

Detection Secrets from the Batcave

by James R. Lytle, G.G.

In this article, we will discuss emerald treatment and the detection thereof via simple tricks, market mentality and truth in disclosure.

This article is for those dealers, gemologists and others who may be having some difficulty understanding David Federman's seemingly "full steam ahead, damn the torpedoes" approach to Arthur Groom's proprietary emerald infill treatment. This approach is evident in several recent issues of *Modern Jeweler* — to wit, February, March and June, mostly in his "Last Word" columns.

Groom's treatment consists of what seems to be a very stable two-part epoxy filler, hardened inside the stone. According to some reliable sources, it neither cracks nor discolors and the stone can be recut with the filler unaffected.

But so what? Other epoxies can be made to perform likewise.

The issue for some, is that with a real world testing time of only a few years (during which, the glop apparently just sat in a bowl growing old) we don't know what emeralds treated this way might look like in 20 years. What about the co-efficient of expansion? How does it differ from that of the host beryl? Does it ever change in time? Will an unforeseen butterfly flap its wings somewhere and cause the filler to turn purple? If we rush to market right now, can we make more money? Who knows?

In the March MJ, Mr. Federman's column "Goodbye Mr. MacGyver," while making several very good points, also makes some sweepingly incorrect generalizations about "these MacGyvers" and their (to my knowledge, fictional) reliance on "Flash Effect."

In June's column, titled "Dumb & Dumber," he cautions that we "not be fooled" into using cedarwood oil, and calls the use of these "outmoded mediums," "dumb." Of course, defending their use would be "dumber."

And in a question that truly seems to pay tribute to the title of his June column, while he is challenging the "tradition," he asks, "How come all those Spanish, Portuguese and German chroniclers in emerald-rich Colombia and Brazil over the past couple of centuries didn't discuss emerald oiling in their many annals?"

Duh! Excuse me, but does Macy's tell Gimble's?

He also wrongly implies that cedarwood oil "notoriously" leaks out.

However, Ron Ringsrud mentions in a letter to the editor, "What people outside the trade don't understand is that in the first few weeks, the cedarwood oil leaks out of the large fractures while remaining quite stable in the smaller fissures." In this now stable condition, the stone still looks mighty fine indeed. He

"...there are many types of epoxies and other materials used today, and in the real world of buying and selling, we need a few tricks for detection."

Cornerstone features diverse ideas and opinions from the AGA's membership, as well as gem industry information.

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PRESIDENT'S MESSAGE

Let's Party!



Our upcoming AGA 25th Anniversary celebration is getting closer. Do you remember our dinner dances of the 80s and early 90s? Can you recall fond memories of AGA gemological gatherings? The revelations, the issues, the debates, the ribald misadventures? Come join your old friends, laugh with them once again and find new gemological issues to ponder.

We're bringing it all back to celebrate the AGA's 25 years and to honor our past presidents. The dinner dance is scheduled for the evening of Thursday, February 4th, 1999 at the Tucson Marriott Hotel which is located next to the University of Arizona and serves as the new AGTA Tucson headquarter. The American Society of Appraisers (ASA) Gems and Jewelry discipline is joining us in this celebration so don't miss it.

We will also hold our annual AGA conference that very same day. If you missed attending last year's conference then *shame on you*. We are giving you plenty of warning for 1999. The conference date is Thursday, February 4, 1999 and the location is the Tucson Marriott. Details regarding the speakers, along with registration forms will be sent out to you later this fall, but mark your calendar now. We are still filling in the speaker list so if you know of someone from whom you would like to hear a presentation, please let us know and we will follow-up.

Thanks to Doug Kearney, our Minister of the Minuscule (he didn't like the title Scullery Drone), the AGA 1998 Membership Directory has been included with this mailing of the Cornerstone. It's good to have this membership benefit back on-line again. If you need an AGA binder or your member information needs updating, please let us know. Our membership is rebounding and has grown more than 10% this past year. We look forward to that continuing trend.

Also enclosed is an invitation from Matt Green, President of the South Florida GIA Alumni Chapter to two upcoming lectures on Sunday, September 20th. AGA members are often involved with local GIA Alumni chapters and we enjoy continuing our kinship through by our events. So if you're in the area make sure to attend these lectures by Joe Tenhagen and Fred Ward.

