



CORNERSTONE

A Publication for the Accredited Gemologists Association

Gem Scams: The Canadian Connection

Part 1 by Anne Hawken

During the last decade and increasing throughout 1990-92, gem "investment" telemarketing has proliferated. In September of 1990, the Accredited Gemologists Association held a gemological conference with the Federal Trade Commission in Alexandria, Virginia. This marked the beginning of AGA's public involvement with the current gem investment scam crisis. AGA members aired victims' complaints with the FTC, and discussed actual collectible gem qualities versus so-called "investment" gem sales schemes. This meeting was, as many of you well know, not the first time that AGA members had confronted gem scams. Some 1970s and '80s scams bear one striking resemblance to the confidence schemes now under investigation. The link? The Canadian Connection.

According to Detective Bob Greig of the Metro Toronto police department, this type of telemarketing scam dates from the late '70s. Then as now, most of these schemes involved Canadians. "Many of these gemstone investment companies operated out of Florida until they were flushed out in the early '80s when the state passed legislation outlawing telemarketing investment operations. They've since moved to Toronto, where they enjoy easy access to the US market while the change of jurisdiction makes it difficult for American law enforcement agencies to investigate them" (*Colored Stone*, July/Aug 92). What is the extent of the "investment gemstone" trade in Toronto? The Royal Canadian Mounted Police estimate \$1 billion in losses to US

consumers alone, while other Canadian authorities estimate \$2 billion annually in overall trade. "On any given day, there are 20 to 30 of these operations working out of Metro and at least one of those is averaging monthly profits of \$1.2 million," says Metro fraud division's Detective Michael Holland. "They run their operation under a certain name for six months or so, then they fold up their tents, move on and start up again under a new name" (*Canadian Jeweller*, June 1992). A network of franchises branching off from an experienced "overlord" is suspected; the scheme originator is given continuing commissions. Valuable "sucker lists" are passed from one operation to another.

Scam victims "are not stung once but several times and it's not so much that they are stupid as it is that the setup of these operations is very sophisticated and impressive," says Doug Weese, precious metals specialist with Consumer and Corporate Affairs Canada (*Canadian Jeweller*, June 1992). In most cases under investigation, the victim has been contacted by phone and promised wholesale-range prices for colored gems. The prospect then receives colorful brochures which often include charts showing the rise in value of different gemstones offered, and out-of-context quotes from prestigious publications and the jewelry trade press. Unwitting consumers are hooked in two ways: a few "great" deals, followed by massive pressure to buy more for even greater profits; and the assurance of

Recent History of AGA & "Gem Scams"

1990

AGA Alexandria, VA "Investment Gems: Facts & Fallacies" conference with Federal Trade Commission regarding problems with "investment" schemes using gemstones. AGA members assist FTC with complaints, and discuss actual collectible gem qualities versus so-called "investment gem" sales schemes, which rely on pseudo security-trading formats while offering commercial grade or lower stones.

1991-92

Rise in colored gemstone "investment brokers" telemarketing schemes. Numerous articles in *National Jeweler*, *JC-K*, and other trade press regarding rise in Canadian-based gem scams. These operators use gem laboratory reports for credibility, along with high-pressure sales tactics and unsolicited telephone calls. Federal Trade Commission, Toronto Fraud Squad, US Postal Inspectors involved with hundreds of complaints and reportedly expect thousands. AGA members C. R. Beesley and Antoinette Matlins act as consumer advocates in numerous cases, and present their efforts to the industry via trade press coverage and conferences. Beesley offers financial recovery to gem scheme victims, with his GemLine Recovery Service (founded 1982). Matlins compiles list of brokers against

continued on page 7

continued on page 7



CORNERSTONE

is a quarterly publication of the *Accredited Gemologists Association*. This quarterly publication is paid for through the dues of membership and may not be purchased commercially. All articles are the property of the AGA and permission must be acquired from the AGA for reprint. The opinions expressed in this publication are those of the individual authors. The AGA can assume no responsibility for these statements, which are offered entirely for the purposes of informed professional discourse and education. For information regarding *Cornerstone*, call Thom Underwood at (619)291-8852.

Board of Directors

Cortney Balzan
President

B. Young McQueen
Vice President

Leo Schmied
Secretary

Dana Lynn Richardson
Treasurer

Regional Governors

Craig A. Lynch
Region 1

James Krol
Region 2

James V. Jolliff
Region 3

Thomas Seguin
Region 4

Anne A. Hawken
Region 5

Mona Miller
Region 6

President's Message

by Cortney Balzan



These past years of serving as AGA president have given me a satisfaction that comes from participating in one of the foremost nonprofit gemological associations in America. I look forward to AGA's upcoming years with added satisfaction. The help I received from past and present officers was invaluable in keeping AGA's mission in focus.

To understand where we are going is helped by reflecting on AGA's formation. Its mission was set forth by Antonio Bonnano (known as AGA's founding father) and his crew. First, AGA stood for the Alumnae of the Gemmological Association of Great Britain and was formed in 1974. AGA was envisioned as a network for sharing gemological information and skills. Graduate Gemologists of the GIA were first allowed to join in 1975. The name was changed to the Accredited Gemologists Association as AGA allowed gemologists from other countries to join in on sharing gemological information and skills. The AGA ship Mr. Antonio Bonnano and his crew built nearly twenty years ago is now set firmly in the water.

AGA's mission is the ongoing development of gemological education, research, professional standards of analysis, practice, and ethics.

This past year AGA contracted with GIA to present a gem conference to clarify clarity and color grading standards for diamonds. Since AGA requested clarification, GIA has subsequently found the need to program classes regularly on this subject. Mr. Leo Schmied has taped this original session for those who could not attend this two day event.

AGA has always gone to the source to clarify the issues of the day. In clarity grading it was GIA's directors. In fracture filling it was Dror Yehuda. Presently, there is Koss diamond fracture filling and we are working on this. In heat treatments and oiling it was Ted Themelis. In country of origin it is Cap Beesley.

Certified Laboratory and Standards have coordinated their committee activities in professional standards of analysis, practice and ethics. Anne Hawken, Chair of the Laboratory Program and Cap

continued on page 3

New AGA Officers Elected

The election returns are in for the recent AGA voting and here are the results:

Board of Directors

President:

C.R. "Cap" Beesley

1st Vice-President:

Leo J. Schmied

2nd Vice-President:

Anne Hawken

Secretary:

Joseph DuMouchelle

Treasurer:

B. Young McQueen

Regional Governors:

David L. Harris
Region 1

Therese S. Kienstra
Region 2

David M. Rosen
Region 3

Joseph Mackley
Region 4

Stanley Cohen
Region 5

Sharon Wakefield
Region 6

We extend our congratulations to each of you and look forward to working with you to serve the gemological community.

President's Message

Continued from page 2

Beesley, Chair of Standards has released reports that regularly show up in trade magazines and journals.

Leo Schmied was asked by AGA headquarters to conduct a case study of gem scams in his area. He had been involved with these issues while working with Lab and Standards. Leo's efforts as a public advocate positioned him as a guest on a radio show, front page news in the local newspaper, and weeks of looking at gems from those that had been had. AGA members had previously presented these issues on national and international television, radio and printed media. While I was in Italy I watched Antoinette Matlins and Cap Beesley discussing these issues on CNN television.

AGA's Code of Ethics is written to address compliance with FTC Guides for the Jewelry Industry. We have always addressed the issues of full disclosure, advocacy for consumer protection, and professional conduct worthy of the public trust. One FTC official mentioned to our headquarters that the AGA acts as a watchdog in the gemological area.

These past years has seen the Software Review Committee presenting articles as regular features in major trade magazines. Annually in Tucson, at the convention center, AGA and JCK cosponsor two full days with industry software vendors and seminars. The Software Showcase answers questions and demonstrates various software products to all who are interested.

I want to thank the various committee members for donating their precious time to benefit AGA and the industry. You are a large part of AGA's mission and its sharing of gemological information and skills. I also want to thank the executive officers who have participated in AGA affairs during my tenure. I believe AGA will be stronger in the years to come because of all of our efforts.

The transition period for AGA's newly elected officials will begin immediately after the election results are recorded. Anne Hawken and Leo Schmied have helped to outline the duties and responsibilities for the new AGA executive officers. They will be ready to serve you by Tucson, 1993, when our Annual Conference and Board Meeting take place.

I wish you all a prosperous, healthy and Happy New Year!

Gem Scams: Intake & Examination Procedures, with Observations

Part 2 by Leo J. Schmied

Documenting Sealed Gems

Opening sealed and warrantied gems for adequate gemological examination puts any existing warranty in question. If you choose to identify, authenticate, or evaluate such gems, protect both yourself and your client's interest during the examination. Be aware that your examination of sealed and/or warrantied gems may give a court cause to call you as a material witness, should litigation be brought. I suggest you give careful consideration to the intake process, the opening and documentation procedure, and—as always—your gemological methodology. Proceed with caution; you may even wish to obtain legal advice.

The outline below is based on sealed gem procedures used by the American Gemological Laboratories Inc. of New York, Mr. C. R. "Cap" Beesley, President. These procedures are courtroom trial-tested; it is recommended that they be followed in every detail. The first line of defense for the opposition's attorney in a courtroom is to suggest that the stone was switched. Document every step, so you can quote your notes in detail. [My modifications of Beesley's procedures follow each AGL step.]

Step 1: Photocopy the plastic containers unopened, clearly showing the stone, seals and labeling intact.

[I took documentation of the process one step further. My laboratory is equipped with security cameras, a monitor and recording VCR. I videotaped the entire examination from start to finish. Also, I first photographed the sealed gems with a 35mm camera. These photographs—which clearly showed the sealed stone in question—were developed before I proceeded to open and examine the gems.]

Step 2: While the stone is still in the

plastic container, prepare an enlarged diagram (clarity plot) of the stone on the photocopy.

[I made two photocopies of my gem identification report including a clarity plot diagram, and photocopied the sealed gemstone over the lab report as background.]

Step 3: Plot a number of identifying clarity or cutting features sufficient to subsequently pick out the stone using your diagram.

[In front of a witness and on camera, I documented everything I could about the sealed gem before opening. This included notation of the shape, color, transparency and plot of the inclusions. I had my witness examine the stone and verify that the stone description and clarity plot matched the sealed stone; and affix his signature to the first lab report. After signing the first file copy, I took a 35mm microphotograph of the sealed stone at 10X or more to show identifying characteristics.]

Step 4: It is critical from this point onward, that the examination procedure be witnessed. Both individuals must keep their eyes fixed on the stone that is being examined. That means no phone calls, distractions or interruptions! So if an attorney asks, "Are you sure the stone never left your sight?" you can respond, "Absolutely certain."

Step 5: In the presence of a witness (a staff member or reliable observer), open the package and individually re-check the diagram against the loose stone.

[The video tape helps support this because it shows that you and your witness had fixed sight on the stone during examination, and the tape can be used in court if needed.]

continued on page 4

Gem Scams...

continued from page 3

Step 6: After both individuals verify the diagram, check the weight to the third decimal place and take an accurate depth measurement, calibrating your equipment before each measurement.

