



# CORNERSTONE

Journal of the Accredited Gemologists Association

## Fracture-Filled Diamonds: A Ticking Time Bomb?

by

Sharon Wakefield, BS ChE, GG, ISA



**Suddenly, without warning, a beautiful two carat VS1 becomes a so-so SI2.**

Impossible? Unfortunately not. You have a *formerly* fracture-filled diamond<sup>1</sup>. Under the heat of re-tipping, its filler disappeared without a trace. Can anyone prove it had been fracture-filled? Only if you are lucky. Does the owner know her stone was treated? Only if you are lucky.

The above scenario is hypothetical. The danger it suggests is authentic. If you are counting on industry-wide disclosure to stay out of trouble; here's a *true story* you may find disturbing.

Several weeks ago, a fellow gemologist asked me to examine two diamonds he had received on memo. He suspected enhancement. Because the memo contained no disclosure, he confronted his supplier, who denied having shipped treated diamonds. My visual examination of one stone clearly reveals the characteristic flash of a filled diamond. The second stone appears suspicious, but it is *not* filled<sup>2</sup>. I confirmed my visual observations using x-radiography.

**We conclusively confirmed an undisclosed two carat fracture-filled stone moving through diamond supply channels.** Is it an isolated case, or does this stone characterize a ticking time

bomb? I don't know, but it suggests a threat we had better take seriously.

### Overview

Advertising by Mr. Daniel Koss of Ramat Gan, Israel, first aroused my interest in fracture-filled diamonds. His firm aggressively markets clarity enhanced diamonds in this country, claiming that Koss filled stones *do not* display characteristic flash, as do other known fracture-filled diamonds.

Threat of an undetectable or difficult-to-detect clarity enhancement motivated me to mount this investigation. Moreover, emerging evidence suggests that routine bench procedures, such as re-tipping and aggressive cleaning, can damage or destroy the filler.

My laboratory purchased three fracture-filled diamonds directly from Koss. Concurrently, Anne Hawken generously purchased three additional stones to support the project. We ordered and received two stones in each of three Koss clarity grades: A, B & C (See Table 1). We made no special request with the order, therefore, I assume our test samples are representative and typical of the vendor's product.

I began my investigation with two objectives: To develop identification procedures and to evaluate stability and durability.

First, I examined the diamonds for visual indication of enhancement.

Contrary to vendor claims, *all six stones produce a very distinct flash*, similar to that seen in Yehuda products. Only the colors are different. Assuming our 6 stones are representative, a qualified observer can visually identify the Koss product.

**Caution:** *Some filled stones may not exhibit this characteristic.* Technology continues to improve, driven by strong incentives to develop an undetectable fracture-fill process.

Next, I investigated stability in ultrasonic and ultraviolet radiation environments, and I exposed one stone to a prong re-tip procedure.

- Filler displaced or visibly degraded after exposure to:  
Ultrasonic cleaning for 4.5 cumulative hours  
Ultraviolet radiation for 2.5 cumulative hours
- Re-tipping removed the filler, in a matter of seconds.
- Ultraviolet sensitivity is alarming. Jewelers, gemologists and appraisers have no control over a stone's future exposure to this ever present environment. Such exposure is governed entirely by the wearer's lifestyle! Test results suggest that cumulative exposure to direct sunlight can, and probably will, produce visible degradation.

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AGA is a nonprofit research, education and ethics organization, benefiting professional and avocational gemologists as well as the consumer interest. Membership programs include advanced gemological education seminars, professional computer software reviews and workshops, and the AGA-Certified Gemological Laboratory Program.



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## Editorial

# In View

## Russian Roulette

Tom Chatham's July announcement regarding distribution of the "Chatham Created Diamond" drew swift (and sometimes schizophrenic) response from industry media. GIA's Gem Trade Laboratory provided a reassuring survey of GTL's detection efforts over some 20 years of research observation. This article, which included brief mention of recently examined Russian material, appeared in *Rapaport Diamond Report* just weeks after Chatham announced formation of his Moscow-based gem synthetic marketing venture. Richard Drucker, in last month's *Drucker Price Report*, offered thoughtful commentary on the actual parameters of fear for diamond markets. Other efforts at panic damage control included front-section newswatches, with nonchalant diamond trade response, in both *National Jeweler* and *JCK*. Mazal U'Bracha offered a diamond synthesis technology article by expert Dr. Vladimir Teslenko of Moscow. While this article carried the handwringing title "Beware: Russia sells 'Man-Made' Diamonds", an editorial in the same issue brightly declared "Oh, Synthetic Diamonds? What else is new?"

Yes Virginia, diamond synthesis has been around since the mid-fifties. And, through years of development and various manufacturing processes, very little "gem quality" material has been produced. However, it is generally conceded that front-line gemologists face escalating duties of vigilance and diligence. "Russian Roulette" was only a matter of time. It appears that, previous to the Chatham venture, some of the newer Russian polished goods entered the world market undetected. Differentiation between natural origin and laboratory-synthesized diamonds is increasingly difficult. Even though Chatham Siberian Gem Company has encountered delays with production contracts and facilities, active marketing of affordable gem synthetics may bloom into big business. All these factors point the

gun at detection and disclosure. Our business is as strong as our information and ethics. What else is new, indeed.

## AGA Responds

Fortunately, several AGA efforts are underway to address synthetic diamond, among other detection and disclosure concerns. Sharon Wakefield, new Chair of the AGA-Certified Gem Laboratory Committee, was among the first to examine the new Russian origin synthetics. The stones were very graciously provided to Wakefield by Tom Chatham. An educational Russian Synthetic Diamond Slide Set of the Chatham-distributed stones is under development (see Lab Alert).

Wakefield's study of Koss filled diamonds also is published in this issue. "Fracture-Filled Diamonds: A Ticking Time Bomb?" concludes that filled diamonds, becoming broadly available in US markets, may pose a greater immediate concern to gemologists, jewelers and consumers alike. The Koss filled stones darken and degrade with exposure to UV. Perhaps enhanced tennis bracelets in Arizona is not such a bright idea. Likewise, Leo Schmied's report on "honestly" undisclosed filled diamonds, "Nightmare," advises caution. Seems that "treatment didn't take" stones are tricky. Maybe ABC "Prime Time" would like a follow-up on this—right before the holidays.

