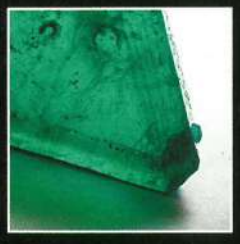
Gems & Jewellery

August 2007 Vol. 16 No.3



The Gemmological Association of Great Britain & The Society of Jewellery Historians

One Hundred Years of Gemmological Education

The change of our official company name from 'The Gemmological Association and Gem Testing Laboratory of Great Britain' to 'The Gemmological Association of Great Britain', as agreed at our annual general meeting in June (see p.16) brings us back to our roots and, more practically, is what we were generally known as around the world anyway.

The recent history of our company name is somewhat confusing. The name 'The Gemmological Association and Gem Testing Laboratory of Great Britain' was conjured up in 1990 when the educational, membership and other functions of the 'original' Gemmological Association of Great Britain were combined with the Gem Testing Laboratory.

That 'original' Gemmological Association of Great Britain had matured out of the Gemmological Committee of the National Association of Goldsmiths, set up in 1908 to establish gem education for the UK jewellery industry. That's one hundred years ago next year, which is why we are proud to be celebrating 'One Hundred Years of Gemmological Education' in 2008. We have ambitious plans. We have our minds set on staying the provider of the highest status international gemmological diploma course through our second century and that means updating our courses, their administration and delivery. But no lowering of standards.

You can learn more about our plans at IJL (see p.24) – we are at stand G455 – which with its growing loose gem section is becoming a major event for UK and international gem buyers and gemmologists. If you don't make IJL, then we will be at the Hong Kong Jewellery Show in September (Booth 2M49) where we will also be holding our Gem-A Hong Kong Awards and Dinner (see p.17). And, of course, don't forget our Conference in October (p.2) with its impressive panel of international speakers and when we'll tell you more about our plans.

Jack Ogden
Chief Executive Officer, Gemmological Association

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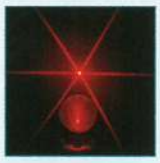

Effect seen with a star rose quartz. Photo courtesy of Harold Killingback. See Star rose quartz by laser light, p.10.

Tabular crystal of Lennix synthetic emerald. © Gem-A. See Gem Discovery Club, p.9.

Victoria Cross. Photo courtesy of David J. Callaghan. See For valour, p.18.

The Lion of Judah bangle by Sah Oved. Photo courtesy of Bonhams. See The Maker of Jewels, p.22.

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Icy Jade, photo by G. Bosshart

The Gem-A Conference 2007

Sunday 28 October
The Renaissance London Heathrow Hotel

Gems of the Orient: Pearls and Jade

For full details of this major event see
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or call Karolina on +44 (0)20 7404 3334

'Piece method' to culture whole round pearls, photo by S. Akamatso.
Green jadeite jade leaves, photo by Mimi Ou Yang.
Tomogram of a cultured pearl, photo by E. Strack.

SOCIETY OF JEWELLERY HISTORIANS

The Society of Jewellery Historians was formed in 1977 with the aim of stimulating the growing international interest in jewellery of all ages and cultures by publishing new research and bringing together those seriously interested in the subject, whether in a professional or private capacity. The membership includes archaeologists, museum specialists, collectors, art historians, dealers, gemmologists, practising jewellers and designers, scientists and restorers, all united by their enthusiasm for the subject.

The Society holds eight evening lectures a year at the prestigious apartments of the Society of Antiquaries of London, as well as occasional symposia. The lectures cover all periods from ancient to modern, and a living jeweller is normally included each year. Refreshments are served after lectures, and this provides an opportunity for members to meet.

Jewellery Studies is published in colour on an occasional basis, and contains full length articles, book reviews and other information. Members also receive *Gems & Jewellery* five times per year. The current maximum annual subscription is twenty eight pounds.

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Treatments and irradiated stones

HARRY LEVY argues that trade terminology can mislead rather than protect consumers and takes a look at new controls on irradiated stones

Irradiated blue topaz

At the time of writing (late July) many jewellery shops and stores in the United States have removed all jewellery containing irradiated topaz from their shelves. This is because the US Nuclear Regulatory Commission (NRC) has recently been considering how to control the trade in irradiated gemstones.

I recall several years ago that the American authorities brought in new regulations regarding the importation of irradiated topaz into the States. All such parcels had to be screened through approved independent laboratories to ensure that they were safe to be worn by the general public.

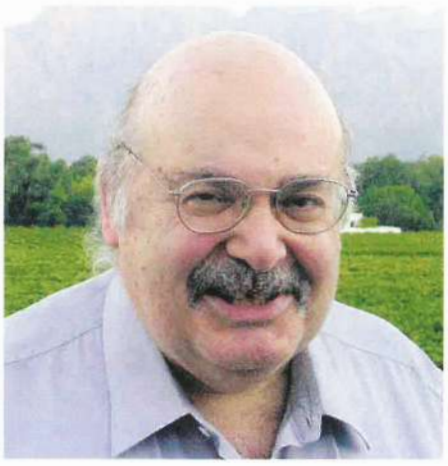
I remember it well because we had a great debate within CIBJO as to whether we could state irradiation as a treatment under CIBJO rules. CIBJO had a policy that the details of an actual treatment should not be stated but only the general term 'treated' should be used to the exclusion of other terms. It was explained to the Congress that the American postal authorities were not interested in opening every parcel that contained treated stones, but only those that contained 'irradiated' stones and wanted this word to appear in any accompanying documents. CIBJO had to adapt and the *Blue Book* was changed to allow the use of the word 'irradiated' to appear in the book. I relate this story to show how difficult it has been to change anything in CIBJO that was formulated by its founding fathers.

Regarding the situation in America now, it is hard to believe that anyone would knowingly handle radioactive stones, or that anyone would buy stones arriving in a heavy lead box. There are so many international jewellery and gem shows now in the States that it is easy to understand that stones coming into the country are not all screened.

In a statement on irradiated blue topaz issued by the American Gem Trade Association (AGTA) on 26 July, they state that to the best of their knowledge there haven't been any reports of cancer or radiation poisoning from an irradiated gem over the past few decades, and there is no reason to believe that a significant quantity of dangerous gemstones is currently in the market. AGTA said, however, that there have been a handful of sightings over that period of stones with potentially harmful radiation. Further information is given at http://www.agta.org/consumer/news/20070726agtanews.htm.

Although the present the US NRC restrictions apply only to irradiated topaz, they could be extended to include other stones such as red tourmalines, many beryls (treated blue, yellow and pink colours, but not emerald), kunzite and irradiated diamonds.

The new regulations are not expected to take effect until late 2007.



Terminology

Aspects of terminology used by the jewellery trade are still under discussion. The trade is now going through a phase of increasing protection for the consumer and I am arguing that many of the terms that hitherto we have taken for granted as being self-explanatory and obvious, have taken on a specialized meaning within the trade and can mislead the consumers rather than protect them.

For example, the word 'treated' is the accepted word to be used when appropriate. There is nothing special about the word treated and if a consumer asks what it means we have to use other ▷

How blue topaz is treated

Colourless topaz is irradiated to change it to various shades of blue, usually imitating aquamarine. There are two processes in common use. One is electron irradiation and the other is neutron irradiation.

The electron treatment is done with gamma rays or electrons produced by electron accelerators. The neutron bombardment is done using a nuclear reactor. Neither of these processes can be done in the back of a kitchen and need sophisticated equipment.

The sky-blue topaz is obtained using electrons, while neutrons are used to produce London Blue topaz, and a combination of both is used to produce the strong colours found in Swiss Blue topaz. All these stones have to be annealed after the irradiation by heating to various temperatures, to stabilize the colour.

Of the two processes, the electron method generates the fewer problems, as any radioactivity quickly dissipates, at most within a few days. With the neutron method, the stone takes much longer to 'cool-off' and cease to be radioactive. It can take from weeks to several years depending on the dosage, type of stone and type of reactor.

Neutron-irradiated stones are often stored in vaults and not released to the trade until their activity is at background levels. I recall rumours that stones have been 'stolen' from such vaults, but such rumours could be malicious as they come from a group about stones produced in another country.

terms and words to explain it. Thus any one of these words, being more self-explanatory, may be used preferentially. To a consumer, a treated stone could imply that the original had some sort of disease, or has had a preservative put in it (compare wood treatments) and would always prefer to know what actual process the stone has undergone to be termed treated.

Similar arguments can be given for the use of the word 'synthetic' by most of the trade. If asked to explain what this means, we have to use words such as 'man-made', 'artificial', 'made in a laboratory or a factory' or some such term. The term 'synthetic' can mean different things to different people and therefore cannot be regarded as being the only word that can be used.

I have attended many meetings where most of my colleagues are so steeped in the rather special uses of some words that they fail to understand that many of our terms have taken on a particular meaning for us, and fail to take into account that the consumer is not taught gemmological terms in school as part of his general education.

Almost all stones are now treated in one way or another to make them more attractive to the buying public. Heating of corundum is most common. This not only changes the colours, but can remove silk within the stone and thus improve the clarity as well. Even heating Verneuil-produced synthetic corundum can remove the lovely defining curved line within the stones and thus make their identification far more difficult. Under heat, foreign materials may now be introduced into a stone to hide fissures or, in the presence of substances such as beryllium, to produce highly attractive colours.