[After opening, I had my witness verify the first diagram and the stone. I then photographed the stone in the microscope in a face up and face down position. The stone was rotated and photographed in two profile positions to show cut. Each time I rotated the stone, I had my witness verify the photographs were of the same stone. I recorded all observations on the second lab report, including a second clarity plot drawn from examination of the loose stone. My witness was not allowed to take his vision from the stone during any part of the procedures. I prepared a full Gem I.D. report and he witnessed every test and the results of each test.]

Step 7: All relevant notations and important observations are kept on your photocopy.

Step 8: When steps from 1 through 7 are complete, both parties should sign and date the information sheet.

[After the second examination, plot, and Gem I.D. report were finished and signed, I prepared a full Colored Stone Grading report according to GIA Colored Stone Grading procedures. Once again, my witness observed the entire examination. All documents and videotapes were then filed and are currently kept in my vault. It is our policy to maintain permanent records in our laboratory. The client was supplied with a new set of grading reports and supporting photographs. Videotapes can be dubbed at any time if necessary. We advise our clients not to disclose the fact that the entire procedure was videotaped. The tapes should be saved for a court of law.]

Observations from the Lab

The following observations were made subsequent to following this elaborate intake procedure and standard

gemological methodology. These comments are the opinion of JAS-CGL, and refer to sealed stones and reports examined in our lab.

Fact: Sealed gem stones hide identifying characteristics. Even the initial photographs show how little you can tell about a given stone while it remains sealed in plastic. It is impossible to weigh, measure, positively identify the material, clarity grade, color grade, assign a proportion or cut grade, or run tests for enhancement/treatments while the stone is sealed. Photographs support how difficult it is to photograph internal characteristics while sealed. In many cases, the light source had to be changed to different angles to view internal characteristics as well as changing the package's angle to catch a glimpse of identifying characteristics. The gem stone scam artist is very aware of these facts and uses them to great advantage.

Fact: Plastic containers hide clarity characteristics. The observer can view the stone only in a face up position, and tilting the stone may not help depending on the type of package used. Front lighting of the stone in a face up position is possible, although the light still is affected by the packaging material. But backlighting is very difficult, if not impossible depending on the package. In many cases, clarity characteristics are totally hidden. For example, we examined a Yellow Sapphire/Corundum that had a huge cloud centered in the stone. We dismissed the cloud while sealed, noting that it could be the plastic playing tricks on us. Once the stone was removed, the cloud was prominent with backlighting. A second example is an Emerald/Beryl that showed few inclusions while sealed, but appeared three to four grades lower in clarity after opening.

Fact: Plastic containers hide cutting characteristics. Once again, the observer can only view the stone in a face up position. Most stones are placed in a hole in a plastic plate. The observer cannot examine the stone in profile. It is almost impossible to determine the cut of most stones that are sealed. We found stones that had good face up outlines and poor profile outlines. An example given is the aforementioned

emerald. This stone had a 70% plus window even sealed in the plastic container. The face up outline was good, yet the profile was poor at best. The best way to explain the profile view was a VERY POOR NATIVE CUT! This stone's culet was 60% off center in one profile view. (This is calculated by using the center of the stone as "0" and the girdle as 100%). In fact, one may have thought the culet covered over 25% of the stone! In reality it was a pavilion facet with an elevation of less than 10 degrees, and not the culet at all.

Fact: Plastic containers change the color and/or brilliance of the sealed stone. This effect is caused by the change of light through the plastic, colored backgrounds and/or sunken pavilions. Even the photographs will show this characteristic effect of plastic packaging.

Fact: Reports accompanying the stones are customarily inconsistent. Most of the "Grading Reports" accompanying these so-called investment gems contained little information which could be considered reliable. In effect, the reports used unknown systems or scales for "grading," misused well-known systems, or used scales which appeared similar to well-known ones. An average consumer could not be expected to realize that these reports were useless and misleading; they purported to be actual gem laboratory reports. And glossy color sales brochures often touted their lab reports as a buyer's assurance of quality.

None of the reports made any mention of treatments/enhancements. None included clarity plots. Few listed the instruments used to prepare the report, or mentioned the color grading system used (except when using comparison "master stones"). Some of the reports compared the color to the AGL ColorScan Color Grading System. Mr. Cap Beesley has brought legal pressure to end this misleading practice. None of the reports compared their color grading system to the GIA Colored Stone Grading System or nomenclature. Clarity grades were inflated by two to three grades, assuming the clarity grading nomenclature was compared to the AGL Colored Stone Grading System.

continued on page

and consequently cross referenced to the GIA Colored Stone Grading System and nomenclature.

Most of the "laboratory reports" listed the cut grade as good. I assume a "good" cut grade is the lowest possible grade used by these labs, based on the stones I examined. An excellent example would be an oval cut ruby that appeared more cushion shape than oval, having a very shallow depth percentage, obviously wavy girdle, misshapened facets, poor alignment, and a culet that was obviously off center in two profile views.

Further, I must conclude that some of the labs issuing reports have a difficult time distinguishing brilliance with reflections from crown facets. In fact, I found the brilliance grades listed to be most amusing. One emerald report stated 60% brilliance on a stone that exhibited 70% windowing! This windowing is obvious in photographs of the stone sealed in the plastic containers. Numerous sapphire reports stated 60% brilliance on stones that exhibited less than 10% brilliance with 80% extinction. I hypothesized that the laboratory graders must have used four very strong lights placed north, south, east, and west of the stone. Using this technique created reflections of crown facets they must have graded as 60% brilliance. In experimental trials, I was unable to reproduce the 60% brilliance using the same hypothetical technique, let alone standard grading methodology.

All the reports had signatures. I must assume the graders failed basic handwriting. I showed the signatures to many individuals and no one was able to identify the grader. Appraisals of value came with some of the stones. The appraised values can be summed up with one word... ridiculous.

Fact: The warranties are questionable to begin with. All the reports had warnings which stated that if the seal were to be broken, the report or sale warranty was invalid (or similar wording). It would appear that the report and warranty had little value to begin with, being practically meaningless. That warning just inhibits a buyer from making an adequate inspection of their purchase, for fear that their stone won't be resold. Since most of these stones

appear to be below commercial grade material, but have reports which make them sound much better, invalidating the report is no loss. And warranties of resale usually are useless; scam operators take their profits and move on. Most of this material, when loose, has limited appeal for jewelry markets. Packaged, there may be no legitimate market at all.

Conclusion: Smell Something Fishy?

Just for fun, I showed the photographs of the sealed stones, marketing brochures, and laboratory reports to numerous individuals. My focus group included members of the general public, several colored stone dealers, gemologists, and jewelers. Everyone was impressed with the stones and lavish brochures. Their illusions readily dissolved after viewing the same stones microphotographed to show the clarity characteristics and especially the cut. To my surprise, the public—who had little or

no knowledge of colored stone grading—made comments first about the cut! Most laughed and said they would never be interested in a stone "cut that bad!" Many had similar remarks regarding the clarity characteristics. One can conclude these stones are not very marketable when the sales prospect is given an opportunity to examine their purchase.

The victims of these gem "investment" schemes were baited with unbelievable bargains, hooked on unreal profits, and reeled in with spurious authenticity guarantees. Sometimes, the con man pulled a "bait and switch" by making grading reports which closely resembled well-known and respected lab reports. Some operators, in their glossy color brochures, even promised bona fide certificates of quality and worth. But after playing the line along, the only profit netted was for the scam operator. Once these stones are out of their plastic environment, they're fish out of water. And smell as sweet.

Gem Scams: Public Warning

Part 3 by Leo J. Schmied

Jewellers Vigilance Canada, the FTC, JVC, and AGA members have carried the gem scam story to the trade press—and to the public. This public awareness has caused more victims to surface brandishing gems enclosed in sealed tamper-resistant packaging with misleading laboratory grading reports and/or inflated appraisals. Many of these victims would still be "investing" in more low quality gems if it were not for the mounting anti-scam publicity. What can you do to help stop this abuse of both consumers and the legitimate gems and jewelry trade? Expose the scams to protect consumer and industry alike. Armed with clear information and a plan, individual gemologists can play an important role in helping fight future abuse, misrepresentation and loss of client confidence. This article outlines methods used by other members to obtain media coverage of the telemarketing gem scam problem.

Major News Stories

This past year alone, Antoinette Matlins and Cap Beesley have made major waves-airwaves. Cap Beesley, who founded Gem Line Recovery's formal efforts to assist victims of gem consumer fraud in 1982, stresses the importance of recovering money from unscrupulous dealers. He has found the wheels of justice to be slow, and seldom satisfying. Indeed, the problem involves various civil and criminal agencies at local, state and federal level—in at least two sovereign nations. Antoinette Matlins emphasizes major media coverage to expose the scheme before more consumers get hooked. And she encourages AGA members in all regions of the country to assist with the collection of evidence and documentation. CNN's "Daywatch" interviewed both Matlins and Beesley in January, and

continued on page 6

Gem Scams: Public Warning

continued from page 5

followed them to 47th Street to investigate gem scam evidence: false gem certificates sold with sealed stones.

In late December and early January, over 23 million radio listeners heard Paul Harvey quote Matlins in his crime news story "Phonies on the Phone." "There's big money in small jewels-but not for you" Harvey said, adding that real gem investors are too sophisticated for the telemarketing pitch. But every day, ordinary people find it "hard to hang up" when told that a few hundred dollars can reap huge profits. Harvey described the "lure" of glossy pamphlets, out-of-context quotes from prestigious publications, and "documents designed to project an image of authenticity and reliability." The bait is secured with one or two seemingly successful deals, which sink consumers in an ongoing scam of more gem purchases for resale. Then, the gem broker/con artist disappears-with the profits. After these broadcasts about Canadian/US gem telemarketing schemes, Harvey and Matlins received an enormous volume of mail. Most were grateful letters from individuals taken in by slick telemarketers. Since that time, Matlins has personally corresponded with each victim, letting them know that she has forwarded their complaint to the FTC. She also has made note of the gem brokerages and "certifying labs" involved: many schemes used Toronto and New York mail drops, along with US "labs" for credibility. CNBC's "Steals and Deals" program gave 80-plus Toronto dealers its Golden Lemon Award for "the worst rip-off of the month." And Matlins has written letters to major news media such as CBS about the millions of consumer losses to gem "investment" schemes, creating more opportunities for media exposure. Copies of sample letters and the complete Paul Harvey broadcast transcript, along with many news clippings and press releases, will be available at the AGA Tucson Conference session "The Canadian Connection" (Friday, Feb. 5, 9:30 am).

