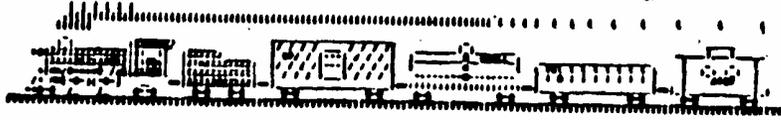


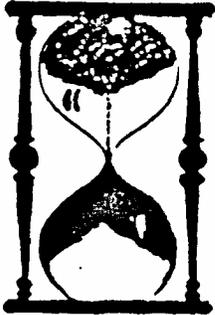


The OPAL EXPRESS

Published monthly by the
American Opal Society...



Vol. 18 No. 10
October 1986



TEN - NINE - EIGHT - SEVEN - SIX

As the November countdown rapidly approaches, twinges of anticipation fill the air. We American Opal Society members begin to awaken from our summer doldrums as our thoughts turn to such fanciful things as pumpkins, turkey feasts, and, oh yes, A FANTASY WORLD OF TREASURES.

The excitement increases as zero hour draws nearer and things begin to fall into place for the MAIN EVENT of our year: that is, the 19th annual Opal and Gem Show and Sale.

Now we ALL know how important it is to pull together for this effort. As in the past, our Show's only as successful as we make it as a team. This year is certainly no exception. In fact, this year our Show is even BIGGER than ever before, with over thirty-five dealers participating in an area of 12,000 square feet. This means that MORE THAN EVER the American Opal Society needs YOU (and YOU and YOU and YOU). You may ask, "How can I help?" "What can I do?" Well, it just so happens that there are a number of things you can do. There are many jobs available that are altogether challenging, rewarding, and FUN.

Please plan to attend the October General Meeting. We need all of you to be there to help in the final preparations of the Show, to share in the excitement of belonging to a winning team.

Mark your calendar for Thursday, October 9, 1986 at 7 30 p m
That's the WHEN. The WHERE is at the Cal-Fed building in
Downey (Please see the map for directions)

Don't forget, there'll be a chance to win a stone or two at the raffle, as well as refreshments See you there!!

PREXY BRIEFS.

*** August and September are vacation months for many (as vacation months go) -- most people DO go, and GO our members seem to have done. This left our opal evaluation meeting in September to the hard-core enthusiasts who support our chapter meetings through the darkest nights of our summer doldrums. Opals were evaluated by our intimate and intense group. When our official experts did not show, the group went right ahead and evaluated their own opals, using our master kits and evaluation charts. I appreciate this determination. When the teacher doesn't show up they go ahead and educate themselves.

*** This June Modern Jeweler magazine printed an article on the treatment of gemstones. This is the most comprehensive coverage in one article that I have read, also the most current. I was so impressed that I wrote Modern Jeweler magazine for permission to reprint at least the portion on opal treatment. They were kind enough to give me permission to use the entire article.

*** Most of us who are opalophiles also have an overlapping interest in other parts of the gemstone world, if only the purchase of a piece of jewelry other than opal now and then. Gemstone treatment or "enhancement" as the treaters prefer to say, is so prevalent that almost any colored gemstone that you purchase can be assumed to have been enhanced in some way. Many times the stone is treated in the country or origin, or in another foreign country and the information is not given to the jeweler from whom you purchased your stone. Opal so far is the most likely gemstone NOT to have been enhanced, but the gemstone treaters are working hard on that, too.

*** Our next meeting will be devoted to the Show.

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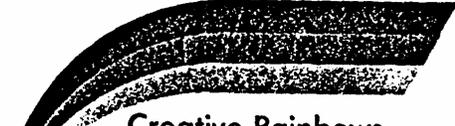
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The air is beginning to have a nip in it at night and that means that fall is here. That also means that show time is getting very close. The tension is mounting and last minute activities are being tabulated so that nothing will be forgotten. First the show is sold out, then we have some cancellations. Then the show is sold out again and then some more cancellations. If there are any more cancellations prior to October 10, 1986, the dealer will forfeit 50% of the money that has been deposited for table rental. If there are any cancellations after that date, the dealer will forfeit ALL the money that has been put down as a deposit.

There are still a few tables (about 3 or 4) that are available for rent. If we don't sell all table space by show time, I will assign the remaining tables for jewelry exhibits and place them near the dealer tables. This will be much better for the exhibitors since the exhibit tables are currently placed around the outside walls.