Another interesting issue

Special use of particular words extends to other kinds of labelling, and the latest is to insist that grading reports for synthetic diamonds should be done in a yellow colour rather than black, as if the average consumer, on seeing a yellow report will immediately know that he has a synthetic diamond. The average consumer has probably never seen a grading report for a synthetic diamond, and the only way he will know that he is being offered a synthetic stone is when it is written clearly in the report.

Treatments have increased the amount of saleable stones now available, but so long as the treatments are stable, they are often not disclosed to the end user. They present numerous new opportunities to the coloured stone industry, but if sold unscrupulously without disclosing the relevant gemstone treatments they could cause a loss of confidence that would be very hard to reverse. ❑

Fourth Gem-Aration

When John Watson of P.J. Watson qualified in the January 2007 Diploma in Gemmology examinations, he became the fourth generation of the Watson family to become a Fellow of the Gemmological Association. His father Vivian Watson, a member of Gem-A's Council of Management from 1990 to 2005, became an FGA in 1969. His grandfather, Peter J. Watson, qualified in 1953 and his great grandmother, Constance Watson, became an FGA in 1945, having been taught by Robert Webster.

Said Vivian Watson: "We are extremely proud that we have achieved four generations of FGAs in our family, and are sure this must be a 'first'. We enquired around the trade including sending out a message on Gem-A's MailTalk, but so far nobody has been able to challenge our claim." He continued: "P.J. Watson Ltd has always been committed to professional standards. In a constantly changing market commitment to traditional values gives customers extra confidence in their supplier."

Can any other family business out there beat this?

John Watson FGA with the family Diplomas.

Some convincing glasses

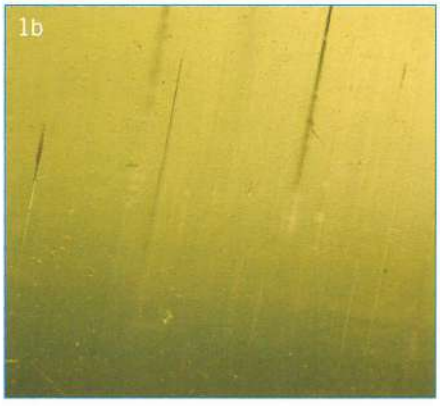
GAGAN CHOUDHARY and CHAMAN GOLECHA of the Gem Testing Laboratory of Jaipur describe the inclusions and other identifying features of some gem imitations

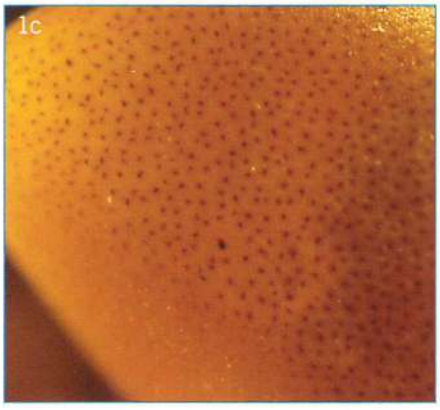
A constant development in technique and manufacture of synthetic gemstones and glasses often leads to products which may surprise a gemmologist. Rough glasses imitating emeralds, phenomenal glasses like colour-change, cat's-eye, etc, have appeared over the years.

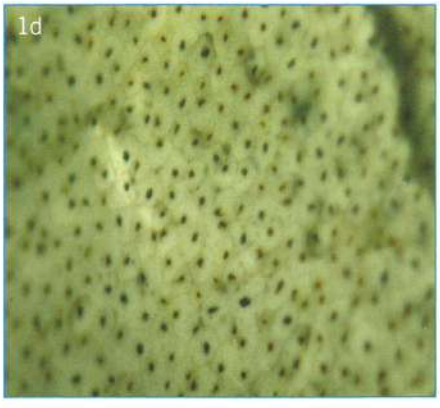
Following descriptions in *Gems & Jewellery* (Mercer 2006; Miller, 2006; Millington, 2006) of some rough 'gem' materials simulated by lower grade materials like quartz, synthetic products or glass, we give details of some particularly convincing glasses recently submitted to the Gem Testing Laboratory of Jaipur. Each stone described below was interesting for its misleading features of visual appearance or inclusions similar to natural gems.

1. A yellow 'water-worn pebble'

A 23.76 ct yellow 'water worn pebble' displaying a frosted surface with some fractured portions and strong sheen in some orientations **(1a)** is typical of chrysoberyl. This stone had some parallel needle-like inclusions which due to the reduced transparency appeared to be the black canal-like inclusions seen in apatite **(1b)**. But examination of the stone proved otherwise; observed in different directions, the stone exhibited a black dotted pattern in two opposite sides in a plane perpendicular to the black inclusions **(1c)**;





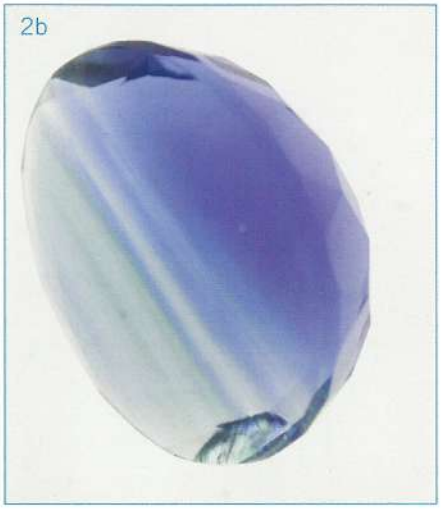


resembling the honeycomb effect seen in some glasses **(1d)**. This eye-visible effect was confirmed by further testing which gave features characteristic of glasses. Though glass cat's-eye with honeycomb effect is commonly encountered, such a rough stone could easily have been mistaken for a natural water-worn pebble.

2. A deep blue gem

2a

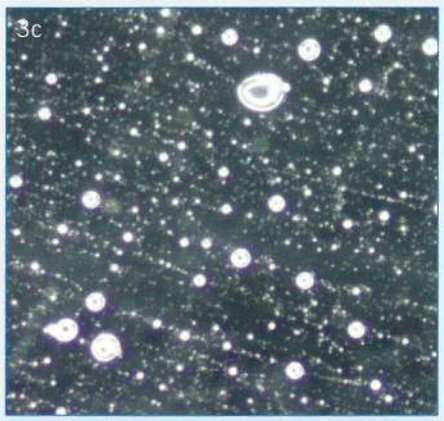
A 19.66 ct, oval mixed-cut gem with a deep blue colour similar to sapphire or kyanite **(2a)**, exhibited a strong eye-visible colour-zoning pattern like that commonly seen in kyanite. However, careful observation revealed a wavy pattern of zones, which raised suspicion regarding its origin. This was further confirmed by immersing the stone in water where wavy blue, green and colourless zones could be observed **(2b)**; these colour zones were associated with the swirl marks. The RI of 1.523 and strong cobalt spectrum were also consistent with it being a glass.

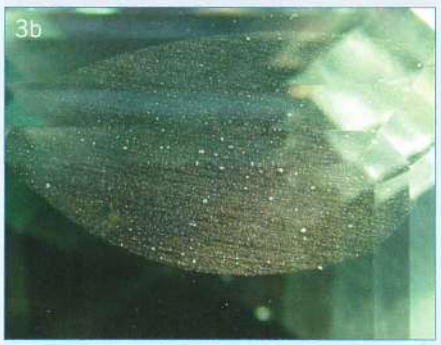


3. A step-cut 'aquamarine'

A 67.38 ct greenish-blue, octagonal step-cut gem **(3a)** with the appearance of aquamarine was tested. A fingerprint-like inclusion was seen just below the table **(3b)** but weak swirl marks were also seen, creating a doubt regarding its identity. When magnified, the fingerprint appeared to be composed of some rounded and elongated inclusions similar to multi-phase inclusions, but careful examination revealed that the droplets were fine spherical and elongated gas bubbles, with typically high relief which gives rise to the visual effect of a double boundary **(3c)**. The presence of swirls **(3d)** and a constant RI reading at 1.515 confirmed the stone to be glass. Though the identification was simple, it emphasizes the necessity for thorough testing.


3a


3c

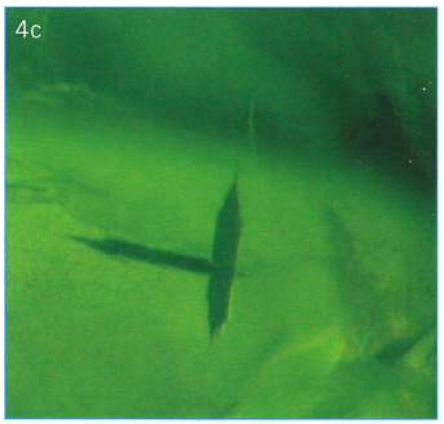

3b


3d

4. A mixed-cut 'emerald'

A 1.75 ct 'emerald' green, oval mixed-cut stone contained some oriented flat reflective planes similar to cleavage fissures. These planes were approximately oriented in two prominent directions intersecting each other, but on careful observations more planes were seen in other directions **(4a)**. At higher magnification these planes exhibited some fine intersecting lines similar to the crazing pattern seen on surfaces of amber or opal **(4b)**. In addition, some hexagonal planes in the form of platelets were also observed in random directions, which appeared reflective and dark in oblique illumination **(4c)** while transparent in transmitted light **(4d)**. Other inclusions present were white crystallites, spherical gas bubbles and areas of devitrification. The pattern of planes, crystallites and platelets could easily mislead one to identifying the stone as natural. Single refraction and a low SG of 2.42 confirmed it to be a glass.