Spread the word

Get the facts. A full resource file is

very important. Obtain as much information as possible on the subject before going public. Numerous articles have been published in National Jeweler, JC-K and other trade press. In addition, the AGA has focused on the problem and issued reports to membership, including Matlin's brokerage complaint list. Your resource list should include prominent consumer advocates such as Beesley and Matlins, US and Canadian agencies investigating gem or telemarketing fraud, and consumer and trade organizations concerned with the problem. Your clippings file should include every story you can lay your hands on. These resources will help you in writing informative and accurate press releases, and will provide a wealth of research material to local press. Referring to published articles and credible agencies will give your press contacts adequate leads and give you good backup. Without giving legal advice, it's easy to recommend that you quote published sources and avoid specific accusations of fraud you aren't both able and willing to prove.

Contact the news media. The news media are always looking for a good story. Include in your press release list: area newspapers and periodicals, mineral and gem society publications, collector's club magazines, radio talk shows and TV stations. Plan your approach before you contact the media. Use strong key phrases and "hot" words to spark interest, both in your press releases and in your first interviews with the media. Make the story accessible and memorable.

Personally, I captured reporters' interest by calling for an appointment while adding a little suspense: "I have some inside information on an international, multi-million dollar scam I would prefer to disclose in person. When can we meet to discuss the details?" To date, these two sentences have opened the doors to a front page news article in one of my local newspapers, a ninety-minute guest appearance on a regional news talk radio station, a follow-up with the news station, and a five-minute spot on one of the local TV stations. If the reporter is still not interested, mention Paul Harvey... that will get the story run.

Radio/TV approach. A second technique is to write a letter to area radio and TV stations, with a trial Public

Service Announcement script attached. B. Young McQueen used an approach like the following letter and script. You might consider something like this for your area, adding mention of the successful Paul Harvey story or enclosing clippings to emphasize the victims' position.

Sample letter

Dear (Name of Station Manager),

I received approval for the attached copy from our International President. We would like to use your station for a trial Public Service Announcement, then expand nationwide.

Your comments would be very much appreciated. Please give us your comments on the script copy, and on any revisions needed to communicate better or to fall within your station's guidelines.

Our purpose is to prevent consumers from being "ripped off" by these fast buck operations. This is one way we, as a non-profit educational Association, fulfill our obligation to the public.

On behalf of the Accredited Gemologists Association, we thank you for your consideration.

Sincerely,

Accredited Gemologists Association

(Your name and designations)

Script for Radio /TV

Every day people send hundreds, even thousands of dollars to a voice on the telephone. They will receive gems in pretty packages... with misleading or inflated appraisals.

The telephone voice says, "Invest in rare gems." But the stones are of common quality, worth only a fraction of their cost. Purchased sight unseen.

If someone pressures you on the phone, think twice. Think second opinion.

Then call your local professional gemologist.

Find out more about gems and jewelry. Think twice, and buy right.

A message from this station and the Accredited Gemologists Association.

Gem Scams: The Canadian Connection

continued from page 1

sealed stones accompanied by a "grading certificate." According to Canadian Jeweller, confidence is established through "an authentic-looking grading report, usually from Gem Information Laboratories, in Miami, FL, and a disclaimer that warns against the breaking" of package seals. "That's the whole fraud of this scheme," says Rob McInnes of Jewellers Vigilance Canada. "When the consumer gets the item and the grading certificate, he assumes that it is authentic and so is afraid to break the seal" (Canadian Jeweller, June 1992). When the consumer tries to sell his stones, he discovers that the operators suddenly are unavailable for the promised highly profitable resale. Trying his luck with legitimate dealers, the victim learns that his topazes, emeralds, rubies and sapphires are of low quality; rarely will he be able to recover enough money through selling his stones to cover appraisal and carrying costs.

Fully 95 per cent of victims are residents of the US; the rest are Canadian or European. Most victims are people who had previously purchased

gemstones as investments, and whose names were on closely-held lists now used to exploit their hope of recovery, since fine gem values have reportedly risen. Many are professionals, attempting to capture appreciation without taxation. Others are middle-class workers or retirees, who have taken second mortgages or deep debt to purchase gemstone nest-eggs for their futures-and their families'. Although Canadian police have sufficient evidence to make charges of fraud, unwillingness on the part of victims to face court proceedings in Toronto makes prosecution difficult.

Arrests are beginning, however. Kenneth Livingston of Atlantic & Pacific Trading was arrested on 12 charges of fraud over \$1000, and two counts of attempted fraud. Mr. Livingston, who had worked under a variety of aliases, was formerly with Brunswick Trading. His victims were selected from a list of known gemstone holders, whose resistance was overcome by telling them that a foreign buyer for their long-held portfolio of gems had been located. However, that buyer was nervous about

being burned by scams, so everything had to proceed according to the broker's careful plan. His scheme was very elaborately staged: 5% up-front seller's commission to arrange brokerage; the buyer's purchase payment check made out to the seller's name (necessitating pre-payment of buyer's commission to broker, up-front by the seller, in order to release the check); and pre-payments supposedly for excise tax at Customs. In two months, Livingston had garnered more than \$92,000, with pending deals worth \$58,000.

"I would be very surprised if, over the course of the next six months, we do not see further arrests by several different authorities" notes Mr. Rob McInnes of JVC (The Watchdog, Official Journal of Jewellers Vigilance Canada Inc, October 1992). He states that an information gathering network has developed which allows consumer complaints to US agencies to be channeled more quickly to proper authorities in Canada. And time is of the essence in apprehending these swindlers before they move on. AGA members have heard the appeal before: please make note of any gem scam information you may encounter, and speed it on to the proper authorities.

Recent History of AGA & "Gem Scams"

continued from page 1

whom consumer complaints have been filed, and assists victims with recovery.

Jan-Mar 92

Antoinette Matlins, AGA member and well-known author, takes her consumer advocacy on the air: Paul Harvey's Dec-Jan nationally syndicated show, "Phonies on the Phone." Beesley & Matlins appear with CNN news team, investigating consumer loss from gem investment schemes in NY.

April 92

AGA's Certified Gem Laboratory Program offers member labs Matlin's list of gem brokers against whom complaints have been filed, for their use in assisting clients with filing

complaints. More information solicited from member labs.

June 92

AGA-CGL program sends all AGA members an updated list of gem brokers against whom consumer complaints have been filed, and laboratories whose gem reports were used to promote goods of questionable quality and worth. Authorities investigating consumer fraud are listed. Notification to the trade of the potential extent of the problem results in uneasiness, threatening phone calls, and disavowals of involvement from some. Raising consciousness raises protest.

Aug 92

AGA-CGL program sends all AGA members a letter explaining the risk to

legitimate dealers, appraisers and gem labs from misleading gem sales schemes. Lab program members are sent an opinion poll about establishing an AGA policy regarding the appropriate use of gem reports. Both communiques contain updates to the complaint list, and ask for help in establishing the extent of the gem scam problem around the country.

Sept 92

Lab Opinion Poll results received. AGA members make use of the complaint list to inform consumers of fraud risk in doing business with high-pressure telemarketers, and to assist in filing complaints with proper authorities.

Questions of Ethics & Liability: Lab Reports Used by Scam Operators

continued from page 8

limiting conditions. A few take such care with conditions of use and "tamper-resistant" documents that they believe "it would be very hard to misuse our reports."

But many also expressed the difficulty of determining whether reports issued had ever been, in fact, misused. Several noted that they could be certain of abuse only if a consumer showed them an altered report, or one which had been used to misrepresent stones offered through "investment" schemes. The most important factor in determining that misuse of reports had indeed occurred seemed to be "feedback"—contact by a fellow professional about the report's use to mislead a consumer. This response supports the Lab Committee's decision to provoke discussion about report ethics and liability, and to make Matlin's brokerage complaint list available to AGA members. Only through professional feedback will we be able to detect actual abuse of gem laboratory reports. And our dialogue about report abuse, limiting conditions, stated purposes and intake procedure should lead to a better understanding of the difficulties involved when issuing reports of gem identity and quality. By measuring our agreement, experience and reasoning against the extent of the document abuse problem, we can devise a policy to clarify report writing. We have the opportunity to fulfill AGA's mission by advancing professional standards.

Poll Results

In a question-and-comment poll of our member labs, 21 responses were received. There was unanimous agreement that AGA should provide a policy addressing misuse of gem reports—not only for member labs, but for all members. One respondent added that perhaps a general AGA policy would be "modified", implying that the ethical burden on CGL's is greater than on AGA

general members. All but one felt any ultimate AGA policy regarding report misuse should be enforceable through Ethics and Grievances; this lab was concerned about the degree of "infraction" which would invoke E&G process. There was very strong agreement that warranties contingent upon sealed packages (which effectively limits further examination and opinion) is a bad idea—a "sound business practice only for scam people." To clarify comments on this subject: it is not plastic packages per se that constitute a problem (after all, many use File-a-Gem or lucite for shipping and storage). Warranties contingent upon the buyer's forfeit of inspection rights is the problem. Member labs were unanimous in agreement that allowing clients independent second opinions of identity and/or quality is a sound business practice. The annoying "invalid" second opinion (lack of professional credentials) and "low ball competition game" were mentioned as occasional costs of playing fair.

Examining Sealed Gems

Two difficult questions with extended conditions—both about gems sealed in packages—were asked. A significant minority (4 out of 21) found the questions to be too complicated for a simplistic answer. However, 18 of 21 still agreed in principle. When asked about breaking a package seal, thereby voiding an existing warranty (without the warranty holder's permission), most would not. And when asked about offering second opinions of gems while leaving them encased in plastic—rather than breaking the seal—and without spelling out the conditions limiting examination, most would not. In both these complicated questions, respondents thought the "appropriate limiting conditions are key." In the case of breaking a package seal for gem examination, one asked clarification of just who actually holds the express or implied grant of warranty, and conse-

quently has the right to give permission for breaking a seal. One member specified that the gem should be examined and "identified" (eg, by inclusion feature) while in plastic, and with a witness; only then should the gem be removed from the packaging for further gemological examination. In the case of examining a gemstone which remains encased in plastic, one lab stated that this method of offering a second opinion is a sound practice only "if qualified by clear limiting conditions." Another lab responded "Honest gemstone reports don't usually make any representation of warranty. Tamper-proof packages are intended to prevent independent examination. Our CGL's should not issue reports with stated warranties, or guarantee any warranties implied or offered by the seller. Plastic packages should be considered an ethical violation."