## Enhancing Diamond Disclosure

In a September 1 *National Jeweler* interview, Daniel Koss of Koss & Shechter Diamonds (Ramat-Gan, Israel) states his intention to expand distribution of clarity-enhanced diamonds in the US. The Far East and Europe have been primary markets for Koss-treated goods until now. New distributor Goldman, Oved of New York claims to market even cheaper filled goods (*National Jeweler*, Oct 1). The pioneering Yehudi-treated stones, which use a different filler material, have been available from Diascience domestically for years. All these producers advocate selling the product for what it is. However, undisclosed

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fracture-filled diamonds from several manufacturers have been spotted at various levels of the US market, in both loose parcels and mounted goods.

The 26th World Diamond Congress voted in June to require that affiliated dealers disclose diamond filling, such as Koss and Yehuda treatments, as well as irradiation (*JCK*, Sept 1993; *National Jeweler*, July 16, 1993). Members of the World Federation of Diamond Bourses, or International Diamond Manufacturers Association, face internal disciplinary action for "fraudulent" sales practice when failing to disclose diamond treatment.

## AGA Conference Update—Tucson & Beyond

Be sure to make your plans soon! The American Gem Trade Association GemFair in Tucson begins Thursday, February 3, and AGA will have a very strong presence. As ever, the best reservations in Tucson are gone by December. So sign up now for AGA Tucson gemology programs, software workshops, and social events. Read more about AGA offerings in **AGA Tucson News**. At the AGA Booth, we will again sponsor a display featuring books and other materials by members, along with membership and program information. To assist with the AGA Booth (a great way to make contacts), place your publications on display or participate in programming, call Secretary Joe DuMouchelle at 313-963-6255.

Read all about it: meetings and conferences have recently concluded in various AGA regions. See **AGA Region News**.

## From the Editor

On behalf of AGA, I would like to thank Thom Underwood for his dedication and competence in producing the last year and a half of *Cornerstone*. An effective Chair of the very active Software Committee, Thom also has brought about publication format changes which helped to unify the content and "look" of *Cornerstone*. At the same time, he managed

to get each issue out despite authors' occasional tardiness! I hope, in my tenure, to perform as capably.

You may note a few changes with this issue of *Cornerstone*. We have elected to enlarge each issue, so that more members and experts may have articles published. We also plan to augment coverage of our membership and activities, to include regular reporting of Member News, AGA Region News, as well as Lab Alerts. In order to expand, some economies are necessary. It is my hope that we soon arrive at a publication size and format which you, the members, will find informative, attractive and accessible.

This is your publication. Please send articles, proposals for reviews, news of member activities (yes, even your own) to the editor for consideration. I will be happy to speak with you about sending articles on diskette, and my services are available for review and editing. I even do spell-check, so you've no excuse. Publish!

*"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper."*

—John Ruskin

## A Ticking Time Bomb?

(continued from pg. 1)

**Diamond's inherent stability and durability are ingrained in our thinking and in our routine procedures. We need to be mindful that very real hazards are associated with handling and wearing treated diamonds.**

## Test and Examination

### Microscopic Examination

Koss does an excellent job of masking internal fractures. Filled areas are difficult to detect unless the stone is rotated into a position where flash is visible. In a mounted stone, where visibility is restricted, flash detection may be extremely difficult, if not impossible.

Fracture-fill induced flash is most evident when the angle of observation is near *parallel* to the fracture plane. Gemologists sometimes confuse this man-made phenomenon with the rainbow of colors caused by natural diffraction which appears in some unfilled diamonds.

Flash is strongly indicative, if not proof, of fracture filling. X-radiography *can* confirm that a stone is, or is not filled.

TABLE 1  
KOSS ENHANCED DIAMONDS USED IN THIS STUDY

Stone	Weight	Koss Clarity*	GIA Color**
1	0.255	A	H
2	0.258	B	G
3	0.256	C	F
4	0.250	A	G
5	0.249	B	F
6	0.270	C	F

\* Koss clarity definition: A=VS1-VS3, B=SI1-SI3, C="Eye Clean"

\*\* Referenced to the author's GIA master diamond set #4800

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## Ultrasonic Cleaning

I subjected stone 2 to ultrasonic stress in a Branson Model 1200 cleaning tank. Exposure for 15 minutes, a nominal cleaning time, produced no observable change. Cumulative exposure is another matter. Microscopic inspection after 4.5 hours revealed missing filler and a more discernible fracture.

Continued ultrasonic exposure, for a total of 10 hours, in increments of 30 and 60 minutes, produced continuing loss of material and increasing visibility of the fracture. These indications suggest a danger of degradation from the cumulative effects of normal cleaning.

## Re-tip Procedure

The literature documents adverse affects of intense heat produced by the jeweler's torch. I expected to see degradation and wanted to examine, first-hand, the effects of known exposure to the concentrated heat associated with routine re-tipping.

At my request, an independent goldsmith accomplished the procedure: mounting stone 3 in a standard 6-prong head and performing a re-tip. He subjected the stone to oxy-propane torch temperature for approximately 60 seconds (ten seconds per prong).

Most of the filler appears to have departed. Formerly filled fractures are now more prominent and characteristic flash is dramatically weakened or missing.

## Ultraviolet Radiation

I selected stone 6 for ultraviolet exposure because it features a large, surface reaching filled cavity. I positioned the stone, face-up, approximately 10mm below a four watt short-wave ( $\lambda = 254 \text{ nm}$ ) ultraviolet lamp.

This stone received a total of 101 hours exposure. After only 1.5 hours, slight brownish discoloration appeared. After 2.5 hours, the filler continued to darken and I observed loss of filler at the sur-

TABLE 2

### Results of Ultraviolet Exposure

Hours	Magnification	Observation
1.5	30-40X	A few dark spots appear in filler
2.5	30-40X	More discoloration. Surface-reaching filler missing.
10.2	10X	Filler noticeably darker.
18.2	2.5X	Continued darkening.
30.5	2.5X	Pronounced darkening
62.5	2.5X	Internal filler discoloration first noted
86	2.5X	Continued darkening
101	2.5X	Continued darkening - End of test

face. Throughout 101 hours of exposure, filler continued to darken and recede, leaving a small, very dark, surface crater.<sup>5</sup>

Table 2 summarizes the exposure sequence and resulting degradation.