4a


4c

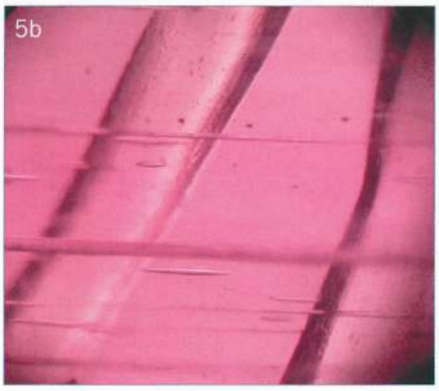

4b


4d

5. A carved 'rubellite'

A 7.12 ct pink carved gem had a shade very similar to rubellite, the pink/red variety of tourmaline **(5a)**. Some eye-visible inclusions, which appeared tube-like, oriented in a single direction parallel to each other, ran through the length of the stone. Tubes reaching the surface displaying round cavities filled with trapped impurities. Upon magnification, it was clear that the terminations of the tubes within the carving were not flat but convergent similar to elongated gas bubbles **(5b)**.

The double boundaries of the tubes confirmed them to be gas bubbles. A distant vision reading of 1.53 and absence of pleochroism confirmed the carving to be a glass.



6. A parti-coloured 'tourmaline'

A 22.86 ct parti-coloured octagonal step-cut stone was well cut with sharp facet edges. The colours were similar to those seen in parti-coloured tourmalines **(6)**. A constant RI reading at 1.52 and low SG of 2.35 confirmed the specimen to be glass. ❑

References

Mercer, I., 2006. Fake rough. *Gems & Jewellery*, **15**(1), p.11

Miller, D., 2006. 'Golite' and 'stoplite'. *Gems & Jewellery*, **15**(2), p.39

Millington, G., 2006. Fake 'ruby' and 'emerald' crystals. *Gems & Jewellery*, **15**(2), p.38

About the authors

Gagan Choudhary MDGI FGA has been Assistant Director of the Gem Testing Laboratory, Jaipur, India, since 2001. Currently he is involved in educational, certification and research activities of the institute.

Chaman Golecha MDGI FGA was awarded the Anderson-Bank Prize in the Gem-A Gemmology Diploma Examination in 2005. He is the Executive (Technical and Training) at the Gem Testing Laboratory, Jaipur.

Gem Discovery Club

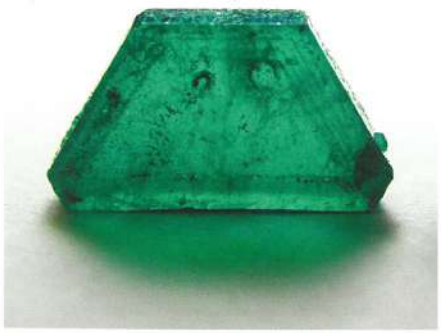
Lens under the Lens

Hands-on examination of synthetics always generates interest at Gem Discovery Club evenings. On 5 June, this opportunity was coupled with the chance to hear Roy Huddlestone explaining the history and characteristics of the Lennix synthetic emeralds, so a large and enthusiastic gathering was assured.

The Lennix synthetic emeralds were invented by a Frenchman, L. Lens. In the 1950s Lens had been inspired by reports of Carroll Chatham's synthetics and in the 1960s he had the chance to undertake research when employed at the Diamond Research Laboratory in South Africa. Roy Huddlestone became involved as a consultant early on, to investigate the commercial potential. The actual process is still a secret, but is known to be similar to that of the Chatham and Gilson synthetic emeralds.

Following Roy's talk, participants had the opportunity to examine a large selection of Lennix synthetic emeralds. The flattened, tabular form of the crystals and their inclusions were observed with interest **(1)**, and the sharper-eyed participants were able to spot a spiral growth feature on one of the samples **(2)**. Each person present left with a sample of a Lennix Sythetic emerald crystal – the generous gifts of Roy Huddlestone.

1. Tabular crystal of Lennix synthetic emerald, width 17.3 mm, weight 6 ct. © Gem-A.



The Lennix synthetic emeralds were examined at the Gem Testing Laboratory by Alec Farn in 1979/80 and his findings noted in his popular 'Notes from the Laboratory' in *The Journal of Gemmology* (1980, **17**(2), 73-80).

The following is the list of characteristics of the Lennix synthetic emeralds taken from this publication:

- a fierce red viewed through the Chelsea filter
- red under long-wave ultraviolet light.
- orangey-red under short-wave ultraviolet light
- refractive indices 1.562 to 1.566
- birefringence small 0.004
- specific gravity 2.65 (quartz matching liquid)
- a strong chromium absorption spectrum which is not diagnostic for distinguishing natural from synthetic emerald.

Farn added: "Although fluorescence is useful as a back-up test, it must not be 'leaned upon' for support. I have noticed that most natural emeralds are green or inert under LW UV, but this is not a rule."

A pdf of the full article can be downloaded from www.gem-a.info/publications/gemsAndJewellery.htm

Worth knowing

Academically minded gemmologists are often distressed when a layperson's first question is "How much is it worth?" However, it is gem-dealer and Gem-A Council Member Jason Williams' contention that students of gemmology hoping to work within the gem or jewellery industry should have some concept of value.

2. Spiral growth in Lennix synthetic emerald. © Roy Huddlestone.

Jason Williams helping Club members with gem pricing.

They needn't necessarily be able to put an exact price on an individual gem, but they should have a good idea of the factors that influence value and how to judge these. He explained all this at the Gem Discovery Club specialist evening on 10 July. After a brief talk from Jason about value and value factors, the participants were let loose on a large number of cut and polished gemstones of all types, sizes and qualities, and asked to jot down their thoughts about value, or relative values.

Half an hour before the end of the evening, participants were told to stop their deliberations and Jason then ran through the gemstones and explained their values and how those values were reached. The prices raged from a few pounds to several thousand, and the values and estimates placed on the gems by participants fluctuated hugely. As expected, those in the gem industry fared best, but even those who had no experience of the trade gained new experience and insights, and had fun in the process.

It was a highly popular evening and Gem-A hopes that Jason will host a follow-up early in 2008. ❑

Details of forthcoming Gem Discovery Club specialist evenings are given on p.28.

Star rose quartz by laser light

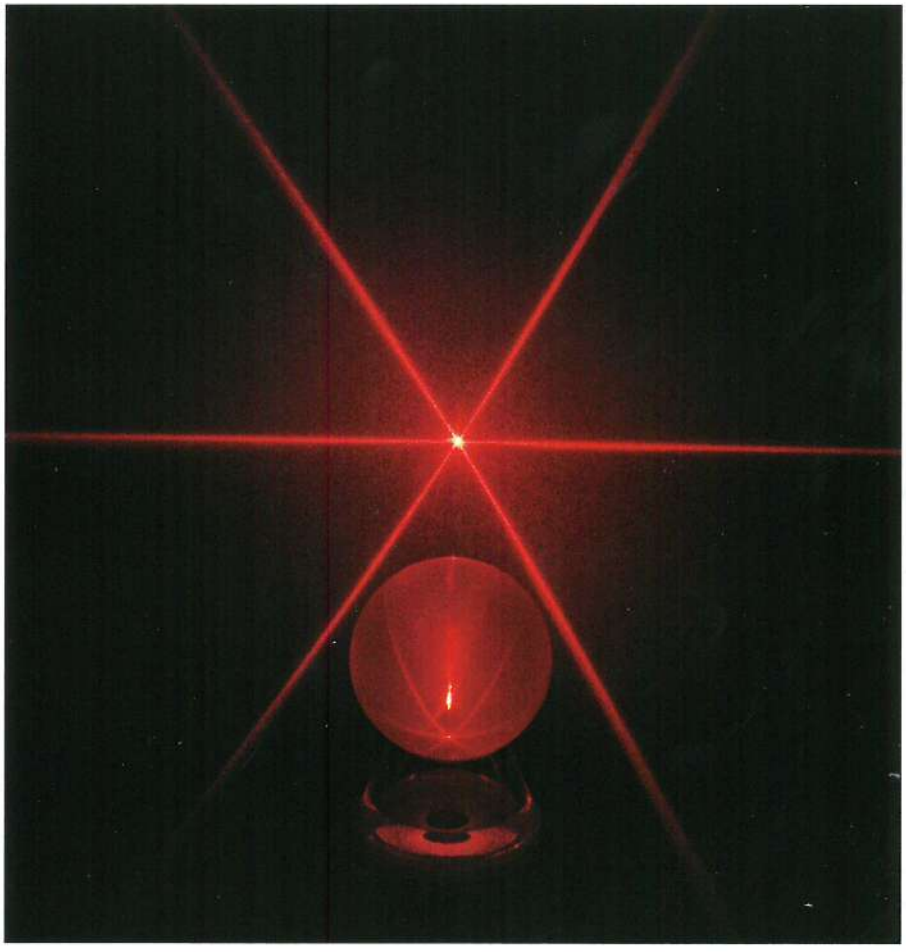
HAROLD KILLINGBACK presents new photographs showing how a pencil of light from a laser is affected by the regular array of inclusions in a sphere of star rose quartz.

