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 JULY-AUGUST, 1935 NUMBER 10

In This Issue:

Published by

THE AMERICAN GEM SOCIETY

555 South Alexandria Los Angeles, Calif.

EDITORIAL FORUM

European Jewelers Revise Gem Nomenclature

International Nomenclature of Admissable Trade Names of Precious Stones, Synthetics, Doublets, Imitations and of Pearls is the imposing title of the most recent report of the B.I.B.O.A. (a European association of jewelers). However, the nomenclature presents a sharp contrast to its involved title.

No Newly-Coined Terms

This new publication shows a great advance over the first suggestions which were made by the B.I.B.O.A. when such terms as "Topaz Saffranite" for transparent yellow quartz were proposed. Terms of this nature were perhaps adopted in an attempt to satisfy various opposing factions at the meetings. Evidently even such compromises were not satisfactory, for the present nomenclature contains no "especially-coined" terms.

Too Simple for Trade Usage?

Through repeated revision the nomenclature has been very much simplified. The American trade will probably feel that it has been over-simplified, since it largely eliminates the use of such classifications as "Burma Ruby" and "Wesselton Diamond."

The Question of Observation of Rulings

Whether the European trade, to which these rulings will apply, will generally observe the nomenclature is a matter which will be watched with keen interest. In America there are many dealers who object to such nomenclature because they believe, often without reason, that the continued use of traditional or favorite terms assist their sales, regardless of the fact that they may be misleading to the buyer. However, the students and many of the enthusiastic supporters of the G.I.A. and A.G.S. in the American trade have for some time been adhering to the nomenclature accepted by these organizations, a system which on the whole is very similar to that of the B.I.B.O.A.

Scientists Will Be Pleased

The present system of B.I.B.O.A. nomenclature is, in the main, of great scientific accuracy. It contains a few points which need revision in order to make it entirely uniform, but the critical test of it will probably not be its approval by scientists but its acceptance by the members of the trade which it is designed to benefit.

Let Us Have Your Comments

Gems & Gemology is especially anxious to receive comments on this system of nomenclature from its readers. A more complete analysis, by Robert M. Shipley, of the B.I.B.O.A. rulings will be found on page 293 of this issue.

Gems & Gemology is the official organ of the American Gem Society and in it will appear the *Confidential Services* of the Gemological Institute of America. In harmony with its position of maintaining an unbiased and uninfluenced position in the jewelry trade, no advertising is accepted. *Gems & Gemology* does not intend to overlap the field of any other periodical in America or England.

Contributors are advised not to submit manuscripts without first assuring themselves that the information contained in them is of scientific accuracy. Manuscripts not accompanied by return postage will be held thirty days and destroyed.

Any opinions expressed in signed articles are understood to be the views of the author and not of the publishers.

Gem Sales Show Upturn

In the editorials of the August issue of *Jewelers' Circular-Keystone* the fact is brought out that sales of gems are increasing. This point is substantiated by numerous retailers throughout the country, particularly by those men who have studied the courses of the Gemological Institute and of the American Gem Society. It seems to us that much of the credit for the increased demand can be given to these two educational organizations which have shown the retailer how to interest his customers in precious stones.

In the same issue of the *Jewelers' Circular-Keystone* appears an article describing the methods employed by John F. Vondey of San Bernardino—one of the Institute's "star students"—to build up his extremely satisfactory gem business. Mr. Vondey credits a great part of his success to his study of the courses of the Gemological Institute.

A Question—

From What Country Is the Hope Diamond Thought to Have Come Originally?

—See *The Hope Diamond,* page 277.

CHAIRMAN VISITS MEMBERS OF THE BOARD OF GOVERNORS

George C. Brock, chairman of the Board of Governors of the Institute, left Los Angeles July 27 for a trip to New York and other large cities, during which he will confer with several members of the Board regarding matters of policy connected with the Institute.

THE DIAMOND MARKET

Generally speaking, the outlook in the diamond markets of the world is optimistic. The price of cut goods at Antwerp and Amsterdam has not shown an advance during the past few weeks, but the Diamond Corporation has promised a 7½% increase in the price of the rough which will be shown at the September "sight". There is considerable demand at present for melee and eight-facet stones, and the price on these stones shows a corresponding increase. Small brilliants are also being sought. These sales can probably be traced directly to the increasing use of diamond-set wedding rings in the U.S.A.

H. J. O'Brien, in the Wall Street Journal of July 11, discusses the buying of large diamonds as a "hedge" against inflation. He points out that "in some instances buyers are ordering delivery made direct to safe deposit boxes —". Increased buying of small and moderate-sized stones for personal wear is also reported. Mr. O'Brien states that the price of cut stones has increased 35% since 1933, but that it is still substantially below the 1928-29 peak.

The pronounced increase in demand for industrial diamonds furnishes indication of growing business activity. "Orders have been especially brisk from the Detroit automobile area as well as from mining regions where they are used for boring purposes."

GEMOLOGICAL TITLES AWARDED

During the month of July the following retail jewelers passed examinations permitting the use of titles:

Qualifying Certified Gemologists

Hubert A. Fischer, *Chicago*

Clayton G. Allbery, *Cleveland*

Registered Jewelers American Gem Society

OHIO

Tudor Newstedt, *Cincinnati*
Frank B. Bromley, *Shaker Heights*

PENNSYLVANIA

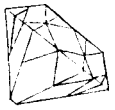
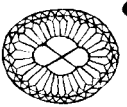
Joseph P. Carden, *Scranton*

Graduate Members American Gem Society

OHIO

Charles Carolyne, *Youngstown*

Important Diamonds of the World


Robert M. Shipley

In Collaboration with
A. McC. BECKLEY

THE HOPE DIAMOND

The Hope Diamond, now in the possession of Mrs. Edward McLean of Washington, D. C., is one of the few truly blue diamonds in the world. It is an unusual stone, combining as it does a pronounced color with the flashing brilliancy and fire common to all diamonds.

The origin of this gem is not known with absolute certainty, but circumstantial evidence so strong as to be almost irrefutable links it with the blue diamond which Tavernier bought in India during his visit there in 1642. The stone which this early diamond trader secured supposedly came from a mine located on a branch of the Coleroon, which is in the mountain range known as the Ghats in Southwest India. In the rough it was "flat and thin" and weighed 112½ carats.

In 1668 Tavernier returned to Paris and there sold the blue diamond, along with many other diamonds, to Louis XIV. It is believed that Louis or one of his successors had the rough stone cut, since a century later the only blue diamond in the French Crown Jewels, which fitted Tavernier's description, was a triangular brilliant which weighed about 68 carats.

When Louis XIV gave audience to the Persian Ambassador in Paris, February, 1715, he wore gems whose value was estimated at about $60,000,000. One of these, according to reports, was a large blue diamond which he wore suspended from a ribbon about his neck. This is the only time that the king seems a pathetic figure—pallid and frail and very small. He was to die in the fall of that year after a reign of seventy years. What were the thoughts of this Persian Ambassador as he gazed at this miniature jewel tower? Did he think of the Persian Ruler, Nadir Shah, a man in his superb height and great breadth who could wear the jewels of all the world with ease?

In an inventory of the Crown Jewels made in 1791 "a fine light-blue diamond weighing 67½ carats" is listed. It was stolen in a grand scoop with the other Crown Jewels from the Garde Meuble (the Royal Treasury)

in Paris in 1792. Of course, so well-known a diamond of such a rare color could not easily be sold intact, in any market in Europe, without positive detection. Recutting would be the only resort of the thief.

Evidently this course was followed, and the diamond was cleaved, for in 1830, an extraordinary 44¼-carat blue gem came into the market. David Eliason was the dealer, a man very well known as an expert on jewels. He had sold many superb gems to kings and princes and bankers. This jewel passed into the hands of Henry Thomas Hope for the sum of $90,000—a small sum when we realize that this is a stone which could not be duplicated in color and size. Indeed few other blue diamonds of notable size are known. Other blue gems are the 13¾-carat Brunswick and the 40-carat Wittlesbach Diamond which was recently offered for sale at Christie's in London.

