay.

Boart. Same as Bort.

Bobrowska Garnet (bob'rof'ska'). Various mentioned in gem references as both grossularite and demantoid garnet.

"Bohemian Diamond" (boe-hee'mian). Rock crystal.

Bohemian Garnet. Dark blood-red pyrope garnet.

"Bohemian Topaz". Yellow quartz.

"Bohemian Ruby". Red or rose quartz.

Boke. See Bike.

Bombay Pearls (bom-bae'). Fine pearls from the Arabian and Red Seas, so named because marketed through that city (Bombay).

Bonamite (boe'na-mite). "A jeweler's trade name for an apple-green calamine resembling chrysoptase in color, from Kelly, New Mexico. Called "bonamite" by Goodfriend Brothers of New York (no doubt, in playful allusion to their own name)." (Spencer). See also Smithsonite.

Bone Amber or Osseous Amber. More opaque and softer than cloudy amber. Looks like bone or ivory. White to brown in color. Contains many bubbles. Takes an inferior polish.

Bone Turquoise. Fossilized teeth of animals stained blue by natural chemical action.

Boort (boort). See Bort.

Bört (bortz, boort, boart or bowr). Round form of poorly crystallized diamond, dark in color and trans-

lucent or opaque. Cleavage is difficult. Used for industrial purposes. "In the trade the definition of 'bort' is extended to all impure diamonds and even to fragments and powder of gem diamonds, provided on account of their small size or because of impurities, they are valueless as gem stones." (Ball.) But mineralogically and industrially, bort is a distinct variety of the diamond species.

**Bortz (borts).** Same as Bort.

**Botryoidal (bot-ri-oi'dal).** Closely united spherical masses resembling a bunch of grapes.

**Bottle Stone.** Moldavite. See Moldavite.

**Boulder Opal.** Term used by Queensland miners for nodules of siliceous ironstone of concretionary origin containing precious opal and occurring in the opal-bearing sandstone and clay at all depths.

**Boule (bool).** French meaning a ball. A pear or carrot-shaped mass of alumina that forms during the production of synthetics.

**Bowenite (boe'en-ite).** Jade-like variety of serpentine.

**Bouton (boo'ton).** French term for button pearl.

**Bowr.** See Bort.

**"Brazilian Aquamarine" (bra-zil'-yan).** Greenish topaz.

**"Brazilian Diamond".** Rock crystal from Brazil.

**"Brazilian Chrysolite".** See Chrysolite Chrysoberyl.

**"Brazilian Emerald".** Green tourmaline.

**"Brazilian Pebble".** Rock crystal (quartz).

**"Brazilian Peridot".** Yellow-green tourmaline.

**"Brazilian Ruby".** Rose-red or pink topaz, either naturally or artificially colored. Most pink or reddish topaz are artificially colored by heating dark-yellow topaz.

**"Brazilian Sapphire".** Light-blue or greenish topaz. Also, blue tourmaline.

**"Brazilian Topaz".** True yellowish topaz.

**Break Facets.** The 32 small facets along the girdle of a brilliant stone; 16 of these are above the girdle and 16 below.

**Brilliance (bril'yan-si).** The comparative "brightness" which reaches the eye as a result of (1) reflections from the *internal* surface of facets (called total internal reflection); and (2) reflections from the external surfaces of the table and other facets of a gem stone (luster). See total internal reflection and luster.

**Brilliant (bril'yant).** Word sometimes used to mean a diamond cut in the brilliant style, but more generally to mean that style of cutting itself when applied to any stone.

**Brilliantteering (bril'yan-teer'ing).** The operation of cutting and polishing the facets on diamonds.

**Briolette (brē'ō-lēt').** Pear-shaped or oval stones faceted all over with triangular facets.

**"Bristol Diamond".** Rock crystal.

**Brittle.** Crumbles under knife or hammer, cannot be cut in slices. Means that a gem is not flexible, ductile, etc., but not necessarily that it is fragile.

**Bronzite (bron'zite).** A variety of enstatite.

**"Brown Hematite".** Limonite.

**"Brown Hyacinth".** Vesuvianite.

**Bruting (broot'ting).** Polishing diamonds by rubbing together.

**"Bubbles".** A globule of air, or a globular vacuum in a transparent solid, as bubbles in window glass or a lens. Spots in diamonds, which are usually air bubbles but may contain gas.