Both these scenarios—breaking a seal to examine, or examination while leaving packaging intact—require further discussion. While it might seem obvious that "honest" labs should not themselves issue identity or quality warranties contingent on sealed gem packages, it is less obvious just what the ethical gemologist is to do when confronted with existing sealed packages and warranty warnings. Should one void a printed warranty in order to perform adequate analysis? On whose authority? Should one offer an opinion on stones where the examination is grossly hindered by a lucite enclosure? Would any such opinion of identity or quality be practically worthless? Precisely how does a given plastic enclosure affect optical examination? What limiting conditions statement is adequate? These questions need discussion and consensus, especially as more "gem scam" material is brought in for laboratory examination and professional second opinions. Cap Beesley, Chair of Standards & Disclosure, along with Leo Schmied, AGA Secretary and CGL Committee member, have been developing recommended procedures for intake, handling, documentation and reporting of encased gems, and those with associated warranties. (See article this issue).

continued on page 11

AGA Code of Ethics

I. Professional Conduct

- A. The gemologist holds a position of trust with the client by virtue of specialized training, professional knowledge, and the ability to advise; members must recognize and respect their fiduciary responsibility to the client as well as to potential third parties.
- B. Members may give considered opinions only; it is unprofessional and unethical to render "off-hand" opinions without full regard for the critical importance of careful inspection, analysis and evaluation.
- C. Independent professional gemological opinions should be free of self-interest and bias. Members who have present or future contemplated financial interest in the articles examined, or the conclusions reached, must disclose the nature and extent of that interest. Full disclosure of pertinent facts is mandatory.
- D. Members may not accept assignments contingent upon pre-determined results, or requiring deviation from norms of professional practice which would render distorted or prejudicial conclusions. Members act as professional agents of clients, not as their advocates.
- E. It is unethical to charge a percentage of value when rendering any type of gemological report that includes determination of value.
- F. Professional consultations and client records are confidential in nature. Disclosures of confidential material may be made only with the approval of parties concerned, or as so directed by a court of law.
- G. In acting professionally either as a material or as an expert witness in a

court of law, it is unethical to suppress any facts, data or opinions in order intentionally to bias or prejudice any finder of fact.

- H. It is unethical to misrepresent professional qualifications or affiliations, or to present them in a form which clearly implies a reasonable but erroneous interpretation. General membership in AGA is a professional association affiliation, not a professional designation. Members must separately apply for, and meet the requirements of, designations offered by AGA.
- I. Any deceptive advertising, use of misleading or inaccurate claims, or unfounded warranties or other promises which are detrimental to public confidence in gemology are unethical practices.
- J. It is unethical to make false and defamatory statements regarding a fellow professional.
- K. All work products created for AGA purposes, or using AGA funds, shall carry copyrights shared by the individual creator and the AGA. Copyright protections will be respected.

II. Standards of Professional Practice

- A. Members must make every effort to be well versed in gemological science and technology, and to keep current with new professional developments.
- B. Gem identification reports must be based on gemological testing sufficient to establish correct results. In identification and evaluation, any limiting conditions which might affect results must be disclosed.
- C. Standardized color and clarity

grading nomenclature must be used in written reports. Any widely recognized gem grading system may be used, but the report must indicate which system has been used.

- D. When encountering a gem with which the gemologist is not familiar and gemologically proficient, a member may give counsel or make written reports only after consultation with a party competent to assess and evaluate the subject gem.
- E. Gemstone enhancement disclosure should follow the guidelines published in the fifth edition (July 1990) of the Gemstone Enhancement Manual. However, it is within the stated purpose of AGA that standards of this type be advanced and refined. When disclosing enhancement to members of the general public, descriptive language - not codes - should be used.
- F. Written reports require the date, signature, the printed name and professional credential, and address of the examining gemologist; a copy of the report is to be retained as a permanent record.
- G. Members may not serve more than one party with respect to the same written report, unless all parties give their prior consent.
- H. Written reports express professional opinions which are free from bias. Financial interest in an article or conclusion must be disclosed; business relationship or affiliation with parties to a transaction must be disclosed; contemplated future financial interest must be disclosed.
- I. AGA logos, and the AGA-Certified Gemological Laboratory and AGA-Certified Master Gemologist designations, may not be graphically dis-

continued on page 11

AGA Code of Ethics

continued from page 10

played or affixed to a written report purporting to be an independent grading report or certificate, or an appraisal, unless the gemologist so designated includes a written statement of financial disinterest, and is the examining gemologist of record.

J. Each member, whose gemological report is to be incorporated into a written appraisal for the public, is encouraged to seek adequate education in appraisal principles and methodology. It is an unethical practice to disregard federal and state regulations which apply to specific types of appraisal reports.

K. Members subscribe to the standards presented before the Federal Trade Commission by the Jewelers Vigilance Committee, published April 1986 as Guides for the Jewelry Industry. However, it is within the stated purpose of AGA that standards of this type be advanced and refined.

III. Grievances

A. Any member who is aware of the unethical professional conduct of another member has an obligation to report the matter to the Ethics & Grievance Committee. It is a breach of obligation to refrain from advising AGA when aware of non-compliance with our published Code of Ethics, either by members or by candidate members.

B. Any member filing a formal complaint with the Ethics & Grievance Committee must do so in a timely manner. Thereafter, all members shall be bound by the established grievance procedures.

C. Results of formal grievance proceedings may range from censure to complete revocation of membership and designations, with loss of all member benefits and rights.

Questions of Ethics & Liability: Lab Reports Used by Scam Operators

continued from page 9

Limiting Liability

Almost everyone agreed that a report document should be made reasonably tamper-proof (20 of 21), and that reports should include specific conditions which limit their appropriate uses (19 of 21). The ASA and ISA codes of ethics were mentioned in regard to limiting conditions, while one member cautioned that disclaimers should be kept to a minimum. Another member lab wanted to know more about how a report document could be made "reasonably tamper-proof." There was unanimous and sometimes emphatic agreement that an AGA-CGL should not issue reports to clients who are known to have misused reports. Formal notification of the termination of business relations with any individual or group considered to be misusing gem reports was considered a sound idea (20 of 21). However, several were concerned also with the "legal complications" and "kind of notification." One suggested that it was easier to just drop that work, rather than become involved in "legal consequences," while another pointed out that notification was both ethical and gave further protection to the gem lab should questions later arise about complicity in the use of reports to mislead or defraud. Noteworthy class action litigation is underway in San Francisco: the litigants are attempting to hold service companies (banks, telephone companies, etc) liable in connection with their regular customers' fraudulent activities. This is just the sort of risk a gem laboratory encounters should their reports be misused on an ongoing basis. Notifying authorities or industry watchdog groups should an AGA-CGL know of gem report misuse leading to consumer damages

was another issue the poll explored. 19 of 21 labs favored notifying authorities, while the other two were uncommitted. One member lab stressed that notifying legal authorities and industry groups is a "very complicated ethical consideration." Our international member lab, whose experience involves several actions at law, would notify any industry group, legal authority, or document-abusing customer only pursuant to obtaining legal advice.

Doing Something About It!

Finally, there was broad agreement that the Lab Program should offer a round table discussion regarding how the newly revised AGA Code of Ethics affects gem report writing. One lab member wanted more than just discussion. "What is ever resolved by a round table discussion? Something should come out of it...." That something needs to be consensus adequate to establishing a report policy which protects consumer, professional client and legitimate gem labs alike. The AGA Code of Ethics is a start.

But we're going further in our search for solutions to the gem scam problem, and for gem report standards. Please join us Friday morning, February 5 at the Doubletree in Tucson. AGA's Lab Program will be sponsoring a panel discussion, "The Canadian Connection," featuring Rob McInnes of the Jewelers Vigilance Canada, Cap Beesley of American Gem Laboratories, author Antoinette Matlins, and gemology ethics activist Leo Schmied. I'll be your host-see you there!

The AGA Tucson '93 Schedule

**American Gemologists Association
Conference and the Certified Master
Gemologist Program**

Conference Theme & Title:

**A Century in Gemology:
From Eye to Machine**

Conference Dates:

**Thursday, Feb 2 -
Friday, Feb 3, 1993**

Conference Location:

Doubletree Hotel, Tucson

Attendees registered for the AGA-Certified Master Gemologist program may receive educational credits for program sessions, applicable to CMG designation, continuing education requirements.

Thursday, Feb 2

8:00 am
Registration & Coffee

9:30-10:30
Session 1: Lecture Presentation
"Classical Materials in
Contemporary Jewelry:
Gemology on the Move"

10:45-11:45 am
Session 2: Lecture Presentation
"Treating Enhancements"
C. R. "Cap" Beesley, GG

12:00-2:00 pm
Lunch Event
Speaker: AGA Honored Guest
Frederick H. Pough, PhD,
"A Life in Gemology"

2:00-3:00 pm
Session 3: Lecture Presentation

"Gemstone Origins:
Determination Principles"
C. R. "Cap" Beesley, GG
2:30-5:00
Session 4: Lecture Presentation
"Practical Principles of Gemology:
Using Scientific Theory in the Field"
W. William Hanneman, PhD,

Evening Events & Meetings

6:30-7:30
Gem Showcase:
Pearls, with James Seaman, GG

7:30-8:30
AGA General Membership Meeting.
Agenda: Leo Schmied,

8:30-9:30
CMG (Certified Master Gemologist)
Study Group

Wednesday, Feb 3

8:00-8:30 am
Registration & Coffee

8:30-10:30
Session 5: Lecture Presentation
"Back to Basics: Gemology &
The Eye"
Alan Hodgkinson, FGA

10:45-12 noon
Session 6: Lecture Presentation
"Practical Gemology: A Wholistic
View of Laboratory Techniques"
Alan Hodgkinson, FGA

12 noon-1:00 pm
Lunch Event: An Entertaining
Surprise

1:00-2:15
Session 7: Lecture Presentation
"Advanced Laboratory
Instrumentation:
An Overview of Current
Materials Technology"
Elizabeth Chain, PhD

2:30-3:45
Session 8: Panel Presentation,
Reports & Grading Workshop
"A Review of Diamond Grading
Issues: AGA Investigates"

4:00-5:00
Session 9: Question & Answer
"The Certified Master Gemologist
Program & Designation"
Larry Phillips, G.G., A.S.A., I.S.A.

Evening Events & Meetings

7:00-8:30
Technology Showcase &
Cocktail Social,
Sponsored by:
Gem Technology Systems
"Innovative Technology in
Gemstone Grading: An Introduction
to GTS"
Kevin Valente & Raymond Bigelow

Thursday, Feb 4

AM Session:
AGA-Certified Master Gemologist
Program

8-12 noon
Session 10: AGA-CMG Advanced
Gemology Challenge
Attendance is by registration only,
and requires application to the CMG
Program.

Evening Event
AGA Dinner & Dance:

7:00 pm Event:
Cocktail Reception for Conferees,
Speakers, Members & Guests

8:00 pm AGA Dinner Seating
Honoree, Frederick H. Pough, PhD
Lifetime Achievement Award

Friday, Feb 5

AM Session:

Gem Scams: What's Being Done?

9:30-11:30

Session 11: Panel Presentation & Discussion

"The Canadian Connection: Solutions to the Gem Scam Problem & The Search for Gem Report Standards"

Panel Members:

Mr. Rob McInnes, Executive Director, Jewellers' Vigilance Canada C. R. "Cap" Beesley, President, American Gemological Laboratory
Antoinette Matlins, Author and Lecturer
Leo J. Schmied, Secretary, AGA
Anne Hawken, Chair, AGA-Certified Gem Laboratory Committee

End of formal AGA Conference presentations at the Doubletree-

Tucson Convention Center

9-11 am

TCC Ballroom: Free
AGA/JCK Panel: Making Your Computer Work for You

11-6 pm

Tucson Convention Center
Ballroom: Free
Software Showcase
Jewelry software exhibits

2-3 pm

Coconino Rm #3: Free
AGA: Richard Homer, Concave Facets: An Innovation in Cutting

3-4 pm

Coconino Rm #3: Free
AGA: Richard Homer, Weight Estimation

Saturday, Feb 6

9-10 am

Gila Rm #4: Free
AGA: Richard Homer, Concave Facets: An Innovation in Cutting

9-11 am

TCC Ballroom: Free
AGA/JCK: Publishing Your Own Newsletter

10-5

TCC, room to be announced
AGA-Certified Gem Laboratory Program: Color Discrimination Testing
(administered by ophthalmological nurse) \$45.00
Half-hour intervals, by appointment.
Sign up at AGA information booth, or at testing room.

