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 MARCH-APRIL, 1935 NUMBER 8

In This Issue:

Published by

THE AMERICAN GEM SOCIETY

555 South Alexandria Los Angeles, Calif.

EDITORIAL FORUM

GEMOLOGICAL ODDITIES

In the ordinary course of the affairs of the Gemological Institute and of the American Gem Society, a number of interesting stories about gems come to light. Believing that several of these "yarns" will interest our readers as much as they have us, we present them here.

New Color Grade of Diamond

The most extraordinary color grade, perhaps, ever yet conceived was mentioned in a recent letter from a student in Akron, Ohio. Says this student: "It seems incredible but one of our customers wrote us from a Southern city where she was visiting asking our advice as to whether or not she should buy a one-carat diamond for $125, the quality of which the person trying to sell her described as a 'Burnt Brazilian Snake-Eye'." (From the price and the color "grade", this sounds like a rather poor yellow stone.)

A Gemological Divining Rod

An extremely valuable instrument (if it would only work) is mentioned in a letter from an honored correspondent. He writes: "I met an old person in the jewelry business who showed me a colored glass or combination of glass plates through which he claimed he could see red stripes in a genuine ruby, sapphire, or emerald. That was his method of distinguishing the genuine stones from their imitations or synthetics."

This Stone Was Lousy

An Associate Member from Montana called at the Los Angeles headquarters a few days ago and, during the course of an interesting conversation, told this story. It seems that one of his customers owned a diamond—a stone which contained in it an amazing array of imperfections. It contained carbon and pin points in a general assortment. But most of all, this stone boasted a large quantity of the type of flaw known rather generally in the trade as "ice". The customer took the stone to a jeweler in the same town in which the narrator's store was located and asked for an opinion on it. Receiving this, the customer came into the store of the teller of the story to unburden

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.

herself of a grievance. It seemed that the other jeweler had told her that her stone had *lice* in it.

Wanted—A New Type of Star Sapphire

In a recent article Hubert A. Fischer, gem importer of Chicago, told of a problem put up to him by a retailer to whom he had sent a selection of star sapphires. These possessed, as do all star sapphires, three bands of light intersecting at the summit of the gem to produce a six-rayed star. But they were not satisfactory. The retailer sent them back "with a request for some with a five-rayed star, as his customer had requested this".

Synthetic Security

Colin L. Christie, of Butte, Montana, has sent this story:

"Day before yesterday a man came in with a ruby of about ten carats and wanted to know if it were genuine. It was easy to determine that it was a synthetic, the color being good but not quite right and all the other characteristics of the synthetic stone being present, but its history was quite interesting. It was brought to this city about 1906 by a wealthy Turk who was a gambler. He claimed to have paid over $900.00 for it in San Francisco. Finally he lost it in a gambling game and since that time it has circulated among the gamblers here, possibly being used as security on a gambling loan or put up on a bet. Its present owner has it now as security for a loan of one thousand dollars. Unless it is redeemed by the borrower, it will, no doubt, cease to circulate as the present holder is not a gambler, and I believe that since he knows it is not genuine, he will not try to dispose of it." (Nor is it an *unknown* occurrence for others than gamblers thus to dispose of synthetic stones.)

Our Display Service Continues

Enclosed with this issue of *Gems & Gemology* is another sales service—a window sign titled "Diamonds as Investments". Sales arguments to tie up with it appear on page 232. Frame this sign suitably and display it in your window; you will find it a valuable stimulus to the sale of diamonds during the ensuing few months.

NEW MEMBER OF EXAMINATION STANDARDS BOARD

Fred B. Thurber of Thilden-Thurber Corporation of Providence has just been appointed by William D. McNeil, President of the A.N.R.J.A., to serve upon the Examination Standards Board of the Gemological Institute of America. Mr. Thurber succeeds the late Godfrey Eacret as representative of the A.N.R.J.A. upon this Board.

Can You Answer This?

Where Is the "Star of the South" Diamond at the Present Time?

See *Important Diamonds of the World*, page 220.

At Headquarters of the Gemological Institute of America

Office of G.I.A. President

Titles Awarded

The following men have completed examinations for titles since the publication of our last issue:

Qualifying Certified Gemologists

Nolte C. Ament, Geiger & Ament, Louisville, Kentucky

Louis Esser, Louis Esser Co., Milwaukee, Wisconsin

Ervin Christianson, Jeweler, Port Washington, Wisconsin

W. R. Leonard, Jeweler, Los Angeles, California

Henry Snyder, Louis Esser Co., Milwaukee, Wisconsin

Registered Jewelers American Gem Society

COLORADO
H. I. Rosencrans, *Longmont*

MASSACHUSETTS
John S. Kennard, *Boston*

OHIO
R. C. Hoover, *Akron*

"Synthetic Diamonds"

A scientific report of the so-called Jourado "Diamonds", prepared especially for Gems & Gemology *by a world-famous expert on gems.*

by

B. W. ANDERSON
Director of London Gemological Laboratory

Early in February, stories appeared in sections of the London Press which made somewhat startling reading. From the newspaper accounts one gathered that a new synthetic stone had been produced which "answered the known tests" for diamond and would "deceive 99% of the experts".

Diamond and Precious Stone dealers were mainly incredulous, but of course anxious to see these wonderful stones; pawnbrokers, quite naturally, were somewhat alarmed. Fortunately, specimens were soon available for laboratory inspection, and a simple refractometer test at once revealed them to be spinel; further, included bubbles were seen under the microscope, betraying their synthetic origin.

A short but decisive statement giving the result of a laboratory test on the stones was issued to the Press by the London Chamber of Commerce, and was also broadcast—and so the excitement subsided. We have now been able to examine a number of these stones, and a full description of their appearance and properties is given below.

The stones are bright, very transparent and free from any trace of color. They take a high polish, and when carefully cut present quite an attractive appearance. Those which are brilliant cut are so lacking in life and "fire", however, that they no more resemble diamond than does quartz or white topaz. Most of the stones seem to be emerald-cut, in which form their claim to compare in appearance with diamond is a little less preposterous, since the lack of "fire" is not so noticeable with this type of cutting.

These spinels are said to be made in Paris, but their physical properties accord exactly with similar synthetic stones which are made in the great factories in Germany and elsewhere. The specific gravity seldom varies beyond the limits 3.62-3.63; the refractive index is always very near 1.726; the dispersion (^{n}G-^{n}B) is .0204, which is less than half that of diamond (.0440). The hardness is similar to that of topaz, according to a lapidary's re-

port, i.e., 8 on Moh's scale. An analysis, actually carried out some months before the scare arose, showed the stones to be essentially $Mg0.2A1_20_3$. This excess of alumina is a common feature of all synthetic spinels, as shown by Rinne and others some years ago. It is a fact worth noting that only in the case of ruby may the chemical composition of the synthetic stone be said to correspond exactly with that of the natural mineral. The coloring agents of the other natural corundums have not been exactly reproduced in their synthetic counterparts, and in the synthetic spinels not only is the chemical nature of the coloring matter (where present) quite "unnatural", but the basic composition of the stone usually corresponds with that of no natural mineral.

THE RECURRING "SYNTHETIC"

February newspapers in the United States carried press reports from England announcing the successful manufacture of synthetic diamonds in gem sizes which could be sold at a fraction of the cost of genuine diamonds. The announcement had been made by a Mr. Jourado, a "gem expert". It was couched in such language as to be almost self-evident that the stones were a synthetic reproduction of some less valuable gem, or merely glass. However, before a verification of their identity by English gemological authorities could be obtained, the radio also repeated the story. Many jewelers unfamiliar with scientific facts and scientific terminology were unable to counteract their harmful effects by a statement of how improbable was the successful manufacture of gem-diamonds.

Identification of the Jourado stones was soon made by Mr. Anderson of the London Chamber of Commerce, and in the March issue of the *Jewelers' Circular-Keystone*, the falsity of Mr. Jourado's announcement was revealed. Mr. Anderson's report, prepared especially for *Gems & Gemology*, appears above.

Following closely upon the English report came a United Press report from Vienna that a Dr. Hans Karabaceil had claimed to have made diamonds "large enough for a lady's ring". The process used involved the heating of "a mixture of iron filings, furnace cinders and coal" in an electric oven.

A similarly harmful announcement might have reached the press in 1932 if the promoter had not chosen Los Angeles to introduce his claims. Arriving from the Orient with a quantity of "a new gem as hard and brilliant as the diamond just discovered in the Orient", he chose the Ambassador Hotel as headquarters and offered a scheme of promotion for the distribution of these gems to local persons. An agreement was made to finance and publicize them *if* they were verified by the Gemological Institute as a substitute for diamond. A few moments' investigation proved them to be very pale yellowish synthetic sapphires.