Finally, we are delighted to confirm that the stories of Leo Schmied's recent demise were greatly exaggerated (see Polygon, AP channel 8/26/1998). In fact, I believe the AGA Constitution Bylaws prohibit immediate past presidents from engaging in premature death of any type. Therefore, we wish Leo the best of continued health and encourage him not to violate the AGA Bylaws. Further we hope to lure him back to Tucson in 1999 for our 25th anniversary celebration.

See you there!

Thom Underwood, President - AGA

**WELCOME
NEW MEMBERS**

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Detection Secrets

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refers to this as “automatic disclosure” and mentions that reputable dealers don’t re-treat or refresh their stones after that.

For example, I have a Colombian emerald that was treated with cedarwood oil when I bought it 15 years ago. It has since been recut (I wear it) and hasn’t needed retreatment. I also like the warm glow imparted by the cedar oil as opposed to the steely glint of epoxy. It is noticeable.

But when my customers demand, or a stone needs, an epoxy, I prefer Hughes #330. I fill the fractures with resin and use resin and hardener to coat the exterior. Sometimes I repolish the stone, especially if there were abraded facet edges. The liquid resin inside doesn’t leak out or discolor. I have some stones that I treated in the above fashion back in

1987 and they are stable and unchanged.

However, there are many types of epoxies and other materials used today, and in the real world of buying and selling, we need a few tricks for detection. So for all you “low-tech garage type” MacGyvers, here’s the money; and for anybody out there who believes that the use of “feelings” and “hunches” and whatnot are bunk, refer to the new science of Neuro-Linguistic Programming. One of its discoveries is that information is sometimes stored non-

verbally in the body itself. This information makes its presence known by that familiar (to some) kinesthetic “tug,” which many don’t know how to respond to, and just ignore. This tug, along with other senses, can be incorporated into epoxy detection.

“Your tactile sense can feel the difference and your ear can hear the epoxied stone squeaking.”

An interesting aspect of many epoxied stones, especially those that have hardener added is that they look and feel like what they are: epoxy. The human eye is very high-tech, and when trained, can pick up subtle differences. If you think of an epoxy coated boat railing, or table, or bar, you may begin to remember certain emeralds you have handled that had that same look, that same feel. Practice with a known epoxied stone and a known non-epoxied stone, by rubbing them one at a time between thumb and forefinger while holding them to your ear. Your tactile sense can feel the difference and your ear can hear the epoxied stone squeaking. Try it. Think of cleaning a bathtub.

Another common feature in some epoxied stones is minute chipping around facet edges and where fractures break the surface. In reflected light, the nature of the epoxy coating will be evident. Occasionally, if the correct angle is achieved, the break across the stone’s surface will look as if lava had flowed into it and hardened. In fact, this is the

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epoxy. This is frequently evident if the stone has been repolished after treatment. Nicks and pits can show the same "lava-flow" appearance. Flash colors in glass fillers vary and are sometimes obscured by the body color of the emerald. The doubly refractive nature of emerald will also cause consternation for those who are accustomed to seeing one color under darkfield and its complement under brightfield. Refer to *Gems and Gemology*, Spring 1995, p. 54 for a short discussion of the above.

Also listed in G & G (Summer '95 p. 118) is a description of "scratch-like" lines in diamond, defined as "areas of incomplete filling." These show up under reflected light. Lava flow effects in glass-filled emeralds can also occur. What I find most useful is a "diagnostic triad" consisting of: 1) fracture outline, 2) subtle (or not so subtle) differences in texture between the host and filler and 3) "lacy fringes" which should not be confused with the "crackled texture" sometimes observed in areas where the filler is quite thick. This "lacy fringe" can exist around all or part of a filled fracture that would otherwise be virtually undetectable. Summer '89, Fall '84 and Summer '95 issues of G & G contain excellent articles on glass fillers. Many fillers (including "Palm Oil," which is otherwise somewhat of a bear due to its 1.57 refractive index), can be detected with the use of a polariscope.

Opticon-filled fractures will sometimes fluoresce chalky white to white-blue to L.W.U.V., but not always. Epoxy 330 will generally show moderate yellow. Various other epoxies will show various colors, and if two different epoxy resins are mixed, so may be the results of your fluorescence testing. A good rule to remember is that most air-filled cavities will not fluoresce (an exception to this rule exists for Russian goods from Chernobyl). Immersion is effective for most epoxies.

In general though, magnification and lighting are the two most effective detection

techniques. There will invariably be differences between the appearance of the infill substance and the host beryl until the day that someone manages to inject beryl into beryl. Even then there will undoubtedly be a dividing line, as in natural "healed fractures."