A late flash from the Anaheim Convention Center: We will not be able to procure liability insurance from the City of Anaheim. We now must scramble around and find some insurance company that will sell us insurance for the two show dates. If anyone knows of a company that has public liability insurance available, please contact us immediately at 213-425-2426 or 714-734-7484.



FROM YOUR EDITOR

Every now and then a newsletter editor needs to sort of "take a vacation from life," stop for a while, catch her breath, take a long hard look at where she's going, vow to change -- and then get back to the reality of things and continue right where she left off. In other words, I thoroughly enjoyed my vacation, but now I'm back and ready to play "clickity clack" with the typewriter keys again. I'd like to thank the Pattees for doing such a nice job in the September issue of The Opal Express, as well as for their continued assistance each month. I would like to also thank all who have written in with suggestions and those really welcome newsy tidbits. And last (but in no way least) thanks to my husband, Andy, whose informative "Show Biz" and "Board Report" articles keep our members up-to-date on important issues.

THE

TREATER'S

ART

Triumph and trauma

By David Federman MJ Executive Editor

Space age technology that helped put man on the moon is helping to transform Mother Earth's enormous gem wastes into enormous gem wealth. Some examples of the new alchemy:

- A Florida cutter now use lasers to remove potentially troublesome flaws from rubies and sapphires before heating them in Thailand. The end result: better yields and greater chances for improved color in treated corundum.
- An Arizona dealer impregnates irradiated rubellite with plastic to hide numerous surface cracks. The end result: new usefulness for tons of reject tourmaline.
- A California crystal grower heals surface cracks in natural emerald by immersing stones in a solution used to grow synthetic stones. The end result: possible liberation of emerald from centuries of dependence on impermanent oiling techniques.

Despite these radical innovations in gem processing, most jewelers and their gem suppliers have no idea how high-tech gem enhancements has become. Nor do they realize that these innovations, and others equally profound, are less than five years old. And now, even before they come to grips with the first wave of high-tech gem enhancements, they will have to brace for a second wave of even more far-out processes.

The reason is simple. Mass conversions of minerals from useless junk to useable gems are often as highly profitable as they are technological. Emboldened by past successes, gem treaters are combing through patents, studying technical journals and on occasion, hiring aerospace scientists in their search for new gem beautification techniques.

"The trick is for commercial gemstone treater, who is generally not a scientist, to somehow gather together this incredibly vast technical database and glean from it information and technology to use in the practice of gemstone treatment." says research gemologist Robert Kane of the Gemological Institute of America.

To turn the trick, treaters have tapped into the rich realms of solid state physics, quantum chemistry and materials science—anywhere work in color origin or appearance alteration of minerals has been done. As treaters have discovered these processes, they have exploited them to the fullest, sometimes with results that shook nations.

Just took what happened in Sri Lanka. For years, huge stockpiles of reject sapphire and topaz there seemingly testified to a survival of the fairest philosophy on nature's part. Within a decade, treaters have converted millions of carats of the islands once worthless corundum and topaz into small wonders—in days, not millennia.

Today, an estimated 200,000 carets of colorless topaz leave Sri Lanka monthly, presumably for America to be irradiated and then heated to an Aqua-Velva blue. Simultaneously, something like 20,000 carats of milky and pale-colored sapphire -leave the Island for Thailand to be heated to just about every shade of sapphire color,

Similarly, heat end irradiation have been benefactors to gems from other countries. Heating routinely improves sapphire from Australia, Cambodia and Kashmir, ruby from Burma. Kenya and Thailand, and tourmalines from Africa, America and Brazil. Irradiation is giving new life to topaz from Africa and Brazil, plus tourmaline from America.

What's more, other sophisticated technologies are waiting in the wings to leave as deep a mark on the gem world. Plastic impregnation may soon render tons of fragile Australian and Brazilian opal crack-proof, toughen much of America's chalky, crumbly turquoise and, perhaps, erase surface fractures from African, Brazilian and Colombian emerald.

Ordinarily, such gem processing breakthroughs would be considered triumph since they swell the supply of many popular gem species and, by so doing, make them more affordable. More likely, however, they will trigger trauma.

First of all, harnessing mass production techniques, developed for other Industries, challenges near-sacred notions of gemstone beauty and value, notions founded on the supreme but possibly archaic virtue of rarity. In a world where treatment is the norm, mass production re~ places natural selection.