When a substance crystallizes, the atoms form a regular repeating, three dimensional, array. In the case of quartz, such an array contains channels along which any titanium oxide can co-crystallize in sub-microscopic needles as rutile. The needles lie along the three axes of quartz's trigonal structure which are at right angles to its principal or *c*-axis. Light can be reflected from these needles and, if the quartz has a polished convex surface (e.g. as in a cabochon or sphere) a six-ray star may be seen 'floating' over the stone. If the stone is sufficiently free of inclusions, such as the incipient fissures which so often occur in rose quartz, it may be possible also to see a star when looking parallel to the *c*-axis against the direction of the incident light. This latter effect is called diasterism and has traditionally been associated with seeing a star in transmitted light – in contrast to the epiasterism viewed in reflected light.

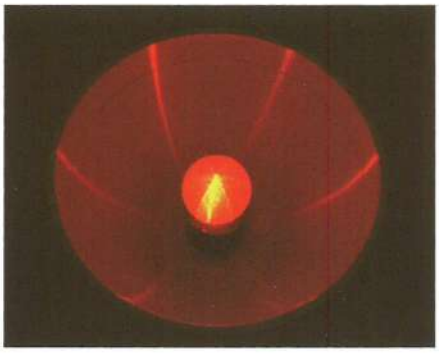
For the best star effects, a point source of light, for example the sun, should be used. Such a source would normally cover the whole stone but here I have used the thin pencil of light from a laser, similar to those used as pointers in slide shows.

Observations

A view of a quartz sphere is shown in **1** in the direction of the incident light, i.e. the laser source is at the bottom of the picture, an arrangement fundamentally similar to that shown in **3** by Killingback (2006), but here the rose quartz sphere is 'eye-clean' and the lack of visible inclusions allows the light paths to form without significant loss being caused by scattering or absorption. The laser beam enters near the lower edge of the sphere which has been orientated so that symmetrical epiasterism occurs (i.e. the beam is parallel to the *c*-axis). The light pattern on the screen beyond the sphere displays the diasterism that would be observed when looking back towards the source of light. The red glow at the bottom of the picture is the base of the Perspex cone on which the sphere rests.



1. The laser beam enters near the base of the rose quartz sphere, where the epiasterism can be seen and diasterism is projected on the screen placed beyond the sphere.



2. The sphere is centred in a hemispherical bowl, through the base of which the laser shines. Some of the light is reflected back and is projected on the bowl as epiasterism.

A near-hemispherical screen is included in **2**, placed round the sphere on the same side as the laser which transmits through the screen from below. It will be seen that light is reflected back in the six-ray pattern of epiasterism.

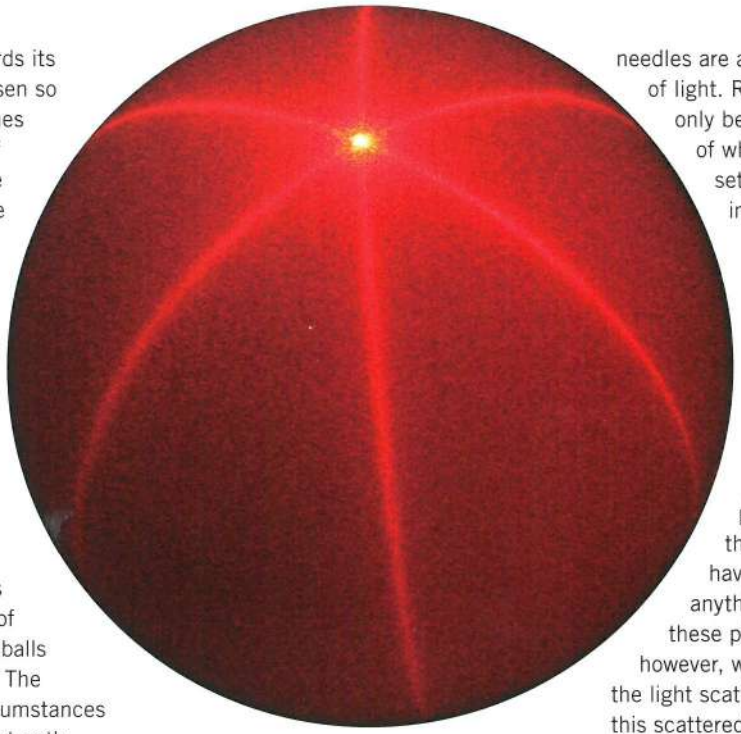
An opal glass globe surrounding the sphere of rose quartz is shown in **3**. The asterism is projected to the globe and extends all round the visible part of it. Where the undeviated laser beam reaches the globe the locally high intensity of illumination results in over exposure.

The view of the rose quartz sphere itself shown in **4**, is looking obliquely

back along the laser beam towards its source, the viewpoint being chosen so as to be between the bright planes which intersect along the axis of the laser. A torch illuminates the background to enable the sphere to be clearly seen.

Discussion

Much star rose quartz contains a regular three dimensional network of rutile needles from which light is reflected in patterns determined by the normal laws of optics, which also govern the refraction as the light beam enters and leaves the sphere. As a two dimensional model, think of a bagatelle board in which steel balls bounce from one pin to another. The slightest difference in initial circumstances may make for an entirely different path. Thus I think of packets (photons) of light from the incident ray being reflected by (or 'bouncing off') one needle after another until they emerge. There is enough variation even in this narrow beam for the components to form the beautiful patterns seen in these photographs. Like the pins of the bagatelle board, the needles of rutile in each of the three sets are all parallel to one another. Also, as the sphere has been orientated to give a symmetrical star, the needles are all at right angles to the beam of light. Reflection can, therefore, only be in the three planes, each of which is at right angles to a set of needles and contains the incident beam.



3. The sphere is surrounded by an opal glass globe, on which are projected the three planes of light that constitute asterism.

The lack of fissures and other major inclusions allows the pattern of reflected light to be developed and seen clearly. There is some scattering, however. In **4**, the light is principally travelling in the three planes just referred to. Had the view point been along one of these, the intensity of light would have prevented us from seeing anything else. Looking between these planes of high intensity, however, we are not dazzled and can see the light scattered from each of them. It is this scattered light which defines the six bladed shape which is so beautifully seen in **4**. (The camera, however, is 'dazzled' or overexposed by the light scattered from the intensely bright axis of the laser beam. To the eye, this line is red.)

Taking **2** and **3** together, it can be seen that the three planes of reflected light extend round the whole circumference of the sphere. As one views the reflection of the incident beam one can go from epiasterism to diasterism in a continuous movement. Epiasterism and diasterism are not different; ...

....it just depends on your point of view.

Conclusion

Using a very thin beam, such as that from a laser pointer, can give helpful insight into the optical effects in transparent stones. Here, the three planes of light which constitute asterism in rose quartz have been made visible, both inside and outside the sphere.

In an age when advances in gemmology seem so heavily to depend on instruments beyond the scope of an ordinary gemmologist, it is pleasing to find how much fun and instruction can be had using a slide-show pointer, the shade from a wall light, and the bowl from last season's Christmas pudding. ❑

4. Light scattered from the three bright planes discloses their shape.

Reference

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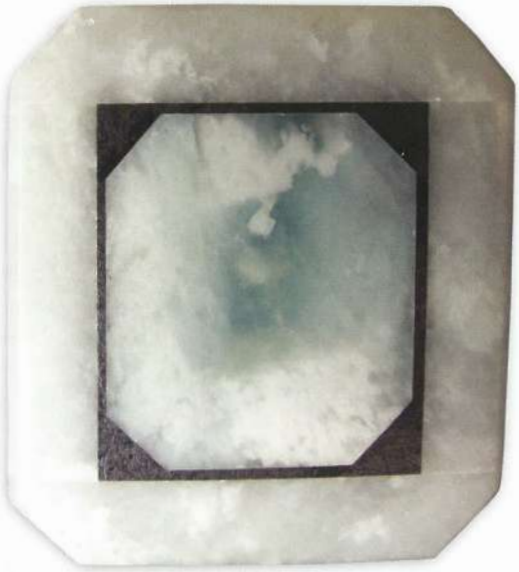
Gemstones of the USA Part 1: the Eastern States

NICOLA AINSWORTH BSc FGA reviews the state gems and minerals of America.

For the past few years I have been developing a particular interest in the gemstones of the United States. This, the first of three articles on the subject, is illustrated entirely with pictures of specimens from my own collection.