A few facts repeated from a statement prepared at the request of the *Jewelers' Circular-Keystone* by Robert M. Shipley will reveal to both laymen and jewelers the slight pos-

sibility in the truth of these or similar reports. It is hoped that retail jeweler subscribers to *Gems & Gemology* will make use of this article in denying future similar reports in their local papers—should they occur.

The Synthesis of Diamond and the Attempts to Accomplish It*

Synthetic diamond must be composed of the same element as the genuine, i.e., carbon, and must possess the same properties, notably hardness and index of refraction, as the genuine. It would have to be sufficiently hard to scratch other diamonds, and its index of refraction would have to be very close to 2.42. Moreover, X-ray photographs obtained by special processes must necessarily reveal the same atomic structure as possessed by the genuine gem.

For many years science accepted the statement of the successful synthesis of diamonds. However, many eminent scientists now express "skepticism regarding any successful production of even microscopic synthetic diamonds. With the establishment of tests dependent upon discoveries which have attended the recent pronounced development of optical mineralogy, certain scientists point out that without the aid of present optical tests, ascertainment of the *true nature* of the microscopic specimens produced by Moissan and other earlier experimenters was then impossible.

"For many years after the production of an artificial substance resembling diamonds by Henry Moissan in 1897, and the immediately subsequent work of Sir William Crookes and Sir Andrew Noble, the scientific world generally accepted their identity as synthetic diamonds. However, Sir William Crookes in his book 'Diamonds', published in 1909, states that 'the largest artificial diamond is less than one millimeter across' and also that such stones 'sometimes broke after their preparation', an indication of unusual internal strain. Because of the exorbitant expense and the failure to produce diamonds of sufficient size to be of any appreciable value these experimenters probably then turned to other fields.

"Sir Charles Parsons later repeated the efforts of Moissan and others with no success. In an address before the Microscopical Society in April, 1924, he stated that he had been trying to make diamonds for 20 years. He had spent $100,000 upon experiments, and had come to the conclusion that nobody had ever made diamonds. In his opinion, Moissan and Crookes had both been mistaken.

"Alpheus F. Williams states in his *'Genesis of the Diamond'*, published in 1932, that 'Grave doubts are now felt as to the justification for the claims, many holding that there has been no clear proof that the crystals produced were diamonds'.

"J. R. Sutton in his *'Diamond a Descriptive Treatise'*, 1928, states, 'It is doubtful if they be diamonds at all, more likely a kind of carborundum.'

"In 1932 it was reported that Dr. Ralph McKee of Columbia in an effort to produce a high-class abrasive had produced artificial diamonds, the largest of which weighed .05 of a carat—in its crystalline or 'rough' form, of course. It is doubtful if such stones were synthetic diamond that they could have been cut, as even the smallest melee. Detailed reports of the necessary tests to prove

*A.G.S. Research Service.

their identity as synthetic diamonds were not released to the scientific world.

"Dr. Brauns, the famous German mineralogist, and Dr. Hoffman had previously questioned the results of the earlier experiments, the general principle of which had been used by Dr. McKee. Dr. Edward H. Kraus, the famous American mineralogist, pointed out that detailed proof had not been presented by Dr. McKee which could be accepted by mineralogists as incontrovertible evidence that they were synthetic diamonds, and mentioned that such proofs must reveal similar index of refraction and identical crystal structure."—Shipley in the *Jewelers' Circular-Keystone.*

Retailing Gems in India

Have you ever wondered about the jewelry trade in India, the acknowledged "home of precious gems"? A jeweler, native of that country, tells some interesting facts.

by

J. A. MOUNTVALA

Registered Jeweler, A.G.S., Bombay, India

My firm was established in Bombay forty-five years ago by A. H. Mountvala, my late father. I joined the business twelve years ago. After my father's death I took over the entire business.

From the time of my father until this day, the firm has been known for its excellent workmanship and honest dealings in high quality gems. At present I deal in diamonds and precious coloured stones. Only the highest quality of diamonds in all sizes are stocked, whereas, in coloured stones, various qualities are kept. Hence, my house enjoys the reputation among all classes of customers as being best stocked in highest grade goods. Valuation of customers' jewelry is done by charging a small fee, which is a percentage of the valuation. I suffer most in this time of great competition as I do not stock inferior quality goods and do not mark down my prices.

Generally, all customers ask for the highest quality goods without having any knowledge of "first class quality". Ultimately they do not buy what they desire, as the money they want to spend would not purchase first quality goods. Besides, there is one impression stamped in the minds of all customers, i.e. that the price of diamonds has gone down considerably.

Most of my customers are my own cast people—"Parsis"—besides a few Indian Princes, Europeans, Hindoos, and Mahomedans (Mohammedans). I have also a large number of up-country customers.

On the whole, customers on our side of the world practically do not understand the A.B.C.'s of diamonds and full advantage is taken by unscrupulous dealers, who do not take the trouble to explain the right thing. When a new customer visits my office, I take great pains to explain

everything in detail until finally he is fully satisfied. Most of my old customers have so much respect for my work that they put blind faith in me and quietly take what I show and advise them to buy.

Finally, gems are set in various types of jewelry, according to the purse and taste of the customer. Among fashionable and rich class of Parsis, the large size pendants with diamond chains, bracelets, and ear-rings, and rings to match are made. Whereas, among orthodox classes, choker style necklaces, single diamond or rose pattern ear-rings, and single line diamond bracelets are preferred. The same uses of diamonds are made among the Hindoos. Nose rings of diamonds and pearls, or diamonds and emeralds are also made. Among the richer classes of Hindoos and Indian Princes, head and ankle wear, known as "Kalgee" and "Pyjebs" are made in fancy designs of diamonds and coloured stones. Preference is given to single line necklaces of large size diamonds. Generally, jewelry is made in gold and silver, or 10% or 25% platinum. Pure platinum is rarely used as few customers would pay for it. Orthodox classes always prefer ornaments to be made of gold.

NEW ACTIVITY AT SOUTH AFRICAN MINES*

It has recently been authoritatively reported that washing operations have been resumed at the DeBeers group of diamond mines. No statement has been made that the mines have been reopened. The blue ground which is being treated, has been spread on the weathering floors for at least three years. In times of maximum production, the blue is not left on the floors to weather but is sent through special machinery which breaks it up. The slow diamond market during the past few years has made it advisable to resort to the less expensive method of recovery by allowing the forces of Nature to break down the rock in which diamonds are found.

The following table has been compiled upon the basis of information contained in the "Forty-Sixth Annual Report" of the DeBeers Consolidated Mines, covering the year ending December 31st, 1933. The figures in the right-hand column, which are based upon both the number of loads of blue ground on the floors and the production in carats of diamond from the blue at each mine during the period immediately preceding its being closed down, are merely estimated and are not to be regarded as official.

Mine	Blue Ground on Floors	Last Yield of Mine in Carats per Load	Estimated Carats of Diamond in Blue on Floors
Kimberley (Closed down since 1914).....	571,176 (1)	.081 (2)	46,200 (2)
DeBeers (Closed down since 1908).....	48,396	.38 (3)	18,200 (2)
Wesselton (Closed down since 1932).....	344,435	.24	82,700 (2)
Bultfontein (Closed down since 1932)....	602,124	.30	180,600 (2)
Dutoitspan (Closed down since 1932)....	315,641	.18	56,800 (2)
		Approximate Total	384,200 (2)

(1) Reef and blue ground mixed. (2) Estimated figures; not official.
(3) From combined washings of DeBeers and Kimberley blue in 1908.

During the single month of November, 1934, the United States alone imported over 26,000 carats of cut diamonds. Comparison of this figure with the above total (a large proportion of which is not gem quality) makes it at once apparent that the "stock above ground" at the DeBeers group of mines can supply the market for only a short time, after which it is to be expected that mining operations will be resumed.

*A.G.S. Research Service.

Gem Mining In San Diego County, California*

In our November-December issue, we carried an article on the emerald mines of Colombia. Since that time, readers have asked why we did not publish something about the gem mines of Southern California which are almost at our door. Here is our answer.