Calculated incident short-wave radiation is  $\sim 0.04$  watts per square meter at the test sample. Incident solar short-wave radiation is  $\sim 0.01$  watts per square meter (daylight average) at sea level.<sup>6</sup>

After 10.2 hours, I first observed degradation at 10X. According to my calculations, this equates to  $\sim 40$  hours of solar exposure.

## Summary

- **Koss stones flash.** Every stone I examined produces easily recognizable flash, affording simple identification.
- **Cumulative ultrasonic exposure induces degradation.** After approximately 4.5 hours accumulated exposure, I observed loss of filler. Loss continued with increasing exposure.
- **Jeweler's torch is extremely hazardous to filled diamonds.** Loss of filler in stone 3, while re-tipping, suggests that bench jewelers need to

exercise great caution with filled stones.

- **Extended exposure to direct sunlight will probably induce visible degradation.** The most interesting and unexpected environmental response is rapid filler degradation under ultraviolet radiation.

## Conclusion

### BEWARE! DIAMONDS MAY BE FOREVER, BUT THIS TREATMENT IS NOT.

Fracture-filled diamonds pose a clear and potentially elusive danger to the gemologist, appraiser, jeweler and, worst of all, the consumer. Danger is especially notable during routine re-tip operations and during cumulative ultrasonic exposures. Add to this: rapid degradation under ultraviolet radiation.

Can you hear the ominous *tick . . . tick . . . tick . . .*

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**Notes:**

<sup>1</sup> Fracture-filled stones in general are known to pose certain durability risks. However, the author's testing concentrated solely on Koss fracture-filled diamonds. In the following technical report, the generic term "fracture-filled" refers only to stones which were the subject of study.

<sup>2</sup> This stone exhibits natural diffraction dispersion which can give the appearance of filler.

<sup>3</sup> Diamonds are near-transparent to X-radiation. Fillers (that I am aware of) contain lead or other X-ray opaque metallic compounds, which stand out in clear contrast to the host diamond. Many natural diamond inclusions, such as iron sulfide, pyrite, etc., are also x-ray opaque; however, a gemologist experienced in this procedure will recognize the subtle differences, especially when x-ray and visual characteristics are overlaid.

<sup>4</sup> Diffraction dispersion is observed when viewing *perpendicular* to the fracture plane. Diffraction produces a rainbow of dispersed colors, rather than one color suddenly changing to another color, as the viewing angle changes.

<sup>5</sup> These findings contradict published Koss claims, which state: "After exposing the material to short ultra-violet rays for hundreds of hours - the equivalent of exposing it to daylight for hundreds of

years - Koss scientists discovered no change whatsoever."

<sup>6</sup>*Handbook of tables for Applied Engineering Science*, CRC Press, 1976, gives the value of 0.08 w/m<sup>2</sup> at normal incidence and mean solar distance. Integrating sin  $\theta$  from  $\theta = 0^\circ$  (sunrise) to  $\theta = 180^\circ$  (sunset) gives total radiation during average daylight hours for 1 day. Total radiation/12 hours  $\approx 0.01$  w/m<sup>2</sup> daylight average.

**Acknowledgments**

I thank my colleagues, whose contributions are an essential and inseparable part of this project:

Dr. Anne Hawken, Director Emeritus, AGA/CGL Program, for priceless consultation and encouragement, and for her generosity in providing three of the six diamonds I tested.

Jacque Stern, GIA Alumni Association Headquarters, for assisting in literature research.

Rick Harvey, my dear friend and owner of Artsmith's Jewelers, Boise, Idaho, who performed the bench procedures.

*"Where quality is the thing sought after, the thing of supreme quality is cheap, whatever the price one has to pay for it."*  
—William James

**Sharon Wakefield** first reported on fracture-filled diamond degradation testing last February, at the AGA Conference in Tucson. She owns Northwest Gem Lab, an AGA-Certified Gem Laboratory, in Boise, Idaho. A Graduate Gemologist (GIA), Wakefield also holds degrees in Chemistry and Chemical Engineering. Prior to entering the gemological profession, she designed solid and liquid rocket engines for space application.

An active member of AGA, Wakefield serves as Governor of Region 6 (Pacific Northwest), and is the newly appointed Chair of the AGA-Certified Gem Laboratory Committee. Her primary interests are in gemological research, promoting higher professional standards, better technical training and improved communication. President of the Idaho Chapter of the GIA Alumni Association, Wakefield recently was elected Vice-Chair of the GIA Alumni Board. She is a Designated Member, ISA, and candidate CAPP in both Gemstones and Contemporary Jewelry.

## Nightmare on Jewelry Main Street— Honestly!

by Leo J. Schmied, GG, ASA, MGA

How many times have we heard a consumer state that a jeweler "damaged" their diamond, or worse, "switched" their stone? What would you do if the accused is you and your store? Would you say "that will never happen to us, because we are honest." If this is your answer, all I can say is "welcome to my nightmare—your worst dream just came true."

Clarity enhanced (fracture-filled) diamonds pose a real threat to your security and reputation. You must carefully inspect *every diamond* you purchase, take in on memo, and especially those stones you take in for repairs. Why? Because clarity

enhanced diamonds are showing up everywhere and not being disclosed to you, or to the consumer.

### From Main Street to 47th Street

As shown by a recent National Jeweler article, our worst nightmare has come true already in St. Louis<sup>1</sup>. This statewide investigation of treated diamonds misrepresented by retailers has generated widespread negative press. ABC's "Prime Time Live" with Diane Sawyer (Nov 4, 1993) also delivered a nationwide happy holidays message:

don't trust your jeweler when it comes to diamonds. The ensuing consumer panic is just the tip of the iceberg; the beginning of legal actions against jewelers. While each state's consumer protection statutes vary, expect damages litigation on top of bad publicity and public distrust.