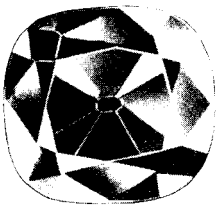
This blue Brunswick Diamond came into the market in 1874, when the jewels of the Duke of Brunswick were sold. The English gem dealer, Edwin W. Streeter (who had the reputation in annals of jewelry sales that Duveen has in the world of picture sales), made a close examination of both the Hope and the Brunswick and was convinced that they were parts of the same stone, the lost "French Blue", both being identical in color and quality, moreover the shape confirmed Streeter in his theory. In the first cutting of the stone, when it was owned by the King of France, the shape was triangular thin and flat. Streeter believes that "it would have been easy for an expert to cleave a triangular piece of about 10 or 11 carats, the recutting of which, as a perfect brilliant, well proportioned, would reduce it to its present weight of 44¼ carats. The Brunswick jewel "once formed the triangular salient protuberance which formerly appears to have characterized the stone now known as the 'Hope Brilliant'." This weighs 13¾ carats. There is also a fragment weighing about 1¼ carats of the same blue. Any differences between the original weight of the "French Blue" and the added weights of the Hope, the Brunswick and the fragment may, of course, be accounted for by loss of weight incidental to cleaving and treatment. This fragment is now one of the brilliant stones in a butterfly composed of colored diamonds which was last reported to be in the possession of an English family.

The Hope family owned the 44-carat blue gem for a number of years and from them it took the name which it bears today. In 1851 the Hope diamond was shown at the great Exposition in London. In 1867 it was sold at Christie's in London, along with the other gems of the Hope collection.

The history of the stone about this period is somewhat confused, but the following report from "The Romance of the Jewel", by Francis Stopford, may be of interest:

"There are many other stories of diamonds which are supposed to bring bad luck to their owners: for instance the well-known Hope blue diamond, which has always been a stone with a curse. It was brought from India by Tavernier, the French explorer, who sold it to Louis XIV. Fouquet, the king's famous minister, borrowed the stone, and fell from his high estate. Marie Antoinette had forsworn its wear before her proud head was placed under the blade of the guillotine. Her favorite friend, the Princesse de Lamballe, had occasionally worn it before the 'Day of Pikes'. In 1830 it was bought by Mr. Henry Thomas Hope, from whom it derives its name, for

£18,000. He escaped any evil consequences. It then became the property of Lord Francis Hope. Lady Francis Hope (a well-known actress), when she parted from her husband attributed all her troubles to the Hope diamond, and prophesied evil for its purchaser. The stone passed from Lord Francis to Mr. Weil, a London diamond merchant, who sold it to a New York jeweler, who could not find a buyer for it, and fell into financial trouble. The unlucky gem found a buyer in M. Jacques Colot, a French broker, who paid £60,000 for it. He sold it to a Russian, Prince Kanitovski. The prince lent the diamond to a beautiful actress at the Folies Bergères, and shot her from a box in the theatre on the first night she wore it. A few days afterwards the prince was stabbed by revolutionists. Colot had not got rid of the evil heritage of the diamond, as he went mad and committed suicide. The next aspirant for disaster was Simon Montharides, a Greek jeweler, who is said to have been thrown over a precipice and killed. From Montharides it passed into the custody of Abdul Hamid, who speedily lost his throne."



THE HOPE

The World's Largest
Blue Diamond
Weight, About 45 Carats

At least parts of the above account, which was taken from the London Daily Express by Stopford, are without foundation in fact. They are but a few of the amazing tales of the baleful powers of the Hope diamond which have been concocted by various feature writers. Another report is that at the time the stones were put up for sale at Christie's, one of those interested in it was the Emperor of Russia. The sale failed to materialize when the trustees of the Hope estate refused the Emperor's bill of credit.

In 1908 the Hope diamond was acquired by Habib Bey at a price reported to be about $400,000. In 1909 the diamond was again on the market. A dealer by the name of Rosenau bought it at auction in Paris for about $80,000.

The last sale of this famous gem was to Edward B. McLean of Washington in 1911, the sale price in this case being $300,000. The "curse" of the Hope diamond seems to have attacked the McLean family in true traditional

style. In 1919 the only son of the family was run down by an automobile and killed. Edward McLean, on October 31, 1933, was judged insane. The gem is now the property of Mrs. McLean, who has tried upon several occasions to sell it, but without success.

A blue diamond is exceedingly rare, especially when a rich depth of color is combined with great brillancy. A very few quite red diamonds have been found and red is still the rarest color, but stones possessing any pronounced hue of blue are almost as unusual.

A few authorities do not feel that the blue color of the Hope is of especial beauty. The late Godfrey Eacret of San Francisco, described it as being of a slightly greyish blue, the color of the more usual Montana sapphire. However, this hue is extremely rare in a diamond.

CHANGE IN BIRTH STONE LIST AGAIN SUGGESTED

The directors of the California Retail Jewelers Association have adopted a resolution to be presented to the A.N.R.J.A. at their annual convention, urging a change in the birth stone list adopted by the A.N.R.J.A. in 1912. The changes proposed would add or change several alternative stones for various months. They would substitute other stones for both turquoise and its alternate lapis lazuli as December birth stone. This would eliminate from the traditional lists one more stone with some claim as a traditional stone for persons born in this month.

At a recent meeting of representatives of the mineral societies of California and Oregon a resolution was adopted "against the proposed changes in the traditional list of birth stones." These mineral societies are composed principally of laymen interested in the collection of minerals.

The list adopted by the A.N.R.J.A. in 1912 contained several important changes and substitutions from traditional lists, notably the substitution of sapphire for chrysolite or sardonyx, which alone had foundations in tradition as the September stone.

Unfortunately many of the stones in the traditional lists are lacking in popular appeal today, and it has been in an effort to popularize the list that the majority of changes have been proposed from time to time.

IMPROVED GEM-CUTTING MACHINE EXHIBITED

Recently on view in Los Angeles was a revolutionarily-designed gem-cutting machine developed in the Felker Research Laboratory of Torrance, California. Designed especially for amateur lapidaries, the outfit is constructed to occupy minimum floor space. All operations, including sawing, cutting and polishing, may be performed with results which compare favorably to those achieved in much more completely equipped lapidary shops.

Synthetic Beryl

Following hard on the heels of the "Synthetic Diamond" story comes the report of successful synthesis of Emerald. The following articles, however, show that the gem dealer has little to fear.

Interest in this product is being revived in Germany.

Almost every important gem-mineral has been recorded as having been synthetically produced as a scientific experiment. However, with the exception of corundum, and a synthetic substance which more or less approaches genuine spinel, no synthetic stones have been made in commercial quantities, qualities and sizes suitable for use in jewelry. Therefore, the synthetic stones on the market today are various-colored varieties of these two substances.

Synthetic beryl was first reported as having been successfully manufactured in France in 1884. Synthetic beryl crystals of emerald color have for several years been in the collections of the U.S. National Museum and the University of Michigan. Kraus and Holden's *Gems and Gem Minerals* (1931) states:

> "Synthetic Emerald. — While many attempts have been made to make the emerald synthetically, the various methods used thus far have yielded only very small crystals. These are often well developed, but are so small that they are of no commercial importance. Furthermore, the methods are generally complicated and involve long periods of time."

As early as 1931 synthetic material had been successfully produced in crystal aggregates such as the one shown in our photograph. This same year gem-stones measuring as large as 5 millimeters in length, 4.5 millimeters in width and 3 millimeters in depth were apparently cut from such crystal aggregates as scientific specimens. However, in quality their appearance was comparable only to a quite inferior natural emerald.

Photograph, Actual Size, of the Igmerald Crystal Tested by the G.I.A.

Recently the same, or very similar, synthetic material to that just described has been the subject of publicity in Germany where it has been developed and named Igmerald by its manufacturers[1] (who also produced the specimen previously mentioned as being owned by the U.S. Museum). There its proposed use in jewelry is the subject of propaganda in which its value as a scientific masterpiece is being stressed, although it has not yet been placed upon the market and it is reported to require months or even years to produce crystals sufficiently large to yield material suitable for jewelry and at a cost of as much or more than natural emerald. Opinions expressed by qualified observers are that it still remains commercially uncompetitive with natural emerald.[1] No report received would indicate

it to be more than it has been for many years—a successful scientific experiment.

The substance is being called synthetic emerald in Germany. However, the results of scientific determinations of synthetic material which reached the U.S.A. in 1931 and of a specimen of Igmerald recently examined in Germany[3] indicate that certain properties of the synthetic material are lower than those of most emeralds. Therefore, some gem authorities believe that the substance may not be a true synthetic emerald but only isomorphous with emerald.[4] However, natural emeralds with properties as low as this substance have been reported as rarely occurring.[5]

Three synthetic specimens — the crystal illustrated above and two cut stones of .22 carats and .38 carats respectively — were recently examined by the Gemological Institute of America. The average of their specific gravities was about 2.64; they exhibited refractive indices of approximately 1.56. Characteristic properties of Igmerald reported by other experimenters, such as inclusions, anomalous double refraction, and absorption spectra, were verified. An additional characteristic property of the synthetic substance, which may prove of great value in detecting it (in the unlikely event that this should be necessary) was observed in the G.I.A. Laboratory: In ultra-violet light, produced by a carbon arc and passed through a Wood's filter, the artificial stones were found to fluoresce quite strongly; the fluorescent color was a light orange. No genuine emerald yet tested in the G.I.A. Laboratory has been found to exhibit more than very faint fluorescence under the above conditions.