**Buffed Top.** With cabochon on top and brilliant base.

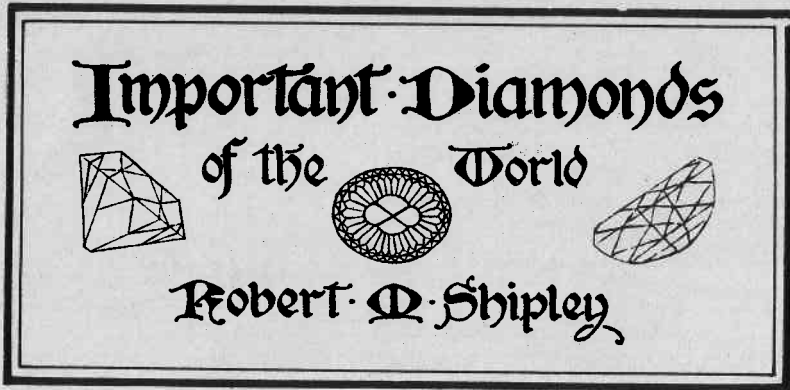
**Bull's Eye.** Laboradorite with a dark sheen.

**Burma or Burmah (bur'ma).** British possession northeast of India proper. Also a term applied to the finest colored rubies.

**Burmite (bur'mite).** Amber found in Burma. Generally pale yellow, but reddish and dark brown specimens are also known. Slightly harder than succinite (Baltic Amber). See also Chinese Amber.

(To be continued)





## THE NASSAK

*(Also known as the Nassac, Nasik, Nessuck, etc.)*

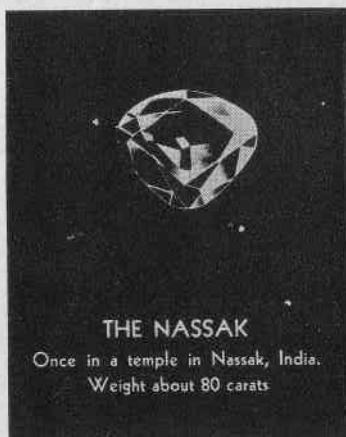
That which man, himself, values above all else he most naturally feels that his gods will appreciate most highly. So to their houses of worship in many lands and many ages have come king and peasant alike, bringing gifts of precious stones to their favorite god. These holy places often become veritable treasure houses, their sacred possessions secure from the looting which accompanied the overthrow of governments and dynasties, until, perhaps, those of still another faith laid sacrilegious hands upon them. Thus, in the Jewish synagogue, the Christian cathedral and the temples of Incas and the Hindus there have lain safely through many troubled years some of the world's most famous gems. Sometimes these have been torn violently and suddenly from their sacred security to re-assume their age-old role in the lives of individuals as objects of art or investment.

In India, where river and hill held stores of precious stones, and kings commandeered all those found above a certain size, the wealth of her temples waxed so great that high walls were built around them and strong guards stationed to watch over them. Such a one was, perhaps, the temple to the great goddess Siva, Hindu deity of destruction and reproduction, at Nassak. This Indian city lies ninety-five miles northeast of Bombay, and among its store of precious stones was a great diamond. Diamonds of the size and quality of this gem were rare and famous in India, yet from whom or whence it came to the temple is a matter of mystery. Although Nassak was a shrine to which pilgrims came from great distances, it lies upon the upper Godavery many hundreds of miles from those nations in which were located the diamond mines. Nor is it known how long Siva had peacefully possessed this stone. Certain it was that during the height of the Hindu power of the Mahrattas it remained respected and revered. But when the great Mahratta confederacy fell upon troubled days, its nominal rulers the Peishwas violated the temples of their own faith to obtain collateral to finance wars against petty chieftains and the East India Company. When the British tide could be no longer stemmed and the last Peishwa, called Bojerow, surrendered his independence to the British during the conquest of India in 1818, he was in possession of this stone. His attempts to conceal its whereabouts were in vain; it was taken from him and came into the hands of the Marquis of Hastings, Commander of the British forces, and became a part of the "Deccan Booty".