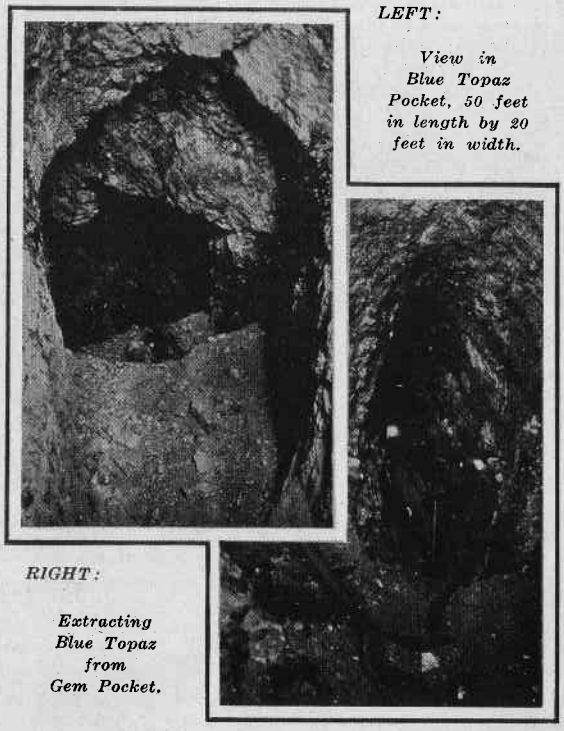
by
J. W. WARE
Qualifying Certified Gemologist, San Diego

The existence of colored tourmaline in Southern California was known as far back as the year 1872, when it was discovered on Thomas Mountain in Riverside County. No active mining was done until 1893, at which time three claims were worked to some extent. These were located at some six thousand feet altitude. At this time considerable tourmaline was found in a pegmatite dike about 40 feet wide and of unknown length and depth. Crystals of tourmaline as large as 4 inches in diameter were taken out, some of which were of green outside shell with pink centers, others of red, pink, blue, and colorless.

Pala District—The Home of the Kunzite

In 1892 red tourmaline (rubellite) was discovered in or adjacent to the lithia deposits at Pala, California. In 1902 rich deposits of kunzite, tourmaline, and beryl were discovered in several localities at Pala and the mines were worked for several years with wonderful results.

A most spectacular gem pocket was located in the Pala Chief Mine in one of the tunnels, by following a streak of brown clay (Kaolin) in its varied course through a large deposit



LEFT:

View in Blue Topaz Pocket, 50 feet in length by 20 feet in width.

RIGHT:

Extracting Blue Topaz from Gem Pocket.

*G.I.A. Research Service.

of lepidolite. This pocket measured about 3 by 6 feet, and was thickly studded with fine large crystals of kunzite and pink tourmaline—a sight never to be forgotten. The Pala District is very rich in gem minerals and has produced a large amount of kunzite, rubellite, and other colored tourmaline, together with a considerable amount of pink and blue beryl.

Mesa Grande Deposits

Another discovery of tourmaline of no less importance was made near Mesa Grande, California, in 1898. Here the pegmatite ledge carrying tourmaline of many colors, together with pink beryl, dips into the mountainside at a 37-degree angle, and has now been worked to a depth of 150 feet with most gratifying results. This ledge has produced an estimated amount of 40 tons of tourmaline. Much of the extra fine pink tourmaline on the market has come from this source.

An interesting bit of history connected with these mines lies in the fact that a few children passing through the saddle of this mountain on their way to school picked up some fine crystals of tourmaline and in school called them "Pretty Pencils". This caused search to be made for more such crystals and resulted in the discovery of some of the best producing tourmaline mines of history. However, Indians knew of these tourmaline outcroppings for many years previous.

Precious Blue Topaz

The Mountain Lily Gem Mine (now known and patented as Emeralite Mine No. 2) was discovered in 1902, when gem tourmaline was found on Aguanga Mountain at 5,100 feet elevation. This, unlike the other gem mines of San Diego County, is a blanket ledge of pegmatite showing many slides due to earth movements and differing somewhat in chemical content.

This mine is the property of the author of this article and has been worked under my supervision to the extent of about 2,500 feet of tunnels. The principal production is precious blue topaz, of which the mine has netted several hundred pounds. Crystals of blue topaz ranging from about 1 carat in weight up to 3¼ pounds have been taken out. One crystal, which cut a 17 carat pear-shaped gem, is of an unusually beautiful blue color and has been pronounced by competent authority, including the late Geo. F. Kunz, to be the finest blue topaz in the world.

This mine also produces pink, white, and golden beryls, as well as pink, green, blue, and colorless tourmaline, and emeralite, the beautiful nile green tourmaline of most unusual and pleasing color, for which the mine is named.

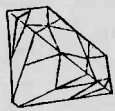
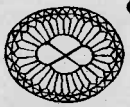
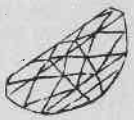
Ramona District

The Ramona gem mines, situated slightly over ten air miles southeast of Mesa Grande, have also produced a quantity of tourmaline, beryl, and hessonite garnets of fine quality.

Due to the depression years just passed and lack of demand, very little gem mining has been done in Southern California, but with increasing demand for gem stones there is no doubt that many of the mines will be put in operation and new ones opened up.

The California Pacific International Exposition will open in San Diego on May 29th, 1935, and the author will have a representative display of San Diego County gem stones in the Palace of Better Housing. Here the public may see a wonderful display of rough and cut tourmalines, beryls, kunzites, and hessonite garnets,

Important Diamonds of the World

Robert M. Shipley

THE STAR OF THE SOUTH

The older diamond fields of Brazil (where the Star of the South was found) are objects of considerable interest. When diamonds were discovered (about 1725) the government took possession of the whole district, drew a military cordon about it, and imposed strict regulations and taxes upon the miners. However, the loss in taxes due to the activities of clever Negro and Italian smugglers was very great. The government then tried the system of farming out the privilege of mining the entire area to contractors. This scheme worked but little better. It was succeeded by an arrangement with the firm of Hope and Company, the Dutch bankers, who took the entire product at the rate of $9.00 per carat, and assumed the debt of Brazil. The latter was cancelled by the sale of diamonds.

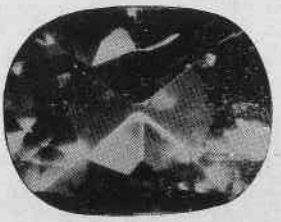
As the stones were taken from Brazil to Holland the industry of diamond cutting was built up in Amsterdam. In 1848, the arrangement with Hope and Company came to an end, and since then the mines have been free to anyone who would pay a rental per square yard.

The discovery of a large and beautiful diamond in Brazil in the early days of mining in that country was attended with much ceremony and rejoicing. The lucky finder was feted as the diamond made a triumphal progress to Rio de Janeiro. The ceremony with which such a diamond was received is reminiscent of the reception said to have been accorded a splendid ruby in the old Indian days.

No one knows to this day if the Braganza, that formerly belonged to the Portuguese crown, is really a diamond. It was at one time considered the largest known "diamond", weighing 1680 carats in the rough, but today is regarded as a "Nova Mina" or white topaz. Topaz is often mistaken for a diamond by those who are not "experts". The finders of the Braganza (who were said to have been criminals) were pardoned and a special frigate was dispatched with the stone to Lisbon. Brazil was then a colony of Portugal and Lisbon was the seat of the government.

A rather pathetic story is told of a free negro who found what he supposed to be a diamond of great size and beauty. He was sent to Rio de Janeiro under an escort of honor and in his excitement imagined the great rewards that would be bestowed upon him—he might even be given the Cross of San Bento and he would have a reward as great as the salary of a general of a brigade. He was conveyed in state to the palace of the Prince Regent and the diamond was carried in by a special officer.

Mawe, the gem expert, who was in Brazil at the time, was asked to examine the stone. Reaching the palace he was conveyed through a labyrinth of rooms to an inner chamber where an exquisite little cabinet stood. This was unlocked and the "diamond" brought out. Before Mawe touched it he knew that it was only a rounded piece of crystal. The hopes of the poor negro vanished as quickly as "snow upon the desert's dusty face". The return to his home must have been a pitiful one.



THE STAR OF THE SOUTH

Now in the Possession of the Gaekwar of Baroda

Weight, 128½ Carats

In 1853 the great Star of the South was found by a slave woman in the Mines at Bagagem, where the largest diamonds of Brazil have been discovered. Her find was rewarded by freedom and a pension for life, and this meant a new world of happiness and comfort for one who had led the wretched life of a slave.

The stone, in the rough, sold for an absurdly low figure (approximately $15,000); later it brought 302 Brazilian contos (about $165,000). The price continued to soar until it came into the hands of the cutters, and of course, after cutting, the value increased enormously. A syndicate of Paris merchants bought the diamond and christened it "Estrella do Sud" or "Star of the South". It was shown at the London Exhibition of 1862. Later, the notorious Gaekwar of Baroda (Mulhar Rao) purchased it for 2,000,000 francs ($400,000). The Gaekwar was, according to Streeter, "next to the eccentric Duke of Brunswick, the greatest diamond fancier of modern times."

Mr. E. Dresden of London received the commission to secure the Star of the South for the Gaekwar. He bought it from the Parisian syndicate, which was represented by Halphen, one of the merchants of the group. The purchase price of 2,000,000 francs was (to quote Dresden) "inclusive, of course, of the mountings, etc., which were very costly."