10-11 am

Gila Rm #4: Free
AGA: Richard Homer, Weight Estimation

11-6 pm

TCC Ballroom: Free
Software Showcase: Jewelry software exhibits

2-4 pm

TCC Ballroom: Free
AGA/JCK: Publishing Your Own Newsletter

3:30-5 pm

Coconino Rm #3: Free
AGA: Paul Downing, PhD
Opal Evaluation

Tuesday, Feb 9

9:30-11 am

Coconino Rm #3: Free
AGA: Paul Downing, PhD
In Celebration of Opal

2-3 pm

Coconino Rm #3: Free
AGA/EGI: Tom Tashey & Gary Roskin
European Gemological Laboratory
Grade SI-3

Dr. Frederick H. Pough Honored

The Accredited Gemologists Association and Lapidary Journal will proudly honor Dr. Frederick H. Pough at the 1993 Tucson Gem and Mineral Show. Dr. Pough's dynamic scholarly research and insights have made major contributions to the field of gemology. His classic book and prolific writing in Lapidary Journal have educated and inspired millions of readers throughout the world.

Presentation of this honor will take place at the AGA Annual Dinner Dance and Awards Ceremony. The featured presenter will be Merle White, Editor-In-Chief of the Lapidary Journal. The award will be presented at 7:00 PM, Thursday, February 4, 1993 at the Doubletree Hotel, Tucson, AZ.

To reserve your place at this event call Courtney Balzan at 800-874-2029. The Dinner/Dance cover charge is \$45.

Accredited Gemologist Association Certified Master Gemologist Program

by Larry Phillips, GG, ASA, ISA



The CMG program got off to a terrific start in 1992. The 1993 program augurs to be even better. The program has been revised procedurally and stands now as the consensus and creation of virtually every officer, committee chair and Regional governor in AGA. Those of you who participated last year will receive full credit for your efforts, and we should be able to award some designations immediately after the meeting of the AGA Board and the CMG Committee in Tucson.

The purposes of the Certified Master Gemologist designation and program are:

- To recognize and certify advanced gemological knowledge.
 - To promote and recognize outstanding individual contributions to gemological knowledge and professionalism.
-
- All educational offerings will include at least an outline. Whenever possible, bibliographies, textbooks, visual aides, and any other materials necessary to aid in recalling the information or utilizing the techniques presented will be supplied. The CMG title deals only with pure gemology appraisal issues are left to others.
 - Seminars will be offered regionally as well as in Tucson.
 - The AGA CMG exam can be taken in Tucson or by correspondence.

The following six qualification requirements must be met by the candidate (in any order):

- 1) The candidate must have a G.G., F.G.A., or equivalent diploma.
- 2) The candidate must demonstrate ownership or access to sufficient gemological equipment for the special areas of study in which they are involved, or for general identification purposes if engaged in a more general practice. A list of equipment will be submitted to the CMG board for approval, with the individuals areas of particular expertise or interest considered. Ownership of a Certified Gem Laboratory is not mandatory, but such ownership is certainly sufficient.
- 3) The candidate must own or have access to sufficient gemological reference texts for the special areas of study in which they are involved, or for general identification purposes if engaged in a more general practice. A bibliography will be submitted as a part of the CMG final application. The process will be the same as above.
- 4) The candidate must take the Munsell/Farnsworth vision test. Normal vision is not necessary, but any deficiencies should be known. The test may be administered by AGA or any other group, but must be given by a qualified optical professional, not by an untrained tester.
- 5) The candidate must complete the AGA Advanced Gemological Seminar and Exam.

This seminar and exam covers:

- unusual gem materials
- detection of treatments
- detection of sophisticated synthetics
- determining country of origin

- deductive reasoning and scientific method
- diamond clarity and color grading
- colored stone grading and elementary color theory
- advanced gemological techniques
- elementary crystallography
- decurrent sources and production of major gemstones

All information necessary to pass the exam will be supplied at the CMG seminars on Tuesday and Wednesday, February 2-3, 1993

- 6) The candidate must demonstrate ongoing educational or research efforts outside of AGA and/or individual contributions to gemological knowledge and professionalism. This is designed to be an extremely **flexible requirement** that the candidates can meet through efforts that reflect their own individual talents and interests. A total of 100 points must be earned through any combination of the following activities. Points would be awarded for activities completed within the five years prior to certification. The CMG Board will set the number of points awarded for each activity. Points will be awarded according to difficulty, content, and contribution to the gemological community.

The candidate would complete one or more of the following:

- Completion of a Personal Contribution Project. A major research or professional Contribution designed by the candidate.
- Completion of college level courses relating to gemology (Geology, Optical Mineralogy or Physics courses for example).
- Completion of Gemological courses offered by GIA and its compeer societies, schools and associations.

continued on page 15

CMG...

continued from page 14

- Attendance at courses and seminars offered by AGA and other gemological organizations relating to gemology.
- Publication of gemological articles in the trade press or gemological textbooks.
- Participation as a gemological instructor for a recognized course or seminar offered by any recognized gemological group (speeches to lay persons excluded).
- Service as an AGA committee chair, executive officer, or regional governor or service on an AGA committee.
- Fulfillment of certain, suggested, pre-defined tasks set by the CMG

E&R Board. These tasks would demonstrate advanced abilities or knowledge in certain areas. For example, the student might submit a microphotographic study of the gem species of their choice, a study of advanced instrumentation not available to most gemologists, or a paper discussing fifteen causes of color in gemstones. These tasks would be recommended in advance or approved upon submission to the CMG E&R Board.

You can pick and choose from the above activities. You would be required to allow AGA reasonable use of any materials or information produced through completion of approved projects or tasks, including dissemination to the AGA membership.

The CMG is not intended as a diploma, but rather as evidence of ongoing involvement in and contribution to the gemological profession. Recertification will be required every five years. The CMG titleholder will either audit the advanced course and take an update test, or submit activities earning an additional 100 points to the CMG Board. Upon acceptance, a dated recertification certificate will be awarded.

I hope that many of you will decide to take the challenge. In this day and age of fast moving technology and increasing emphasis on commercialism over scientific methods and accuracy, the need for advanced studies and competencies grows daily. Help AGA to fulfill that need and become one of the recognized top gemological professionals.

Suggested Name Change: TSOISITE (alias Zoisite)

[Reprinted from The South African Gemmologist, Gemmological Association of South Africa, Ian C. C. Campbell, FGA, Editor]

A letter from Dr. E. Gubelin, C.G., F.G.A. addressed to Ian C. C. Campbell the following is the main text of a letter received in February 1992. It is dated 12th February 1992. Anyone wishing to respond to this suggestion please contact the editor of this Journal (c/o P.O. Box 1354, Randburg 2125 RSA) or Dr. Gubelin direct (Residence, Suite 436, "Ratna Mahal", Haldenstrasse 4, CH-6006 Lucerne, Switzerland).

"From the following purport of this letter you may derive that I am slowly returning to gemmological matters. I have been following by reading articles and discussing the topic with colleagues that there seems to prevail great uncertainty about what the new green transparent variety of zoisite should be called so that the new name will be accepted by gemmologists, mineralogists and the trade as well. Some people call

it correctly green zoisite, others call it green tanzanite, and against others call it chromian tanzanite, Dr. Barot even suggested the ugly name gubinite which I definitely despise.

Upon thorough reflection I have come to the conclusion that all the suggested names-green tanzanite, chrome tanzanite and gubinite-are wrong and should definitely be abolished. The family name for the new mineral is zoisite, of which tanzanite is merely the name of the blue variety. In other words, tanzanite refers to the blue variety of zoisite. To be gemmologically, mineralogically and scientifically correct the new green transparent variety must either be called green zoisite or be given an entirely new variety name. It must be considered that blue and green are not the only varieties of the mineral species zoisite. If we gave extra names to each colour variety, it would become extremely complicated. Therefore, it would be most feasible, practical and logical to use the species name zoisite with the colour prefix.

I know that the mineral name zoisite

was despised in English speaking countries, especially in America, because it sounds so similar to suicide. Therefore, I suggest that in English zoisite be in future writing with "ts" instead of a "z" (compare as an example in German Zar with the English Tsar). The tsoisite would be pronounced in the same way in English as in German and no confusion with suicide would be possible. It would not be the only case where the English written gem name is spelt differently from that in other languages (e.g., garnet, emerald, etc.).

To summarize I wish to suggest (and I shall make this suggestion to other gemological associations and magazines) that the new green transparent variety of zoisite be in future called green tsoisite, and all colour varieties as tsoisite with the colour prefix except of course, for the blue variety, tanzanite. I should be grateful to you if you would kindly include these paragraphs of the present letter in the next issue of your magazine."

-Reprinted Verbatim-

The Nearly Extinct Shipley (American Gem Society) Diamond Colorimeter: Some Current Results and Observations

by Martin D. Haske, MS, GG, ISA

This report and findings are the personal observations of the author, are not sanctioned or endorsed by the American Gem Society, the Gemological Institute of America or the Accredited Gemologists Association. This report is published solely for the exchange and stimulation of ideas. The author wishes to thank Mr. Phil Minsky for allowing me the opportunity to both tinker with, become acquainted with, and make operational (although not necessarily calibrated), the Shipley Diamond Colorimeter; those unnamed at GIA who provided invaluable information as to the operation and technical aspects of the machine; the three AGS and one independent stores who so graciously let me test their stones.

BACKGROUND

The author was introduced to the Shipley Diamond Colorimeter, Serial #5, in pieces, in plastic bags, with no blueprints or schematics, but with a six page instruction manual. The yellow filter, and its associated glass plate, was separate from the body of the machine. The vintage 1956 Diamond Colorimeter is crude by today's standards, but a surprisingly simple and effective machine. It consists of four separate parts or circuits:

- 1) The power supply and light source
- 2) The optical path
- 3) The photometer circuit
- 4) The circular "slide rule"

The power supply and light source

The unit investigated (serial #5) came with a regulated 120VAC power supply, manufactured by Sola Electric (General Signal), labeled Mini/Micro Computer Regulator, output 120V 0.58 amps max, type 685H, catalog no 63-13-070, serial

#820FP. The output voltage was measured as 123.5VAC using a MICRONTA 22-194 digital multimeter. The power supply voltage was not monitored during the testing of the Master Stones and may or may not have fluctuated; but, as this was standard procedure in the days of the instruments' active use, the necessity for power supply monitoring was disregarded. The Colorimeter is plugged into the power supply, and through an on/off switch (no fancy electronics here) drives a type CBX projector lamp. The original bulb, a GE type CBX black top, blew out within 20 minutes of the instrument's turn on. The author has no information as to whether or not this is the correct bulb, other than it was in the machine. A replacement bulb, a Sylvania type CBX-CBS 75watt/120V Blue top, was obtained and used for this study. The author does not validate that this is an approved replacement for the OEM bulb, and-as we all know-lamp manufacturers seemed to have cinched in tungsten lamp technology such that we never seem to get a bulb to last as long as the older manufactured types do. This replacement bulb has a rated life of 50 hours. I do not know what the rated life of the original was. The author's previous technical experience dictated that the lamp be "burned in" for a period of 2 hours before any use was made of data obtained.