The great diamond then became known as the Nassak. It was sent to England and was valued at \$150,000. It apparently was in the safe custody, if not in the possession, of that famous firm of English jewelers, Rundell and Bridge. When they retired from business in July, 1831, it was sold at auction to Emanuel Bros. at the "distressed" price of £7200 (\$36,000), a forced sale during the period of most serious depression.

In 1877, the Nassak again went to the auction block and, together with a famous pair of diamonds which had been presented to Queen Charlotte by the Nabob of Arcot, were purchased by the Marquis of Westminster. The Marquis wore the Nassak in the hilt of his sword and had the Arcot diamonds mounted as earrings for the Marchioness.

In 1929, the Nassak again came into prominence when, after having been imported into America as an artistic antique by the French jeweler, Monsieur Georges Maubousin, to be offered for sale by his New York branch, the United States Customs Court at New York upheld its importation free of duty. Such a decision, although well founded by facts, might have es-



established a precedent which would cause no end of trouble with claims made by owners of old cut diamonds of doubtful antiquity, so the American jewelry trade arranged an appeal to the Court of Customs and Patent Appeals which reversed the former decision.

Such a decision was perhaps necessary, but the Nassak is nevertheless in many ways the acme of an artistic antiquity. Few diamonds are of finer quality or purity, but that which is most remarkable is its cutting and polishing, which was indeed the work of an artist. When brought from India it weighed over 90 metric carats (89½ English carats). The raw stone had apparently been of a roughly triangular shape which, as was customary with Indian stones, had been but slightly altered when facets had been placed upon it in the usual effort of the Indian cutter to retain a maximum of weight. While in the custody of Rundell and Bridge, the Nassak was recut and polished. Such was the skill of the artisan and so excellent was the taste of his associates who planned its new form that but slightly over eleven carats were lost in recutting. This reduced the Nassak to its present

weight of 80.59 carats, and produced a stone of most unusual beauty and brilliancy, which retained its original triangular form in a most pleasing manner. The careful planning and placing of its 90 facets are most unusually well done, especially when the unusual shape of the diamond is considered. Together with the example of the Florentine with its 126 facets, the results obtained in the Nassak tend to prove the desirability of the placing of many facets on stones of large size.

The value of the stone was greatly increased. Streeter in 1882 estimated its value at \$125,000 to \$150,000 and said that "by amending its defects and accomodating the pattern to the exigencies of the subject matter, they transformed the rudely facettted, lusterless mass into a diamond of perfect brilliancy".

After the courts decided to assess a duty on the Nassak, it was returned to Paris and to Monsieur Mauboussin, in whose possession it was in January, 1932. The gem is now offered at \$400,000, a price of approximately \$5,000 per carat.

## Pleochroism in the Determination of Gem Minerals\*

DR. RENÉ ENGEL

*California Institute of Technology*

*Pasadena, California*

As is well known, pleochroism, or the varied colors exhibited by some minerals when examined in transmitted plane polarized light, is a property of marked value in distinguishing various gem stones. With pleochroism, the effect due to absorption, or relative intensity of the light passing through the mineral in various directions is also to be carefully observed. The use of the instrument called a dichroscope in the detection of pleochroism in gems is rather common, but does not serve the purpose as well as the Nicol prism or polarizer forming part of the substage of a polarizing microscope. With this last apparatus, if correctly designed, it is possible to establish the relations which exist between the pleochroism and absorption on the one hand, and the directions of vibration of the light passing through a birefringent mineral on the other, besides many other properties

\*G. I. A. Research Service.

such as inclusions, fractures, flaws, cleavage planes and several optical characteristics, which serve to establish the diagnosis and also the qualities of the gem under observation. The relations between the directions of vibration and the nature and intensity of the colors constituting the pleochroism usually exhibit marked discontinuities between many of the gem stones and are thus very valuable in determinative work, particularly in the case of cut stones where the obtaining of fragments is usually impossible without defacing the gem.

Without attempting to enter into the details of the theory of this method which would lead to a lengthy restatement of most of the principles of optical mineralogy, it may be of interest to illustrate its practical application by a definite example.