For anyone who wishes to study the gemstones of North America there is a rich and well organized mine of information. The renowned American gemmologist George Frederick Kunz wrote *Gems and Precious Stones of North America* (2nd edn) in 1892. This book, which has been made available in modern reprints, bears a striking resemblance to modern gem books in both language and layout. Written at a time when, according to Hollywood at least, the West was a wild and lawless place, the book is also full of tales of prospectors and descriptions of the individual gemstones that they brought back East to make their fortunes. In a charming aside, Mr Kunz suggested that children be encouraged to hunt for gem crystals in the Appalachians because their young eyes were so quick to spot the smaller stones and because it provided them with healthy, outdoor exercise. The post-war American fashion for rock hounding, often a family activity, seems to have brought his suggestion to life.

Collectors, hobbyists and amateur lapidaries have been served by a multitude of magazines and guide books, and these are often available very cheaply from book dealers on the Internet. Although some of the collecting sites may now be closed, many of the specimens have found their way into private collections or, not infrequently, into boxes in attics, and regularly come up for sale. The most detailed works by far on the gemstones of North America are the three volumes by the late John Sinkankas. Written between 1959 and 1997, they outline pretty well every gem deposit ever reported and offer a wealth of information on mining and collecting methods.



1. Bowenite, the state mineral of Rhode Island.

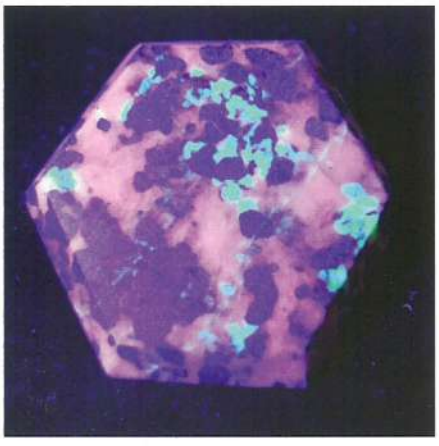
The Eastern States

The adoption in the United States of America of 'state gemstones', 'state minerals' and 'state rocks' by all but a few states has focused collectors' attention on interesting, unusual and attractive materials that might otherwise have been overlooked. The overlaying of a network of man-made state boundaries over the geological structure of the Eastern United States means that collecting rocks and gems from New England and the Appalachians can be enjoyable for the hobbyist as well as for the academic. So highly mineralized are the rocks there that it is possible to obtain both garnets and amethysts from every one of the sixteen states along the Appalachian Trail. Many states also yield beryls, tourmalines and corundum, although not all are of gem quality and few occur in commercial quantities.

Not all states have adopted state gemstones (see table opposite) despite the fact that some of those which have chosen not to, for example Virginia, have some lovely examples available to the collector. In other cases a state mineral such as the bowenite serpentine **(1)** of Rhode Island, or a state rock such as the Delaware sillimanite, have been polished to produce attractive gemstones. The state of New Jersey is the source of a significant number of the world's rarest minerals, such as franklinite, willemite **(2)** and hodgkinsonite, and some of these have been cut into exotic gemstones

State	State gem	State mineral	State rock	Other significant occurrences
Maine (ME)	tourmaline			amethyst, aquamarine, garnet
New Hampshire (NH)	smoky quartz	beryl	Conway granite	fluorite, garnet
Vermont (VT)		grossular garnet	marble	pyrite, jade, quartz
Massachusetts (MA)	rhodonite	babbingtonite	Roxbury pudding stone	amethyst, wampum (quahog shell)
Connecticut (CT)	garnet			beryl, tourmaline
Rhode Island (RI)		bowenite	cumberlandite	amethyst, quartz
New York (NY)	garnet, schorl	hematite		'herkimer diamond' (quartz)
New Jersey (NJ)				amber, carnelian, rare minerals
Pennsylvania (PA)				amethyst, beryl, serpentine
Ohio (OH)	flint			fluorite, pyrite
West Virginia (WV)	lithostrotionella			jet, hematite
Virginia (VA)				spessartine, garnet, moonstone
Delaware (DE)			sillimanite	garnet, schorl
Maryland (MD)	Patuxent River stone			serpentine, garnet
Kentucky (KY)	fortification agate			fluorite, jet, pyrite
Tennessee (TN)	pearl (natural)		agate	fluorite, sphalerite, calcite
North Carolina (NC)	emerald		unakite	ruby, sapphire, hiddenite, garnet, amethyst
South Carolina (SC)	amethyst		blue granite	sapphire, garnet, tourmaline
Georgia (GA)	quartz	staurolite		amethyst, hematite, lazulite
Alabama (AL)	star blue quartz	hematite	marble	agate, garnet
Florida (FL)	moonstone (not indigenous)	fossil coral		conch pearl

2. A specimen of calcite, willemite and franklinite in daylight (above) and long-wave ultraviolet light (below), from New Jersey.



for the specialist collector. In spite of this, New Jersey has adopted neither a state gemstone nor a state mineral and one of the most sought after local gem materials is a beautiful variety of the humble carnelian.

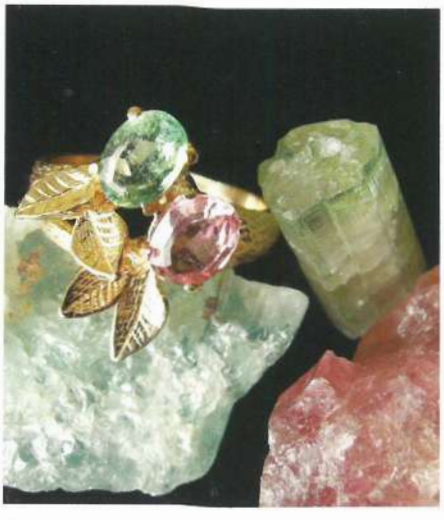
The fossil coral, lithostrotionella, while no doubt beloved of the paleontologist, normally displays none of the beauty expected of a gemstone but even so it has been adopted as state gemstone by the state of West Virginia. When tracked down, the particular variety found in Pocahontas County displays a delicate lacy interior in shades of blue, pink and (appropriately) coral. Patuxent River stone, chosen by the State of

3. Almandine garnet, the state gem of New York, with 'Herkimer diamond' (quartz), which also occurs in the state.

Maryland, is also a fossil but this time an attractively stained dinosaur bone. It is to be found occasionally as river worn pebbles in sites which are still open to the amateur collector. Both materials take a lovely polish, which adds to their suitability as state gems.

Other state gemstones are not so readily available. The closing or working out of so many former collecting sites has left certain desirable materials like the blue star quartz which is the state gemstone of Alabama virtually unobtainable. In spite of the large quantities of almandine garnet produced by the state of New York **(3)** for use as abrasives, building stone and even ships' ballast, few fine quality garnets have been polished for the gem trade and even less are available today. The author found it easier to obtain an opaque, icositetrahedral garnet crystal from the 1880s building excavations on the Island of Manhattan than to track down a single faceted New York garnet. The state of Florida has avoided any such problems by adopting a completely non-indigenous material, moonstone, as its state gem. It is the only state to do this.

Certain state gems, such as the magnificent tourmalines of Maine **(4)** and the emeralds of North Carolina, are still mined on a family scale and set into individually designed pieces of jewellery. These gems tend to be more expensive than their equivalents from more prolific parts of the world and so their appeal is to the discerning customer who will appreciate their unique associations. Along the holiday destinations of the Appalachian trail and particularly in Virginia and North Carolina, small gem mines and collecting sites are open to the public as family attractions. Gem specimens have been found as by-products of quarrying for building stone and of mining and also by the prospectors who, to this day, pan for gold in the rivers and streams of some of the most beautiful countryside in the world.



4. Tourmaline, the state gem of Maine.

As urban development has changed the face of so much of the landscape, older specimens of gem minerals become highly desirable in their own right. Even the labels can be considered precious and the rarer the crystals the less advisable it would be to have them cut as gemstones. The colours and individual crystal habit of the minerals from the Eastern United States are remarkably varied and are often completely characteristic of a particular location. Indeed this is the region in which many were originally identified and named. However, anyone looking for a specimen of danburite from the original source, Danbury County, Connecticut, is going to be disappointed. This particular deposit never yielded any gemmy material and is now long buried under modern city streets.

Not all gemstones are of mineral origin, in fact the name wampum, which has entered the language as a slang term for money, derives from the term used by the woodland Indians of the American North East for the purple and white beads made from quahog and whelk shells. Worked shells were very important for adornment and ceremonial use in pre-conquest America but subsequently vast quantities of brightly coloured glass beads were imported from Europe and incorporated into adaptations of the Native American designs. The beautiful, purple and white swirls of the quahog shell have found favour with contemporary American jewellery designers and a return to traditional patterns has led to a demand for imitation wampum beads made from glass or clay. In an interesting reversal of fortunes, these are often specially manufactured for the American craft market in the Far East. ❑

Parts 2 and 3 of Gemstones of the USA will follow in future issues of *Gems & Jewellery*.

AGM and talk by John Koivula

Annual General Meeting

Elections

The AGM of the Gemmological Association was held at the National Liberal Club, Whitehall Place, London SW1A 2HE, on Monday 18 June. Council Chairman Professor Alan Collins took chair. As well as the Fellows and Members present, David Lupton of Throgmorton Secretaries Limited and Russell Tenzer of Hazlems Fenton (the auditors) were in attendance.

