

P.O. Box 996 Laytonsville, Maryland 20760

Joel E. Arem, Ed.

" TO DEVELOP AND PROMOTE PROFESSIONAL STANDARDS IN THE PRACTICE OF GEMOLOGY "

AGA membership is now approaching the 100 mark, despite very limited publicity. We are grateful to Mike Holland, Publisher-Editor of the American Independent Jeweler magazine, for his cooperation and support. A news release several months ago in this publication has resulted in a steady stream of inquiries and applications.

AGA is now incorporated as a non-profit organization. As of this writing I have still not seen a news release in the Journal of Gemmology; GIA will not print a release in their quarterly publication. Thus, our main source of membership - the magazines that directly reach all GG-s and FGA-s, remain inactive as a source of members. This makes it even more incumbent upon existing AGA members to let other professional gemologists know of our existence.

The field of gemology is undergoing rapid and dramatic growth. Synthetic gem materials are enjoying great popularity, and new synthetics are creating problems for both jewelers and the consuming public. The spiraling inflationary trend of world economies has focussed popular attention on "real value" commodities, such as gold, antiques, coins, rugs and gems. Gemstones have a track record of appreciation and solidity as a store of wealth almost unrivalled among commodities valued by mankind. This awareness is slowly but steadily creating a surge of interest among investors that promises to radically change the structure of the gem market in the next few years. It is certainly an exciting time to be a trained professional in this field, because the skills of the gemologist are going to be in great demand in the years ahead. We should all view our training in this light - we have special services to offer that are unique and in greater and greater demand. Professionalism in gemology is an accomplishment of which we can all be proud; let's make sure that the people who seek our services are aware of the level of competence implied in our credentials.

J.E.A.

MINUTES of Meeting of AGA

A regular meeting of AGA was held at the Sheraton Park Hotel, Washington, D.C. on May 18, 1977, from 8:20 PM to 10:30 PM. A total of 24 members and guests were present. President Joel E. Arem reported that AGA will soon be incorporated as a non-profit organization; this will make it possible for us to receive monetary gifts on a write-off basis (ed. note: incorporation is complete).

Comparatively few qualified persons are aware of the existence of AGA; therefore suggestions were made for publicizing its existence. The suggestions included notices in the Lapidary Journal, the Journal of Gemmology, and in the column acknowledging gifts to GIA in their quarterly publication.

President Arem suggested that all members make use of the Exchange Mart section in the AGA newsletter for distribution of instruments, books, magazines and other items of a professional nature. Dr. Arem also commented that he would like the newsletter to serve as a means for AGA members to communicate with one another.

Theresa Zook commented on the excellence of the article on the use of the spectroscope, written by Mary Helne, GG, in the last newsletter.

Joseph Tenhagen of Miami Florida, GG, FGA, then gave an excellent presentation with color slides on the mining of emeralds in Colombia. Joe has made numerous trips to these areas and is widely recognized as an expert on the emerald mines of Colombia. The talk was followed by questions and answers on production and sale problems relating to Colombian emeralds. The meeting was adjourned at 10:30 PM.

Dale Farringer, GG

The following notes were received from Edwin Sasaki, of Tokyo, one of our most active AGA members. JEA

NOTES AND OBSERVATIONS OF EXPERIMENTS ON MAXIXE TYPE BERYL

The following research experiment was conducted by Mr. Halley F. Batista, President of Halba Comercio & Industria, Belo Horizonte, Brazil, during the author's trip to Minas Gerais in late September, 1975 (prior to participation in the XV International Gemological Conference in Washington, D.C.).

The experiment started at 5 PM and was conducted in a sealed, darkened room specially prepared for this purpose. The process, called S.M. (simple method) involves the use of a specially made irradiation tube (ed. note: ultraviolet??). The specimens treated included one rough crystal and three faceted gemstones, all of light colored pink beryl (morganite).

The stones were placed side by side under the irradiation tube and the room was sealed. After 24 hours the room was opened and the stones checked for coloration. A very slight blue color had been produced. It was explained at this point that the color would not become darker immediately. No thermometer was noted in the room, but it seemed that the temperature was evenly controlled.

After 48 hours the stones began to show a distinct indigo blue coloration. At 72 hours the shade of blue was even more noticeably darker.