During the recent examination by the writer of an unusually colored gem stone, thought to be either zircon, tourmaline or andalusite, the use of the pleochroism-direction of vibration method permitted it to be definitely concluded that the stone was a tourmaline. To show precisely the differences existing between these three minerals, these properties are summarized below:

	<i>General Intensity of Pleochroism and Absorption:</i>	<i>Relative Intensities Parallel to Directions of Vibration Denoted by X, Y and Z:</i>
Andalusite	Strong	X (yellow to rose) is stronger than Y (colorless to green) is stronger than Z (colorless to green)
Tourmaline	Strong to very strong.	Z (brown-green-pink) is stronger than X (colorless to greenish yellow)
Zircon	Weak	Z (pale brown) is stronger than X (colorless)

The weak intensity of pleochroism and absorption in zircon as compared to the strong intensities in tourmaline and andalusite reduces the determination to these last two species. Regarding zircon, the play of colors due to dispersion should not be confused with those due to pleochroism. Between andalusite and tourmaline the distinction is based on the differences in colors corresponding to the same directions of vibration.

The stone, identified in this fashion as a tormaline, is a Ceylon gem weighing 21.72 carats and prettily cut in a cushion shape. In natural transmitted light its color is a dark brownish green to chrysolite green variegated by a reddish brown coloration which appears to be related to internal reflections on some of the facets. Under artificial light the stone has a light reddish brown color resembling that of hyacinth zircon.

# SELECTED BIBLIOGRAPHY

(Continued from last issue)

*Explanation: Key Accompanies First Portion in January Issue.*

- \*\*\* Lahee, Frederic Henry  
**Field Geology**, 3rd Ed., Revised and enlarged N. H., etc. McGraw-Hill Book Co., Inc. 1931. Bibliography.
- \*\*\*\*\* Lee, Willis Thomas  
**Stories in Stone**; telling of some of the wonderlands of Western America and some of the curious incidents in the history of geology. N. Y. Van Nostrand, 1927.
- \*\*\* Leith, Charles Kenneth, and Mead, W. J.  
**Metamorphic Geology**. A Text Book (in two parts). N. Y. H. Holt & Co. 1915. Part 1, Rocks, Crystalline & Metamorphic; Part 2, Geology.
- \*\*\*\* Longwell, Chester Ray; Knopf, Adolph, and Flint, Richard F.  
**A Text Book of Geology**. N. Y. Wiley, 1923-33, 2 vol.; Successor to L. V. Pirsson's "Textbook of Geology." "Reading References" at end of most chapters. Vol. 1, Physical Geology, by C. R. Longwell—R. F. Flint. An excellent reference book for the gemologists' library. Vol. 2, Historical Geology, by Charles Schuchert and A. O. Dunbar; 3rd edition largely rewritten.
- \*\*\*\*\* Mather, Kintley Fletcher  
**Old Mother Earth**; Cambridge. Harvard University Press. 1928. These lectures were originally prepared for broadcasting, and have been somewhat modified and re-arranged for the reader.
- \*\*\*\*\* Miller, William John  
**An Introduction to Physical Geology**, with special reference to North America. N. Y. Van Nostrand, 1930—"Selected references." A slightly expanded edition of Part 1, of the same authors. Elements of Geology.
- \*\*\*\*\* Miller, William John  
**Elements of Geology**, with special reference to North America. N. Y. Van Nostrand Co., Inc. 1931. An excellent book for the beginning student, necessitates no formal knowledge of other sciences. Well illustrated.
- \*\*\*\*\* Miller, William John  
**Introduction to Historical Geology**, with special reference to North America. N. Y. Van Nostrand Co., Inc. 1931. A slightly expanded edition of Part 2, of the same authors. Elements of Geology.
- \*\*\*\*\* Mills, Enos Abijah  
**Romance of Geology**. Being adventures with glaciers, rivers, and wind, fossil hunting, trailing ancient sea shores, and following mirages of the desert. Garden City. N. Y. Doubleday, 1928.
- \*\* Moore, Raymond Cecil  
**Historical Geology**. N. Y. and London. McGraw-Hill Book Co., Inc., 1933. "Selected References." 1, Geology. 2, Geology, stratigraphic. 3, Geology, North America. 4, Paleontology.
- \* Pirsson, Louis Valentin, and Schuchert, Charles  
**Introductory Geology** for use in Universities, Colleges, Schools of Science, etc., and for the general reader. Part 1, Physical Geology. Part 2, Outlines of Historical Geology. N. Y. Wiley, 1924.
- \* Pirsson, Louis Valentin, and Schuchert, Charles  
**A Text Book of Geology**. Part 1, Physical Geology by Louis V. Pirsson. Part 2, Historical Geology by Charles Schuchert. N. Y.