The Gaekwar was an unpleasant person with a habit that smacks of Mediaeval days in any land. Some disagreeable persons of note are accused of using subtle poisons, and especially diamond dust, in preference to cold steel. Benvenuto Cellini, the greatest goldsmith of all time and one who knew gems, relates how an attempt was made to poison him in this fashion during his imprisonment in the Castle San Angelo. He gives a most lively account of his terror when he felt a gritty substance between his teeth when he bit into his food. The Gaekwar, however, took the precaution to mix a little arsenic with diamond dust and found the combination a most effective mode of disposing of several of his objectionable subjects. When he attempted to murder a British official, Colonel Phayre, in this fashion, he was threatened by an irate Queen with loss of his possessions. However, the threat was not carried out.

The Star of the South "was cut by Coster of Amsterdam at an expense of $2,500 (£500), to a gem 35 millimeters (1⅜ inches) long, 29 millimeters (1⅛ inches) broad, and 19 millimeters (¾ of an inch) thick. These proportions are remarkable for the length given the stone. The cut stone weighs 128.5 metric carats. While it is a 'white' stone by reflected light, by refracted light it shows a decided rose tint, an unusual but attractive feature which Streeter regards as derived from the form given to it in cutting, but this seems somewhat unlikely." (Farrington.)

The present Gaekwar of Baroda, now owner of the Star of the South, in an interview with the writer in 1934, stated that this gem, together with the famous "English Dresden", was mounted in a necklace among his Crown Jewels.

THE DICHROIC COLORS OF RUBY

The dichroism of ruby may be regarded as varying from distinct to very strong, but the colors observed vary widely. One color is usually some shade of red and the other a bluish-red. But the true pigeon-blood shows two shades of bright red only, without the slightest trace of blue; and some of the very dark rubies will also show two dark shades of red only, with no blue. Very often, however, the blue in one of the dichroic colors of ruby is so pronounced that an expert can see it with the unaided eye.—Note by Lt.-Col. J. F. Halford-Watkins, Mogok, Upper Burma.

A Question . . .

In Fashioning a Gem, Which Facet Is Usually Placed Upon It First?

See *Modern Methods of Fashioning Gem Materials*, page 227.

A GEMOLOGICAL ENCYCLOPEDIA

(Continued from last issue)

HENRY E. BRIGGS, Ph.D.

Occasionally we will find a mineral having a crystalline form which is foreign to this particular mineral. This is due to replacement. By chemical action, particle by particle, the mineral which first composed the crystal was carried away and, particle by particle, a different substance replaced it. Thus we find not only crystals which have been replaced, but also wood, bones, etc. Such crystals are called "Pseudomorphs" and this term really means "false form".

Use of Optical Instruments

We find ourselves practically lost in gemology without the aid of optical instruments. Since these instruments are of great importance to us, perhaps it would be well to dwell at least briefly upon them. We should know at least a few of the various types of instruments and something of what they will do in order for us to select our instruments intelligently. We should also know something of the way to properly care for optical instruments in order that we may keep our instruments in good condition and maintain their efficiency.

Dichroscope

The dichroscope is one of the most simple of optical instruments to use. It consists of a prism of optical calcite mounted in a body tube in such a way that there will be no stress exerted upon the prism, and of an eyepiece which is adjustable to suit the observer. Some instruments have special devices for holding crystals and orienting them before the objective aperture. A ray of light entering the aperture of the instrument is separated into two rays by the spar prism, thus the observer will see two images of the aperture side by side. These two images are polarized at right angles to each other and consequently we can see the color of the ordinary and the extraordinary rays side by side where it is easy to compare them. It is impossible for the unaided eye to see these colors separately as both the ordinary and the extraordinary rays will impinge upon the retina at the same time and in the same place, consequently the unaided eye will see neither color, but rather a color intermediate.

Daylight is best for observation with the dichroscope, since with many forms of artificial light we cannot see certain shades of color, notably yellows of light tint. The crystal under observation is held directly before the aperture of the instrument and the eyepiece adjusted to obtain the clearest image. The mineral can then be oriented so that it has been viewed from every angle and the pleochroism noted. See Pleochroism.

Care should be taken never to drop a dichroscope, as a sudden shock may ruin the spar prism by parting it. The lenses should be carefully protected so that they will not become scratched and when cleaning them they should be slightly moistened by breathing on them before wiping

them. They should be wiped off with a very soft cotton cloth which will not leave lint. Never apply oil to any part of a dichroscope. A chromatic instrument should be protected from extreme cold or sudden temperature changes, as these may cause the balsam to give away. When an optical instrument requires repairs or adjustment it should never be tampered with but should always be taken to an optician skilled in this branch of optical work or returned to the factory.

Simple Magnifiers

Simple magnifiers are so commonly used as to require no description. Instructions for the care of the dichroscope will also apply to magnifiers.

Microscopes

The compound microscope is a very valuable asset in examining minerals and gems; however, the polarizing microscope is so much more adapted to the study of minerals that we will discuss the use and care of microscopes under that heading.

Polarizing Microscope

The polarizing intrument differs widely from the ordinary compound microscope or those especially for biological work. The construction of the stand of a polarizing microscope is considerably different than those of the other types. The polarizing instruments usually have a round revolving stage. Often the stage is calibrated in degrees so that it may be set at any desired angle. Also provision is made in the polarizing instrument for the use of accessories for various tests which will be discussed later in this chapter. The essential difference however between the polarizing and biological microscope is in the optical system and equipment.

It will be necessary first for us to get an idea of polarized light before we can go farther on the subject of the polarizing microscope.

We will recall that according to the undulatory theory, light is a form of radiant energy or etheral vibration which travels at the rate of 186,000 miles per second. It is propagated by the vibration of ether particles in all directions at right angles or perpendicular to that in which the light is traveling. However in polarized light (plane) this etheral vibration takes place in one direction only. This condition can be produced with special prisms such as the Nicol's prism or with a glass or other reflector set at an angle so that the reflected and incident rays are at right angles to each other. Both methods are used in polarizing microscopes although the prisms are preferable. We must aid the eye with a second prism which is called an analyzer in order to observe polarized light. The polarizer is the prism or reflector below the stage and the analyzer is the special prism mounted in the tube above the stage. Polarized light will be acted upon by lenses much the same as ordinary light. That is, it can be rendered convergent, divergent or parallel with the proper lenses.

The polarizing microscope is equipped with a special prism or with a glass set at a certain angle, to act as a polarizer and with a special prism to serve as an analyzer. It is usually possible to rotate either the analyzer or the polarizer, or both.

(To be continued)

GEMOLOGICAL GLOSSARY

(Continued from last issue)

Crystalline Aggregate. Massive crystalline material made up of many particles, each an individual crystal too small to be seen by the unaided eye. When cut as a gem can be polished with a smooth, reflecting surface. See also Massive. See also Crystal Aggregate.

"Crystalline Emerald." A false triplet. An emerald triplet with a beryl or quartz crown and glass pavilion. See Assembled Stones.

"Crystalline Glass." A trade name given to partly colored glass.

Crystalline Material. Same as Crystal Material.

Crystallization (kris"tal-i-zae'shun). The process of forming crystalline structure, which may result in crystals or in irregular crystalline masses. See Crystalline.

Crystallographic Direction, or Crystallographic Orientation (kris"tal-oe-graf'ik). Refers to directions in the various crystal systems which correspond with the growth of the mineral and often with the direction of one of the faces of the original crystal itself.

Crystallography (kris"tal-og'ra-fi). The science which describes the form of crystals.

Crystalloluminescence (kris"tal-oe-lue"mi-nes'ens). Light given off by certain substances in crystallizing from a solution. Arsenic oxide (As_2O_3) is an example.

Cubic. Having the form of a cube, as a cubic crystal; or referring to directions parallel to the faces of a cube, as cubic cleavage.

Cubic System. A crystallographic system, the crystals of which may be described by reference to three axes of equal length each situated perpendicular to the plane of the other two.

Culasse (koo"los'). The pavilion.

Culet (kue'let). Small flat facet at the bottom of a brilliant-cut diamond.

Culette (koo"let'). Var. of *culet.*

Cullinan (cul-lee'nan). Largest diamond ever found. From Premier Mine, South Africa. Named for Thos. Cullinan, promoter of mine. Weighed 3024¾ karats.

Cultivated Pearl (kul"ti-vate'ed). Another name for Cultured (whole) Pearls.

Cultured Pearl (kul'tuerd). An artificially propagated pearl. The name describes both (1) the early type of blister pearl, which grew to the shells, and the bases (backs) of which were mother-of-pearl and (2) whole pearl consisting of a core—usually a sphere of mother-of-pearl—over which layers of nacre, similar to those in the natural pearl, are deposited by a living oyster. It is an artificially propagated pearl, and therefore, not genuine. See also Blister Pearl.

Cupid's Darts (kue'pid's darts). Quartz with needle-like inclusions of goethite or rutile. See also Sagenite.

Cushion Cut. The older form of the brilliant cut, which has a girdle outline approaching a square with rounded corners. Often applied,

probably incorrectly, to the step or trap cut.

Cut Glass. See "English Crystal."