The material was very cloudy or turbid and while some of it was of fair emerald color, experienced gem dealers and lapidaries estimate that natural stones of the same color and quality would not be worth more than a few dollars per carat. The uncut crystals are particularly interesting because all of their faces, both prism faces and basal pinacoids, are noticeably concave.

The synthetic material recently examined in Germany[3] and England[5] revealed the physical qualities as listed in the following table, in which are also listed the properties of specimens of natural emerald:

	Specific Gravity	*Refractive Indices*		*Birefringence*
England				
Igmerald	2.66	1.5647	1.5660	.0013
Colombian Emerald	2.698	1.565	1.570	.005
S. African Emerald	2.765	1.586	1.593	.007
Germany				
Igmerald	2.662	1.5606	1.5644	.0038
Colombian Emerald	2.694	1.5632	1.5690	.0058
Colombian Emerald	2.688	1.5696	1.5751	.0055
Brazilian Emerald	2.676	1.5679	1.5732	.0053
Siberian Emerald	2.703	1.5734	1.5795	.0061
Siberian Emerald	2.703	1.5748	1.5810	.0062
S. African Emerald	2.718	1.5805	1.5870	.0065
S. African Emerald	2.726	1.5807	1.5873	.0066

All observers report the material also to be turbid, and the published conclusions of Dr. Eppler[3] (roughly translated) are:

1. The new synthetic emerald (substance) of the I. G. Farbenindustrie can with certainty be distinguished from all natural emeralds.

2. It possesses a lower refractive index, less birefringence, and a lower specific gravity than the natural emerald.

3. It exhibits entirely different liquid inclusions arranged in a manner characteristic to it.

4. It shows an anomalous double refraction which may be used as an indication toward its recognition.

Because of difference in the method of manufacture, inclusions in this material do not resemble the characteristic inclusions of bubbles and curved striae by which synthetic corundum is identified.

Statements regarding this synthetic substance have kindly been submitted to *Gems & Gemology* by Dr. Karl Schlossmacher, well-known German mineralogical authority, by G. O. Wild of the German *Gesellschaft für Edelsteinkunde* (institute of precious stone science), and by B. W. Anderson, director of the English Gemological Laboratory, and are published herewith.

[1]Deutsche Goldschmiede Zeitung, February 2, 1935, page 3.
[2]Deutsche Goldschmiede Zeitung, June 16, 1935, page 244.
[3]Deutsche Goldschmiede Zeitung, April 6, 1935, pages 144-146.
[4]Chemical compounds which have an analogous composition and a closely related crystalline form are commonly said to be isomorphous. (Dana's Textbook of Mineralogy.)
[5]The Gemologist, May, 1935, page 297.

SYNTHETIC EMERALD

by

PROF. DR. KARL SCHLOSSMACHER
University of Konigsberg, Konigsberg, Prussia

The synthesis of the Emerald is an achievement. The scientists who had the first success in the making of synthetic Beryls, of which Emerald is but a variety, were Hautefeuille and Perrey. Their work dates of 1884 and was done in Paris. They produced small crystals measuring fractions of a millimeter so that their work had no practical consequence. In 1894 a German scientist, Traube, arrived at the same product by a different process but his stones were also of no commercial importance. Quite recently only it was possible to make larger stones, even if they are of no marketable size as yet. They are the success of several years of research of the two German chemists Dr. Espig and Dr. Jaeger of the I. G. Farben concern at Bitterfeld. The color is identical with that of the real stones and according to measurements of the author the absorption curve is also the same as that of natural stones. Even flaws of distinct shape in natural Emeralds are to be found in the synthetic product and it will be a task for science to find means of differentiating between the two.

It may be stated that it has been impossible up to date to make stones of any importance as to size. Several millimeters square are about the utmost that has been produced and the cost of their production is said to be higher than that of equal genuine material. The present groups of

intergrown crystals are not suitable for cutting but allow only small portions to be used for gem material. It is impossible at the present time to tell anything about the goal at which the makers are driving. The point of view at present is that that matter is only of scientific importance. The makers assure the trade that they have no intention to make any practical use of their achievement. For this reason the public has been acquainted with the matter in a new and unique fashion; a cut stone mounted with other precious stones has been sent out as a lottery prize at the occasion of a fashionable affair at the German capital. The press, the radio and the pictorials have at the same time published news about the matter so that the entire country was well informed.

IGMERALD

by

B. W. ANDERSON

Director of London Gemological Laboratory

Recent reports from Germany of the Synthesis of emerald by the I. G. Farbenindustrie naturally aroused considerable interest (tinged with uneasiness) in Precious Stone circles. Now that the facts about these stones are more truly known it is to be hoped that any feeling of alarm will quickly subside, for, in the first place, it is very unlikely that these "Igmeralds" will ever be placed upon the market to compete with the natural emerald; and in the second place, the Igmeralds so far available for examination have shown distinct differences from the natural stones—quite sufficient to enable a definite distinction to be made.

Specimens of the new synthetics are extremely difficult to obtain—the specimen which we were able to examine was most kindly lent to us by Herr G. O. Wild, Director of the Precious Stone Laboratory at Idar. As a gem-stone this specimen was not such as to excite admiration. The small size (.108 carat) poor cut, and internal markings were such as to make the stone far more valuable as a scientific curiosity than as a precious stone. Under a lens, the Igmerald showed a strongly-marked banded structure and curved, crack-like markings, as can be seen in the photo-micrograph. The dichroism was strong enough to be clearly visible to the naked eye, the twin colors being a deep bluish green and a paler yellowish green.

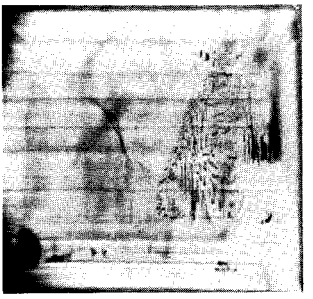
Physical Properties

The specific gravity (2.66), refractive indices (ϵ 1.5647 and ω 1.5660) and particularly the birefringence (.0013) were found to be unusually low, and provide means of distinction from the natural emerald. In this connection it is interesting to note that determinations on another specimen of Igmerald at Hamburg University (as reported by Dr. Eppler in the Deutsche Goldschmiede Zeitung) yielded very similar results: specific gravity, 2.662; refractive indices, 1.5606 & 1.5644; birefringence, .0038. In our case the birefringence was too small to be measurable on a Tully refractometer.

Anomalous double refraction, due to strain, which is very rare in natural emerald, was observed both

in the Hamburg specimen and in the Igmerald we examined. One further significant feature of the synthetic stone was at once noticeable when we examined its absorption spectrum with a direct-vision prism spectroscope. In the red and orange the usual narrow bands, due to chromium, were present, but in addition to these we observed two new bands in the yellow at wavelengths 6060 and 5940, which were particularly strongly developed in polarized light (extraordinary ray) and at once revealed that the stone was not natural. A Laue photograph was taken, in the direction of the hexagonal axis, and gave a pattern apparently identical with that given by natural beryl.

To sum up, it will be seen from the above account that the internal structure, strong dichroism, anomalous double refraction, characteristic absorption spectrum, and low birefringence, specific gravity and refractive index, all provide means of distinguishing the Igmerald from



The Internal Markings of a Fashioned Igmerald, as Seen Under 14 Magnifications

the natural emerald. Actually, owing to the laborious process involved and the high cost of production, it is unlikely that these synthetic emeralds will ever appear on the market.

SYNTHETIC EMERALD

by

GEORG O. WILD

Gesellschaft fur Edelsteinkunde, Idar, Germany

The synthetic Emerald, which has lately been produced by two German scientists of the I. G. Farben concern, does not entirely merit the fuss which was made about it.

It might be argued that the situation was similar when the first Rubies were secretly put on the market. The outsider might believe this. However, there is a vast difference between the crystalizing powers of Corundum and Beryl. While the first possesses to a high degree the urge to form crystals, the latter is almost entirely free from this tendency. Years are required to bring the atoms of the complicated structure of Beryl into their position, while a few seconds suffice to form Ruby or Sapphire crystals. The only obstacle in the way of the commercial production of the Ruby was a mere technical and not a fundamental one, while with Beryl the problem is vital. The ruby split and cracked into many small pieces during the cooling period, which for the sake of cheap production had to be shortened as much as possible. Once this was overcome there was no obstacle to mass production. The same factor, time, enters the production

of Beryl only in a different way. To cut it down an intricate set of apparatus and machinery is required, so that the commercial production may be questioned for years to come. Whoever knows what it means to keep constant high temperatures between 2000 and 3000 degrees Fahrenheit will be able to imagine what it means to "squeeze" the Beryl atom into the crystal state. A period of several years is probably required to do this, during which time the temperature has to be kept constant within a degree of even fractions of it. Deviations will ruin the long prepared process and possibly spoil the last period of growth. It is not known along which lines the synthetic Emeralds have been produced today, but it may be assumed that they are along those followed by Hautefeuille and Perrey.