At 120 hours total irradiation time the ideal "cobalt blue" colors had been attained. According to statements by Halba Comercio officials, pink beryls of a certain type can be successfully made blue by irradiation, and there is no sign of color fading even after 5 years (comment by Sasaki: what happens if placed in direct sunlight??). Internal defects are not produced.

The XV International Gemological Conference was held on October 5-9, 1975. Members of the Conference had been privileged to witness the irradiation experiments. Prof. R.R. Franco of the Institute de Energin Atomica, Brasil, called the attention of the conference members to the Maxixe type beryl treated by the S.M. process. He explained that the stones had not been submitted to the action of nuclear sources, such as X-rays, gamma rays, neutrons or electrons, or other particles. Discussion of the experiment raised the question: should this material be called aquamarine, or should the name "Maxixe-type beryl" be retained? It was suggested that since the starting material for the treatment is a beryl (morganite) it would be wise to call the material "treated blue beryl". The stone is currently being marketed under the name "Halbanita".

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Sasaki kindly provided the following addresses, reprinted here for benefit of AGA members:

Source for "Victoria Stone", a relatively new synthetic material:	Iimori Labs, Ltd. 1-7, Sugamo, 1-Chome Toshima-ku, Tokyo 170, Japan
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Source of quartz cabochon "tops" for the making of opal triplets:	Tsuchiya Kashoku Seisakusho Ltd. 1-13-11, Umura Kofu-shi, Yamanashi Pref., Japan
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A note in the National Jeweler magazine calls our attention to the mineral PAPAGOITE as a new gem material. This mineral is $\text{CaCuAlSi}_2\text{O}_6(\text{OH})_3$, is monoclinic with RI 1.607-1.672, S.G. 3.25 and hardness 5-5.5 (pure material). The new gem papagoite was evaluated by the U.S. Gemological Services Co. and found to have a refractive index of 1.521-1.534, SG of 2.42 and hardness of 7+. This material, as might be deduced from the high hardness, is actually a dissemination of papagoite in chalcedony. In this regard it is similar to much chrysocolla, which often gives quartz readings on the refractometer.

Papagoite, named after the Papago Indians who inhabited the region near the area in Arizona where the mineral was first found, looks like chrysocolla or turquoise and takes a good polish. The material is inert in UV light and has a distinct spectrum.

HOW TO FACET SPODUMENE SUCCESSFULLY by James L. Semmes, Jr., Gemologist

Many amateur gem cutters have asked me which stone I think is the most difficult to facet, considering all stages of the cutting process. My answer is always spodumene. There are, of course, many gemstones that are quite difficult to facet; but spodumene will leave even the experienced cutter on pins and needles throughout the entire operation.

Spodumene is also interesting because, though no emphasis is placed on this in the gemological literature, there seems to be some degree of difference between the color varieties: kunzite (pink), triphane (yellow) and hiddenite (green). It has been my experience that the yellow spodumene is a bit tougher than the other named varieties, but this is speculation on my part. This discussion will treat kunzite, because this variety is the best known of the spodumenes.

The first difficulty to be overcome is selection of rough that has few needles in the outer portion of the material. This is very important, because during performing grinding into these needles causes bits of spodumene to flake off at random. The result is a drastic loss of material, and what starts out as a fairly large gemstone may end up much smaller than anticipated.

Sawing a piece of rough can also be hazardous, and must be performed quite carefully. My advice is to nick the rough all around the area to be sawed, and carefully and slowly feed the rough into the saw blade. This operation is usually accompanied by sweat, panting and a great sigh of relief when the rough does not shatter into pieces or split neatly in half. Once the piece of rough is cut, it is normal to sit and contemplate how lucky you have been!

Dopping the gem is the next operational step. We will assume that the finished stone is to be emerald cut, and the pavilion is faceted first. I use strip epoxy for dopping spodumene, never wax. Heat can and often does result in breakage of a stone. One simply tears off the correct strip length of epoxy for the intended stone; put this on the dop, put the stone on the strip and put it aside to allow the epoxy to cure. Curing time for strip epoxy is 4 hours (suggested on label) but I cure it for 8 hours to be sure of a good bond.