For the present, look for anything that doesn't seem right. Roiling, or heat-wave effect is common, as are "brush marks," or the look of freshly poured and raked concrete that has just set. Swirling, crackling dried-up lakebed effects, or a general "thick"

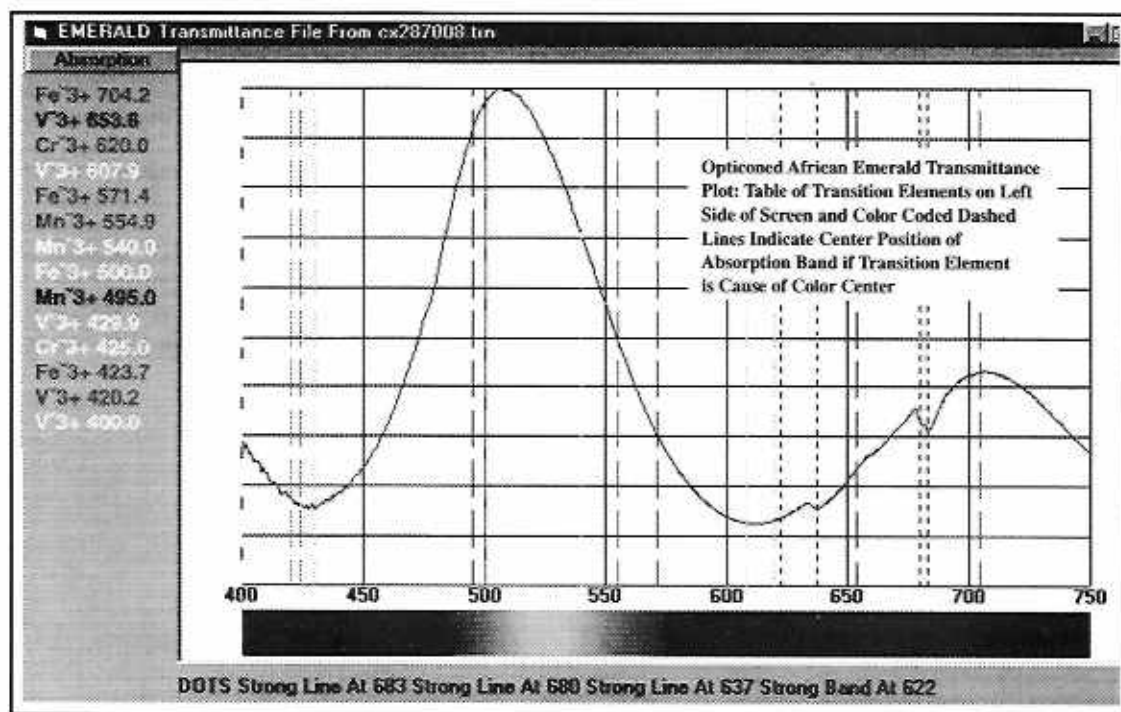
seeming texture frequently manifest.

Air-filled cavities will reflect like mirrors, but oil- or resin-filled cavities won't.

Glass-filled cavities, when no bubbles or swirl marks can be found, are extremely hard to detect, but sometimes have "lacy fringes" like those seen in some corundum.

Subtle color differences are detectable. The color depends on the filler and how it interacts with the color of its host. Look for yellowish-brown, brown, gray or green that is concentrated as this could be dye. Sometimes the grays and light ambers have the textural appearance of a poly bag or a vinyl sheet running through the stone; just somewhat thicker and darker than it ought to look. This has also been described as a hazy or cloudy appearance.

All "foreign materials" can show flash effects (although cedar and other oils usually don't) of one type or other, but never rely on specific colors to I.D. a filler. Using emerald as an example, we find a variety of different R.I.s, depending on whether that particular emerald comes from Colombia, Brazil, Africa, Pakistan, etc., not to mention the wide range of R.I.s from mine to mine within one country. In fact, two different stones from the same mine can vary in R.I.: since the flash effect is a direct result of the difference in R.I. between the host material and the infill substance; the same infill substance could produce different flash colors when used in



different emeralds. And don't forget that infills are sometimes mixed.