So, you say, "I don't sell filled diamonds, I have nothing to fear." Dream on! The reality is that a business killer is stalking you while you sleep. This killer could plunge you into a costly legal battle and destroy your valuable reputation. Even though you may be innocent (ignorant) of all charges,

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## Wake-Up Call

The newest threat stems from "honest mistakes" with regards to low end diamonds—stones that have been sent for treatment and returned to dealers with statements like "Filling Did Not Take." Not all diamonds submitted for treatment "take." Many of us, like our dealers, would assume that because the treatment was unsuccessful, that the diamond is not treated at all. This honest mistake spells disaster.

At the beginning of September, I asked several diamond dealers to send me some full cut round brilliants, ranging from 1.50 to 2.15 carats, Imperfect clarity with J-O color range. Dealers included my regional suppliers, as well as New York dealers. **Of the 20 stones received, we found that 7 were clarity enhanced without disclosure<sup>1</sup>.** Upon being questioned, the diamond firms all stated that their goods were not filled, because the stone had been returned to them from treaters as "DID NOT TAKE—NO CHARGE." These dealers assumed that this release from the treatment company meant that the stones in question took no filler material at all<sup>2</sup>.

The fact is, these diamonds did have some fractures filled, though not the major fracture intended for treatment. A diamond may be sent to a treatment facility and returned with a "Did Not Take" statement, but if any portion of the diamond "took" the filling, it is *still considered a clarity enhanced stone and must be disclosed<sup>3</sup>.* Cap Beesley notes that a safe description of such stones is "evidence of foreign deposition": ie, further testing would be required to determine just what material is in what portion of the stone.

**Partially-treated diamonds are being sold as non-treated stones everyday by brokers who honestly believe that "No Charge" means the diamond is not treated at all.** Treated diamonds are not being disclosed as such, in good faith. This is the cause of our alarm.

## Killer Nightmares

Why should this cause you concern?

### WHAT IF..

- You ask for a 1.00+ carat SI<sub>2</sub> to I<sub>2</sub> diamond, J-P color range (the lot of flash for little cash stone). Your regular broker (who may also be a dealer sending diamonds in for treatment) sends you diamonds on memo to sell. You sell a partially-treated, though "honestly" undisclosed, stone. WHAT IF this consumer has the stone examined by a better-informed gemologist or appraiser, who informs your customer that the stone is clarity enhanced? You didn't disclose this fact to your customer. What will happen to you, and customer relations?
- Some other jeweler sold the stone described above, and you take it in for repair. Assume you (or staff) neglect to check thoroughly for enhancement. Your bench jeweler attempts to rebuild a prong, and the high heat removes what little filling might have masked fractures. Now your customer sees a "different" stone. You may be accused of damaging the stone during repair, or even of switching stones!
- The media picks up on a *new scam* by jewelers: selling treated diamonds without disclosure. Remember, this is already a hot media topic in Main Street St. Louis: your town could be next. An "honest" mistake on the part of your wholesaler, compounded by less than fully diligent gemological quality checking by you, has become a newsworthy story. What fun! What publicity! Who needs it?

## Honestly!

This threat is real, and we are faced with an enormous detection nightmare now. In recent months we have seen numerous stones mistakenly identified by brokers as untreated, on the basis of "DID NOT TAKE—NO CHARGE." Do not make the mistake of assuming that all stones sent to you have been properly disclosed for clarity enhancement. It is especially important to check low end goods. If even 1% of the diamond is filled, it must be disclosed.

Suppliers whom I have personally dealt with and trusted for over 18 years have made this "honest mistake." All argued that the stones were not disclosed because the treatment "didn't take." No matter who your source, don't live in a dream. Get real. Check it out.

### Notes

<sup>1</sup> *National Jeweler Online*, Polygon, October 8, 1994. Print release date October 16 issue. TV story on clarity enhanced diamond sales without disclosure led to state attorney general's office investigation. Story picked up by local daily newspaper, and CNBC show "Steals & Deals."

<sup>2</sup> Of these, two stones were sent to Lab Chair Sharon Wakefield for further examination. Her x-ray tests confirmed suspected treatment in one stone, while determining that a second, questionable stone, was not filled. (See "Fracture-Filled Diamonds: A Ticking Time Bomb?", this issue)

<sup>3</sup> The author noted and discussed these events at length on Polygon, September 22, 1994. AGA Online (AA private network), ASA Online (AS private network) and the generally-accessed Business Discussion channel (BX) all received electronic releases about this growing problem. More information on partially-filled and undisclosed diamonds—including laser drilled and filled goods—has been solicited, for further studies by the AGA-Certified Gem Laboratory Program.

<sup>4</sup> Private conversation with Cap Beesley, President, Accredited Gemologists Association. Also refer to the Federal Trade Commission Guides.

Leo Schmied, First Vice President of AGA, and member of the AGA-Certified Gem Laboratory Committee, is a frequent contributor to *Cornerstone*. He is also quite active on Polygon, updating jewelers nationwide on current gemological and ethical concerns.

## Lab Alert!

### Synthetic Gem Quality Diamonds:

*The Future is Now* Tom Chatham graciously furnished four synthetic diamonds, two faceted and two rough, for my GIA-AA program (Boise, ID) early in October. I was able to keep the stones for only two days, but couldn't resist this unique opportunity to thoroughly examine, test and photograph Tom's Russian synthetics.

All four stones are yellow. Three have strong brown overtones and visible metallic inclusions, strongly suggesting flux incubation. The smallest stone, a 0.10 carat round brilliant, is intense fancy<sup>1</sup> yellow. A spectacular stone, considering its origin, with no tell-tale inclusions that I could see. If this diamond were presented in a parcel of otherwise natural yellow melee, I would not have identified it as synthetic, using my (formerly) routine procedure.

Only one visual test, ultraviolet luminescence, distinguishes all four Chatham samples from natural. **Their response is unlike that documented in published reports of other synthetics.**

Recently, I researched the literature on synthetic vs. natural diamond separation. Without exception, the articles and papers I reviewed (although not addressing Russian material) report that short wave UV response is stronger than long wave. Because this is unlike natural diamonds (those that fluoresce), the literature reports separation to be straightforward. I do not find this to be entirely true with the Chatham product.