Cutting. Strictly speaking, that operation in the fashioning of a diamond commonly called *rounding up*. Applied rather generally in the jewelry trade to the entire process of fashioning diamonds and other gems. (See *Fashioning*.)

Cuvette (koo"vet'). A term sometimes applied to the intaglio which has a raised cameo-like figure in a concave depression.

Cyanite or kyanite or disthene (sye'-a-nite). Rarely used as a gem stone. Transparent light to dark sky blue. Hardness 4-7.

Cyclic (sik'lik or si'klik). Circular as in certain types of repeated twinning that tend to produce circular forms.

Cymophane (sye'moe-fane or sime'-oe-fane). A variety of chrysoberyl usually considered identical with the Oriental Cat's-eye, but sometimes applied to that subvariety in which an *irregularly* shaped light *floats* in the stone.

Cyprine (sip'rin or sip'rine). Sky-blue vesuvianite.

Cyst Pearls (sist). True pearls which occur in the tissues of pearl-producing shell fish in a pearl sac and away from the shell.

Dammar Resin (dam'ar or da-mar'). Java and Malay damar. A resin from a pinaceous tree of Australia, the Philippine Islands, etc. Dammar Australia is the Kauri pine. Used in Amber imitations.

Dammer. Var. of Dammar. See Dammar.

Datolite (dat'oe-lite). A calcium boro-silicate occurring both in glassy monoclinic crystals, and in compact opaque masses. Hardness 5 to 5½. Specific Gravity 2.9 to 3.0; luster vitreous, transparent to opaque. Massive datolite is whitish, yellowish, reddish, greenish, or brownish and often mottled. Sometimes used as a gem.

"Dauphine Diamond" (do'feen). Rock crystal (quartz).

Davidsonite. Greenish-yellow beryl.

D. C. An abbreviation in the trade meaning diamond or brilliant cut.

Dead Pearls. Pearls with only a lusterless or dead white appearance.

Decrepitation (dee-krep"i-tae'-shun). Violent breaking away of particles, with crackling sound, on sudden heating. To snap and break into fine powder when heated.

Deflagration (def"la-grae'-shun). Sudden combustion; flashing like gunpowder.

Deformed Crystal. A crystal bent or twisted out of its normal shape, so that it may differ widely in angle from the regular form. See Distorted Crystal.

Delatynite (de-la'tin-ite). A variety of amber from Delatyn in the Galician Carpathians, differing from succinite in containing rather more carbon (79.93%), and no sulphur.

Delawarite (del'a-war-ite). Aventurine feldspar from Delaware County, Pa.

Deltah Pearls (del'ta). Trademarked name for both solid and wax imitation pearls.

Demantoid (dee-man'toid). Diamond-like.

Demantoid Garnet. A grass-green variety of andradite garnet, known erroneously as olivine. Demantoid is very brilliant and has a high dispersion, which is unusual among colored stones.

(To be continued)

Modern Methods of Fashioning Gem Materials

In our last issue, a given rough gem was studied carefully, and given its first form by sawing. In this concluding installment Mr. Felker completes the process of fashioning.

by

MAX N. FELKER

Felker Research Laboratory, Torrance, California

Roughing

After the rough stone is reduced to the correct size by sawing, it is ready to go to the horizontal laps for faceting and polishing. If the rough specimen is approximately the size of the finished stone desired, the sawing process is omitted.

At this point, it is probably best to remind the reader that this article concerns especially the gems whose hardness ranges from seven to nine. Softer stones, especially opaque gems, receive a very different treatment after having been sawed than do gems whose hardness is seven or more.

The first faceting on the harder stones is accomplished on a horizontal copper lap charged with diamond dust. In its charge, this lap does not differ greatly from the previously mentioned saws. The lap has diamond forced into a flat surface; the saw carries this charge on a thin edge.

The material to be cut is mounted in a prepared cement (equal parts of red sealing wax and shellac) on a lapidary stick. This stick is of maple or a wood of similar hardness, pointed at one end and with a flat table at the other. The gem is then "roughed out" on the diamond dust charged lap. After being ground on this wheel, the stone has its approximate shape and size.

Rough material which approaches the desired final shape—for instance a rounded pebble which is to be cut en cabochon—is not submitted to the first grinding lap but goes immediately to the second.

Faceting

The facets are placed on the gem by grinding on another diamond-charged copper lap. The charge in this case is much more finely crushed than that used on the first lap. Although the majority of lapidaries guide the stick by hand when placing the facets on a gem, we employ facet-cutting machines. These may be adjusted to cut a facet in any desired position and the facets thus produced are always set at the correct angle.

The first facet placed is the table. This is cut by grinding with the lapidary stick held exactly perpendicular to the cutting surface. Then the main crown facets, followed by the smaller crown facets are placed on the gem. The stone is cut away from the stick and remounted with its table against the wood. The main facets of the pavilion, followed by the smaller ones, are then cut.

As the stone comes from the second lap, it is shaped and faceted as it will be when completed. But the surface is rough and dull. It seems impossible that its flashing transparent beauty can be released.

Although the surface of the gem is rough, it should not be scratched. Scratches are often produced by too-fast cutting, or by large grains in an incorrectly prepared charge of diamond. These scratches must, of course, be removed during a later operation—often a tedious job. Therefore, it is best to avoid producing them during the first roughing.

"Feel" Is a Guide

As in the case of sawing, the correct pressure of the stone against the wheel must be maintained. If the gem is pressed too lightly, the lap will cut very slowly if at all. Too great pressure produces the undesirable scratches and may even shatter the gem. In faceting, the correct pressure is achieved principally by using the "feel" of the lapidary stick in the cutter's hand. Each gem species requires a particular touch based largely upon the known hardness and toughness, but learned only through experience. After each few seconds on the wheel, the surface being cut is wiped clean and studied carefully before the operation is resumed.

The final high polish is given to the gem by a tin lap charged with tin oxide. (Some lapidaries use Tripoli as an abrasive in this operation.) The surface of the wheel is scorified and hackmarked in order to hold the charge. Great care is used in the operation performed on the tin lap. At this time it is especially necessary to guard against producing facets which are not perfectly flat. Such facets cause the finished gem to lack a sharp brilliancy and to take on a "sleepy" appearance. The gem which comes from the tin lap is a finished product. Therefore, each facet must be perfectly flat and brightly polished; the junction lines between facets must be straight and sharp.

Fashioning Softer Gems

Softer stones—those ranging about from four to seven in hardness—often respond more satisfactorily to a treatment considerably different from the above. These gems are roughed out on the edge of a carborundum wheel, then ground on a wheel of finer-grained carborundum. A wood wheel faced with carborundum paper is used to further shape the gem. This paper covered wheel often has the wood behind the paper grooved in such a manner as to facilitate the production of cabochon cuts.

Other abrasives are also used in fashioning gems whose hardness is seven or less. A notable instance is the use of sand-stone grinding wheels in the quartz-fashioning plants at Idar, Germany.

After the stone is shaped on the carborundum wheels, it is polished on a hard felt lap charged with tin oxide. If the stone is cut faceted rather than en cabochon, the tin lap is employed for this final operation in place of the felt.

I have outlined in this article only the method of cutting which we have found most effective. Methods used by other lapidaries vary widely. But it is safe to say that the use of diamond or carborundum saws and laps, and tin-oxide polishing wheels will be found in almost every case the most satisfactory and economical procedure in gem-cutting.

Degrees of the Lapidary's Craft

There are three general types of gem-cutting depending upon the skill required of the lapidary. The first and easiest is the fashioning of simple cabochons. The second is faceting in any form; the third, cameos, intaglios and other engraved gems. The last type of cutting requires not only a knowledge of fashioning in facet or cabochon shapes, but also a high degree of skill in the delicate task of carving. The tool now often used for this work is a tiny diamond saw—1/16 inch or less in diameter—mounted on the end of a shaft.

Suggestions for judging the relative perfection of cutting are of even more interest to the retail jeweler than a discussion of methods of fashioning. Two important points must be considered in judging a gem for perfection of cut:

1. The shape of the stone and location of facets.

2. The polish of the facets.

Under (1) the first factor to judge is the symmetry of the facets. Each individual face should have a mate on the exact opposite side of the stone. The table and culet should be centered above and below the girdle. As to the relative angles of the base and pavilion, these are not as important in colored gems as they are in a colorless stone in which the maximum brilliancy is possible. The correct angles for several gems of varying refractive indices as computed by Dr. Whitlock are quoted here. Various lapidaries have worked out differing proportions which each believe to produce a more effective result. The correct proportions for colored stones are by no means as generally accepted as are those for diamonds.

The reader may estimate the proportions of gems not listed upon the basis of the known refractive index. The width of the table should, in all cases, be approximately 60% of the width of the stone at the girdle.