It may be said that, while the Ruby production is a crude process, where any well-trained workman with the necessary experience can watch over a number of furnaces, the making of the synthetic Emerald is a most difficult matter to be compared with the work of a highly trained surgeon. By its very nature it cannot enter into a stage of mass production. The amount which has to be invested in the form of time and apparatus for the making of a small individual crystal is entirely out of proportion to the value of the desired product.

GEMS DISPLAYED AT SAN DIEGO FAIR

The Pacific International Exposition at San Diego is disappointing from the standpoint of one who wishes to see fine gem stones. Many booths exhibit jewelry, but few of them are worth studying. Prince M. U. M. Salie of Ceylon exhibits fine stones from the Orient—particularly sapphires, star sapphires and moonstones. J. W. Ware, Qualifying Certified Gemologist of San Diego, has constructed a full-sized model of a California gem mine; it represents the type of working from which many of the gems he displays have been taken. Of particular interest in the accompanying display are three fine blue topaz which Mr. Ware has mined and cut. The largest of these was declared by the late G. F. Kunz to be one of the finest gem-topaz in the world. Both of the above displays are in the Palace of Better Housing.

In the Electrical Building is the exhibit of Philip Klein of San Francisco. Only genuine stones are displayed, many of them in platinum or gold mountings manufactured by Klein's. The famous Monte Alban jewels from Mexico will be shown at the Exposition when they reach San Diego early in August. Also, the permanent mineral collection in the San Diego Museum, which is on the Fair grounds, contains many fine gem specimens and should be visited by every gemologist.

Do You Know—

What Is an Endoscope?

—See *Gemological Glossary*, page 291.

The Jeweler Tests His Metals

Are you sure that the articles you sell are correctly stamped? The author stresses the ease with which you can find out for yourself.

by

C. M. HOKE

Author of "Testing Precious Metals," New York

The philosopher says *Know Thyself*.

The customer says *Know Thy Goods*.

And the wise retailer obeys. All of us, as buyers, have had the experience of entering one store and finding ignorance, and entering another store and finding knowledge. And whether the goods be socks, diamonds, bananas, or municipal bonds, our tendency is to purchase from the man who literally knows his stuff and to return to his store again and again, with confidence and respect.

Realizing this, the jeweler of today studies every aspect of his wares —the fashion aspect, the sentimental or romantic aspect, and the material aspect.

The Need for Testing

Aside from the fact that a knowledge of his goods makes him a more successful salesman, there are other reasons for knowing their character and intrinsic value, primarily his legal responsibility. A seller of gold, silver, or platinum jewelry that has the quality stamp, is responsible for its quality—whether he manufactures it or not. During recent months, when much old jewelry has been turned in and assayed, it has been proven that a tragic proportion of stamped jewelry is below standard. An article by Mr. G. H. Niemeyer, chairman of the Jewelers' Vigilance Committee, in the May 16 issue of *The Manufacturing Jeweler*, discusses this subject in an able manner. The jeweler must know his goods both for his customers' sake and his own.

But this is not all, he wants to do more than to say merely: "This is white gold," or "This is platinum". He knows the value and the pleasure of being able to say, for instance, "This 18-k white gold has been whitened by nickel; this other 18-k gold, of nearly the same appearance but higher price, was whitened with palladium; though both are excellent metals, the latter will hold its color better and will always be of higher intrinsic value." He follows this with a little chat on the platinum-group metals, and a sale is made.

The Ease of Testing

Fortunately it is an easy task to test jewelry,—and without injury to it. Many of us who have seen old-gold buyers file deeply into an article, then drop acid into the cut, have assumed that any test is sure to damage the article beyond repair. This is far from the truth. One of the most useful of all tests can be made without the slightest injury; most others can be made so as to leave only a minute trace—a trace no more noticeable than the tiny scratches that watch-repair men make to identify their work.

Specific Gravity

For example, the specific gravity test is applicable to many cases, and

is made without injury to any article that can withstand plain water, since it involves merely weighing it as usual, then hanging it on a thread and weighing it again while it is immersed in water. A little arithmetic on the jeweler's part will then tell him the specific gravity of the object. The student of gemology is already used to testing the specific gravity of gem stones.

With the precious metals the method described above, in which the article is weighed first in air, then in water, involves only a balance, a few moments of time, and no damage to the jewelry. Anyone using the figures thus obtained cannot possibly confuse white gold with stainless steel, white gold with high grade platinum, platinum with palladium, nickel with silver, yellow gold with brass, nor most filled gold with solid gold. It is even possible to determine roughly the karat of gold articles, and to distinguish between iridio-platinum and palladio-platinum.

One limitation of the method must be noted; if the article contains stones, either the stones must be removed, or if the specific gravity of the complete article is taken, allowance must be made for the stones. This latter is not easy to do. Also, care must be taken to avoid jewelry in which two or more alloys are employed, such as platinum-topped gold, or sterling silver that is gilded. However, these combinations require care no matter what method of testing is employed, so this fact is no criticism of the specific gravity method.

Touchstone Tests Need Not Injure Jewelry

In spite of the custom of old-gold buyers, which is usually to ruin any article that is tested on the touchstone, this damage is not necessary. Men accustomed to handling watch parts, and to whom the use of the loupe is natural, can readily learn a sort of semi-micro technique for testing jewelry. First they make a tiny cut in some inside part of the article, using a jeweler's saw—fine as a horse-hair—then a minute drop of the proper acid is introduced, and its action watched under the loupe; then it is washed off thoroughly. Following that a streak may be made on a touchstone if desired, for comparison with standard streaks; a single short streak is enough, involving almost no injury to the article, and it in turn can be tested with a small drop of acid, and watched with the loupe or hand lens. Even if the article should have been spotted or scarred by this treatment, the expense of re-gilding it is small, and the satisfaction of knowing its quality is considerable.

Practice Is Easy and Inexpensive

Every jewelry shop within the range of the Depression contains a few articles of no sales value—articles of gold or silver or platinum, now outmoded or for some other reason waiting to be disposed of as old metal. In many cases the quality of the metal is known. What better way of realizing part of its value is there than to utilize these articles in training every employee in methods of testing? The beginner, when making touchstone tests, is apt to make too conspicuous a cut, use too much acid, make too many streaks on the stone, etc., and of course he does not learn how to interpret the tests without some practice of hand and eye. This outmoded jewelry is precisely the stuff for him to learn on.

The older members of the staff no

doubt already know these tests, especially as applied to gold. But even they — even many otherwise capable gold-buyers — are not familiar with all the new tests for platinum, palladium, etc., notably those that enable one to detect palladium in white gold or platinum, to detect nickel in jewelry or dental alloys, to detect gold when used as an adulterant in platinum, and so on. These tests require only a few additional bits of equipment, a few additional chemicals, and they are fascinating to use and profitable to depend upon.

To the younger members of the staff, these tests offer an inexpensive and delightful road to that knowledge of jewelry which makes a salesman both happy and successful.

Expensive Ignorance of White Alloys

White alloys range in value from a few dollars a ton—as in the case of stainless steels—to a value even higher than that of 18-k gold—as in the case of iridio-platinum. Sadly enough for the gold buyer, stainless steels present a handsome appearance and have a strange resistance to acids.

That is, some acids—notably nitric acid and aqua regia. Now, there is no special magic about nitric acid, there being other acids of comparable strength, but to jewelers it has traditional virtue. If a metal resists nitric acid, they think of it as "noble". If not, they call it "base".

There are obvious objections to this tradition. Palladium, a metal of the platinum group, and as fine a jewelry metal as ever known, dissolves promptly in nitric acid; so does silver. Steel, chromium, and aluminum, all base metals, are strangely resistant to it.

However, some jewelers still rely solely on nitric acid or aqua regia for distinguishing between expensive metals and cheap ones! As a result, many of them have been cruelly punished. Thousands of dollars have been paid out for stainless steel, worth a few cents a pound, under the misapprehension that it was white gold, simply because the buyers had neglected to learn the few easy tests that would tell the difference in a trice.

In some cases, losses were taken in silence, because the jewelers and loan brokers involved were unwilling to admit their ignorance of how to test metals.