As the above discussion illustrates, the situation becomes even more treacherous when dyes are added. So remember one rule: in a stone that has an air-filled cavity, any "flash" will be more in the nature of "interference colors" or thin film iridescence — a rainbow effect. A filled stone shows a single, directional color. When the stone is viewed perpendicularly to the fracture, one color is visible, and when the stone is tilted slightly, a second color frequently appears. Again, these are single colors across the body of the fracture and not multiple colors seen undulating together. When single colors appear across

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DOG FIGHTS

by RW Hughes & R Zajicek

Single-celled yankers

There are many dealers who look upon gemological labs with a good deal of disdain and the feeling is often mutual. So often today it seems that gemologists and traders are on opposite sides. Tug, tug, pull, pull, each seems to have a different agenda.

Dealers often view gemologists as inferior beings (those who can, sell; those who can't, teach or identify). And, for their part, gemologists look upon merchants as some type of single-celled amoebae (those who understand, teach or study, while those who can't, become merchants).

We hope the following article will go some ways toward bridging this gulf, by gently (and sometimes not so gently) pointing out the problems and solutions for each camp.

Labspeak

What are some examples of lab misbehavior? The propensity to issue reports (origin, ID, etc.) when they are uncertain is a big one. If a gemological lab is uncertain of an ID, they should admit it. But getting a lab to do this, or even worse, to admit to a mistake, is like convincing the Big Bad Wolf to go vegetarian. Too busy a huffin' an' a puffin'.

Another problem with labs is their tendency to attach cryptic comments to reports. Typical was that from a lab which stated that, although the gem in question exhibited features characteristic of one source, it was actually from someplace else. Just what is a buyer to make of this? It looks like a Burma, but is actually from Ceylon. Huh?

How about these lab comments regarding two different stones. Both

stones were identified in the same lab within days of one another:

1. **In our opinion, the sapphire is of Burmese origin.**
2. **The sapphire is of Burmese origin.**

Are these different identifications?! The report would receive an A in Physics, but would probably get an F in Communications 101. Translating Labspeak into English, the inclusion of the "in our opinion" statement indicates a reduced confidence level in the decision.



But Je-ez! Why do we need to make a translation? What's wrong with indicating some sort of confidence level in plain English, German, Spanish, Japanese, Thai, Chinese or any other tongue that a 20th century human speaks? Give us a percentage, a scale, a bar graph, a 12-step program for peridot's sake! You're the scientists, cobble something together.

It is precisely this type of double-speak that gives gemologists a bad image amongst dealers. Such statements would do a Washington politician proud: "Yes I paid the hooker \$50, but only because I felt sorry for her."

Ostrich gemology

The decision by Asian gem labs to limit disclosure of glass infilling to those cases where it can be detected under 10x magnification or less was certainly another

questionable decision¹. Like the three monkeys who refuse to be tainted by evil, these gemologists apparently decided that if an infilling/fracture filling can't be easily detected, it just doesn't matter. Might we recommend a similar course in identifying synthetic gems. If such labs can't identify synthetic origin under 10x, then declare it natural and go have a beer. After all, why break a sweat?

Apparently² these labs have confused

how the enhancement affects a stone's quality with the ability to detect that effect. Bleached-impregnated jadeite (B-jade)

can be some tough stuff to identify with a microscope, even at 200x, but the enhancement has a tremendous effect on appearance.

Unfaithful

We would like to know just how a laboratory arrives at its decision on an identification, origin or grade. If we send a rock sample off to a geology lab for testing, we get back a detailed written report, not some single-sentence statement saying "granite - gray - 32.5 grams." In contrast, many gemological labs apparently believe that any data beyond weight and color will simply confuse the great unwashed.

It's not that we don't trust the labs — it's just that, like the government, we shouldn't be placed in the position of

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having to trust them. A fundamental tenet of science is peer review. One's decisions must be subject to examination and testing by others. But interpreting and understanding the decisions of many gemological labs is pure witchcraft — and we don't like riding a broom. So if you call yourselves scientists, leave the mind-reading to the Ouija board set. For the benefit of the paranormally-impaired like us, please print the testing data on the lab report. Leave matters of faith to the church.

Guv'ernment irregulation

Unfortunately, this gibberish is not limited to a single lab, nor even to gemologists. Government regulators themselves are quite capable of coming up with their own versions of Labspeak, after close consultation with the various factions of the trade. Witness the US Government's Federal Trade Commission (FTC) ruling that the laser-drilling of diamond does not have to be declared to consumers because, according to the FTC's Joan Z. Bernstein: "Lasering is a common practice and not an extraordinary process...and that while lasering produces a small surface opening on a diamond, the majority of diamonds sold in the U.S. have similar surface imperfections (from other causes). Thus it appears that surface imperfections are to be expected in diamonds, unless they are described as flawless. There is no evidence that failure to disclose lasering causes substantial consumer injury."