Correct Crown and Base Angles for Gems According to Variation in Refractive Index

Gem	*Refractive Index*	*Angle of Crown**	*Angle of Base**
Diamond	2.417	35°	41°
Zircon	1.95	40°	40°
Corundum	1.76	37°	42°
Tourmaline	1.64	40°	43°
Quartz	1.55	42°	43°

*With respect to table or girdle plane.

How to Judge the Cut of a Gem

Of course, unless the stone in question is either square or circular, the angles will vary at different positions on the girdle. The average of the varying angles, however, should approach the above figures. A goniometer such as is used in mineralogy is often valuable for measuring these angles. The base of the goniometer is placed flat against the table and the swinging arm is lined up with the main crown facets. The angle is then read on a scale. The arm is swung around against the principal pavilion facets and the angular reading again noted.

As to the facets, these should be perfectly flat and highly polished. This factor is best judged by reflecting diffused light from the facet and studying it through a magnifier. The

facet should show no scratches or pits and should have clean, sharp edges between it and adjoining facets.

If a gem passes all of the above tests without a flaw, it might be called a "perfect cut," but it has been my experience that truly *perfect* cutting jobs are even more rare than gems which are actually perfect as to absence of inclusions.

Reminiscences of a South African Diamond Buyer

In the first installment of this article, Mr. Spitzel told of the diamond-buying practices in the camps by the Vaal. In this portion he tells something of the people of the diamond districts, and of the sale of a rare "fancy".

by

JEAN P. SPITZEL

Diamond Importer, Los Angeles

I met an interesting character at the diamond fields—a man in his seventies by the name of Cohn. He, at one time in his younger days (somewhere around 1865) found a very rich claim which turned out to be one of the big mines in the Kimberley district and people said it was "The" big mine. He sold it to the Syndicate for £250,000 (about $1,250,000). He thought he was sitting on top of the world and went to London to break the stock exchange. But it broke him, so he came back. In 1922 the poor old fellow was getting along, but not doing very much. He didn't have any export connection. He was a local buyer and had to sell his merchandise to some of the exporters. One day he came to me with a parcel and—digger-fashion—did not ask me a price. I glanced at it, spotted a couple of pebbles and immediately picked them out as worthless. He was a highstrung old man. He picked up his diamonds and walked out. He didn't show up for three or four weeks but finally he came back. Again I noticed a couple of pebbles, but I didn't say anything about it. I figured out what the parcel was worth and bought the lot from him. After I had bought it, I said, "Here is a present for you," and handed him the worthless stones. He saw I was not trying to put one over. Somebody had been slick enough to sell them to him on account of his poor eyesight.

Farming Too Prosaic

South Africa is a fertile country and immigrants could make a very nice living, but somehow whenever an Englishman or German, or whatever he may be, emigrated to South Africa he heard such wonderful tales of diamonds being found that whatever purpose he had in mind, he always seemed to feel that he was first going to gamble a little.

He turned to the diamond fields and staked a claim. Regardless of how poor a digger was, he would never lift a shovel. We could get a Kaffir for £2-10 a month and his keep. A few pounds of maize would keep him for a long time. A more expensive commodity was water. All the diggers had to buy water. Sometimes it had to be hauled fifteen to twenty miles. A tank of it cost a shilling, and it took a lot of water to wash gravel.

Gravel and diamonds, alike, were always coated with red earth. I suppose all of you have seen a diamond with a red imperfection. These imperfections are inclusions of common clay which in South Africa is brick-red. If you split the diamond in half you can take a little saliva and wipe off all that red. Whenever we bought a diamond that had a red spot in it, we put it in hydrochloric acid for two or three days and part of the red always disappeared, but where the opening was too small for the acid to penetrate, naturally, the earth remained. The red marks are the surest way to identify that a diamond has come from an alluvial field and is "a river diamond". It does not have to be a blue river color. You will find river diamonds all the way from black to pink, including yellows and browns.

The Color of Diamonds in the Rough

Nine times out of ten we can tell the color of a rough stone accurately. Suppose that one-half of a stone is crystal clear and the other half of inferior quality. In such a case color is very hard to determine because the so-called "rotten" piece affects the color of the better half until the former is removed by splitting. As the good and bad pieces fit closely together, sometimes we get reflections from the poor piece. Nobody can tell definitely what the color is going to be ultimately. Sometimes South African river diamonds were coated. That was rather unusual, however. Only Brazilian diamonds are always coated. They looked like they had been dropped in pitch—dark green or black in color.

One day one of the local people at Bloemhof had a round piece about 6 by 8 mm. which was not even translucent—black as ink. He wanted £20 for it. The outside was smooth and indicated that the inside was sound. Even if the material were sound and the color not good, it was not worth much. A friend and I tried to buy it as a speculation. We made an offer of £15. The owner kept it for several weeks until one of the diamond cutters, running short of rough, came to the fields and talked that digger into having the stone cut. In all the years that I have been in the diamond business in Amsterdam and Antwerp, I have never seen such a beautiful stone. (And I have seen quite a lot of collection stones.) It was sold for £2500 in London. Its color was a beautiful indigo blue.

(To be continued)

This Month's Window Sign

Believe it or not, retail jewelers have recently reported purchases of diamonds as speculative investments! Most jewelers are convinced that in normal times great harm has been done to the trade and to the individual merchant by representing diamonds as investments. This month's sign, however, is designed for use on show case or among diamonds in your window to attract those persons who wish to possess property instead of money in the event of inflation. So that no misrepresentation may result we urge our members to read the excellent article of Mr. Marcus, one of America's outstanding jewelers, on page 98 of the *Jewelers' Circular-Keystone* for March, 1935, the article "Consider Gems as a Good Investment" on page 55 of the February issue of the same journal and the section of the booklet the *Purchase and Care of Diamonds*, which appears below.

DIAMONDS AS INVESTMENTS

To sell a diamond as an investment in the sense of its yielding financial income would be dishonest, but from the standpoint of yielding an income in the enjoyment of the beauty it continually offers and the pride of possession it affords, it does excel. No other thing can give as much joy and satisfaction over as long a period and then be sold for so nearly its original price as can a diamond. Indeed, it is more imperishable than the hills and rivers from which it came.

The price of diamonds fluctuates with economic changes, but no more than those of stocks, bonds, and real estate. Upon a forced sale — like that of one's home—the returns from a diamond rarely approach its original cost, and because of the limited number of persons who actually know the qualities and values of diamonds, there is never the ready market of buyers that there is for bonds and real estate. However, you can *always* realize some reasonable return from every diamond. This is not true of every stock, bond, or piece of real property. Because of their extraordinary stability of value, diamonds are perhaps among the most stable of commodities and added to this, they are not subject to disintegration. For this reason, diamonds, other gems, and gold form the majority of assets of governments, notably those of India, where in the Treasury of Hyderabad, they are reputed to total in value over $1,000,000,000.

The fact that in gems a larger fortune can be carried about than even in gold, and that in unexpected times of need, they can be converted into the necessities of life in any corner of the globe makes them extraordinarily desirable to every person capable of owning them.

Note: Orders for this booklet imprinted with jeweler's name may now be placed with the A.G.S.

GUILDS

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

THE A.G.S. GEM AND JEWELRY PUBLICITY CAMPAIGN

Although the campaign "To Make America Gem and Jewelry Conscious" is not to be fully launched for many months, the "Advance Guard" of student lecturers has become so active since January that it seems that the greatest service *Guilds* can give its readers is to acquaint them with the nature of their present possibilities to help both themselves and the trade by making available the experiences of others. A list of lectures now available is on Page 19 of the February *Guilds*. A.G.S. Guild and Chapter news is necessarily curtailed in this issue.

NATIONAL PUBLICITY LECTURE COMMITTEE ANNOUNCED

The National Publicity Lecture Committee is being formed to act in an advisory capacity for the G.I.A. and the A.G.S. regarding the type of material to be included in lectures now being prepared; the technique of presentation; and the nature of groups before whom these lectures should be designed to be given.

The following members have so far been appointed to serve on this Committee:

Hans Bagge, Qualifying Certified Gemologist, Chicago.

Colin L. Christie, Qualifying Certified Gemologist, Butte, Montana.

Fred J. Cooper, Philadelphia.

Milton Gravender, Qualifying Certified Gemologist, Minneapolis.

John Vondey, Qualifying Certified Gemologist, San Bernardino, California.

These men have been delivering talks very successfully in their communities and are well qualified to assist the A.G.S. in the preparation of lectures for use by its Associate Members and students and by students of the Gemological Institute.

TALKING BEFORE 27,000

by

FRED J. COOPER

Member of National Publicity Lecture Committee, Philadelphia

In May, 1915 (just twenty years ago) I gave my first lecture on "Precious Stones". In the audience there was a very prominent business executive who congratulated me upon my very humble efforts and also made the following suggestion: "As a Jeweler you have a great wealth of interesting facts that the general public would be deeply interested in, but I think your efforts would reap a greater reward if you would create a series of lectures on some specific subject, and the audience would leave with something of new and lasting interest." At the time, I was connected with a very conservative jewelry house. They could not vision

the possibilities of such a campaign. However, eleven years ago I left this "Conservative Old Fortress" and started in business with an abundance of new ideas.