Cutting the pavilion is the next step. In this regard cutting is essentially the same as for garnet, tourmaline, quartz and other gem materials, but I do NOT recommend using any grit coarser than 600. I have known cutters who use coarser laps, but they end up with a large percentage of broken stones. My track record with laps of 600 grit or finer is quite good by comparison. I usually facet spodumenes as step cut gems, with 5 tiers of steps used on the pavilion of a larger stone. The critical angle of the pavilion is 40 degrees; but I generally add a row of very tiny facets at 30 degrees at the very tip of the culet to prevent it from breaking during polishing.

Polishing is rapid using a tin lap and Linde "A" (aluminum oxide), or using one of the new ceramic polishing laps and 50,000 grit diamond spray. The only cautionary word here is avoid using too much pressure in polishing; take your time, and you will not break the stone.

Transfer dopping is no problem. Put the old dop in a glass filled with epoxy remover, and let it sit until the stone loosens from the dop. Place a small bit of clay (I use "Play-doh") in the tip of the "V"-shaped dop, and fill the remainder with epoxy. Using your fingers, carefully place the culet of the stone into the "V" and, with a transfer jig, carefully line up the stone; put just enough pressure on the stone to keep it in the dop. Let the new epoxy cure, and remove the first dop. Next, cut the crown of the gem and remove the finished stone from the dop as before.

It is easy to describe the cutting process, since words are abstract and writing is not as anxiety-ridden as cutting. The actual faceting is another matter. You will need patience, courage, an excellent vocabulary of expletives, lots of time, and determination to succeed. Do not get discouraged if you break a stone; you are in good company, and many before you have done likewise.

My suggestion overall is to cut emerald cut gems, and wherever possible do larger stones. Faceting rounds and fancy shapes is a different matter entirely, and hopefully I will be able to contribute an article on this aspect at a later date. Good luck!

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Change of Address: Horace Simon, of Simon Jeweler-Gemologist is now located at:

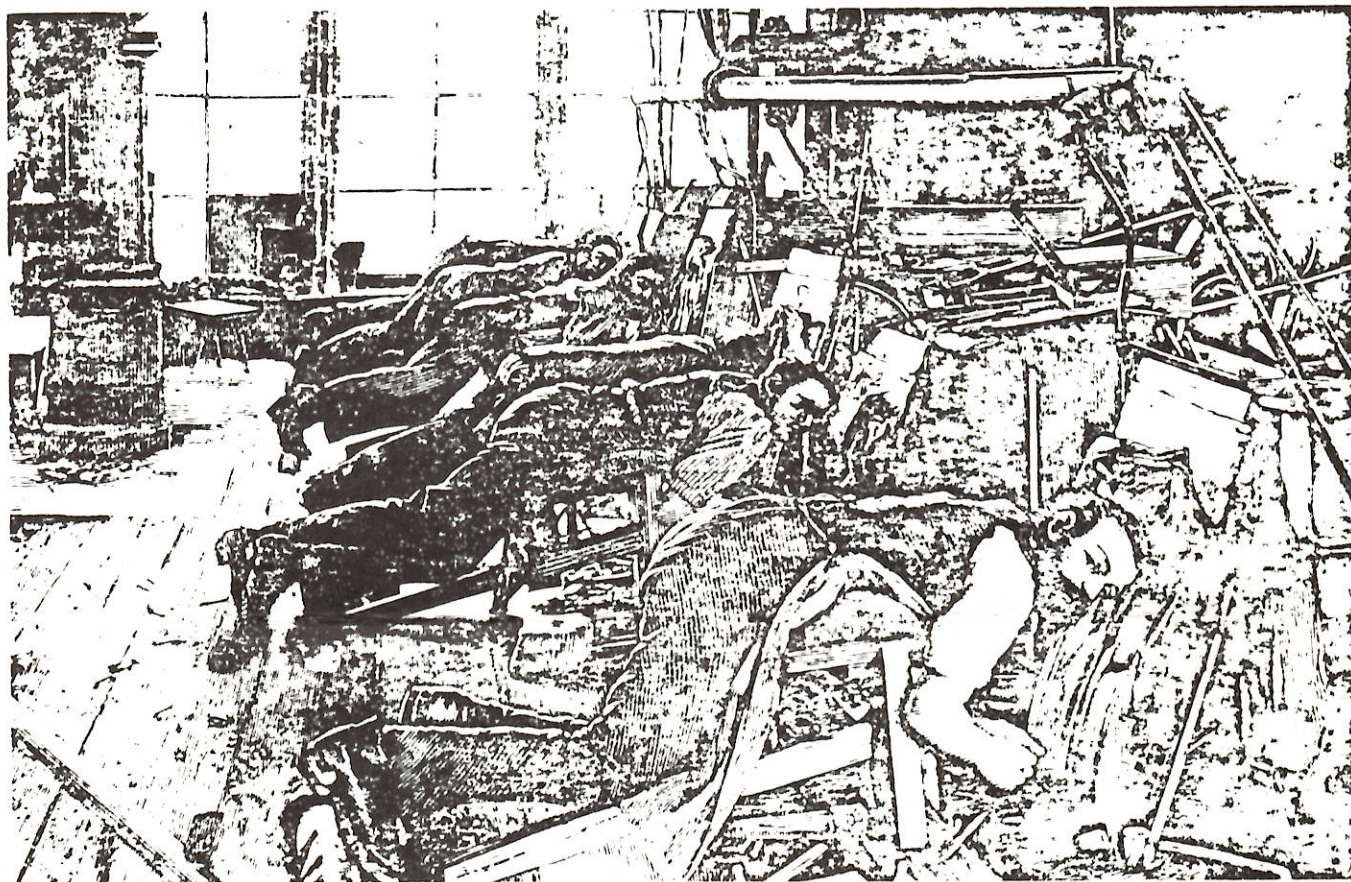
941 E. 70th Street, Shreveport, Louisiana 71106