The optical path

The lamp has a series of four filaments which must be brought into alignment such that the focal point of the optical path concentrates enough energy to drive the photo cell to maximum output. The lamp is interposed between a reflector and a pair of condensing lenses. The light path exiting the condensing lenses impinges on one of two color filters: (1) a blue, or (2) a variable

density yellow combination filter. Reflecting 90 degrees via a silvered mirror, the light then passes through a second set of glass plates; one of these slide mounted diffuser plates is for calibration, and the other for measurement. The light exiting the calibration glass diffuser plate is restricted by an aperture approximately 0.126 inches in diameter, and impinges on the photocell. The light exiting the glass measurement diffuser plate ("test" slide) enters the table of the test specimen diamond, whose pavilion is covered with an aperture having a diameter of approximately 0.141 inches. This restricted measurement light impinges on the same photocell, when the slide is in the test position. The color filters were examined with a DISCAN spectroscope. The blue filter showed transmission from approximately 420 to 475 nm, while the yellow showed surprisingly wide band characteristics, approximately 495 to 670 nm. There were no noticeable transmission characteristic changes between the test and calibration glass plates, nor during the yellow filter density changes. (See Spring 1958 *Gems and Gemology*, reference 1). The yellow filter combination consists of a uniform yellow glass filter and a one way mirror; the mirror surface has variable concentration silvered spotting or "spattering", which results in variable total light transmission.

The photometer circuit

The photometer circuit consists of what appears to be a Selenium photocell. Actually, the photocell has an aluminum outer frame and a bakelite inner frame with a brass contact plate; these sandwich a photocell plate, requiring electrical contact on the outer rim and the reverse side to complete the

continued on page 17

circuit. This cell is connected to a cover actuated switch, in series with a 10000 ohm (coarse adjustment) potentiometer, a 500 ohm (fine adjustment) potentiometer, and a Weston meter to the other lead of the photocell. The meter has a 0 to 100 scale and would measure current through the circuit.

The circular slide rule

The slide rule-if you will-consists of a 4 inch diameter single circular (log base 10) interior rule labeled 10-100. A crudely formulated exterior scale, calibrated with a "set point" and 0 to X (Roman numeral 10) numbering, arcs across a portion of the perimeter. This outer scale does not appear to conform to a standard logarithmic spacing. Any confusion in relying on this scale can be alleviated by reading the scale explanation offered by Shipley in his 1958 G&G article. (The author first tried intuitive "reverse engineering analysis" to determine the scale's proper interpretation; it is his conclusion that he should have gone to the books first.) The circular slide rule is engraved "American Gem Society Color Grade."

COLORIMETER OPERATION

The instrument was cleaned and reassembled (engineering judgement applied, no guarantees, twiddling screws to obtain the "best" results), and the optical path recleaned, including wiping fingerprints from the bulb. The filaments were focused by moving the bulb base in two dimensions. Thorough cleaning and focusing of optical elements was necessary in order to get sufficient output from the photocell to peg the meter at 100. The new bulb was "burned in" for at least 2 hours. Instructions supplied with the machine stress that a warm up time be allowed before any readings be taken: 3 to 5 minutes are suggested, although the author saw drift in the readings even after 15 minutes. The procedure for operation is as follows:

1) Thoroughly clean the test stone and place it table down on the forward test slide (measurement diffuser plate). Place the larger diameter aperture over the pavilion of the test stone; this centers the specimen.

2) With the slide in the calibration position and the blue filter activated, use the coarse and fine adjustments to obtain a stable 100 reading on the meter.

3) Slowly push the slide in to obtain the "blue" reading. Let the machine stabilize at that reading for two to three minutes.

4) Slowly pull the slide out to verify a continued 100 reading for the "blue" calibration position. If the reading has drifted, use the fine adjustment to obtain a 100 reading and repeat steps 2 and 3. If the "blue" calibration reading is at 100, set the "blue reading obtained in step 3" on the interior scale of the circular slide rule, opposite the "set" point on the exterior scale. Do not touch either the coarse or fine adjustment potentiometers.

5) With the slide still in the calibration position, rotate the filter wheel clockwise toward the "yellow" marking to obtain a 100 reading on the meter. Do not go past 100, as the instructions state that you may corrupt the subsequent reading.

6) Slowly push the slide in to the test position and, after allowing time (2 to 3 minutes), obtain the "yellow" reading from the meter.

7) Position the pointer on the slide rule at the "yellow" reading, as indicated on the interior scale. The AGS colorimeter "Color Grade" reading is now found on the exterior scale.

While this procedure sounds simple, it can be frustrating due to drift of the machine, and the need for absolute cleanliness of the stone and optics. Now to the test results.

DATA

The data obtained by the author, with the exception of the anomalies cited below, appear to be markedly consistent with assigned AGS grades and/or the interpolated GIA grades. The author first assigned colorimeter grades based on direct interpolation of the colorimeter scale, but after having read Shipley's article (Reference 1, figure 4) went back to the yellow/blue ratio readings to

correct the interpolated colorimeter reading. The corrected readings are those reported and plotted in Figure 1, Colorimeter #5 Readings.

Figure 1 presents the author's results on the five master stone sets tested. According to sources, both at GIA and elsewhere, GIA/GTL currently assigns AGS readings to master stones based on visual interpolation against their GIA master stones, which had at one time been calibrated on a Shipley Diamond Colorimeter. The GIA/GTL does not presently use the Shipley Diamond Colorimeter to check any stones (Reference 3). It is not known at what date the current interpolation procedure was implemented at GIA. The author has no knowledge as to whether any of the master stones tested for this report had been subject to testing with a "properly calibrated" Shipley Diamond Colorimeter at any time in the past.

All stones tested were either GIA certified master stones and/or AGS graded master stones. With the exception of set #4693, the author's set, all master stone set numbers will remain confidential; these test results have been transmitted to the owners along with appropriate caveats and comments. In the case where AGS colorimeter readings were not assigned to the test stones previously, a "reference" AGS colorimeter reading was assigned based on the published correlations between the AGS and GIA color grading systems (Reference 4). Master stones previously assigned an AGS colorimeter reading by AGS/GIA used these correlations. It cannot be discerned whether the assigned AGS colorimeter readings on AGS master sets were the results of actual colorimeter readings or based on the current visual interpolation method. This fact must be taken into account when assessing the implications of the presented results.

Sources indicate that the GIA master stones have colorimeter spacings of 0.50

(Reference 5). It is also interesting to note that Shipley (Reference 1) conducted an experiment on the grading of one stone in which it appears that in visual gradings 36% varied by 0.5 color grade or more, whereas with the

continued on page 18

Colorimeter...

continued from page 17

Electronic Colorimeter only 2% (one sample) had this large an error (color grade here appears to refer to colorimeter grades, the test stone having a reference colorimeter reading of 2.2). The author can testify that the readings obtained from this machine were consistent and repeatable to within 0.2 on the colorimeter scale, after the stone had been properly cleaned.

Set 3 - was a mixed bag. It consisted of a six stone AGS master set, five of which were in AGS papers listing "Grade," interpreted as colorimeter grades of 0, 1.20, 2.50, 2.90, and 3.75, the sixth stone being in an AGS paper which specifically stated a "C/M Reading" of 1.90. This graded set contained two SI2 clarities and an I clarity, all of which graded higher on the colorimeter than their assigned AGS colorimeter reading. With the author's own experience in trying to put together a master stone set through GIA/GTL, and with current recommendations on master stone sets, I strongly believe that at

each use.) Table centered feathers and/or included crystals were present on another two stones; these data were retained, although the author believes that they might possibly be rejected as master stones.

THE FUTURE

The author is now in the process of reconditioning and testing three more AGS colorimeters. These colorimeters will be cross checked, minimally against master stone sets #2 and #5, and the results presented later. If any reader is in the possession of an "unusable" AGS colorimeter, please contact the author. We will try to put it in operational order, and accumulate some more data.

References

- 1) Shipley, Robert M., "Electronic Colorimeter for Diamonds," *Gems and Gemology*, Spring 1958.
- 2) "Operating and Maintenance Instructions American Gem Society Electronic Colorimeter," American Gem Society, (1956?).
- 3) Private conversations, GIA sources, 1992.
- 4) p. 27, *The AGS Way: Diamond Grading Standards Manual*, American Gem Society / Gemological Institute of America, 1991.
- 5) Private conversations, non GIA sources, 1992.

Author's Biography

Martin D. Haske is a new contributor to the AGA Lab Program's GemTech R&D Group, and has obtained AGA-Certified Gem Laboratory status. A Graduate Gemologist (GIA), he also holds a Pearls Certificate (GIA), and is a Designated Member of the International Society of Appraisers. Haske had been a hobbyist in the jewelry and lapidary arts for 25 years before undertaking his professional designations. Mr. Haske holds both Bachelors and Masters of Science Degrees from the Massachusetts Institute of Technology and has spent nearly thirty years in the design, development, test and analysis of precision electro-mechanical and electro-optical sensors for military applications. Mr. Haske is the author of the ADAMAS ADVANTAGE (C) 1992, sophisticated software created as an aid to gem identification and appraisal.

For More Information, Contact:

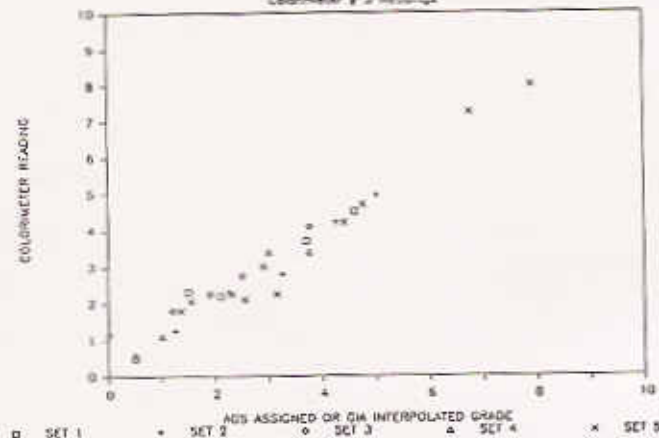
Martin Haske

320 Place Lane Woburn, MA 01801

(617) 935-5430

Figure 1

Colorimeter # 5 Readings



Ideal distribution would be along a straight line, at 45°.