*(To be continued. The next issue will complete the subject of geology and begin the subject of mineralogy.)*

## BOOK REVIEWS

ROBERT SHIPLEY, Jr.

Sir William Bragg, "The Universe of Light", New York, Macmillan Co. 1933—\$3.50. May be secured from the G. I. A. Book Dept.

Too often a great research scientist writes of his experiments and seems to take the attitude that he alone can thoroughly understand the results. And very often it is true that the scientists' writings are quite incomprehensible to the average person. In his "Universe of Light", Sir William Bragg commits no such error. The material was first presented as the 1931 Christmas Lectures in the Royal Institution at London, to an audience composed largely of young people. In book form, the material has not suffered. The author describes graphically the experiments he used to illustrate the talks. Twenty-six plates, two of them in color, add to the completeness of his descriptions. And in addition to the plates there are abundant line drawings all through the book.

A great portion of the phenomena which we see about us daily—particularly the many colors in Nature—are explained in Bragg's clear and simple style. The explanations of refraction and double refraction and of interference will be of interest to every prospective Gemologist. The author treats with the polarization of light in such a manner that one is given not only a thorough understanding of the principle but also a desire to be able to apply it.

The last chapter but one of this work deals with Röntgen rays (X-rays) and their use. Here Bragg not only gives the explanation of the rays but he also speaks on the subject of crystal structure. The author is noted for his researches in the fine structure of matter.

The whole of the "Universe of Light" may be said to bear more or less directly upon the study of gems, as almost all of a gem's charm comes to us through the medium of light rays. Moreover, the book is cleverly written; its author is a philosopher and something of a humorist as well as a great scientist.

Rutley's *Elements of Mineralogy*, revised by H. H. Read, London, 1933. Thomas Murby & Co.

This is a comparatively small and very compact mineralogical reference book. Especially are the economic aspects of the various ore minerals treated. However, Read has not given an equal importance to the mineral species which produce gems. Jadeite, for instance, is dismissed in two sentences. The book is thoroughly indexed, and many of the field terms applied to minerals by prospectors are included. Its best feature is its terse clarity.

Unfortunately, there are no identification tables. With a comprehensive set of tables, the *Elements of Mineralogy* would be almost unsurpassed as a field manual. In its present form, it is best recommended to gem enthusiasts as a reference book and as a method of refreshing a previously acquired knowledge of mineralogy. That the text has a certain very definite value is proved by the fact that it is now in second printing of its twenty-second edition.

## TWO LARGE DIAMONDS

Johannesburg, South Africa,  
15th March, 1934.

Dear Sir:

In reply to your letter of the 7th February, the weight of the two large diamonds found in the alluvial diggings on Elandsfontein near Pretoria was as follows:

JONKER DIAMOND . . . . . 726 carats  
POHL DIAMOND . . . . . 287 carats

Both diamonds were of magnificent quality, irregular in shape, and blue white.

There is no basis for the statement that either stone was a portion of the Cullinan diamond, although the quality was very similar. Both diamonds have now been shipped to London.

Yours faithfully,

H. T. DICKINSON,  
*Consulting Engineer,*  
*De Beers Consolidated Mines.*

### Lectures Gain in Popularity

Mr. John Ware of San Diego, California, seems at the present writing to be the most prolific of gemological speakers. He has addressed the students of the San Diego High School, and also the University Club. Mr. Ware has also been asked to appear before the San Diego Mineral Society in the near future.

But the distinction of being the most enthusiastic of the speakers must be tendered to Mr. Burt P. Hann of Lawton, Oklahoma. Mr. Hann attended the convention of the Oklahoma jewelers in Oklahoma City equipped to deliver a talk. To his surprise, he all but stopped the show. Nor was that the end of it; Radio Station KOMA of the City called and asked if he could give a 15-minute talk over the air—forty-five minutes after the telephone call.