Secondly, the fact that the laboratory is the finishing ground for so many gems challenges an equally

sacrosanct separation between

manmade and natural. Processed gems fall into a gray area somewhere between these two distinctions. The area gets grayer once jewelers realize that some of the choicest tricks of the treater's art were first developed by makers of synthetic stones,

To help jewelers cope with the serious issues raised by treatment, Modern Jeweler surveys recent developments in the application of advance technologies to gemstone enhancement.

HEAT TREATMENT

The art of the state

Today, heating is the only way most of the world's rubies and sapphires can ever hope to qualify as gems suitable for jewelry use. Therefore, those who treat them hold most, if not all, the power in the corundum world. Thanks to its massive heating capabilities, Thailand has been the sapphire market's seat of power for the last decade.

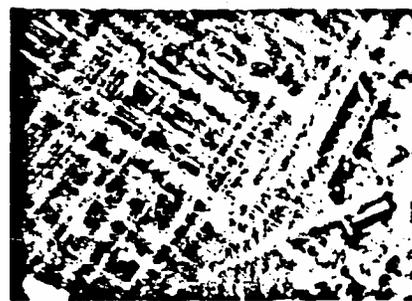
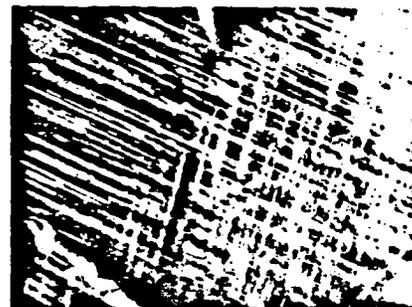
But until Thailand began to treat gems, it was a nobody in the sapphire world. Sri Lanka, the main producer of fine sapphire, called the shots. Then, in the mid-1970s, the Thais learned of two sapphire salvaging techniques, both involving the use of high heat, that helped them depose Sri Lanka's dealers as the czars of corundum,

Ironically, Thailand wrested control of the sapphire market from Sri Lanka by successfully rehabilitating tons of the Island's reject stones, bought for next to nothing. "Blueing" was done using a high-heat conversion method, said to have been developed by the Swiss some 20 years earlier, as well as one detailed in a 1916 Union Carbide patent for the heat-coloring of colorless corundum. Both processes worked spectacularly well with a type of milky sapphire, called "Geuda," found only in Sri Lanka. By heating to temperatures to dissolve silk (rutile) and trigger an internal chemical reaction, Geuda pieces were transformed from opaque, colorless stones to transparent, blue beauties.

When the Sri Lankans realized their pennies-per-carat Geuda stones were being turned from junk into gems, they, of course, raised prices for this magical rough. But by then their backlogs, accumulated over decades, were practically depleted. Meanwhile, the Thais had cultivated



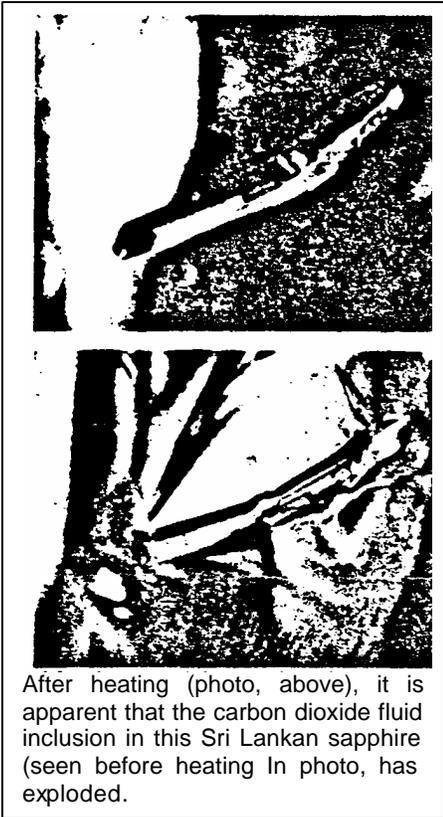
Two views of hematite crystals in a yellow sapphire after heating, the top under dark-field illumination, the one above in diffused transmitted light.



The rutile in this Sri Lankan sapphire (photo, above) broke down into line dust-like particles during heating (photo, top).

Unless otherwise noted, all photos by John I. Koivula, GIA

MODERN JEWELER



After heating (photo, above), it is apparent that the carbon dioxide fluid inclusion in this Sri Lankan sapphire (seen before heating in photo, has exploded.

extremely close relationships with Sri Lanka's gem miners, outbidding the island's dealers for new sapphire rough because they had the know how to make it useable. Eventually, market control shifted from Colombo, Sri Lanka, to Bangkok, Thailand. Now Sri Lanka's dealers want their old power and prestige back. And so does their government. But it won't be easy.