This distribution shows slight variance from ideal, either in colorimeter readings or in original "grading."

Anomalies and Criticisms

Set 1 - Stone 2, from an AGS set assigned an AGS colorimeter reading of 1.5, consistently gave a reading of approximately 2.35 (mid H) on the colorimeter. This stone, when viewed through the pavilion, visibly appears to be consistent with the AGS assigned reading of 1.5 (G). This discrepancy is consistent with the anomaly discussed in Reference 1, although at a much lower colorimeter reading.

Set 2 - Stone 3 (GIA set 4693), assigned a GIA split grade J-K, equivalent to an AGS colorimeter 3.25, consistently gave a colorimeter reading of 2.8 (I-J). This is the reverse of the anomaly indicated in Reference 1, although at the exact same level.

least two of these stones would-or should be-rejected out of hand, due to optical occlusion through the table. One of these two included stones also was listed as having very slight pink fluorescence. The stone graded 0 on the paper is shown with a colorimeter reading of 1.15, but it is not clear whether the assigned grade was an AGS 0 or a Colorimeter grade 0.0.

Set 4 - stones were in GIA grading papers, without an assigned set number. They were graded as an E, F, J, and a K-L. The J stone consistently read 3.4 on the colorimeter, versus the 3.0 expected, again similar to the problem Shipley noted in reference 1. The K-L stone also read 3.4 versus an expected 3.75.

Set 5 - was a nine stone AGS set, vintage 1968, two stones of which were found to be inconsistent with the physical data and/or associated plotting information. These were eliminated from the presented results. (Case in point for laser engraving of master stones, and for careful checking after

A Comparative S.G. Test Medium: Sodium Polytungstate

By Ian C. C. Campbell F.G.A. ICSL, Randburg, RSA.
Introduction by Sharon Wakefield, G.G.

INTRODUCTION

"Currently, the use of heavy liquids is probably the most noxious activity of gemologists. Aside from health factors, these liquids are foul smelling and are light sensitive. They decompose into acidic and/or corrosive products, and they are not reclaimable. There ought to be a better approach - and there is. It utilizes a substance known as sodium polytungstate." from SODIUM POLYTUNGSTATE AS A GEMOLOGICAL TOOL, by W. William Hanneman, Ph.D.

Dr. Hanneman provided the AGA Certified Gem Laboratories committee with samples of sodium polytungstate ($3\text{Na}_2\text{WO}_4 \cdot 9\text{WO}_4 \cdot \text{H}_2\text{O}$) powder. A test specimen was forwarded to Mr. Ian Campbell, the international member of the CGL committee, for examination and test.

Mr. Campbell is Director of the Independent Coloured Stones Laboratory in South Africa and Editor of the South African Gemmologist. The following report summarizes Mr. Campbell's test program to ascertain the products usefulness as a heavy liquid for comparative specific gravity measurements.

In addition to an extensive analysis as a gemological test medium, Mr. Campbell also performed a rigorous X-Ray diffraction analysis on the powder to determine chemical composition, as there are different formulas cited in the literature for "sodium polytungstate". He concludes that these formulas "may be general ones given, but in fact are most likely rearranged compounds to suit the specific requirements of the developers." Please contact the author for additional information on this analysis.

To analyze the provided test specimen, solutions of varying concentrations

are prepared by mixing the powder with distilled water. The refractive index of the mixture is measured and can then be compared with a Density vs RI graph supplied by Dr. Hanneman with the product.

REPORT ON BEHALF OF THE ACCREDITED GEMOLOGISTS ASSOCIATION

SUBJECT:

Sodium polytungstate in solution as a heavy liquid for gemmological/mineralogical comparative specific gravity tests. Test products supplied: Dry powder in packet marked GL-150.

TEST RESULTS AND DISCUSSION

TEST: pH OF DIFFERENT SOLUTIONS.

A one gram sample of powder was put into solution (distilled H₂O) at a ratio of 1.00 gram per 7 ml. of water. A comparable concentration of virtually 140 grams/litre was thus achieved. The pH at this level of concentration was clinically assessed as 3.6. By comparison 7 is considered as neutral, and 1 strongly acidic. A proportion of 1 gram per 30 ml. of water gave virtually a neutral pH (i.e. 33.33 grams/litre).

A saturated solution (i.e. with precipitated crystals forming at the bottom of the liquid) turned litmus paper a reddish orange colour showing it to be relatively strongly acidic.

If RI's of a highly saturated solution are assessed on a standard lead glass refractometer, the drop of liquid should be wiped off immediately with a water dampened swab until completely clean without necessarily swamping the 'window' with water. The sodium

polytungstate liquid drop on the window should under no circumstances just be left - the acidity can harm the dense glass. Obviously neutralising the concentrate is the best course of action to take if on-going RI's are to be taken (this will not detract from the useful purpose of the liquid).

TEST: INCREASINGLY MIXED SATURATIONS VS. CORRESPONDING S.G. INDICATIONS

(All water used was distilled) RI's
ex Rayner Dialdex Refractometer:

STEP 1:

- 10.00 grams powder + 2.50 ml. H₂O
- (a) Measured RI: 1.555
- Comparative S.G.: Afghanistan Lapis Lazuli floated (2.80)
- (b) 24 hours later: RI: 1.558
- Rayner 2.85 indicator suspends in liquid.
- (c) 7 days later: RI: 1.560
- Rayner 2.85 indicator rises very slowly.

STEP 2:

- Same mix increased to represent 12.00 grams powder to 2.50 ml. H₂O
- Settling period awaited.
- RI: 1.580
- S.G. 3.02 - 3.03 range
- Pale green tourmaline 3.02 rose slowly and red tourmaline 3.03 sank slowly.

STEP 3:

- Mix per Step 2 above increased to represent 15 grams powder to 3.00 ml H₂O (i.e. 5 grams/ml). Settling period awaited.
- RI: 1.585
- S.G. fractionally over 3.11. Blue tourmaline 3.11 floats upwards extremely slowly.

continued on page 20

Polytungstate

continued from page 19

STEP 4:

Mix per Step 3 above increased to represent 16.50 grams/3.00 ml H₂O (i.e. 5.50 grams/ml). Settling period awaited. Saturated solution observed by presence of crystals of sodium polytungstate on bottom of bottle.

RI: 1.595

S.G. fractionally more than per Step 3. Blue tourmaline indicator 3.11 floats upwards slowly as opposed to extremely slowly.

NOTES ON ACCURACY OF ABOVE INDICATORS

A range of coloured tourmalines were used as indicators which were conveniently close to one another to give a useful gradation in relation to the top end of the S.G. range of the saturated sodium polytungstate liquid. Webster (Ref. 3) gives mean SGs for different colours of tourmaline as hereunder, however this writer computed corresponding actual SGs hydrostatically which are shown correspondingly - the latter are the indicators used for the tests performed in the absence of a large volume of liquid which could be tested by a Westphall balance and at the same time did not rely on relevant charted RI values (after Hanneman) to assess corresponding SGs.

S.G. OF TOURMALINE BY VARIETAL COLOUR:

Textbook Values after Webster	Computed values, Campbell (1992)	
Blue yellow 3.11	3.11	(Blue only, Mocambique)
Dark green 3.08	3.11	(Zimbabwe)
Black 3.15-3.20	3.08	(Zimbabwe)
Brown 3.06	3.08	(Khaki brown Zimbabwe)
Pink 3.03	3.04	(Mocambique)
Red 3.05	3.03	(Mocambique)
Pale green 3.05	3.02	(Namibia)
RANGE 3.20-3.03	3.11-3.02	

CAUTION: As can be seen, using reported mean S.G. values as opposed to

checked values in this context can lead to some inaccuracies. SGs of indicators should be positively checked first before such are used.

COMPARISON OF THESE S.G. TEST RESULTS, TO THE SODIUM POLYTUNGSTATE-WATER SOLUTIONS RI/SG GRAPH (AFTER W.W. HANNEMAN, 1990)

The results for Step 1 - 3 inclusive fit well into the graph after Hanneman (Appendix A); see co-ordinates A, B and C. An interesting variation was noted at the saturated end - the RI (1.595) increased disproportionately to the S.G. at maximum saturation, the latter of which varied only extremely slightly at least insofar as these tests showed (co-ordinate E). Then again, as shown by co-ordinate D, the RI was unexpectedly slightly lower, being 1.585. Perhaps this anomaly was due to ambient room temperatures (hence liquid) being meaningfully at variance over the test period - undertaken over about 10 days.

POTENTIAL FOR INCREASING LIQUID SODIUM POLYTUNGSTATE S.G. FROM 3.10 TO 4.20

It is on record (Ref. 4) that this liquid may be raised by extremely fine particles of tungsten carbide being

added to form a suspension liquid of up to 4.20. No other data is given. Obviously this additive would have to be of an extremely small micron range to be effective. This writer has not seen this alteration and cannot really comment further on it. The successful use of such a suspension would obviously depend on the stability of the suspension itself. Notwithstanding this, the extension of the S.G. to 4.20 is in itself extremely important and covers the corundum and upper garnet range more than adequately. This aspect is worth investigating further with the manufacturers of tungsten carbide as to the physical and chemical behaviour of this product in the conditions envisaged.

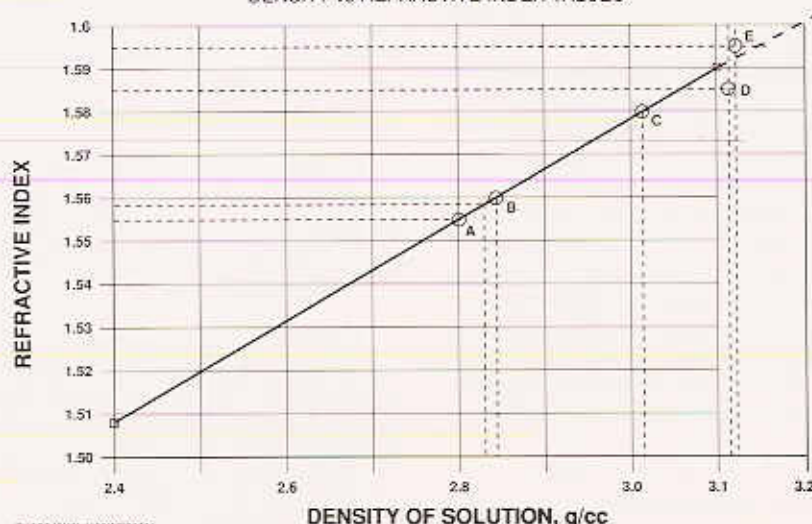
STABILITY OF SOLUTIONS

1. No discoloration evident provided distilled, or equivalent, water is used.
2. Coloration (milky) due to calcium - rich water does not affect the S.G. use of the liquid. (Reducing agents are also reported to result in a blue tint.)
3. Use as an immersion liquid can be impaired slightly if the liquid is milky - however, the precipitate can be eventually removed.
4. Very stable, particularly in saturated form. However, logically the bottle must be well capped. This is espe-

APPENDIX D

SODIUM POLYTUNGSTATE-WATER SOLUTIONS

DENSITY vs REFRACTIVE INDEX VALUES



©1990 W.W. HANNEMAN

continued on page 21

cially true of the intermediate unsaturated mix. Water is nowhere near as volatile as the likes of the conventional heavy liquids which it potentially takes the place of.