Old White Metals Now Profitable

Among the hordes of gold buyers that sprang into activity recently, it was noticed that most of them rejected white metals, and would buy only yellow gold. In view of the value of iridio-platinum and many dental alloys, the cause of this discrimination is seen to be simple ignorance of metals and their values. Because of this ignorance, many pieces of excellent white metal in which gold, platinum, or palladium were constituents, are still on the old-metal market. The owners, discouraged by this lack of interest, have acquired a sort of inferiority complex regarding their goods, and are willing to sell it at a low price. When a buyer with proper training meets such owners, he can pick up bargains.

Has White Gold Lost Its Vogue?

Fashion swings back and forth like a pendulum. In 1880 we admired yellow gold jewelry, the more massive the better. In 1920 we ad-

mired white jewelry, the more lace-like the better. Now in 1935 we are swinging back to yellow gold again. A contributing cause is the fact that some of the early white gold alloys, hastily compounded in war times, were of poor working quality and bad color.

The yellow gold of 1880 is going back to the melting pot. The unwanted white jewelry of 1910-1929 should go with it, hastened on its way by the enlightened jeweler, back to the form of bullion, whence it can be made up again into new articles of present day appeal.

GEMOLOGICAL INSTITUTE RECEIVES EQUIPMENT AND SPECIMENS

A few weeks before his death, Mr. Godfrey Eacret, Chairman of the Board of Governors of the Institute, presented a very fine ultra-violet ray apparatus to the laboratory — only one of his many generous gifts. The instrument is a Kromayer mercury vapor quartz tube burner manufactured by the Hanovia Chemical Co. It is a very strong and steady source of ultra-violet light. This burner is so mounted as to be used readily as a source of light for use with a microscope as well as in the usual type of ultra-violet work.

Securing cut stones to use in the practical examination required of candidates for the title *Certified Gemologist* presented a serious problem when the examinations were first being prepared, since the collection of gems owned by the Institute was very limited. However, several firms responded at once when material suitable for the examination was solicited. Large lots of cut stones were loaned by Tilden-Thurber, Inc., of Providence; by the American Gem and Pearl Co. of New York; and by C. B. Brown and Co. of Omaha.

Wilbur A. Sweeney, who has been working with the laboratory staff of the Institute in development work on instruments, has presented a number of pieces of chemical equipment. These include a series of crucibles, distillation apparatus, flasks, etc. The principal application of this equipment will be in the preparation of various liquids useful in gem-testing — for instance, in dissolving sulphur in methylene iodide for use with the refractometer.

C. A. Allen, G.I.A. student of Cranbury, N.J., has sent a representative collection of rough zircons for purposes of laboratory experimentation. These include both treated and untreated stones; and since the history of each specimen is known, accurate research can be conducted.

More Technical—

How Can a Monochromatic Red Flame Be Produced with a Bunsen Burner?

—See *A Gemological Encyclopedia*, page 295.

GEMOLOGICAL GLOSSARY

(Continued from last issue)

(The key to pronunciation will be found in the January, 1934, issue.)

Dop (dop). Device for holding diamond during process of cutting and polishing.

Dop marks. Marks left on diamond from dop.

Double Refraction. When a ray of light passes obliquely through minerals of the tetragonal, hexagonal, rhombic, monoclinic and triclinic systems it is not only refracted, but also resolved into two rays which travel with different velocities. This is known as double refraction.

Doublet. A real gem cemented to a piece of glass cut and colored to imitate the real stone, or portions of two genuine gems cemented together.

Dravite (dra'vite). Brown tourmaline.

Drilled Pearls. Pearls with one hole for setting on peg, or quite through the center for stringing.

Drop Pearls. Oval or pear-shaped pearls, not necessarily of perfect shape.

Druse (drooz). A surface covered with small projecting crystals. A cavity in a rock, having its interior surface studded with crystals and sometimes filled with water; a geode.

Drusy or Drused. Covered with minute crystals closely crowded, giving a rough surface with many reflecting faces.

Ductile (duk'til). Capable of being drawn into wire.

Dull. Not reflecting much light; absence of luster.

Dumortierite (due-more'ti-er-ite). A basic aluminum borosilicate. Orthorhombic. Hardness 7. Specific gravity 3.26-3.36. Luster vitreous. Color bright blue to greenish-blue. Transparent to translucent. Pleochroism very strong.

Dumortierite Quartz. A massive variety of quartz. Deep blue and violet blue to violet. Opaque. It is quartz containing and colored by the mineral dumortierite. Its blue variety closely resembles lapis-lazuli and is improperly called "California lapis."

Durability. Ability of a gem stone to resist chemical and abrasive influences. Durability depends largely, but not entirely on the hardness and the toughness of a mineral.

Dust Pearls. Small seed pearls weighing less than 1/25 of a grain.

"Dutch Bort." Zircons found in the South African diamond mines.

Dyke. See Dike.

Earthy. Consisting of minute particles loosely aggregated; clay-like, dull.

Eclogite (ek'loe-jite). A rock found in the diamond "pipes" thought by some scientists to be the original matrix of the diamond.

Edelsteinkunde (German). The Science of Precious Stones.

Edisonite (ed'i-sun-ite). Mottled blue turquoise.

Effervescence (ef"er-ves'ens). Evolution of gas in bubbles from a liquid.

Egg Pearls. Ovoid; shaped like an egg.

Egg Shell Turquoise. Turquoise with crackled appearance owing to fine, irregular arrangement of matrix which appears like cracks in an egg shell. See also Turquoise.

Egyptian Jasper (ee-jip'shun). Banded yellow, red, brown or black jasper.

Egyptian Pebble. Egyptian Jasper.

Elaeolite (ee-lee'oe-lite). See Nephelite.

Elastic (ee-las'tik). The property of springing back to its original form when bent, as in thin sheets of mica.

El Doradoite. Trade-name for a blue variety of Quartz used as gemstone; from El Dorado County, California.

"Electric Emerald." A glass imitation of Emerald.

Electrons (ee-lek'tron). The particles or electric charges which make up the greater portion of the atom and which revolve about the nucleus of the atom. See also protons.

Electrum (ee-lek'trum). Alloy of gold and silver, also obsolete name for Amber.

"Elie Ruby." Red pyrope (garnet) from Elie, Scotland.

Emerada. Trade-marked name for a yellowish-green synthetic spinel.

Emerald (em'er-ald). The most valuable variety of the Beryl species. Color, bright emerald-green, due to the presence of a little chromium.

Emerald Cut. A square form of cutting in which all facets are flat and parallel to the girdle. See also square-cut, step-cut, trap-cut.

Emeraldine (em'er-al-din or dine). Chalcedony artificially colored green.

"Emerald Malachite." See Dioptase.

"Emerald Triplet." An assembled stone. Usually consisting of a top of beryl of lighter or different color from Emerald and sometimes of a base of the same mineral. The term is also applied to an assembled stone of rock crystal top and back with a green separation layer.

Emeraldite (em'er-al-ite). Green tourmaline.

Emery (em'er-i). Impure granular variety of common corrundum.

Enamel (en-am'el). A vitreous composition usually opaque or semi-opaque, applied by fusion to the surface of metal, glass, or pottery for ornament or protection or as a basis for decoration.

Enantiomorphous (en-an"ti-oe-mor'-fus). Forms related to one another as is the right hand to the left; hence not superimposable.

Endoscope (en'doe-skope). An instrument used to discriminate between drilled true and cultivated pearls.

"Endura Emerald." A trade term applied to any kind of green glass though originally applied to a special type.

"English Crystal" or "Full Crystal." Used for fine tableware, including "Cut Glass." See also Imitations, Glass.

Enstatite (en'sta-tite). Known incorrectly as "green garnet." Rarely found in sizes sufficiently large to use as gem-stones. Chemical composition, $MgSiO_3$; Hardness 5½; refractive index 1.67-1.70. Translucent, yellowish-green to bluish-green.

Epaulet (ep'o-let). A five-sided form of the step-cut; its girdle outline resembles an epaulet.

(To be continued)

Gem Nomenclature in Europe

by
ROBERT M. SHIPLEY
President of the Gemological Institute of America, Los Angeles

The B.I.B.O.A. (The International Association of Jewelers, a European organization) has just published valuable tables of nomenclature of precious stones entitled "International Nomenclature of Admissable Trade Names". It has been officially prepared by this organization to establish correct and incorrect nomenclature or terminology in Europe. It contains admissable names printed in black and inadmissable (incorrect, misleading, or deceptive) names in red. The nomenclature is printed in four languages.

Minor criticisms of the contents on these tables are possible as is true of everything published, but the accomplishment marks a great stride forward on the principle of protecting the buying public. The compilation of the work has obviously been laborious, and it seems almost free from the influence usually brought to bear upon such undertakings by selfish interests. The material is the result of work by Prof. Dr. Schlossmacher, Prof. Dr. Brauns of Germany, Prof. Michel of Vienna, B. W. Anderson of London and others.