The Thais guard their art with (if needs be) vengeful propriety. Any attempt by a Thai citizen or even a foreigner who runs a business in Thailand to practice gemstone alchemy in another country is viewed as treason. Usually a simple death threat is enough to bring the wayward practitioner back to his senses. But the Sri Lankans are betting that sooner or later this rather extreme form of peer pressure will fail to keep potential defectors in line. The sooner the better, they feel. So Sri Lanka's government is willing to pay handsomely — if only in the form of concessions—to see a flourishing treatment industry on the island. Of course, the site, or sites, of any processing plants will probably be a state secret. It is a virtual certainty that such plants will be targets for terrorism.

Meanwhile, Sri Lanka will continue to try to import the treatment technology it needs to compete against Thailand. But even if it does so successfully, many U.S. dealers doubt Sri Lanka can win back old influence. For one thing, it lags too far behind Thailand. For another, the Sri Lankans are setting out to learn the art of treating at a time when the best grades of Geuda cost as much as 60% of the final dealer cost for a first-rate enhanced gem. Such stones are rare. However, far more plentiful run-of-the-mill treated stones bring very small profit margins, often under 10%. Consequently, any money to be made from treating comes from quantity not quality.

This fact forces the Thais to experiment even more with their art, for currently it is the Sri Lankan rough that proves unreclaimable that is still relatively inexpensive. The treater who can finally find a technique that transforms abundant incorrigible sapphire stands to make a large fortune. Egged on by the profit motive, Thailand's treaters could stretch the technology gap even further. But can Sri Lanka's ample dregs of corundum be beautified in the oven? Treater/dealer Richard Postrel, Gem-source Ltd., Bay Harbor, Fla. believes so and is sinking several hundred thousand dollars into proving himself right. "The treater must proceed on the premise that

all or virtually all corundums have some color locked in them," he declares. At present, this is still a highly theoretical assumption. Nonetheless, Postrel continues, "The true treater blames himself and not his stones for their failure to take to heating." That's why he says true treaters won't resort to using chemical enhancement techniques like diffusion coloring. "They're cop-outs," Postrel says.

Instead, Thailand's master treaters push the art of non-chemical heating to new heights. Postrel is even experimenting with lasers to eliminate or, at least, relieve stress from temperamental inclusions. "Problematic inclusions can destroy a stone when it is being heated," Postrel explains.

"Therefore, to minimize the potential for damage, dealers must cut away areas in the stone that could give trouble. But by doing this, they may eliminate areas with important concentrations of color-causing trace elements. Using lasers, I expect to be able to use more of the rough than is presently possible. Hence, more of my stones should prove amenable to heating."

CRYSTAL REGENERATION Born-again beryls

Imagine that a benchman has badly fractured a customer's valuable Colombian emerald or, for that matter, Burmese ruby. Believe it or not, modern gemstone enhancement technology could, if perfected, spare jewelers the high replacement cost of such a stone. That's because regrowth for a couple of weeks in a hydrothermal autoclave used to grow synthetics could heal the fracture in the damaged gems. The hydrothermal technique has been a matter of public record for at least 65 years. But it has only come into its own as a viable possibility in the last 25 years, during which time methods have been developed that could seal and heal fractures in emerald, ruby and sapphire.

So it is not inconceivable that jewelers might someday offer customers beryl and corundum clinics for badly damaged heirloom gems worth mending. Such mending is done everyday in the art and antiques worlds. For sure, these born-again beryls and corundums would have to be reclassified as "synthetically

restored," because, in effect, they would be natural or partially natural (in the case of oiled or heated) stones used as "seeds" for a synthetic overgrowth process. But whatever these stones might be termed, the technology exists to give them new life—time and time again,