The advice about a series of talks came to the fore and I busied myself with gathering the necessary material for my first lecture, "The Pearl". From the first I decided that I would illustrate my talks and the policy of having interesting exhibits has proved of great value. Also, things seen with the eye seem to make a deeper impression on the audience than words heard with the ear. My talk on "The Pearl" has been given twenty-nine times to approximately two thousand people.

"Time and Timekeepers", which was to be my lecture number two, was born in 1926. Up to the present time it has been given sixty-two times to approximately nine thousand people. The same year that "Time and Timekeepers" came out, I also introduced the talk "The Romance of the Diamond", which I have given sixty-two times to 6,358 people.

From the experience gathered as the result of these three talks, I had not found a real live contact that would tie-in these lectures with the store without giving the lecture a commercial flavor (which, by the way, will sign the death warrant for any talk). Inasmuch as I sold Antique Silver from England, I hit upon a scheme to print some old English Hall Marks upon an attractive card which would make it easier to explain in a talk how silver has been stamped for over six hundred years.

Then I worked up "The History of Sterling Silver" lecture and invited all of the members of various clubs where the lecture was given to bring their old heirlooms to my store for identification.

My Hall Mark cards are distributed to the members of the audience before the lecture begins and they work like a charm. They are also held by the people for future reference. So far, the talk on "Silver" has proven to be the most popular. It was given on November 2nd, 1927 for the first time (eight years ago). I have delivered this lecture ninety-five times to over eight thousand people, and it still brings more new customers into the store than any of the other lectures. The great advantage in having a series of talks is that you can go back year after year to the same audience and every time you make one more "living contact" by word of mouth and sight of eye.

Having been to some Clubs four times, I was forced to edit another lecture. On May 9th, 1933, I inaugurated "The Antiquity of Jewelry". This has been delivered four times to about five hundred people. In the last eleven years I have delivered two hundred and fifty-two illustrated talks to almost twenty seven thousand people.

A few months ago I learned of the American Gem Society and in spite of having passed the half century milestone, I am taking a course which will enable me to learn more about the precious gems. Money cannot measure the invaluable help the course affords to the jeweler who has "eyes" to see the future of our old and honorable craft.

In this age of great scientific development and with the public so well informed, the time is not very distant when the jeweler who *guesses* will lose his prestige whenever gems are to be sold.

GEM PUBLICITY BEGINS TO SPREAD

Associate members and students of the American Gem Society are deriving very valuable publicity from the delivery of talks on gem stones to organizations in their localities. Popular talks are available to Associate Members and more authentic lectures to students and Graduate Members. Such talks serve to spread the word in the community that the speaker is a student of his merchandise. The result is that he earns the name of an expert in his line and confidence in his statements on the part of his customers, and of those who hear him speak, is built.

To date, reports of the delivery of more than thirty-five of these talks have been received at the headquarters of the G.I.A. and A.G.S. It is known that other talks which have been given were not reported. The majority of these lectures are furnished to students by the above organizations as part of their service, without charge. Kiwanis and Rotary Clubs predominate among the organizations to which the talks have been given.

Some notable lectures are those of John Ware to the San Diego University Club and the San Diego Mineralogical Society; F. Otto Zeitz to the Kiwanis Club of Chicago; Clayton G. Allbery to the Cleveland Lodge of the Knights of Pythias. Other students who have addressed various groups are: James W. Uncles, Hans Bagge, Linwood Cross, George Barclay, J. Willard Tobin, Colin L. Christie, Wilson T. Clark, Leslie V. Gray, Earl McBath, E. Howard Phillips, Julian Zenier, and John Vondey.

Newspaper editors to whom notice of the awarding of Graduate Membership is sent, are often eager to obtain copy of this nature and in some cases have even solicited the gemological students in their localities for articles.

Mention may be made here of: Burt Hann, series of articles in the Lawton, Oklahoma, *Constitution;* William Theis, birthstone articles in the Cleveland *Plain Dealer;* and F. R. Mathes, series in a Eureka, California, journal. As in the above case, these by no means constitute the whole of the articles which have thus been published.

These are but a few of the lectures which occurred before February 1st. Reports of lectures occurring since that time will appear in later issues.

DISPLAYS CREATE DEMAND FOR GEMS AND LECTURES

I wish at this time to say that I have been able to interest my customers greatly in talks over the counter on gems. This has been brought about by the interest created by customers reading your signs, etc. and the window displays which accompany the Display Course. This has led to a request from several Rotary Clubs that I compile material that would be suitable for a talk at their meetings in the near future. I realize that this is getting into deep water and yet I believe there is a great possibility in just some such way of presenting our ideas to the public.

—Note by Frank Bromley, Cleveland.

CHEAPER INSURANCE TO INCREASE SALES?

My idea is that one reason there is so much jewelry in the vaults and not worn is due to the expense of insurance. If people could be induced to take their jewelry out of the vaults and wear it, and one lady see another wearing hers, they will naturally look into the situation themselves.

I have been working with a number of brokers and also underwriters and after about a year and half have finally got one very representative company to see my point, and I am now awaiting the confirmation of a letter from the insurance company before I send it out to a number of people to see whether they are interested—Note by H. Paul Juergens, Qualifying Certified Gemologist, Chicago.

Let us have your ideas on this subject. There will be more comments in a future issue.

THE INFREQUENCY OF JEWELRY ROBBERIES

In your blue bulletin in regard to diamond robberies wish to say that I have given this a great deal of thought and, while no accurate figures are available, the number of robberies in proportion to the stones now worn I think would be about one hundred thousandth of one percent that would have been taken in this way. This, of course, does not include jewelry store robberies.

Do not know where accurate figures would be available unless it would be through the number of stones imported into this country through the custom house since the landing of the Pilgrim Fathers. This is usually my argument when a customer tells me he is afraid of robbery.

The easiest way to control this would be for the Gemological Institute to compute these figures and issue this statement to a National Jewelers' Service and reprints made to be used by all jewelers in ads and in window display—Note by Capt. Ted Syman, Qualifying Certified Gemologist, Denver.

What are your ideas on this subject? There will be more comments in a future issue.

IMPORTANT GIFT TO G.I.A.

A gift of outstanding value is the recent one of Meyer D. Rothschild, one of the most outstanding figures of the American gem and jewelry trade for over a score of years. Mr. Rothschild has presented to the Institute the plates of his book, *A Hand Book of Precious Stones*, containing 143 pages published in 1889 forty-four years ago.

Because of its usefulness to the jewelry trade—an object to which the Gemological Institute is dedicated — Mr. Rothschild's gift is a most appropriate one. A probable use of this gift of value to the present trade is already under consideration.

New Mine Sapphires, a well-illustrated booklet issued in 1914 by the New Mine Sapphire Syndicate of London, has also been presented to the library of the Institute by Mr. Rothschild. This booklet explains in detail and in a popular manner the Montana mines which produced sapphires and the methods of winning and sorting the rough gems.

NEWS OF A.G.S. GUILDS AND CHAPTERS

Below are the officers of two of the newly-organized Guilds. Other Guilds have met during the months of March and April and the officers will be listed later.

New Jersey Guild

The first meeting of the New Jersey Guild was held in the Douglas Hotel, Newark, on the evening of February 8th. Dr. Alfred C. Hawkins addressed the group. At this meeting the By-Laws were adopted and the following officers elected:

President	Jean R. Tack
Vice-President	P. J. de la Reussille
Secretary and Treasurer	Jerome B. Wiss

The next meeting of the New Jersey Guild will be held in May; members will be notified of date.

Eastern Pennsylvania Guild

The Founders' meeting of the Eastern Pennsylvania Guild was held Thursday evening, February 14th. The meeting consisted of an address of welcome by Dr. Samuel G. Gordon, of the Academy of Natural Sciences of Philadelphia, where the meeting was held; the election of officers; and a very fine talk on Gemology by Dr. Alfred C. Hawkins. The following officers were elected:

President	Fred J. Cooper
Vice-President	A. Lester Sauter
Secretary	Kenneth W. MacLennan

The next meeting of the Eastern Pennsylvania Guild will be held in May; members will be notified of date.

New York Chapter

Second meeting held Wednesday, March 29th, at 24 Karat Club. Sydney H. Ball gave an illustrated talk on "Diamonds". The following committees were appointed: *Membership Committee:* Mr. Engel, Udall & Ballou; William D. McNeil, A.N.R.J.A.; and Leopold Nathan, S. Nathan & Co. *Nominating Committee:* Frank L. Spies, Handy & Harman; Frank C. Osmers, Jr.; and Ralph J. Laware. Next meeting: end of May.