The Chairman welcomed those present and commenced the main business of the evening. The Report and Accounts for the year ended 31 December 2006 were received, James Riley and Jason Williams were re-elected to the Council following their cooption during the year and Sally Everitt was re-elected for a second term. Gwyn Green and Brian Jackson were both re-elected to the Members' Audit Committee.

Name change

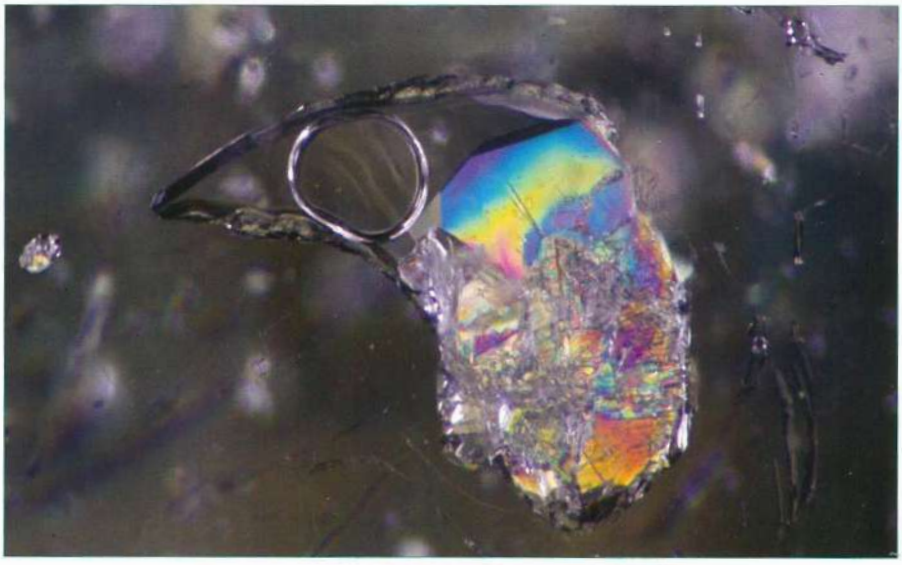
The Meeting then considered the Special Resolution to change the name of the Association from 'The Gemmological and Gem Testing Laboratory of Great Britain' to 'The Gemmological Association of Great Britain'. The Chief executive explained that the full legal company name was unwieldy and in practice almost never used. The shorter form 'The Gemmological Association of Great Britain' was simpler, was already used on much of the Association's literature and, along with 'Gem-A', was the name by which the Association was generally known worldwide. Peter Dwyer-Hickey expressed his view that it was important to retain the word 'Laboratory' in the company name, but Ian Mercer pointed out that other gemmological organizations have laboratories but feel no need to include this information in their company name. After further brief discussion, the resolution was put to the vote and the name change agreed by a large majority.

In his closing remarks, the Chairman thanked the Chief Executive and his staff, together with the Council Members, for their hard work over the past year. ❑

Inclusions

A presentation by John I Koivula of the GIA, Carlsbad, entitled 'The latest views of the MicroWorld' followed the AGM. John illustrated his talk on his recent work with wonderful photomicrographs of the high quality we have come to expect from this renowned gemmologist specializing in photomicrography of inclusions in gems. He emphasized that the inclusions and their distribution gave clues to the chemical and physical origins of natural gemstones within the Earth. Shown below are two of the photomicrographs that were included in John's presentation.

John concluded by saying: "Mother Nature cooks in a very dirty kitchen. But with the full chemistry set of naturally occurring elements, she creates a fantastic and infinite variety of inclusions."



'Eagle's head' in beryl. This complex fluid inclusion contains solid phases of quartz, feldspar and manganotantalite which identify this beryl as pegmatitic. Magnification 15x. Photomicrograph by John Koivula courtesy of microWorld of Gems.

Bright red crystals of spinel in a phlogopite host from Myanmar. Magnification 5x. Photomicrograph by John Koivula courtesy of microWorld of Gems.

Gemmological Symposium

CAROLE GORDON reports on the First European Gemmological Symposium, hosted by the German Gemmological Association

Thomas Linde (left), President of the German Gemmological Association, with Gem-A's Director of Education, Ian Mercer.

At the beginning of June the German Gemmological Association celebrated its 75th Anniversary by hosting the First European Gemmological Symposium. Held in Idar-Oberstein an impressive line-up of gemmologists and trade representatives spoke on a variety of topics. The highlights were too numerous to mention but a small sample of the subjects discussed included the following.

Dr James Shigley, GIA, spoke on recent trends in coated diamonds and simulants. Diamond-like carbon (DLC) was given particular mention. This is an amorphous carbonaceous material which possesses some similar physical properties to diamond but is not diamond. DLC can be extremely difficult to detect using currently available methods. He called for more research and discussion on the subject.

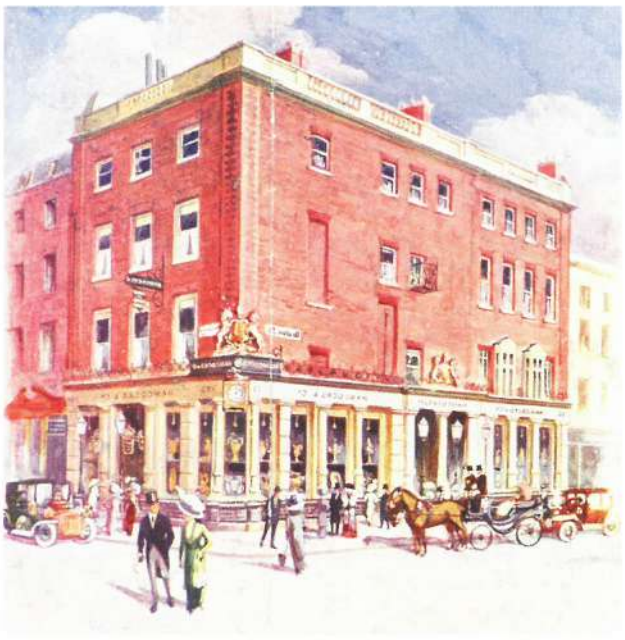
Chris Smith, AGL, reported on vivid blue sapphires which have been appearing in the main trading centres over the last year. The neon blue colour said to be due to a 'new' beryllium treatment is unlike any known natural colour corundum. Further testing however identified these stones as having been surface treated with cobalt.

Prof. Dr Henry Hänni, SSEF, spoke on recent developments in pearl testing. The main task is the distinction of natural from beaded or beadless cultured pearls and the detection of treatments. Classical X-radiography is still the mainstay for initial identification but other methods are increasingly being employed. For example energy dispersive X-ray fluorescence (ED-XRF) can give useful assistance in separating freshwater from saltwater as it provides clear data on manganese content. Silver nitrate treatment can also be detected. Laser ablation inductively coupled plasma mass spectrometry (LAICPMS) is the latest technique showing great promise because it is able to identify minor differences in trace elements. Data sampling is still in progress but Hänni advised that this method appears very promising. ❑

For valour

An introduction by DAVID CALLAGHAN FGA to 150 years of the Victoria Cross

David Callaghan spent his entire working life at Hancocks & Co., for many years the senior Director of Hancocks and responsible to the firm for all aspects of the VC. He has been extremely active in the trade, being, amongst many other things, Chairman and President of the National Association of Goldsmiths, and Chairman of the Gemmological Association of Great Britain. He is a liveryman of both the Worshipful Companies of Goldsmiths and Clockmakers. David is the foremost authority on both the manufacture and authentication of Victoria Crosses, every one of which has been manufactured by Hancocks. Casting, finishing and engraving a Victoria Cross very much encompasses the skills of a jeweller. Indeed as medals are made to be worn, they can be considered a form of jewellery.



1. C.F. Hancock's original premises on the corner of Bruton Steet and New Bond Street, founded in 1849. Reproduced by courtesy of David J. Callaghan.

The central feature in the design of the obverse of the VC is a crowned lion surmounting a scroll within which the words *FOR VALOUR* are enshrined. A definition of the word 'Valour', 'extreme courage in the face of danger, especially during battle', sums up the main element of this unique award. First awarded for action in 1854, there have been 1355 VCs won to date including three double VCs. This year sees the 150th anniversary of the first investiture held in Hyde Park on 26 June 1857.

The VC owes its evolution to the Crimean War (1854-56) when it was realized that, within the British system of military awards, there was no medal open to all regardless of rank or service. Fighting alongside the French, for whom the Legion d'Honneur could be awarded regardless of rank, brought the realization that Great Britain too should institute such an award. Thus the VC came into being with the direct and personal involvement of Queen Victoria and Prince Albert. Indeed it was Her Majesty who amended the original design which included the words *For the Brave* as the motto. Her Majesty pointed out that the wording would lead to the inference that only those deemed to have been brave were indeed brave. It was the Royal preference for the words *FOR VALOUR* that prevailed. The final design having been approved, the first metal proof was submitted to the Queen on 4 February 1856. It did not meet with the Royal Approval and further proofs were submitted until, on 3 March 1856, the matter was finalized. The next day the War Office instructed Mr C.F. Hancock to prepare 106 specimens of the new medal.