Three stones fluoresce more strongly to long wave. The small round, however, is inert to long wave. Fortunately, the fluorescence pattern of all four is *distinctive*<sup>2</sup>. This feature is patchy luminescence: strong (long wave) to moderate (short wave) yellowish-green fluorescence, concentrated *in the stone's center*. Otherwise, the stones appear inert. This unusual pattern should

capture your attention.

**It is essential that you perform UV luminescence examinations in a dark room with your eyes adjusted to darkness.** I'm afraid many of us have become complacent about the environment required for observing this phenomenon.

Now is the time to rethink and revise our procedures. A genuine possibility of synthetic origin now exists with every diamond we examine. Credible reports tell us that Russian producers have been introducing synthetics into Western supply channels for several years<sup>3</sup>.

Technology continues its advance. Separation techniques and procedures, valid today, maybe obsolete tomorrow. With the emergence of synthetic gem quality diamonds, stakes are higher than ever before.

Synthetic diamonds, as we know them today, can only suggest what may be coming. Be vigilant.

—Sharon Wakefield, Director,  
AGA-Certified Gem Laboratory Program

### Notes

<sup>1</sup> If it is appropriate to refer to a synthetic as fancy.

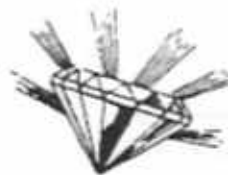
<sup>2</sup> This is consistent with the reports of others investigating synthetic material.

<sup>3</sup> *Mazal U'Bracha*, Number 53, pages 58 through 61.

*"The eye is quick in adjusting to brightness and slow in adjusting to darkness. If the surround is bright and the task is dark, ability to work effectively will be seriously handicapped."*

—Faber Birren, *Color & Human Response*

**Diamond Master Sets** The Lab Committee has noted that several applicants to Certified Lab status offer documentation on master diamond sets, but that the sets are registered to "To Whom It May Concern." For a nominal fee, GIA Gem Trade Lab will review and re-register existing master sets, placing documentation under the individual gemologist's name. This is of benefit for several reasons. First, AGA-Certified Gem Laboratories are required to own fully-graded master diamond sets registered in the individual's name. Additionally, should any casualty or total loss to the master set occur, the individual is better prepared to defend a loss claim when the set is clearly registered in his or her actual name. Another note on masters: the New York GTL is now offering to grade new master sets from color series submitted by the client (dealers, retailers, etc). For more information, call GTL at 212-221-5858.



# AGTA GemFair:

**Thursday,  
Feb 3–Tuesday, Feb 8,  
1994**

**Travel Agent:  
Wyndham Travel,  
1-800-938-5900,  
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## AGA Tucson News

AGA at the Tucson Convention Center  
*Free Programs and Seminars: first  
come, first seated.*

## Free Gemological Education Programs from AGA

### Gem Color Guide II

Thurs 2/3/94

Tom Tashey of European Gem Laboratory,  
Los Angeles.

2-3 pm, Gila Room, #4

### Concave Facets: Innovation in Cutting

Sun, 2/6/94

Richard Homer, award-winning gem  
designer/lapidarist

2-3 pm, Apache Room, #2

### World Opal Market

Mon, 2/7/94

Paul Downing, PhD, author

2-3:30 pm, Apache Room, #2

## AGA Software Workshops, Sponsored by National Jeweler

Information: Thom Underwood, 619-291-  
8852

### Beginner Level

#### Doing a Great Newsletter for Nearly Nothing

Thurs 2/3/94

9-11 am, TCC Ballroom, Crystal Room

Are you "computer clueless?" Learn word processing software to create simple but very effective newsletters. Advantages of newsletters as advertising; which fonts (typefaces) work best; use of pictures; design for effect; your image and "voice" in print. *FREE.*

### Business Software

#### Managing Your Day in the Store

Thurs 2/3/94

2-4 pm, TCC Ballroom, Crystal Room

Looking for a computerized process to help manage your store's daily routine? Tired of the desk clutter which keeps you from customers and jobs? This workshop is hands-on with cutting-edge personal information management (PIM) technology and contact (customer) management software. Evaluate which contact software is right for you; understand the lingo; get to actually use at least one system. *FREE.*

### Software Showcase

Fri & Sat, 2/4 - 2/5/94

11 am-6 pm, TCC Ballroom, Turquoise Room

Meet the major jewelry industry software producers, in this free demonstration forum. Investigate software for inventory control, accounting, point-of-sales functions from imaging to appraisal writing support.

## AGA Testing Services at TCC

### Master Diamond Grading Analysis

*FREE*

Sat & Sun, 2/5 - 2/6/94

9 am-5 pm, TCC

Sign-up for half-hour testing sessions at the AGA Booth in the Convention Center. Advance Appointments: Martin Haske, 617/935-5430.

*Bring your Master Diamond Set, and photocopy of your Master Set report.*

Testing will be conducted on Master Diamond Sets using several types of colorimeters. Results from testing conducted at Tucson 1993 indicate that "many diamond masters represent a range of color rather than a color point" (Haske, *Cornerstone*, Summer 1993). If we are to achieve replicable results in diamond grading, we must first be assured that our "fixed points" of reference are accurate and directly comparable. Findings to date cast some troubling doubts on those master stones we all regard as our fixed color point references. If you have had your set tested once, this will be an opportunity for verification of previous results.

## Farnsworth-Munsell Color Vision Testing

**\$40 AGA Members**

**\$45 Non-Members**

Thurs & Fri, 2/3 - 2/4/94

9 am- 5pm, TCC

Sign-up for 20 minute testing appointment at the AGA Booth.

Advance Appointments: Sharon Wakefield,  
208/362-2275

Color vision testing is conducted by a qualified ophthalmologic nurse in a proscribed lighting environment. Results may be filed with the AGA-Certified Laboratory program, or kept as your private record of current color discrimination acuity.

Practicing professional gemologists have a number of reasons for frequent color vision testing (every four years is recommended). First, you are assured that your color vision is within the normal range since "color vision of an expert is probative where the value of the property depends on the quality and/or intensity of its color" (IRS ruling). Secondly, vision changes with age, as well as with medication use. Be assured that there is a great deal of difference between average (or even low) *normal* color vision, and actual *defective* color vision. Further, it benefits both your buying and grading to know if there is a particular hue you are not perceiving within the normal range. Ignorance is not bliss.