IDAR-OBERSTEIN, THE GEM CAPITAL OF THE WORLD by Dale E. Farringer, GG

During mid-August, 1977, I visited the twin cities of Idar and Oberstein, West Germany, not far from the French border. They are not large cities - together they have a population of only 40,000 people. They seem larger because they consist of two long streets, on both sides of the Nare River.

They are, however, old cities. Their existence has been traced back to the Middle Ages. They were important even then because of agate and other minerals that were mined in the Nare valley. Official mining records date operations back to 1375, although the first mention of processing dates to 1520. A man by the name of Wirich von Dhaun is said to have been the owner of Idar-Oberstein's first agate-cutting mill. The industry grew, and by 1867 there were 153 such mills, worked by 1,430 cutters.

The early mills were powered by water wheels. The cutters lay horizontally on their chests while slowly grinding agate and other mineral materials. It was not until the beginning of the last century that workmen began polishing stones such as are used in jewelry, and not until 1871 that horizontal metal discs (laps) were used in cutting and polishing.



As supplies of rough material for cutting diminished, Indian and Egyptian carnelian and jasper were imported. This event occurred in the early 1800-s. Then in 1834 arrangements were made to import agate from Brazil. Brazil is still a prime source for cutting materials. Other suppliers of rough have been South Africa (for tigereye) since 1880, Ceylon (moonstone) since 1885 and Australia (opals and sapphires) since 1890. Today, cutting materials come from 6 of the 7 continents, and Idar-Oberstein is considered the gemstone capital of the world.

Idar-Oberstein (continued)

Today, because of unexcelled workmanship, the 600 gem cutting and polishing shops of Idar enjoy an excellent worldwide reputation. Gem dealers from all over the world come to Idar-Oberstein to buy these precious products. To facilitate buying and selling, a 22-story Diamond and Gem Trade Exchange was constructed in the early 1970-s. It was opened in March, 1974. A total of 136 dealers maintain offices in this building. One floor is devoted to display cases containing the wares of 211 dealers. This commercial display is said to be the largest of its kind. Here, one can view the entire spectrum of gems, ranging from agates to zoisites, and even synthetics. The Exchange houses a museum which was inaugurated by Paul E. Desautels, curator of the Smithsonian's Hall of Gems. The building also houses the facilities of branch banks, a post office, and insurance companies.