Mr. Hann considers that he had rather a busy time. And now that he has returned to Lawton, he is not allowed to rest. The *Lawton Constitution* is after him to write the radio address for publication.

In summing up he says, "I know I got a great kick out of it . . ."

### Books To Be Reviewed

The following books have been received at the Institute for reviewing purposes. The reviews will appear as soon as space will permit.

Blackwelder and Burrows. *Elements of Geology*. American Book Co. New York.

H. W. Shimer. *An Introduction to Earth History*. Ginn & Co. Boston.

J. H. Bradley. *The Earth and Its History*. Ginn & Co. Boston.

H. Michel. *A Pocketbook for Jewelers*. Gustav Herz. Vienna.

Emmons, Thiel, Stauffer, and Allison. *Geology*. McGraw-Hill Book Co. New York.

### Eight New Qualifying Certified Gemologists

Since the publication of the March-April *Gems and Gemology*, the following have passed the *Qualifying Certified Gemologist Examination*.

Henry R. Bloedel, Bloedel's Jewelry, Inc., Milwaukee, Wisconsin.

Colin L. Christie, Leys, Butte, Montana.

W. J. Glick, Junction City, Kansas.

Leslie V. Gray, Jeweler, Culver City, California.

Percy F. Jones, E. W. Reynolds, Inc., Los Angeles, California.

D. A. Kirk, Slavick's, Inc., Los Angeles, California.

H. E. Rapp, Pasadena, California.

George Schneider, Jeweler, Hollywood, California.

### Graduate Members of the A. G. S.

The following persons have qualified as *Graduate Members of the A. G. S.* since the publication of the March-April issue of *Gems and Gemology*.

#### CALIFORNIA

Earl Bothwell, *San Jose*  
W. R. Burke, *Berkeley*  
Carl Chamberlain, *Long Beach*  
Chas. W. Clark, *Van Nuys*  
H. C. Corey, *Santa Maria*  
Godfrey Eacret, *San Francisco*  
R. E. Fintrock, *San Gabriel*  
Leslie V. Gray, *Culver City*  
E. W. Hanf, *San Bernardino*  
W. C. Haubrich, *Berkeley*  
A. B. Hillabold, *Fullerton*  
Norman L. Jenkins, *Oakland*  
Armand Jessop, *San Diego*  
E. C. Kendrick, *Anaheim*  
D. A. Kirk, *Los Angeles*  
G. W. Lawton, *Gilroy*  
Harold Lewis, *Long Beach*  
William Lorenz, *Santa Ana*  
Robert Mills, *Oakland*  
E. C. Morrison, *San Pedro*  
J. E. Peck, *Campo*  
Leo J. Potthoff, *Whittier*  
F. W. Twogood, *Riverside*  
Burt F. Umstead, *Glendale*  
H. E. Wellman, *Alhambra*  
Ralph Wilson, *Southgate*

#### IDAHO

L. E. Zenier, *Lewiston*

#### KENTUCKY

Franklin Shumate, *Louisville*

#### MINNESOTA

Leslie E. Dewey, *Minneapolis*  
Milton D. Gravender, *Minneapolis*

#### MISSOURI

Roy Culbertson, *St. Louis*  
Otto Kortkamp, Jr., *St. Louis*

#### NEBRASKA

Carl Vondrak, *Omaha*

#### NEW YORK

J. Arnold Wood, *Poughkeepsie*  
W. A. Sweeney, *New York City*

#### OHIO

M. F. Fournier, *Lakewood*

#### OKLAHOMA

Burt P. Hann, *Lawton*

#### TEXAS

Neal Hutton, *Dalhart*

#### WISCONSIN

Louis Esser, *Milwaukee*

#### INDIA

J. A. Mountvala, *Bombay*

## ARE YOU A MEMBER?

American Gem Society,  
555 South Alexandria,  
Los Angeles, California.

Send \$3.50 today for your Associate Membership in the *American Gem Society*, its services, and a year's subscription to *Gems & Gemology*.

Name.....

Address.....

City.....