There we have it, duh. Because many diamonds might have a natural or three on the girdle, we should not worry, we repeat — NOT WORRY — that a high-tech laser has been used to extract an inclusion which would otherwise BLOW THE BEJESUS out of said diamond's clarity grade. We can see it now, as the big bad wolf lectures the three little piggies: "Just because many piggies get eaten by wolves, you

shouldn't get so damned uppity. Relaxxxxx, take a nap (and couldya pass the Tabasco before you fall asleep?)"

Unbelievably, the FTC has now applied similar guidelines to enhancements of colored stones. According to possible interpretations of these guidelines, permanent enhancements no longer need to be declared to the consumer. This means that according to these government irregulators, it is now A-OK to sell surface-diffusion treated sapphires as natural. Thanks, Mom.

A buyer's ideal lab

Call us ignorant, but we think what many buyers want from a lab is the dirt. They want to know if the stone has been tampered with in any way, shape or form.

If it is an expensive ruby or sapphire, they also want to know just where their little darlin' first popped out of the ground. Today, unfortunate as it may be, origin is a fact of life in the ruby and sapphire trade.

A seller's ideal lab

Call us ignorant, but we think what many sellers want is consistency. If they take an untreated Burma ruby to one lab and get an untreated Burma birth certificate, they expect that from other major labs. When they don't, or when they get some sort of Labspeak double-talk, they get mad. Is this surprising?

What do a minority of sellers want from labs? They want the labs to simply rubber stamp whatever scam is current, a sugar-coated version of the truth.

There are also certain dealers who play both sides of the fence. We personally know of instances where dealers have taken South Sea pearls and Ceylon sapphires to Burma for sale. We could go on and on, but the fact remains that many gemologists have the crazed stare and foaming mouth of rabid dogs precisely because the teeth in their tushes are those of dealers misrepresenting goods.

A gemologist's ideal customer

As the director of a major lab once told us: "My best customer is the postman. He/she brings me business every day and never says a word." No shouting, no screaming, no lying, no attempts at bribery. Just business. Is it any wonder that he feels that way?

Solutions

What can dealers do to help the situation? Start by educating gemologists about your product. Most dealers travel far more than gemologists and have access to more samples. When was the last time you gave your favorite lab or gemologist samples of something new or interesting? Try it. Help them help you.

Second, try to understand that everyone makes mistakes. When you find one, gently point it out to the lab and ask them to adjust the report. Save the smarmy "I'm smarter than you" routine for your maker when you get upstairs. There's nothing wrong with trying to catch a lab in an error — it keeps them honest. But when you've caught them, teach them how to learn from their mistake. Don't hide it from them while broadcasting it to everyone else.

And what can gemologists do? For starters, you must begin to document the reasons behind your decisions. Doing this will keep you honest. This

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"Always do right. This will gratify some people and astonish the rest."

— Mark Twain

"Only mediocrities rise to the top in a system that won't tolerate wavemaking."

— Lawrence J. Peter



documentation must be in plain English, not Labspeak. Second, you must start looking at dealers like human beings, not money-grubbing shylocks.

Tugging vs. pulling

Tug, tug, pull, pull. Those at opposite ends of the rope have a seeming inability to understand the other. Today, our business is perched upon the precipice. If each side does not begin to understand the needs and goals of the other, we just might find ourselves toppling over the cliff, in glorious togetherness. Tug, tug, pull, pull, let's all get on the same side of the rope before we strangle each other. Tugging, pulling, what really is the difference? East and west — gemologists and dealers — both are points on the same line. ■

Notes

1. *ICA Gazette* (1994) First seven steps to international rules at Asian meeting. *ICA Gazette*, June, p. 7.
 2. We are giving them the benefit of the doubt. 3. *New York Diamonds* (1997) FTC reaffirms policy on laser disclosure. *New York Diamonds*, March/April, p. 8.
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MEMBER NEWS

It has been an exciting year for member Tom Tashey, his wife Myriam and the Gem Quality Institute. With Tom as President and Myriam as Vice President, GQI has grown since 1980, when its office in Downtown Los Angeles issued independent reports of quality assurance on diamonds and color gemstones. Almost 20 years, a lab acquisition and an incorporation later, the Tasheys are proud to announce the opening of their new branch office in the heart of Chicago's jewelry district.