The following special professional seminars require fees. Participants receive AGA-Certified Master Gemologist credits. For detailed schedule, brochure & reservations, call AGA Secretary Joseph DuMouchelle, GG  
313-963-6255, 9-5 weekdays  
or 313-344-9870 after 5 and weekends

*AGA Professional Education*

### The Cutting Edge: Colored Stone & Diamond Enhancement - Grading & Evaluation

Thursday 2/3/94 & Friday  
2/4/94

8 am-Noon; 1-5 pm

#### TCC Ballroom, Copper Room

Practical, hands-on sessions and program presentations both days will examine Koss diamond treatment, emerald treatments, diffusion treated rubies and blue sapphires, and the new synthetic rubies, sapphires and emeralds. Special presentations include...

- Introducing Russian Synthetic Diamonds: laboratory study report, and specimens.
- Diffusion Rubies, Hydrothermal Rubies & Emeralds
- "The Breathing Piston: A New Approach to Fracture Infill Methods & Techniques"
- Diamond Cut Grading, Pearl Grading
- "SI 3, What Is It?" Panel Discussion
- Presenters include Tom Chatham, Cap Beesley, Dr. Hanni, Ted Themelis, Richard Drucker, Martin Rapaport, Sharon Wakefield and Tom Tashey.

\$100 AGA Members

\$125 Non-Members

*Register Now to Reserve Your Seating for these Professional Sessions!*

*Participants receive AGA-Certified Master Gemologists credits.*

## AGA Cocktail Reception

Free admission, Cash Bar

*Join AGA before the AGTA Dinner Dance!*

Sat, 2/5/94, 6-8 pm.

Doubletree Hotel, Bonsai Room

## LETTER TO THE EDITOR

Dear Editor:

Lately more jewelers and diamond dealers have become concerned about the durability and stability of clarity enhanced diamonds. Trying to provide an accurate answer, I refer them to the article "Filled Diamonds: Durability Concerns" written by GIA scientists and published in Rapaport Diamond Report (Sept 3, 1993). This article is based on research conducted in 1989, fully published in *Gems & Gemology* ("The Characteristics and Identification of Filled Diamonds," Summer 1989).

The 1989 research tested the durability and stability of our original Yehuda Clarity Enhanced Diamonds, and did not address any other existing treatment methods. Results showed that steam cleaning, ultrasonic cleaning, and boiling in soaps do not harm the Yehuda filling. GIA found that our filling remained in place when subjected to high heat. Even at 1490 Fahrenheit degrees, Yehuda diamonds retained filler material, although damage to transparency became evident.

Since 1991, a few other companies have started providing diamond enhancement services. The methods and materials used by these other companies are not those employed by Yehuda and Diascience. Three major defects have been found in these other treatments which do not exist in Yehuda treatment.

First, some companies are marketing diamonds in which the filling material is sensitive to ultraviolet light; exposure to

sunlight can turn their filling gray or black. A second problem is the heat sensitivity of other filling materials. At least one company has discerned that their treated diamonds can withstand only up to 842 F degrees (450 C), whereon the filling material quickly evaporates. In contrast, Yehuda filler does not evaporate. A third problem is durability of other treated diamonds when subjected to ultrasonic cleaning: some other methods produce enhanced stones which do not withstand normal cleaning procedures.

Therefore, we recommend to our clients, and those who use clarity enhanced diamonds, to inquire of their vendors whether the treatment was done by the Yehuda Diamond Company, or by another firm.

Sincerely,

Ron Yehuda

The Yehuda Diamond Company

*PS- Early in our research, we easily discovered an infilling material which solved the optical objective: it was inexpensive, but was not durable. We chose to continue research until a more durable, optically enhancing diamond filling material was developed. We believe customers deserve better. This month, we have donated Yehuda diamonds to AGA's Lab Program for further study of the type already conducted by Sharon Wakefield on other filled diamonds. We look forward to the results of your independent testing.*

## Thanks for the Memories

AGA would like to thank *Jewelers' Circular-Keystone* for their tremendous support of the Software Review Committee, and Software Showcase these past several years. Without such longstanding assistance, many of our beneficial efforts in the area of business technology might never have been realized. We are grateful for such wonderful friends in the jewelry industry. Thank you, JC-K!

## AGA Region News

### "TRICK OR TREAT! Diamonds of the 90's"

October 31, 1993 San Francisco

Hosted by Region 1 Governor David Harris, in conjunction with the Bay Area GIA Alumni Association, this brunch meeting and seminar cast light on a number of "chilling" issues...and in the record time of four hours. Featured guest Tom Chatham brought out the goodies for sixty meeting participants: Chatham Created Diamonds produced in Russia, and soon to be marketed in the US. AGA Past-president Cortney Balzan, David Harris and Sharon Wakefield contributed reports on practical gemological procedures for synthetic determination, based on their observations of the Chatham stones. Balzan and Harris examined gem synthetic diamonds provided by Chatham a week prior to the meeting. Their objective was to use readily available instrumentation, and standard gemological procedure, to observe any differences between natural and synthetic stones which might normally be detected by the working retail gemologist. Wakefield examined lab-grown diamonds, also provided by Chatham, at greater length during

the month prior. (See **Lab Alert**). Additionally, an update report on Koss treated diamonds was provided by Lab Chair Wakefield. Gary Roskin presented a session on  $SI_3$ , as used by European Gemological Laboratories of Los Angeles. In all, there were few tricks, and many treats.

### "Who is the keeper of the standard?" Diamond Mini-Conference

October 24, 1993 Miami

Incoming Region 4 Governor Joseph Mackley (Southeastern US), along with outgoing Governor Tom Seguin, co-hosted this day-long diamond meeting in Miami. The focus was recent developments in the diamond industry: grading changes—including the controversial  $SI_3$  clarity grade, diamond cut grade, grading tolerances and the new synthetic diamond. Tom Seguin, introducing the session, stated that the conference was for professional information only, and not to be considered an endorsement of any particular change to diamond parameters.