C.F. Hancock had founded his company on the corner of Bruton Steet and New Bond Street in 1849 **(1)** and the firm quickly became renowned as one of the finest retailers and manufacturers of fine silver and jewellery of the day. Since the inception of the new award the firm, now styled Hancocks & Company (Jewellers) Ltd., has the unique distinction of having supplied every VC.

From 1854 until 1918 the only distinction between VCs was that all Naval VCs were suspended from a blue ribbon and Army VCs suspended from a red ribbon **(2)**. However, on the 1 April 1918 the Royal Air Force was instituted. All VCs awarded for action after that date have been suspended from a red – more correctly perhaps crimson – ribbon.

The rules and regulations concerning the VC are announced by Royal Warrant and these have changed as the nature of warfare has changed. The Royal Warrant instituting the new award dated 29 January 1856 applied to "Officers and Men who have served Us in the presence of the Enemy and ... have performed some signal act of valour...". In 1857 the

2. The blue and red ribbons denoting Naval and Army VCs respectively. Reproduced by courtesy of David J. Callaghan.

Indian Mutiny broke out and another Royal Warrant was issued on the 29 October 1857. It extended the rules to include "Officers and Men of the Naval & Military service of the East India Company...". As a result some civilians were awarded the VC as, technically, they were not serving in either the British Army or Navy.

The first action to earn a VC was that of Mate Charles Lucas who picked up a live shell that had landed on the deck of *Hecla*, on which he was serving, and threw it into the sea. The action was dated 21 June 1854. Obviously the manner in which war is waged has changed over the last 150 years as the military hardware has become more sophisticated. The reason behind the award of VCs has hardly changed – rescuing wounded comrades under fire; single-handedly changing the course of a battle; perseverance beyond the call of duty under withering enemy fire; personal sacrifice of one's own life in saving the lives of comrades – because valour does not change.

A unique feature of the VC is that the name of the recipient and the date of the action is engraved on the reverse of the medal **(3)**. The VC itself is cast from worthless bronze and this is in keeping with the text of the original VC Warrant proposing "a new Military Order, the insignia of which, though trifling in value shall be highly prized...". The medal is worthless until issued but, once the name of the recipient is engraved on its reverse, the converse becomes true – the medal becomes priceless!

3. The name of the recipient and the date of the action engraved on the reverse of the VC. Reproduced by courtesy of Spink.

4. A specimen VC and Bar shown with a reproduction of the VC and Bar awarded to Lieut. Martin-Leake. Reproduced by courtesy of David J. Callaghan.

From the outset it was envisaged that anyone who, having received a VC, performed another act of valour entitling him to a VC then a Bar to the award would be recorded. However, it wasn't until the Great War that such a thing happened. During the first Battle of Ypres Lieut Martin-Leake VC, RAMC performed such acts of heroism over the period 29 October – 9 November 1914 that a second VC, the Bar, was awarded. His first VC was awarded for action on the 8 February 1902 when serving as a Surgeon-Capt. in the South African Constabulary during the Boer War. This created an immediate problem because a design had not been considered, but the dilemma was resolved quickly. A VC and Bar has an abbreviated version of the VC's suspender bar attached to the suspender ribbon and the details of the action are engraved on its reverse **(4)**. Two other such awards have been made, one during the Great War the other during World War II.

This year has seen the 25th anniversary of the Falklands War during which two posthumous VCs were awarded and another such award was made last year to the late Cpl. Bryan Budd for action in Afghanistan. The most recent award to a living combat soldier is to Private Johnson Beharry for his valour in Iraq in 2004.

Much as we wish it to be otherwise, the need to recognize heroism by the award of the VC is still with us. For the last 150 years the medal has been made of dull worthless bronze, but the recipients' valour doesn't change and the debt we owe to the selfless nature of their deeds is immeasurable. ❑

Interpretations of opal: opaline paste in the V&A

ANN TOZER looks at the use of glass paste in eighteenth-century jewellery

Reverse of **1**. *Courtesy of the Victoria and Albert Museum*

Thanks to the generosity of William and Judith Bollinger, the jewellery galleries at the Victoria and Albert Museum, London, are currently undergoing a complete renovation and redisplay, to re-open in 2008. It is indicative of the history of glass stones in jewellery that they are to be found in over 150 objects in the new display. These range from Roman earrings of antiquity to nineteenth-century traditional European jewellery, and the work of twentieth-century jewellers such as the Gaskins.

An important part of the paste shown will be from a group of 22 jewels set with opaline and colourless paste. The group was given to the Museum in 1975 by Dame Joan Evans, one of the many donations which she made between 1933 and 1976.

1. *Jewel. England or France, about 1770. Silver with opaline and colourless pastes. Museum no. M.161-1975. Given by Dame Joan Evans. Courtesy of the Victoria and Albert Museum.*

The prominence of gemstones in jewellery of the eighteenth century encouraged imitations that became fashionable in their own right. The development of the brilliant cut from the later seventeenth century had increased the light which sparkled from diamond jewellery. Opportunities to wear a wide variety of colourful gemstones emerged with the eighteenth-century distinction between evening dress and less formal morning dress. In this context, paste stones were a less expensive alternative to precious gems and gave jewellers the freedom to experiment with the size, shape and colour of stones with less risk.

The development of colourless paste in the eighteenth century was facilitated by the development of lead glass at the end of the seventeenth century. In 1674, George Ravenscroft secured a patent for glass using flint stones and lead oxides made at his Savoy Glass Works in London. Though Ravenscroft himself left the glass business in 1679, other makers in London continued to develop this type of glass into a successful product through the 1680s. For the jeweller the attraction of lead glass was that it had a higher refractive index and was better suited to faceting.

In France, Georges Frédéric Stras had such success with the paste jewellery sold from his shop between the 1730s and his death in 1773 that by 1740 his surname had entered into use as a term for paste in France. In 1767 a new guild of Bijoutiers-Faussetiers was formed to regulate the trade in Paris.

Vivienne Becker, in her essay for the exhibition 'Faux Gems and Jewels' held at Sandra Cronan Ltd in 1994, notes that Stras's shop attracted such elite clientele as Madame de Pompadour. In London, the prominent silversmiths and jewellers Wickes and Netherton advertised in 1759 that they included 'False Stonework' amongst their stock. Diana Scarisbrick quotes Mrs Hardcastle in *She Stoops to Conquer* (1773) who observes: "Half the ladies of our acquaintance, My lady Kill Daylight and Mrs Crump and the rest of them carry their jewels to town and bring nothing but paste and marquisites back."

Paste jewellery was made in the most fashionable designs. The jewel pictured in **(1)** differs only slightly from the Pouget design in **(2)**, published in 1762. Both include a large central flower, flowing into a ribbon bow, leaves and petals below. A more recent donation, a silver dress clip set with colourless pastes given by Pamela Clabburn in 1989, is even closer to a Pouget design **(3** and **4)**. The clip bears part of a Paris décharge mark which is probably that used between 1762 and 1768.

Paste in imitation of opal, known as opaline paste, is made from translucent white glass, backed with a coloured foil that increases the impression of iridescence. It was produced in both England and France, and the examples in the V&A group date from the middle to the

2. From Planche 18, Traité des pierres précieuses, *Jean-Henri-Prosper Pouget, Paris, 1762. Courtesy of the Victoria and Albert Museum.*

late eighteenth century. In the seventeenth century opacity in glass was achieved using oxides of tin or antimony, but a greater range of opacifiers was subsequently used.

Some of the jewels in this group contain opaline pastes in cabochon form, as would normally be the case with an opal. However, others contain faceted opaline pastes. The jewels in **(1)** and **(5)** are set entirely with faceted pastes; **(5)** shows a slide in the form of a bow with a pendant. The large opaline paste stone in the central rosette is cut into what is sometimes referred to as an English star cut, and is surrounded by colourless pastes cut in the same way.

Dame Joan Evans wrote of opaline paste in *A History of Jewellery, 1100-1870* (1970): "It is not in the least like opals, but it is quite charming." The presence of faceted opaline paste stones in these jewels illustrates her point. Some of the qualities of opal are simulated through the opacity of the glass and added reflection from the foil beneath the stone. However, the use of faceting takes them outside of the realm of realistic simulation. Instead, the jeweller has creatively interpreted the visual effects of opal.

5. Slide and pendant. Western Europe, c.1750. Silver and gilded silver with opaline and colourless pastes. Museum no. M.160-1975. Given by Dame Joan Evans. Courtesy of the Victoria and Albert Museum.

M.D.S. Lewis proposed that paste made with this approach "was not counterfeit jewellery; it was made to achieve certain decorative effects which for technical reasons are rarely realized with diamonds and other precious stones." In this sense, the group of paste given by Dame Joan Evans epitomises the spirit of paste jewellery in the eighteenth century. ❑

3. Clip. Paris, c. 1765. Silver with colourless pastes. Museum no. M.2-1989. Given by Pamela Clabburn. Courtesy of the Victoria and Albert Museum.

4. From Planche 65, Traité des pierres précieuses, *Jean-Henri-Prosper Pouget, Paris, 1762. Courtesy of the Victoria and Albert Museum.*

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Ann Tozer is Assistant Curator in the Metalwork Department at the Victoria & Albert Museum, South Kensington.