It is interesting to note that the majority of correct and incorrect names follow the recommendations in the table of nomenclature prepared by the American Gem Society, for its Students and Graduate Members. In the preparation of the A.G.S. Table many recommendations for the elimination of certain trade terminology was withheld for future recommendation by the Society. This was because the A.G.S. classification of incorrect or misleading terms already made had been considered by certain factors in the American trade to be too revolutionary. Therefore it was deemed best in the U.S.A. to withhold several suggestions for some future time and to refer them for consideration by the entire membership of the A.G.S.

However, the B.I.B.O.A. seems to have proceeded upon the conviction that it was to the best interests of both the jewelry trade and to the public to immediately make radical changes in present trade terminology. These changes, on the whole, have been more revolutionary than those established in the A.G.S. table. For instance, in their announced policy of establishing classifications "in fullest accord with the truth" the B.I.B.O.A. has established as inadmissable "the additions of place of origin to any designations" unless they can be applied without doubt or the correctness can afterwards be proved by testing. This establishes as incorrect such trade terms as Burma Ruby for any ruby other than from the Burma gem deposits; the term Ceylon sapphire for any sapphire other than one mined in Ceylon; Siberian amethyst for an amethyst mined outside of Siberia, etc. As the names of "trade grades," such terms are in common use in the legitimate trade in the U.S.A. as classifications to describe the color and general appearances of stones, so also are such terms as Wesselton Diamond which, as commonly used, refers to a color grade

and not to the origin. Such use of the names of mines in reference to diamonds is not practiced in Europe and that problem of establishing such usage as incorrect did not have to be met when they formulated this ruling. However, there is a school of thought in the American Trade which considers the use of such terms as unethical.

The B.I.B.O.A. tables are silent upon the use of the term Oriental pearl to describe salt water pearls from sources which are not in the Orient, such as Panama or the South Seas. Of course, the use of the terms Oriental emerald, Oriental topaz, etc., to describe colored sapphires is listed as inadmissable because so obviously misleading as to the nature of the species itself.

The B.I.B.O.A. tables admit the use of terms such as, ruby-like spinel and alexandrite-like sapphire; establish as inadmissable the use of the terms ruby-spinel, rubicelle, and sapphire spinel; but at the same time list sapphire-quartz and topaz-quartz as admissable. This seems the only flagrant inconsistency. It would seem that the use of the adjectives ruby, sapphire and emerald as a "prefix" to describe color should all be permitted or that only ruby-colored, topaz-colored, etc., should be approved for such descriptions.

Stained red, blue, green, brown, and black chalcedony is not to be sold without the use of the prefix *dyed*. The classifications of the terms chalcedony, agate and onyx do not seem entirely scientific or consistent. For instance, the prohibition of the use of the term chalcedony in describing bluish agate and the use of the term agate for both solid-colored or banded chalcedony would seem difficult of rationalization by an American customer familiar with mineralogical classification. However, as mentioned, these are minor criticisms of what *Gems & Gemology's* contemporary, *The Gemologist* calls "a foundation on which a very valuable work will be constructed."

Gems & Gemology will be interested in receiving opinions of A.G.S. Members regarding any of those above-mentioned recommendations or "prohibitions" as they are called by the B.I.B.O.A.

The booklet is obtainable from the B.I.B.O.A., 1 Noordeiende, The Hague, Holland, at a cost of about $2.65 plus the money order fee and is an interesting addition to a gemological library.

"MAXIXE BERYL"

In the German mineralogical publication *Zentralblatt fur Mineralogie*, 1935, a new variety of Beryl has been described by Schlossmacher and Klang. Its specific gravity is reported as 2.805, higher than sea green beryl but lower than the rose colored morganite. This is the most important difference in physical properties from other bluish or bluish-green aquamarines. In composition its principal distinction from other beryl lies in the fact that it contains a small amount of boron oxide (0.39%).

This beryl was found in the Maxixe Mine in the northeastern of Minas Geraes, Brazil. The authors suggested the name of Maxixe Beryl, but R. Brauns in the *Goldschmeide-Zeitung* states as his opinion that it is an unimportant variety of aquamarine and that a distinctive name for it is superfluous.

A GEMOLOGICAL ENCYCLOPEDIA

(Continued from last issue)

HENRY E. BRIGGS, Ph.D.

However, the burning of a non-luminous gas flame colored with some metal salt will serve for occasional use. The following salts will produce monochromatic light in a non-luminous flame: Lithium, red flame of wave length 6700 Angstrom units; Sodium, yellow flame of wave length 5890 Angstrom units; Thallium, green flame wave length 5350 A.U., etc.

With the goniometer we must have a prism cut from the mineral to be tested. In a faceted gem two opposite facets can usually be used.

After we have a prism suitable we can either use the perpendicular incidence method or the minimum deviation method.

In the perpendicular incidence method a ray of monochromatic light is allowed to pass through the collimator of the instrument and fall perpendicularly upon the face of the prism to be tested. The angle of the prism will of course have to be smaller than the critical angle of the mineral otherwise the ray would be totally reflected (see total reflection) within the specimen. With the telescope find the angle of deviation and then from the angle of deviation o and from the angle between the prism faces a the index of refraction n may be calculated as follows:

$$n = \frac{\sin (a + o)}{\sin a}$$

Note: It is necessary to use a table of trigonometrical functions (found in most any good trigonometry text-book) to find the sin of the angle read from the scale of the goniometer. *This calculation must be made by the sin of the angle.*

In the minimum deviation method a ray of monochromatic light is allowed to pass from the collimator through the prism which is mounted in the center of the instrument. With the telescope find the angle at which this ray is least deviated in its passage through the prism. From this angle of least deviation and from the angle between the prism faces we reckon the ratio or refractive index thus: Let a be the angle of least deviation and o be the angle between the prism faces and n be the index we wish to determine.

$$n = \frac{\sin \frac{a + o}{2}}{\sin \frac{a}{2}}$$

Note. As above you will have to make these calculations with the sin of the angles.

Spectroscopes

We will remember that the color of a mineral is due to selective absorption. That is all the colors of white light not absorbed, blend to produce

the color we see. Oftentimes two minerals which look to be exactly the same color will be found to absorb entirely different parts of the spectrum. The unaided eye cannot tell what portions of white light are absorbed and what is not. However, with the aid of the spectroscope we can see clearly the portions of light which are not absorbed and hence we can determine what has been absorbed.

Every different substance has a different way of absorbing light and we can make excellent use of this fact to identify gems as well as to analyze a great variety of other substances. No chemical analysis is so delicate and sensitive as is the analysis of the transmitted spectrum. However, the high efficiency of spectrum analysis is so well known that it needs really no introduction. We will proceed at once to the use of the instrument.

There are a great variety of spectroscopes on the market and the design and methods of handling is so widely different that the author will only try to explain their use in a broad way. The optical companies who manufacture these instruments will gladly furnish instructions for handling their particular design, however, all spectroscopes are comparatively simple to use.

A ray of white light is allowed to pass through the gem specimen into the collimator. It will pass from there through a prism or series of prisms and to a telescope which can be adjusted to see the spectrum. Some instruments are complex and have an arrangement for showing the spectrum along side a scale. Some of the simpler and cheaper spectroscopes consist of merely a little tube and eye piece with a prism or set of prisms in the tube between the objective and the eye piece. Other instruments have what is called a comparison prism which can be swung into the upper half of the slit (objective aperture) so that a ray of day light may be broken up and projected beside the band which is partly absorbed, then the two can be compared, hence the name "comparison prism".

It will be obvious from the foregoing that the spectroscope affords one of the most convenient ways of identifying gems and other minerals. The author has used it with gratifying results and heartily recommends the spectroscope to the beginner.

NOMENCLATURE OF GEMS

The common names of most of the gems have been handed down through many ages. Names which we use today to designate certain gems —such as garnet, amethyst, sapphire, and ruby—are all names which originated centuries ago before mineralogy became a science.

It will be noted that some gem names end with "ite". These are gems which have been recognized since mineralogy became a firmly-founded science. Some of the common names of days gone by have been replaced with others, but for the greater part the older names seem to have lived down through the years.

(To be continued)

BOOK REVIEWS

***Testing Precious Metals*, by C. M. Hoke, second edition, published by The Jewelers' Technical Advice Co., New York, 1933, price $1.00, may be secured from G.I.A. Book Dept.**

Particularly valuable at the present time, owing to the advanced price of gold and silver and also because of the prevalence in the jewelry market of jewelry with misleading or fraudulent descriptions, is a practical text explaining in detail the methods of testing precious metals. This book is of great value both to the buyer of old metals and to the jeweler who wishes to check the authenticity of the metal in new pieces of jewelry in his stock.