AGA President Cap Beesley, in his opening remarks, stated that the changes to diamond grading parameters are complicated only by the political arena, rather than any actual technical consideration. Gary Roskin, the Assistant Director of European Gemological Laboratory (Los Angeles) described their new  $SI_3$  clarity grade, which was added to EGL's descriptive terminology in April 1992. Roskin defined the new  $SI_3$  clarity grade as being a slight tightening in the  $SI_1$  and in the  $SI_2$ , with the available balance of the lower part of  $SI_2$  category becoming the new  $SI_3$  clarity grade.

Cap Beesley followed with a talk on standards and the traditional vocabulary of diamond grading. Beesley asked the question "Who is the keeper of the standard?" Cap opined that this "keeper of the standard" should be one without a commercial interest, and who can maintain this standard with integrity, informing every interested party when a change to this standard is to be made, and why. Beesley felt that

changes have been made in diamond color grading, diamond clarity grading, and diamond cut grading—including ideal cut tolerances. Cap also showed slides on the new synthetic diamonds, and pointed out identifiable characteristics.

Following a lunch break, hands-on microscope viewing sessions concentrated on the  $SI_3$  clarity grade, as presented by Gary Roskin. Cap Beesley demonstrated diamond color grading by spectroscopic methods, and presented a quiz on diamond cut grading. During this practical session, conferees also availed themselves of the opportunity to examine a master set of Argyle C1-C7 diamonds, presented by EGL.

Martin Rapaport presented a lecture on his interpretation of the "microscope" gemologist versus the "loupe" dealer in the marketplace. This talk was interlaced with a "machine-gun" spray of topics, including his diamond market guide's use of  $SI_1$  clarity grade: the low end of  $SI_2$  through the high end of  $I_1$  ( $SI_2/I_1$ ). He also generalized on the influence of cut grade to price in the marketplace. Rapaport emphasized that the gemological laboratory will be even more important to the future of the diamond business, due to some fraudulent dealers selling off-grades and treated goods without disclosure.

The diamond mini-conference concluded with a panel discussion involving all presenters, questions and dialogue with the audience.

—reported by Joseph Mackley, ASA,  
MGA

### Art & Designer Jewelry Breakfast & Membership Meeting

June 5, 1993 Las Vegas

About 30 AGA members joined President Cap Beesley and meeting host David Harris in welcoming speaker Barbara Berk to an early morning breakfast before the Vegas jewelry show last June. Barbara Berk, GIA's 1993 Student of the Year, is a studio jeweler creating highly three-dimensional brooches, earrings,

bracelets and neckpieces intricately woven of colored gold, silver and refractory metals. Berk's slide lecture surveyed contemporary designers whose works were on display at the show, and introduced price and availability information of interest to wholesale buyers and appraisers alike.

As AGA's first meeting at a jewelry wholesale exposition, the morning's agenda included "lobbying efforts" to permit appraisers to easily obtain show entrance credentials for the purpose of wholesale price and quality research. (Member Neola Caveny, GG, ISA also lobbied hard on this issue, with letters to *JC-K*, among others). President Beesely was successful in Vegas: show passes for appraisers were made available there for the first time. Beesely made it clear that his next goal is to obtain show credentials at other industry expositions, such as the JA New York show. Also to his credit, Beesely was invited by show sponsors *JCK* to moderate a well-attended panel discussion on industry ethics. As a frequent speaker and special guest, Beesely's clout may have had something to do with the decision for access to the show. Thanks, Cap. We knew you could do it.

"Some persons are likeable in spite of their unswerving integrity."

—Don Marquis

## AGA Member News

### Books & Publications

Renée Newman recently has released a new book, *The Gold Jewelry Buying Guide*. The latest in her series of consumer-oriented jewelry and gem buying guides, *Gold Jewelry* is concise, thorough, and completely readable for the jewelry neophyte. In chapters such as Manufacturing Methods, Gold Terms &

Notations, and Judging the Setting, Newman allows consumers confidence and facility in judgements of quality. Professionals in need of quick reference on jewelry evaluation elements also may profit from the clarity and completeness of this book's organization. Newman's other titles include *The Ruby & Sapphire Buying Guide*, *The Diamond Ring Buying Guide*, and *The Pearl Buying Guide*. This last work received favorable reviews from AGA Lifetime Achievement Awardee Frederick H. Pough in the last issue of *JC-K Book Club News*. For more information, contact member Renée Newman at International Jewelry Publications, POB 13384, Los Angeles, CA 90013-0384, USA.

Antoinette Matlins and gemologist Antonio Bonanno (founder of the Accredited Gemologists Association) have released a completely revised, updated and expanded edition of the very popular *Jewelry & Gems: The Buying Guide*. This father and daughter duo have served as gemology editors with *National Jeweler* for over a decade. Matlins continues to serve as a gem and jewelry consultant and consumer advocate. *Jewelry & Gems: The Buying Guide*, Third Edition (Gemstone Press/Van Nostrand Reinhold), includes excellent sections on choosing an appraiser and the importance of thorough appraisals; this makes this edition an essential addition to AGA members' bookshelves. "Hot market" stones such as red beryl, "neon" tourmaline and green tanzanite are among such featured additions as: the art of contemporary jewelry; sections on fantasy cuts; and award-winning designer jewelry. All are augmented with a new selection of photographs. Matlins' book advocates consumer education, to "build a sound relationship with a jeweler, knowing that the jeweler does, in fact, merit your trust."

AGA members receive a courtesy discount on single copies (retail \$16.95) and attractive quantity discounts are available. Other popular titles by Matlins & Bonanno include *Gem Identification Made Easy*, and *Engagement & Wedding Rings*. For more information, contact Gemstone Press, Box 237, Woodstock, Vermont 05091. Or call 800-962-4544.

Martin Haske, member of the

AGA-Certified Gem Laboratory Committee and frequent contributor to *Cornerstone*, also is the developer of ADAMAS ADVANTAGE<sup>®</sup>. This sophisticated software, which many members have seen demonstrated at Tucson, was created as an aid to gem identification and appraisal. Haske is now offering the standard version of ADAMAS ADVANTAGE to AGA members at the discounted price of \$500 (plus \$15 s&h). The regular price to those not affiliated with select gem and appraisal organizations is \$595 plus handling. For more information, contact Marty at 320 Place Lane, Woburn MA 01801, or call 617-935-5430.