WHEN USED AS A HEAVY LIQUID FOR S.G. COMPARATIVE TESTS

Indicators (apart from RI/SG relationship):

The usual species can be used such as moonstone (+/- 2.57), albite feldspar (+/- 2.62), quartz (2.65), beryl (+/- 2.70), emerald (2.69 - 2.76 depending on locality), calcite (2.71), tourmaline range (3.02 - 3.11 depending on locality), and euclase (+/- 3.10). The correct thing to do is to hydrostatically check all indicators before use.

ESSENTIAL REQUIREMENTS:

A wide necked washing bottle to clean stones in between tests and when finished. This should hold an adequate amount of distilled water to effectively clean off everything including tweezers. The sodium polytungstate solution tenaciously adheres to stones, glass and tweezers if not cleaned off and can be of real nuisance value in this context. However, the water efficiently and quickly does the job.

USED AS A WETTING AGENT AND AS AN IMMERSION FLUID

Tests indicated that the solution does not make a good wetting agent and tends to roll off or "ball up" into globules on surfaces - a generally typical reaction with water based liquids. Yet, if mixed to the correct R.I. level, it can be successfully used as an immersion liquid. However, if the graph is looked at (Appendix A) it will be evident that the S.G. can become something of a nuisance value as well in this context - for example to mix a solution of RI 1.54 - 1.55, a density of between approximately 2.67 and 2.76 would be attained, resulting in the quartz floating and having to be held down by tweezers (as is the case of beryl/emerald in bromoform)! The same would apply in the case of mixing for the beryl group (RI 1.57 - 1.59). Subsequent cleaning is always essential because of the white

deposit left after evaporation - it doesn't just wipe off, it must be essentially washed off. If holding test specimens in tweezers is no problem, then this liquid can be useful without the usual subjection to the hazard of carcinogenic and mutagenetic organic liquids presently used.

CAUTION: POTENTIAL DAMAGE, IF ANY, IS YET TO BE INVESTIGATED IN RESPECT TO POROUS AND/OR SURFACE REACHING FRACTURED STONES

However, it is pertinent to discuss some of the obvious logical potential epigenetic changes that may take place in such material if immersed for purposes of internal examination. Liquids such as monobromonaphthalene, bromoform, and methylene iodide (diiodomethane) are more volatile than sodium polytungstate in solution - the residues left by the three conventional heavy liquids are not in the same context as the latter mentioned. When the sodium polytungstate water evaporates, there is a crystalline or possibly pseudo-crystalline residue left - it is this that can act in principle in the same way that other filling mediums do when used as fillers to mask surface reaching fractures in stones - notwithstanding eventual fully leached out residues after washing.

On the other hand, in the case of porous stones (e.g. opal, etc.) the potential deposits precipitated within the stone would depend on the subsequent resultant micron particle size of a residue possibly being drawn into the structure. Would there be a potential effect in respect of diaphanity after drying out has taken place? There are still, it seems, some unanswered questions. Perhaps suitable tests along these lines could be undertaken by other AGA members from a practical point of view over as wide a range of relevant material as possible.

TOXICITY

Adequate research has already been done by others on this subject. This writer can find no evidence of any kind that suggests this as being an unsafe chemical to use IF USED INTELLI-

GENTLY IN THE NORMAL SENSE OF THE WORD. As has been said, everything is toxic to a degree if overdone. Obviously one doesn't drink it, suck ones fingers to clean them (!) or leave it within reach of babies or young children, particularly in significant quantities.

COST FACTOR

From information held, direct U.S. prices of the powder appears to be \$15.00 per oz (i.e. \$15 per 28.35 grams avoirdupois, or nearly 50 cents/gr.). Information on cost factor in South Africa available from author.

ADVANTAGES

1. Non-toxic (the main benefit relating to health).
2. Refractive index range can be graduated from principally 1.51 to 1.59 simply by using distilled water.
3. Specific gravity range can be graduated from virtually 1.00 (pure water) through slightly higher values (for example to test amber), right through to 3.11 which covers the important species with the exception of the upper range garnets, diamonds and corundum, but this may be possibly extended by additives to 4.2.
4. Not as volatile as the conventional liquids presently used by gemmologists.
5. No odour.
6. Colourless liquid when correctly mixed.

SOME DISADVANTAGES

1. Unwashed dried precipitate clings tenaciously to stones and tweezers. (Then again, conventional liquids have to also be cleaned off.)
2. Further investigation required into the effect of penetrating solution into surface reaching cracks and its effect on such structures, particularly porous structures. Simple washing and/or soaking may suffice.

continued on page 22

Polytungstate

continued from page 19

3. Maximum S.G. is 3.11 (methylene iodide is +/- 3.32) - without further modification.

4. Not a good wetting medium.

CONCLUSION

The health factor is of course a premium one. The use of such a liquid is a big step forward in terms of safety. It is a highly viable alternative to the more hazardous liquids conventionally used to date.

ACKNOWLEDGEMENTS

Thanks to Dr. Arno Kleyenstuber of Mintek, Randburg, for being instrumental in having the X-Ray diffraction and one pH test done and useful dual discussions with the writer thereafter.

REFERENCES

1. Hanneman, W.W. (1991). *Sodium Polytungstate as a Gemmological Tool*. The Journal of Gemmology. Vol. 22, No. 6, 364-365.
2. Geoliquids, Buffalo Grove, Illinois (assumed 1992). Poly-Gee Brand Sodium Polytungstate. Technical Data Sheets. 2 pages.
3. Webster, R. (1975). *Gems*. Third Edition. Section on Tourmaline. 126.
4. Hills, G. (1991). *An Alternative to Dangerous Heavy Liquids*. Tasmanian Gemmologist Newsletter. 4-5.

APPENDIX

A. Hanneman's sodium polytungstate-water solutions graph (R.I. vs. S.G.) with random check points noted thereon as a result of this investigation.

Q&A

Edited by: B. Young McQueen

Q: What is a Gemologist?

I'd be willing to put \$100 on the table that you have seen an appraisal from a competitor who has assigned himself the title "gemologist" when he holds neither a GIA nor a Gemmological Association of Great Britain (GAGB) title. He also has no formal designations from any of the smaller schools of gemology. Although the public is obviously being deceived he is probably within his legal right. If you call yourself a plumber in most states you have to pass test and be licensed by the state, ditto for beauticians. Certain other trades do not require this. All you have to do is hold yourself out to the public as a practitioner of that trade, eg. marketing consultant. Appraisers have the same problem or the same opportunity depending upon your viewpoint. Should states certify gemologists and appraisers? Should we be able to obtain the designation Certified Public Gemologist or Certified Appraiser from state licensing departments. Should the American Gem Society be prohibited from using the title, Certified Gemologist, because it implies state certification. It looked like the real estate appraisers would, because of the S&L mess, be required to become certified. The feeling was that the certification benefit would trickle down to personal property appraisers. Now the regulations relating to real estate appraisers are being watered down. Appraisals by certified real estate appraisers are only required at certain threshold values. I'd bet that nothing will happen in this decade to recognize personal property appraisers through state certification.

There are two sides to the issue:

Con: We should encourage less government in our lives, we should want nothing that would cause gemological services to be priced out of reach of most of the public.

Pro: We want professional standards

within our occupation and we feel we deserve the status of professionals such as CPA's.

Are there ways to achieve our goals without the intervention of government? Can we push this concept with insurance companies? Should they accept appraisals only when signed by a GG or an FGA? What about the PhD in geology who specializes in gemstones? What about the valid opinion that being a gemologist does not make you a qualified appraiser? Should GIA be spending more of their efforts to improve the recognition of GG's as the only real gemologists instead of worrying about teaching appraising or entering into agreements with the Manufacturing Jewelers and Silversmiths of America (MJSA) to develop jewelry quality standards? Is the whole issue a non-issue with no real impact on anybody? Let us hear from you. Let your opinion be heard?

Q Bohemian cluster jewelry contains either pyrope garnets or glass stones. It's usually impossible to get an RI reading and since both are singly refractive the dichroscope is of no help. This material is relatively cheap so exhaustive tests with removed stones are not practical. Often inclusions analysis is inconclusive. Is there a quick way to tell them apart?

A: Try this: Most of these garnets are a mixture of almandite and pyrope. The pyrope proportion is usually high so we call them pyrope. Get a sample of this material. The material sold as ant hill garnet from New Mexico or Arizona will do. Examine these garnets under fluorescent light vs. incandescent light. There is a distinct difference. Glass does not show this change. Of course the more collaborating test the better, but this works, it's fast and works when you are away from the lab.

Send your comments; questions; gemological tips to Q&A Editor, 5613 University Blvd. W., Jacksonville, Florida 32216.

New Reference Work on the Heat Treatment of Ruby and Sapphire

Ted Themelis has announced the January 1993 release of his authoritative reference covering the theoretical aspects as well as the practical applications in heating rubies and sapphires. The results of hundreds of heat treatment experiments are reported and the book is packed with illustrations, providing the reader with updated information on all facets of heat treatment of corundum. The book contains:

- 54 full color photomicrographs
- 88 black and white photographs
- 80 diagrammatic explanations
- 30 spectragrams
- 63 tables

Here are some commentaries:

"This book... is an important addition to the list of technical publications on gemstones. As a text, it is recommended to every gemologist who has an open mind to the current developments in the field of corundum heat treatment."

-Dr. H.A. Hanni, Swiss Gemmological Institute

"A unique, well-balanced and readable text covering both the thermochemical theory and the practical details necessary for the heat treatment of corundum and its detection. Highly recommended".

-Peter Read, FGA

The 6" x 9" hard cover book is will be available in January 1993 and costs \$90. You can see Ted Themelis in Tucson or call 813-734-3729 to place your order.

Please send me a membership application for Accredited Gemologist Association

Name _____
 Address _____
 City _____ State _____ Zip _____
 Phone # _____

Application Guidelines

Membership with full voting privileges is available to professionals holding gemological diplomas from accepted institutions.

Associate Membership is available to students of gemology and avocational gemologists.

Supplier Membership is available to providers of goods & services to the gem & jewelry industry.

Member Dues & Fees

\$25 Processing Fee (one-time, non-refundable) will be retained by AGA.

\$125 Initial Voting Member Dues.

\$75 Initial Associate Member Dues.

\$175 Initial Supplier Member Dues.

Make checks payable to Accredited Gemologists Association, in US funds.

Membership is renewable annually (Voting \$100, Assoc. \$50, Supplier \$150).

Return completed application to:

Tom Seguin, AGA Membership Chair

Bayshore Office Building

6221 14th Street West, Suite 105, Bradenton, FL 34207

AGA will not discriminate against any applicant based upon race, creed, color, national origin, age or gender. Applicants are required to meet substantial member qualifications, and to adhere to the AGA Code of Ethics.