As the author points out in a footnote, incorrectly stamped articles are constantly appearing in the trade. The great majority of jewelers wish to avoid selling such pieces, even unintentionally. *Testing Precious Metals* tells, in simple language, the various tests which will definitely determine the true nature of precious metals.

The book is carefully written and instructions are clear and easily followed. The work is very brief, covering but some sixty pages, yet the methods of testing are presented in sufficient detail to enable even a layman to apply the tests. The author is a recognized practical authority in the precious metal trades, with the background of a university degree in chemistry.

***Geology*, by W. H. Emmons, G. A. Thiel, C. R. Stauffer, and I. S. Allison. Published by McGraw-Hill, New York, 1932.**

To quote its preface: "The textbook 'Geology' is a brief presentation of the subject, prepared for use in a one-semester beginning course for college students." A general knowledge of sciences is presumed on the part of the reader, but no specific previous study is necessary. The book is complete in itself, as many texts are not, and requires no outside references to atlas, dictionary, or encyclopaedia in order to gain a thorough understanding of the subject.

The subject matter is almost exclusively physical geology; only one short chapter is concerned with earth history. The style is simple and clear, with no attempt to popularize the subject; but the authors explain causes as well as outlining processes, and the result is an interesting treatment of physical geology.

Each of the four authors was evidently assigned the writing of chapters concerning the subjects with which he was most familiar, a plan which succeeds in raising the standard of the text as a whole.

SELECTED BIBLIOGRAPHY

(Continued from last issue)

Avicenna, Abou-Ali-Alhussein-Ben-Adloulah
Canonnes Medicinae. [Lat. reddit.] Ven. (Venice), 1843. Contains material relating to the medicinal and magical virtues of gems.

Babington, Charles
A Systematic Arrangement of Minerals, their chemical, physical, and external characters. London, 1795.

Bacci, Andrea
Le XII Pietre preziose. Roma (Rome), 1587.
De Gemmis et Lapidibus pretiosis, tractatus ex. Ital. Lingua Lat. red. Francof. (Frankfurt), 1605.
De Gemmis ac Lapidibus pretiosis in S. Scriptura. Roma (Rome), 1577; Franc. (Frankfurt), 1628.

Bacon, Roger
Opera Quaedam hactenus inedita. [Edited by J. S. Brewer.] London, 1859. The appendix—Epistola . . . de secretis operibus artis et naturae—contains some material relating to the magical and alchemical virtues of certain gems.

Ball, S. H.
Early Gem Mining; real and otherwise (in Mines and Met., V 9, No. 263, Nov. 1928, pp. 488-492).
Historical Notes on Gem Mining (in Econ. Geol. v. 26, No. 7, 1931). Article of great value. Tables and bibliography.
Royal Gem Monopolies (in Military Engin. v. 24, No. 137, Sept.-Oct., 1932, pp. 501-6). Mines of the Pharoahs; Rubies and Spinels.
The geologic and geographical occurrence of precious stones (in Econ. Geol. v. 17, No. 7, Nov. 1922).

Ball, V.
A Manual of the Geology of India. Calcutta, 1881.

Bapst, G.
Les joyaux de la couronne. [In Revue des Deux Mondes, 1886, p. 851.]

Barbet, Ch.
Traite complet des Pierres Precieuses. Paris, 1858.

Barbet de Jouy, Henri
Les gemmes et joyaux de la couronne au Musee du Louvre. Paris: L. Tochener 1886. (12) pp., 60 plates.

Barrera, Mme. de
Gems and Jewels. London, 1860.

Barth, H.
Das Geschmeide, Schmuck und Edelsteinkunde. 2v. Berlin, 1903.

Bauer (Max Hermann)
Edelsteinkunde, eine allgemein verstandliche darstellung der eigenschaften, des vorkommens und der verinendung der edelsteine, nebst einer anleitung zur bestimmungderselben, fur mineralogen, edelsteinliebhaber, Steinschleifer, Juweliere; 2 Vollkommen. Leipzig, C. H. Tauchnitz, 1896.

Precious stones; a popular account of their characters, occurrence, and application, with an introduction to their determination, for mineralogists, lapadaries, jewelers, etc. With an appendix on pearls and corals. Tr. fr. the German with additions by L. J. Spencer. London, C. Griffin and Co., Ltd., 1904.

(To be continued)

GUILDS

Devoted to News and Activities of Educational Organizations and of Vocational Study Groups and Their Members.

STUDY GROUPS TO MEET IN SEPTEMBER

All study groups conducted by the A.G.S. or G.I.A. for their students will hold September meetings. Below are listed dates, meeting places, and names of instructors:

Boston: Boston Society of Natural History. September 10th.
Instructor: Edward Wigglesworth.

Eastern Pennsylvania: Academy of Natural Sciences of Philadelphia, September 19th.
Instructor: Dr. Samuel G. Gordon.

New Jersey: Douglas Hotel, Newark, Friday, September 13th.
Instructor: Dr. A. C. Hawkins.

Pittsburgh: Date and hour obtainable from officers of the Tri-State Guild, Paul Hardy (c/o Hardy and Hayes), President.
Instructor: Dr. Richard Sherrill of the University of Pittsburgh.

Cincinnati: Date and hour will be obtainable from Edward Herschede, c/o Frank Herschede and Co., Cincinnati.
Instructor: Dr. Otto Von Schlichten, Geology Department, University of Cincinnati.

Cleveland: Study group of the Northern Ohio Guild. Date and place to be later advised by officers of Regional Guild, Clayton Allbery, Secretary, 1641 East 85th, Cleveland.

Washington, D. C.: Date and place of meeting obtainable from W. H. Wright, c/o Galt and Bro., Washington, Chairman Regional Certification Committee.
Instructor: Dr. W. F. Foshag.

Milwaukee: Pfister Hotel. Exact date of meeting obtainable from officers of Wisconsin Guild, Wm. H. Schwanke, President.
Instructor: Dr. A. J. Wolcott.

Chicago: Date and place of meeting obtainable from Organization Committee, Chicago Chapter, Paul Juergens, 55 E. Washington, Chairman.
Instructor: Dr. A. J. Wolcott.

San Bernardino, Calif.: Will meet in September to complete *Certified Gemologist* examinations.
Leader: John F. Vondey.

Los Angeles No. 1: Will resume weekly meetings at G.I.A. Headquarters in September to complete final assignments before *Certified Gemologist* examinations.
Leader: Percy F. Jones.

Los Angeles No. 2: Meeting fourth Thursday of each month at G.I.A. Headquarters. August 22nd meeting will feature an actual demonstration of gem-cutting by Max N. Felker.
Instructor: Robert Shipley, Jr.

Los Angeles No. 3: Regular meetings second Thursday of each month to begin in September. At G.I.A. Headquarters.
Instructor: Robert Shipley, Jr.

Long Beach, Calif.: Meeting each Monday night.
Leader: James Newton.

JEWELERS USE GEMOLOGICAL PUBLICITY

Cowell and Hubbard of Cleveland, Ohio, have been featuring a series of newspaper advertisements on gems. The form, type, and copy of these advertisements are of the highest character. They feature gems of quality and the selection of merchandise with aid of scientific methods by buyers or students of gemology.

The series was also printed upon excellent stock for insertion with customers' monthly invoices. Mats of this series for insertion in newspapers and for printing upon mailing insertions are obtainable from the G.I.A.

George C. Barclay of Newport News, Virginia, has been publishing an interesting series of newspaper

advertisements stressing the importance of diamonds and other gems as investments, and the unusual protection that is afforded the public in buying from Certified Gemologists.

J. B. Hudson, Inc., of Minneapolis, Minnesota, has recently published extremely well-written and effective educational display advertisements regarding diamonds and diamond qualities. Especially prepared sketches of correct and incorrect proportions of diamonds have been included in their copy. Immediately above their signature cut they announce the fact that three Qualifying Certified Gemologists serve the public in their store.

F. R. Mathes and G. H. Mathes, American Gem Society Registered Jewelers of Eureka, California, have been featuring a series of well-written educational advertisements on gems. Each advertisement is confined to an individual stone and consists of well-chosen educational copy. In addition to the individual stones, they have featured native California stones, and jade as the Mother's Day stone. The text of this series of advertisements is obtainable from Mr. F. R. Mathes.

Richard H. Van Esselstyn and Mirabeau C. Towns, 3 Maiden Lane, New York, have prepared an attractive pamphlet for distribution to their customers. It contains interesting facts regarding gems—their value as "investments." Throughout the copy the importance of the titles, Certified Gemologist and Registered Jeweler are featured.