Tri-State Guild

Met in Pittsburgh Feb. 12th. Prof. Fettke, Carnegie Inst. of Tech., and Paul Hardy spoke. Next meeting: second week in June.

Wisconsin Guild

Second meeting held at Hotel Pfister, Friday, April 12th. Dr. A. J. Walcott spoke on "Optical Properties". Next meeting: Monday, May 20.

Northern Ohio Guild and Cleveland Chapter

The next meeting of the Northern Ohio Guild and Cleveland Chapter will be held in Cleveland on Friday evening, May 24.

Central New England Guild

The next meeting of the Central New England Guild will be held in Worcester, Massachusetts, the first week in June.

VOCATIONAL RESEARCH GROUPS

G.I.A. mail instruction has proved eminently successful over a long period of time. The system of instruction through supplementary lectures has not been satisfactory because students have been found to rely upon lectures and not to put into regular study the work necessary to get the best results out of the courses. However, at the present time in many regions where a sufficient number of students are enrolled in either the courses of the G.I.A. or the A.G.S. monthly Study Group meetings are held, at which time the students meet together to review their work and to have any matter upon which they are not clear more fully explained. The meeting is in the nature of a round-table discussion and is led either by an instructor arranged for by the Institute or by a member of the group. This type of study is still in the experimental stage and is proving most satisfactory. Group study is not, however, essential for a student to receive the maximum value from his courses. Some of the finest students yet enrolled have been in communities by themselves and have done all of their work independently with only the material which they have received by mail.

We are listing some of the Groups which have been formed and which are now functioning most satisfactorily.

Los Angeles Study Group No. 1

Leader: Percy F. Jones, Qualifying Certified Gemologist, Los Angeles
Meeting every Monday evening, at the headquarters of the Gemological Institute of America.

Members:

Leslie V. Gray	Percy F. Jones	George Marcher
	D. A. Kirk	George Schneider

Boston Study Group

Instructor: Dr. Edward Wigglesworth, Director, Boston Society of Natural History, Boston.
Meeting first Tuesday of each month at Boston Society of Natural History.

Members:

Edmond Beaulieu, Portland, Me.	Robert E. Hutchinson, Boston	A. Ronald Reed, Providence, R. I.
Linwood Cross, Portland, Me.	John S. Kennard, Boston	Montgomery C. Reed, Boston
Allan Davidson, Boston	Heywood B. Macomber, Boston	Richard S. Shreve, Boston
F. Forest Davidson, Boston	Douglas E. Nathan, Fitchburg	Henry Stevenson, Boston
Harold D. Feuer, Worcester	William Park, Boston	Fred Thurber, Providence
Robert R. Hodgson, Boston	John H. Peterson, Needham	Kenneth Woodward, Attleboro

Milwaukee Study Group

Instructor: Dr. A. J. Walcott, Field Museum of Natural History, Chicago.

Members:

Henry R. Bloedel, Milwaukee	C. E. Kasten, Milwaukee	Richard Seidel, Milwaukee
Howard Bruhys, West Bend	Alvin F. Loose, Milwaukee	H. E. Snyder, Milwaukee
Bob Esser, Milwaukee	Ellsworth A. Miller, Green Bay	Henry F. Stetcher, Milwaukee
Alfred A. Fuchs, Milwaukee	Edwin E. Olson, Milwaukee	Earl Trauger, Racine
Henry Jung, Milwaukee	Fred A. Schmitter, Milwaukee	Ralph H. Young, La Crosse
Fred W. Kaeding, Milwaukee	W. H. Schwanke, Milwaukee	

A.G.S. REGIONAL CERTIFICATION COMMITTEES

We are announcing two more Certification Committees in this issue. The duties of these Committees were explained in the February issue of "Guilds". Numerous others have been appointed and the personnels will be published in a later issue.

New Jersey

Jean R. Tack, *Chairman*, Newark
W. M. Baird, Jersey City
T. H. Goodwin, Trenton
Kenneth A. Henke, Montclair
Ambrose New, New Brunswick
H. V. Paul, Newark
P. J. de la Reussille, Red Bank

Northern Ohio

C. J. Cornell, *Chairman*, Cleveland
V. E. Chittenden, Akron
H. E. Hawk, Columbus
John B. Hudgeon, Bedford
E. Howard Phillips, Conneaut
Edward W. Powers, Youngstown
William Theis, Cleveland

G.I.A. BOARD OF GOVERNORS MEETING

The semi-annual meeting of the Board of Governors of the Gemological Institute occurs in Philadelphia, April 16th. Matters of national policy will be determined and a chairman elected to succeed the late Godfrey Eacret.

NEW G.I.A. GOVERNORS ELECTED

Elections to the Board of Governors for 1935 include four new members: Geo. C. Brock of Brock and Company, Los Angeles; E. W. Hodgson of Hodgson, Kennard & Co., Inc., Boston; H. A. Maier of Maier & Berkele, Inc., Atlanta; and H. B. McCague of The Cowell and Hubbard Company, Cleveland. Messrs. Dougherty, Esser, Everts, Hardy, Herschede, Homann, Thurber, and Vogt were re-elected.

INTEGRITY AS A BUSINESS ASSET

If a merchant wishes to build a business which will thrive and endure, he must be concerned with his "human duty" to his customers, his creditors, and his bankers. In practically all gem sales, the customer must depend upon the integrity of the merchant for information regarding the gem he is purchasing. And, naturally, a customer will seek out a merchant whom he feels to be reliable.

Therefore, it is of greatest importance for the merchant to acquire an accurate knowledge of his merchandise. It is his duty to protect his customers with a sound knowledge of the merchandise he is offering for sale, and to honestly inform them as to its value. A reputation for honesty is invaluable to the merchant.

It is worthwhile for a merchant to pay his obligations promptly, thus maintaining good credit standing both locally and also with the manufacturers and jobbers. It is also his duty to conduct himself creditably on all occasions, thus establishing himself in the confidence of the public.

A reputation for being fair and honest in all of his business transactions and for being up-to-date and informed regarding the merchandise he is offering for sale, is of the greatest value to the merchant and should be considered the "human duty" of every man interested in building business for the future.

—Note by H. I. Rosencrans, Registered Jeweler, Longmont, Colo.

Gem-Testing Instruments

Listing and Prices of G. I. A. Recommended Apparatus

Refractometers

G. F. Herbert Smith Refractometer (as illustrated) $80.00

Tully Refractometer ..... PRICE UPON REQUEST

Sulphur-saturated methylene iodide (n=1.79+) 10 grams $2.00

Dichroscopes

Dichroscope, producing exceptionally large images of opening, permitting twin colors to be readily compared $7.50

J. H. Steward Dichroscope, with adjustable focus and special device to hold stone. In wooden case $22.50

Loupes

10x Eye-Loupe, G. I. A. registered aplanatic lens in duralumin eye-cup $12.50

10x, 14x, or 20x aplanatic Hand Magnifier $7.50

Specific Gravity Attachments

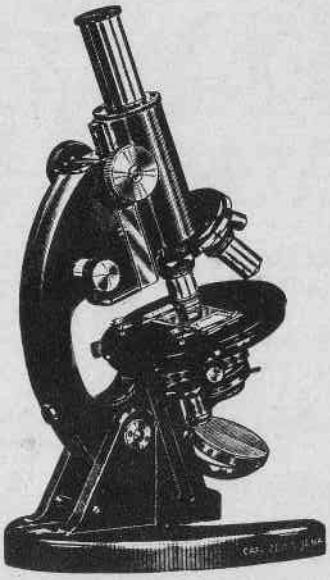
Specific Gravity Attachments for converting diamond balance. Include stand, water, container, holder for stone, and counterbalance $2.00

Hardness Points and Plates

Hardness Points of 6, 7, 8, 9, and 9½ on Moh's Scale, mounted in metal rods attached to chain $2.00

Hardness Points, better-finished points set in individual metal rods contained in leather case $7.50

Hardness Plates, specimens of each of minerals of Moh's Scale (except diamond) with polished flat faces ..... PRICE UPON REQUEST



Diamond Gauge

Gauge for checking angles of bezel facets and comparative depth of pavilion of brilliant-cut diamonds $2.00

Microscopes

Compound Microscope (approximately as illustrated) especially valuable for detection of synthetics $127.50

Compound Microscope, same as above but with accessories for polarized light $164.50

Compound Microscope, completely equipped gem-testing model $325.00

Spectroscopes

Direct-vision hand Spectroscope, in case $20.00

Prism Spectroscope $55.00

Packing costs paid by us, shipping costs paid by consignee. All prices subject to change without notice.

Further Information Concerning Above Instruments Upon Request

GEMOLOGICAL INSTITUTE OF AMERICA

3511 WEST SIXTH STREET, LOS ANGELES