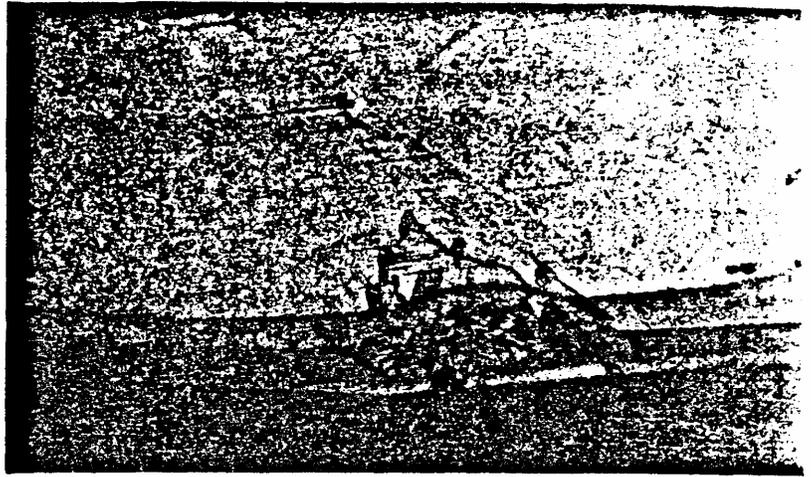
No doubt, the thought that natural gems could be "reborn" over and over in a laboratory is a bit spooky. But thanks to advance crystal growth technology, emeralds and rubies can be used to "regenerate" themselves. Such possibilities are the stuff of which future shock is made. Still, jewelers must face the fact that regeneration can be done. Once they do, they can begin to come to grips with the current mind-boggling state of the gem treater's or, if you will, processor's art. It is an art largely borrowed from the high-tech, big-bucks world of aerospace research where considerable time and money has been spent understanding the origin of color in minerals and duplicating these processes in made-made stones.

"Ever since World War II, there has been a steady procession of techniques for the enhancement of synthetic stones that have eventually been applied to natural gems," says researcher John Koivula of the Gemological Institute of America. Koivula is convinced that most of the corundum treatments gemologists encounter today are lifted straight from the patents on these processes. Many of them belong to Union Carbide whose Linde Air Products subsidiary made synthetic sapphire for years.

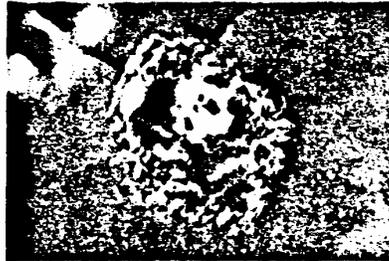
One example is glass-filled ruby. A 1948 patent assigned to Linde describes a technique to fill in and smooth out the pits and cavities often found in synthesized (and natural) corundum. This involves bonding of a special-formula glass under high heat that has a chemical affinity for corundum (ordinarily glass doesn't). Dealers assume that the treaters of Bangkok who have been using this technique since the early 1980s discovered the process by themselves. But Koivula notes that GIA tests of the glass used showed it was identical to the formula suggested in the patent literature.

"I strongly doubt that it was a coincidence," he says.

Certainly, crystal growers can take direct credit for the gem trade's adoption of a diffusion coloring process used frequently on pale-to-colorless sapphire. As detailed in a 1975 Union Carbide patent, the process is meant to induce a surface color by . . . (to be continued)



It's almost impossible to see the glass-filled cavity in the girdle edge of this Thai ruby under dark-field illumination (photo, left); but under surface reflected light (photo, top), the hung is hard to miss.



The glass-filled cavity in this Sri Lankan sapphire has a noticeably different luster in oblique, surface light (photo, right); under normal 10x viewing (photo, left), a large gas bubble, plus brown residue, is visible.

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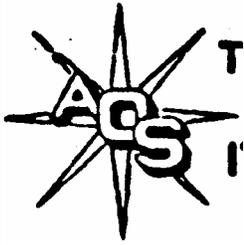
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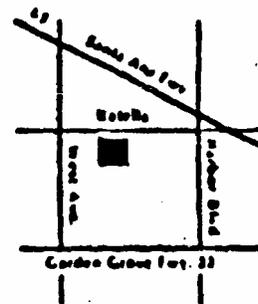
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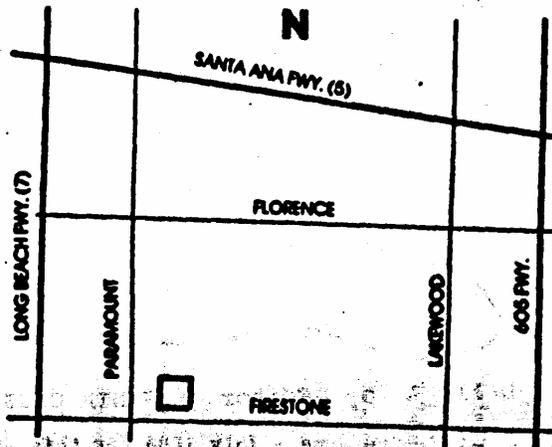
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