Larry Phillips, AGA-CGL and active gems & jewelry appraiser was a resource for the latest issue of *Kiplinger's Personal Finance Magazine* (Nov, 1993). The article mentioning Phillips, "How to get a good appraisal," appears under the regular column "Your Family Finances." Good work, Larry.

### Retirement Gala Planned for AGA Founding Father

With the retirement of Antonio Bonanno, founding father of AGA, the nation's gemological community forfeits one of its best loved and most respected leaders. Without the vision, dedication and hard work of "Tony" Bonanno, our professional community could not have developed so broadly and richly. A special retirement gala is being held December 19, 1993, in Washington, DC. For more information and reservations, contact Kathryn Bonanno, 609 Fifth Avenue, NY NY 10017, 212/758-5058.

The Columbia School of Gemology, directed for 50 years by Antonio Bonanno, is being offered for sale. The family is searching for a highly skilled, dedicated gemologist to acquire this substantial gemological laboratory and educational institution, and to carry on the Bonanno tradition. For more information, contact Antoinette Bonanno Matlins, POB 237, Woodstock VT 05091, 802/457-4000.

## Get Well Soon

Supplier member John Allaman, a dear friend from many Tucson adventures, is now recovering from major surgery. While he is advised to rest for several months, we do hope to see him again soon. Allaman's Sarasota Instruments, a division of Tensor Corp., is developing a special price offering on gemological instruments to members of AGA. Look for more news on this offer soon. And GET WELL, JOHN!

*"Many individuals have, like uncut diamonds, shining qualities beneath a rough exterior."*

—Juvenal

## "Melee"

### News Briefs & Notes of Interest

#### A\*G\*A\* (Activist Gemologist Anonymous)

\* Why are we receiving the latest GIA lab research *through paid subscriptions to Rapaport*, rather than through GIA Alumni member or chapter channels? Is this part of the new benefits package Alumni were promised for their commitment to higher dues, and support of research? [*Rapaport Diamond Report*, Sept 3, 1993: "Filled Diamonds: Durability Concerns" by Robert C. Kammerling, James E. Shigley, Thomas M. Moses (p. 11-12). *Rapaport Diamond Report*, Aug 6, 1993: "Identifying Faceted Gem-Quality Synthetic Diamonds" by James E. Shigley, Emmanuel Fritsch, Robert C. Kammerling, John I. Koivula, Thomas M. Moses (p. 10-13, illustrated).]

\* If *Cut* is so important to diamond quality that even Diane Sawyer (ABC) rec-

ommends to consumers that they get an opinion on cut along with the other C's, why can't the industry agree to establish cut grade parameters?

\* Inquiring minds want to know: will our letters of completion for taking GIA's new "Super Gemologist" seminars come with tights and a cape?

#### The Contemporary Design

**Group** Many AGA members were among the crowds at the summer's Las Vegas and New York shows. And the most heavily trafficked aisles again seemed to be the designer's groups. The fastest-growing association of professional exhibiting design jewelers is The Contemporary Design Group. Joint efforts to benefit members and retailers include trade show designer section promotion, group advertising programs, ethical advocacy and retailer education programs. Appraisers in need of designer information would be well advised to make note of this successful venture as well. Color brochures displaying the works of an expanding group of contemporary designers, and information on quality standards are among the resource materials available. For more information or membership application, contact Chairman Michael Pilla at 1057 Grand Avenue, St. Paul MN 55105. Or call 612-293-1878.

**Summer Reading** OK, so summer's flown and you can't find time to read until after the holidays. Highly recommended is Gerald A. Browne's latest jewel intrigue novel, *18mm Blues*. The story develops on several levels across the gem-saturate cultures of New York & San Francisco, the waters of Japan, Thailand gem-cutting districts and, of course, pearl poaching in Burma. Expect a bit of romance, unexpectedly colorful gems and paintings, spirit possession, violence of the non-gratuitous type, and an overall great read. How many errors in gem and place names can you spot? —Mystery Reader.

**Diamonds in the News** *JCK*, Sept 1993, part one: "Filled Diamonds: Are the Tell-Tale Signs Enough?" (p. 48-51). "Chatham Announces Synthetic Gem Diamonds" (p. 15-16). *National Jeweler*, Sept 1, 1993: "Koss Turning to 'Practical' US Market", "Argyle Offers New 'Certs'" (p. 14). *National Jeweler*, Oct 1, 1993: "Clarity Enhanced Biz Heats Up in the States" (p. 14). *National Jeweler*, July 16, 1993: "Diamantaires' World Congress Takes Hard Stance on Disclosure" (p. 1, 175). *Diamond World Review*, June-July 1993, "Russians Adapt Know-How for Enhancement of Rough" by Vladimir Teslenko (p. 50-54), "Firms Rush for CVD Technology" (p. 54). *We've got diamonds on the soles of our shoes....*



### AGA on Polygon

AGA Online now features Lab Alerts, as well as discussions on a variety of timely subjects. Join in our Polygon private network (AA) now!



**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.

**Membership 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).

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.

**Return completed application to:**

Tom Seguin, AGA Membership Chair  
 Bayshore Office Building  
 6221 14th Street West, Suite 105, Bradenton, FL 34207

**ASK MR. SOFTWARE**

Free software suggestions  
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*National Jeweler* and the Accredited Gemologist Association (AGA) are offering the jewelry industry a service to help jewelers computerize their business. Simply circle the number listed below. You will be sent a simple form to fill out and return. The AGA will send you a listing of relevant software options for your particular business needs.

The Accredited Gemologist Association (AGA) is a not-for-profit professional organization that promotes computerization for every aspect of the jewelry industry through software reviews, seminars and workshops around the country. The AGA offers advanced training in gemology and a certified Gem Laboratory Program. We advocate for ethical codes of conduct within the gemological appraisal business.

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 3955 Goldfinch Street, San Diego, CA 92103

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