Housed on Chicago's "Loop" in the Mallers Building, GQI's new 4,000 square foot lab promises "Honesty, integrity, professionalism and expertise, plus a client friendly service staff and a fast turn-around time," says Tom. Why set up shop in Chicago? The GQI plans to better serve their nationwide client base, which has been rapidly growing

in the midwest.

This is not GQI's first expansion. In 1985, the Tasheys acquired the rights to the Los Angeles branch of the European Gem Lab (EGL). With Tom gone to Chicago to develop and manage the new location, the Los Angeles lab is pleased to announce the appointment of noted diamond expert, Craig Slavens, to manage their diamond-grading division.

Myriam says that the appointment of Slavens is an important step in maintaining and upgrading the laboratory's services: "Craig Slavens brings to the table over eight years of diamond-grading experience. He served as a quality-control specialist at the GIA's Gem Trade Laboratory for over six years, and also helped set up and supervise the American Gem Society Lab in Las Vegas. We are extremely excited about this important addition to our staff."

Tom has been a member of the AGA since 1978. ■

Certified Gem Laboratory Update

Words from the Eastern Front

In the never-ending battle

to spread the values of Lab Certification, Director Jim Naughter has renewed his objectives. At AGA Headquarters, we are getting in-synch with Naughter's dynamic efforts, improving our response and processing time for prospective CGL and AGA members. His current objective: recruitment. More troops are needed, and we don't mean reinforcements from our current ranks. Any organization is only as good as its members, and Naughter is seeking more of the same quality professionals that currently make up our CGLs.

Naughter has always preferred the personal touch, arguing that "People want a paternal relationship" with the organization. So, he takes a more personable approach. His strategy: "The first thing I do is to ask what kind of business [a prospective CGL] is involved in," paying special attention for businesses with gemological evaluation and/or synthetics research emphases.

One bit of information that Naughter has gleaned throughout the recruitment process is that many people have not heard of the AGA.

In this situation, Naughter describes the organization as one that promotes discourse in ideas and scientific/professional ethics. What is important to note, is that while Naughter is often initially recruiting for the CGL, many of the people he speaks to also end up applying for membership in the AGA. This is an effort our entire membership should be able to contribute to. Almost 100% of our members renewed for 1998, which means the AGA has been helpful to you in some regard. We are planning bigger and better events and more opportunities to educate and be educated. Share your AGA experiences with your colleagues. Photocopy the inquiry form on the back of this publication and give it to a potential member. The stronger and larger our ranks, the more we can make our presence known in the Industry.

See you next issue with more information! ■

If you have any questions regarding applying for gem lab certification, call Jim Naughter at (518) 438-8872. Questions regarding current lab status should be directed to AGA Headquarters at (619) 286-1603.

Detection Secrets

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the body of a fracture, you have a filled stone. Absence of this effect does not, however, prove that the stone is not filled. Also, there is an exception to this rule: occasionally, the "single broad flash" color may actually be two colors (for instance, orange and pinkish purple, as reported in *Gems and Gemology Lab Notes*, Spring '95). However, this effect still doesn't resemble interference colors or thin-film iridescence (it doesn't undulate) and it can still be referred to as a "broad flash." Experience is the real key here, and after a while, sorting out this type of exception to the rule becomes almost second nature.

Another visual detection method that is so simple that it's overlooked is to just look real close. This may sound simplistic, but it works; you can actually see the outline of the filled fracture. You may need to play with angles of observation, or use various types of lighting (shadowing is very effective). The point to remember is that, just like the curved striae in synthetic corundum, the fracture-filler juncture is in there, and you can find it.

As previously mentioned, Yehuda-type glass fillers will sometime show a lacy

fringe around part or all of the fracture outline. If you can see the fracture outline but you don't notice any brush marks, bubbles, swirls, texture or color differences, and you aren't sure which way to call it, try this: while viewing the fracture through your microscope, drag an alcohol-saturated brush across it. If the relative relief seems to go from high to low, you have just fracture-filled your stone with alcohol and you can assume that it contained only air before you did so; otherwise, the alcohol would not have seeped down into the fracture, thereby reducing its visibility. But again, a lack of change doesn't prove that the fracture is filled; sometimes the alcohol doesn't seep down because of surface tension or dirt.

So, there you have it; a place to start. Fellow member Marty Haske and I have been working up some graphs of stones filled with different substances, globs of raw filler, exotic mixtures of fillers and



generally anything I can dream up and send to him. We may even publish what we find, if Marty can stop obsessing over the need to eat. ■

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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.

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