Another museum located in Idar is called the Heimat Museum, and is supported by more than 400 dealers and persons interested in the geological sciences. In addition to a collection of mineral specimens, gems and fossils, there is a replica of a goldsmith's work shop which consists of one large room where he lived and worked (see photo below). Another feature of the museum is the reproduction of the old-fashioned grinding mill, run by water power.



Idar-Oberstein is the headquarters of the German Gemmological Society, which has some 2,000 members. It operates a training school that teaches students the techniques used in gem identification, evaluation and pricing. A main objective is to teach the student how to distinguish natural gems from the increasing number of synthetics on the market. About one-third of the students are from outside Germany. A few come from the United States, and according to one of the instructors they would like more U.S. students. Interested persons can write to:

Deutsche Gemmologische Gesellschaft
Postfach 2260
D-6580 Idar-Oberstein
West Germany

TRADE NEWS Joel E. Arem, Ph.D., F.G.A.

Cubic zirconium oxide (zirconia), ZrO_2 , is slowly but surely getting onto the market. Much of the material grown in Europe, chiefly by the Djeva company of Monthey, Switzerland, is characterized by a pale brownish discoloration. Zirconia is also being grown in the U.S.S.R., and in the U.S. by Ceres Corp. of Waltham, Mass. The man in charge at Ceres is Joe Wenckus, formerly of Arthur D. Little Co. and an old friend, who told me that he can produce about 80,000 carats per month of clean, colorless material. The off-color crystals are remelted and never reach the market. The cost of zirconia is high but should come down as production methods improve. In fact, I just received 2 price lists from Germany listing cut "Djevalite" (one of the trade names for zirconia). One of the companies stated that they reduced prices because of a recent drop in rough material cost. A 6 carat zirconia (round) is approx. 10 mm in diameter and can be purchased in Germany for 120 DM, or about \$5 per carat.

There is a good article on ZrO_2 by Kurt Nassau in the Lapidary Journal, July 1977, p. 900-904, 922-926. The M.S.B. Corp. in New York is currently asking about \$25 per carat for cut stones, \$1.50 per carat for rough. My last information from Djeva listed a rough price of \$4 per gram, but they would not guarantee quality (i.e., you take whatever you get even if some of the material is brownish) and the minimum order is 100 grams.

Zirconia has a S.G. of 5.7, refr. index 2.15 and dispersion of 0.060. This is slightly more dispersion than diamond but close enough to be very convincing, and the high RI will make cut gems virtually indistinguishable by eye from diamond. The hardness is 8.5, like YAG, so cut zirconia should wear quite well in jewelry. Gems already in settings will likely cause increasing problems for the jewelry trade in the near future.

After 2 years of preparation I am delighted to announce the release of the Color Encyclopedia of Gemstones. This book, written and illustrated by your newsletter editor, was designed as a single volume, rapid access source to all gemological data relating to basic characteristics of gem materials. The book is approx. 325 pages, and covers more than 200 gem species plus all their color varieties. There are 320 photos on 64 pages of color plates, illustrating all color varieties for 185 species (e.g., beryl is treated as a single species). The data include colors, formula and chemical variations, crystallography and typical habits, luster, streak, specific gravity, refr. indices, birefringence, dispersion, pleochroism, cleavage, luminescence, spectral data, occurrence and localities, wearing characteristics and noteworthy examples in museums and private collections. The publisher is Van Nostrand-Reinhold. Additional details will be provided on request.

It has been suggested that an article be published in this newsletter dealing with the format for gem and jewelry appraisals. Talk about a can of worms! Rather than any one member of AGA putting his or her neck on the block, I am requesting that EVERYONE of our members send me a typical appraisal or a suggested format for what a good appraisal should include. I will summarize the results and report in a survey article in the next issue.

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ELECTION OF OFFICERS

The ballots for election of new AGA officers are enclosed. Please return as soon as possible, in any case no later than Nov. 10. Please sign your name on the outside of the envelope in which you return the ballot, but do not sign the ballot itself.

The proposed slate submitted by the nominating committee is:

President: Joel E. Arem, Ph.D., FGA
2nd V.P. : Theresa Zook, FGA
Secretary: Dale Farringer, GG

1st V.P.: Sonja Schwartzman, FGA
Treasurer: Tomiko Butler, FGA