George A. Arbogast, 55 E. Washington, Chicago, is continuing the publication of his series of brochures on individual gems. These are prepared for the most discriminating Retail Trade. They are hand set on the best laid stock and with a reproduction of the particular gem which is the subject of the brochure printed in excellent color. The theme of the introductory brochure—"Science Dominates Our Age"—is subtly repeated in the subsequent brochures. These are particularly of value for distribution by Certified Gemologist students to their highest class prospects. Mr. Arbogast finds that they build prestige and important sales. A portion of the copy of the introductory brochure was published on the back cover of *Guilds* of February, 1935. Samples and prices are obtainable directly from Mr. Arbogast at the address above mentioned.

A.N.R.J.A. CONVENTION

The annual national convention of the A.N.R.J.A. will be held at the Waldorf-Astoria in New York City, beginning August 26th. Educational conferences and addresses are increasingly receiving the attention of this organization and its officers are to be commended for the excellent service the organization offers to the retail trade, handicapped as they have always been by lack of adequate financial support from it.

It is expected that the G.I.A. and A.G.S. will be represented by a booth in charge of the New York Chapter of the American Gem Society and the Northern New Jersey Guild.

GEMOLOGICAL STUDENT USES ASSIGNMENTS IN CLOSING SALES

Leo J. Vogt, Qualifying Certified Gemologist of the Hess & Culbertson Co. of St. Louis, reports an additional effective method of using the assignments of the Certified Gemologist course. After interesting customers in the purchase of a gem of some particular species, he suggests that they take with them the assignment of the course which tells of that particular gem. The return of the assignment to Mr. Vogt assures him of another contact with the customer, and the reading of the assignment has, in many cases, been responsible for the sale of important diamonds or other gem stones.

REGIONAL CERTIFICATION COMMITTEES

Several Regional Certification Committees, not previously announced, are:

Western Pennsylvania, West Virginia, Eastern Ohio

Paul Hardy, Chairman, Hardy & Hayes Co., Pittsburgh, Pa.
M. W. Rehn, Pittsburgh.
A. B. Powell, W. J. Lukens Co., Wheeling, West Va.
W. A. Caplan, Jr., Clarksburg, West Va.
Paul F. Sellers, Altoona, Pa.
W. G. Spies, Steubenville, Ohio.
Frederick Kropff, Morgantown, West Va.
R. B. Smith, Indiana, Pa.

Cincinnati Region

Ed Herschede, Cincinnati, Ohio.
Algernon Chapman, Cincinnati, Ohio.
Joseph Thoma, Piqua, Ohio.
Wm. Rindt, Richmond, Ind.
Nolte C. Ament, Louisville, Ky.

Eastern Michigan

Percy K. Loud, Wright, Kay & Co., Detroit.
F. L. Matheson, Traub Bros. & Co., Detroit.
Ray Schlanderer, Schlanderer & Sons, Ann Arbor, Mich.
N. E. Hascall, Norman Hascall & Son, Inc., Toledo, Ohio.
C. G. Broer, Broer-Freeman Co., Toledo, Ohio.

CERTIFIED GEMOLOGIST EXAMINATION

The first of the three portions of the Certified Gemologist examination has been completed by seven candidates and seven more are being completed as *Gems & Gemology* goes to press. The second and third portions which are to be taken under proctorship and which include the actual determination of unknown stones has been completed by one candidate. Several more have been sent to the Proctors of a number of the seven first-mentioned candidates. The nature of the Certified Gemologist examination was explained in the last issue of *Gems & Gemology* in the *Guilds* section. The first gemologists to be certified will be announced soon.

TALKS BY GEMOLOGICAL STUDENTS AT JEWELERS' CONVENTIONS

Recently R. C. Hoover, Registered Jeweler of the A.G.S. of Akron, Ohio, was invited to address the Canton, Ohio, Jewelers' Association on the subject of gems. He read a most excellent paper on gems and practical value to the jeweler of a knowledge of them. He has generously offered the use of his manuscript to other Gemological students.

Dorothy Sartori, Graduate Member of the American Gem Society, and daughter of the well-known Spokane jeweler, Mr. A. J. Sartori, was a speaker at the Washington State Jewelers' Association at the Washington Hotel in Seattle. The subject of her talk was "The Romance of Jewels and Jewelry." It was excellently written—the result of much personal research upon her part. It is full of inspirational ideas for the jewelers. It is equally valuable as a popular talk by the jeweler to groups of laymen or clubs. Copies of her manuscript are obtainable from the Society for delivery by students.

It is becoming customary at State Jewelers' Conventions and at many meetings of local associations to feature talks on gems by students of the Gemological Institute or the American Gem Society. The American Gem Society maintains a service assisting program committees to secure the services of such speakers. A file is being assembled by the Society of manuscripts of suitable talks and copies may be obtained by writing to the Executive Secretary of American Gem Society of Los Angeles.

ADDRESSES PHILIPPINE UNIVERSITIES

Leopold Kahn, Registered Jeweler of Manila, P. I., was recently honored by a request from the Philippine Women's University to deliver a lecture upon Diamonds. The lecture prepared by Mr. Kahn was somewhat scientific in nature and was met with the sincere appreciation of the student body. Shortly afterwards Mr. Kahn was asked to repeat his lecture before the University of the Philippines. A set of replicas of Famous Diamonds he had on display caused a great deal of comment among the students. He also illustrated the diamond with a large wooden model of a round, brilliant, cut diamond.

The complete text of his lecture was published in the Women's Magazine and the anniversary number of the Manila *Tribune*, together with photographs. Almost an entire page of regulation size newspaper sheet was devoted to reporting the lecture.

REDUCING DIAMOND THEFTS

Regarding the possibility of reducing diamond thefts, I should make the following suggestions:

That accurate registered diamond sales records be kept by all legitimate diamond merchants (i.e. a description of the diamonds as a means of identi-

fication) and a duplicate statement issued with the purchase. This would trace the true ownership and act as an authorized transfer in resale. Stones without this statement or transfer, would not be repurchased.

Strictly enforced rules governing the repurchase of gems—and requiring the purchaser to make out a proper report to an authorized city or Federal agent. This method would greatly eliminate thefts by discouraging the sale of illegitimate Diamonds.

—*Note by Edwin E. Olson, Q.C.G., Milwaukee.*

STUDY GROUP MEMBERSHIPS

Newark Study Group

Instructor: Dr. Alfred C. Hawkins, former head of Mineralogical Department of Rutgers University, New Brunswick.

Members:

Barney Bobek, Little Ferry
Donald J. Cooper, Bayonne
P. J. de la Reussille, Red Bank
Louis Haimann, Morristown
Samuel Haimann, Morristown
Kenneth A. Henke, Montclair
H. V. Paul, Newark
L. J. Rad, West New York
Jean R. Tack, Newark
Bertrond J. Weber, Ridgewood
Jerome B. Wiss, Newark

Los Angeles Study Group No. 2

Instructor: Robert M. Shipley, Jr., Laboratory Director, Gemological Institute of America.
Meeting fourth Thursday of each month at the G.I.A. headquarters.

Members:

William Gordon, Fullerton
David Howell, Pasadena
D. M. Jasper, Los Angeles
W. R. Leonard, Los Angeles
Dorothy Lovell, Los Angeles
Harold Ross, Hollywood
E. Vail Shipley, Los Angeles
C. L. Smith, Redlands
W. A. Sweeney, Los Angeles
E. E. Tompkins, Los Angeles
Burt Umstead, Pasadena
H. L. Woodruff, El Monte

Los Angeles Study Group No. 3

Instructor: Robert M. Shipley, Jr., Laboratory Director, Gemological Institute of America.

Members:

George C. Brock
T. B. Buchan
Scott Cook
Orville Joy
G. L. Kronmiller
E. J. Smith
C. H. Terstegen

Eastern Pennsylvania Study Group

Instructor: Dr. Samuel G. Gordon, The Academy of Natural Sciences of Philadelphia, Pennsylvania

Meeting third Thursday of each month, at Academy of Natural Sciences of Philadelphia.

Members:

C. A. Allen, Cranbury, N. J.
Carl W. Appel, Allentown, Pa.
Percy L. Appel, Lancaster, Pa.
Fred J. Cooper, Philadelphia, Pa.
T. Harry Goodwin, Trenton, N. J.
Kenneth MacLennan, Philadelphia, Pa.
A. Lester Sauter, Philadelphia, Pa.
Orrin Siegfried, Allentown, Pa.
Wilbur Stahler, Allentown, Pa.
W. B. Weylman, Vineland, N. J.

San Bernardino Study Group

Leader: John Vondey

Members of the Group:

Frank Blackstone, Paul Noack, Howard Smith, F. Twogood

Meeting: Each Monday Night in San Bernardino