The Maker of Jewels

EMILY BARBER FGA of Bonhams recounts the life and the jewellery of Sah Oved

The outstanding originality of British jeweller Sah Oved (1900-1983) is more often than not omitted from discussions of twentieth-century jewellery design. Very little is written about her, she did not leave an archive and although her charm and considerable talents were well known within her milieu and she trod her own creative path, she did not engage much in self-promotion. Indeed many of her jewels were unsigned, the only clue to the uninitiated being the handmade cases with colourful silk interiors, each with a woodcut on the lid with the legend 'Sah Oved, Maker of Jewels'.

She was born Gwendolyn Ethel Rendle, the daughter of a country doctor and had a very English upbringing. She trained with John Paul Cooper until 1923 and her student pieces from this period reflect the medievalism at the heart of arts and crafts design – not just in subject matter, but also in technical expertise. From 1924, she had her own studio and traded as 'Miss Rendle of Doughty Street'.

Perhaps the most significant moment of her professional and personal life came around 1927 when she met Mosheh Oved, the charismatic owner of the Bloomsbury antique shop Cameo Corner, which boasted a treasure of precious materials, objets d'art and cameos and a varied international clientele of intellectuals, artists and royalty. Queen Mary was a regular visitor and her Daimler was often seen outside, with a red carpet stretching from the shop door to the car. The Oveds later counted Jacob Epstein as one of their friends and his sculpture of Sah is in the Israel Museum, Jerusalem.

Working for Cameo Corner, Sah undertook repair work, engraving and enamelling and also private commissions for her own jewels. The shop provided her with a wealth of raw materials to incorporate into her inventive designs and Mosheh's Polish/ Jewish background provided the cultural motivation. Despite her parents' disapproval, she changed her name and remained with Mosheh until his death.

The majority of Sah's jewellery designs were executed prior to 1938 and were distinctive, one-of-a kind private commissions, which took several years in the making. Her order book from 1928-1933 details ninety-one commissions, many of them rings with their own name such as 'Spring Ring' or 'Jewelled Joust'. There are also pencilled remarks in the margin, such as 'Russian lady', 'American lady', 'sold to musician', noting when the jewels were bought. In 1929 she created a fantastic 22 ct gold cuff bangle for Nancy Cunard, the glamorous society figure, poet and political activist, who was famously photographed by Man Ray and Cecil Beaton wearing her signature African bracelets. Edith Sitwell and the author Marghanita Laski were also her clients.

An early photograph of Sah Oved. Photo courtesy of her daughter.

Lion of Judah Bangle, 1930s, with detail of the inscription on the reverse of the clasp (below). Photos courtesy of Bonhams.

Her trademark jewels from this period are all worked in high carat gold, in an impressive range of techniques. They are set with a smattering of gemstones and incorporate engraved Hebrew inscriptions as unifying elements. Sah was a peerless artisan and the tactile quality of the jewels combined with the inscriptions imbues her work with a magical lyricism that never seems manufactured or

Emerald crystal choker by Sah Oved, 1931. The Hebrew inscription is Psalm 137, "The Mourning of the Exiles in Babylon". The Hebrew slave bangle is also shown. Both were sold by Bonhams in April 2006 for £31,200 and £9000 respectively.. Photo courtesy of Bonhams.

A contemporary photograph, exact date unknown. The model wears jewels by Sah Oved including the Hebrew Slave Bangle. Photo courtesy of Sah Oved's daughter.

artificial. The choker pictured was made in 1931 and employs a large emerald crystal as its centrepiece, although the use of rough stones is not usually associated with jewellery earlier than the 1960s (interestingly she went on to exhibit this particular piece thirty years later, at the International Exhibition of Modern Jewellery at Goldsmiths' Hall in 1961). Another piece from the same period is a bangle worked in gold and platinum with the modelled figures of two Hebrew slaves and set with rose-cut diamond 'tears'. The 'Lion of Judah' bangle, which she made for Mosheh, bears a legend beneath the lion, which in turn doubles up as the clasp. Sah was constantly devising new ways of linking. When antique jewels in old Cameo Corner cases come up for sale at auction, if there is an ingenious clasp mechanism, it is usually one of Sah's inspired repairs or alterations.

After the Second World War, Sah took up silversmithing at The Central School of Arts and Crafts. She published *The Book of Necklaces* in 1953 and contributed several pieces to the International Exhibition of Modern Jewellery at Goldsmiths' Hall in 1961. One of her last jewellery commissions was for the necklace on the tomb of Queen Elizabeth I at Westminster Abbey.

Bonhams is selling a collection of Sah Oved's jewellery on 6 December comprising rare pieces from the 1920s, 30s, 40s and 50s. This is arguably the largest collection ever to come up for auction and we hope the sale will attract a new generation to Sah's work. ❑

Bibliography

Peter Hinks, 1985. *Twentieth Century British Jewellery* 1900-1980. Faber & Faber, London. ISBN 0-571-10650-1

Barbara Cartlidge, 1985. *Twentieth-century Jewelry*. Harry N. Abrans Incorporated, New York. ISBN 0-8109-1685-1

UK Auctions

BONHAMS www.bonhams.com

Oxford (t: 01865 73252)
Jewellery: 18 September, 20 November

Knightsbridge (t: 020 7393 3971)
Jewellery: 19 September, 14 November

CHRISTIE'S www.christies.com

South Kensington, London (t: 020 7930 6074)
Jewellery: 11 September
Fine Jewellery: 2 October
Antique Jewellery: 6 November

DREWEATT NEATE www.dnfa.com

Donnington, Newbury, Berkshire (t: 01635 553553)
Affordable Jewellery and Silver: 6 November
Jewellery: 7 November

Apsley Road, Bristol (t: 0117 973 7201)
Affordable Jewellery and Silver: 11 September

Neales, Nottingham (t: 0115 962 4141)
Affordable Jewellery and Silver: 9 October

FELLOWS & SONS www.fellows.co.uk

Birmingham (t: 0121 212 2131)
Second-hand Jewellery and Watches: 23 August, 13 and 27 September, 11 and 25 October, 8 November
Antique and Modern Jewellery and Silver: 6 September, 18 October
Costume and Silver Jewellery: 10 September

GARDINER HOULGATE www.gardinerhoulgate.co.uk

The Bath Auction Rooms, Bath (t: 01225 812912)
Antique Jewellery and Silver: 28 November

LYON AND TURNBULL www.lyonandturnbull.com

33 Broughton Place, Edinburgh (t: 0131 557 8844)
Jewellery and Silver: 25 October

WOOLLEY AND WALLIS www.woolleyandwallis.co.uk

Salisbury, Wiltshire (t: 01722 424500)
Jewellery: 1 November

Dates correct at time of going to press but may be subject to alteration.

Gems at IJL

A new show layout for 2007 will feature a Central Boulevard, Bar and Piano Bar, providing the perfect relaxation area with opportunities for networking. A definite 'must visit' for anyone with an interest in gemstones is the new Loose Gems Zone situated just two blocks to the right of the Boulevard Bar. The Zone replaces the Gemstone Plaza, always a busy and popular section of the show.

New! Loose Gems Zone

Show supporters Gem-A (stand G455) will be in a new location in the Loose Gems Zone. The Gem-A team will be on hand to up-date you on exciting developments in education and membership services, particularly those to be launched in Gem-A's 'One Hundred Years of Gemmological Education' celebrations in 2008. Learn about the plans to introduce these innovations to Gem-A's international membership at events around the world.

Gem-A membership will be strongly represented at IJL, particularly in the Loose Gems Zone. Coloured stones continue to gain in popularity and those visiting the show should take the opportunity to see what's new on the market. Bead specialist Marcia Lanyon (H455) stated that acid shades are the season's colours. "We will be showing a range of beads in these colours, including golden cultured pearls and lemon citrine, which have been selling particularly well," said Marcia. Gem dealers George Lindley & Co. Ltd (H430) have also noticed the current popularity of the acid colours. Said Director Mary Lander: "There has been a great demand for our unheated yellow sapphires, so these will certainly feature in our stock at IJL."

Visit gem specialist Marcus McCallum (H555) to see for yourself a selection of the beads mentioned in his article 'Stone Beads – Market Explosion' (*Gems & Jewellery*, June 2007). Ruppenthal (G465) will be introducing their new range of natural colour green jadeite jade jewellery.

Doug Garrod to present diamond and pearl seminars

The popular programme of seminars covering many aspects of the gem and jewellery trade is to be held during the Show, full details of which are given at www.jewellerylondon.com/page.cfm/action=Seminars. Admission is free to those attending the show.

Two major seminars will be presented by Gem-A's Senior Instructor Doug Garrod. Are you aware of the pearls currently on the market and are you able to identify them? **'Pearls: their separation and identification'** (Sunday 2 September) will give you the answers. Natural pearls and cultured nucleated and non-nucleated, South Sea and Akoya pearls, the methods of their growth and their identification, will be brought to you in 45 stimulating minutes.

'Diamonds: formation to finger' (Tuesday 4 September) will, as the title suggests, give you the complete diamond story from its formation deep in the Earth's crust to the beautiful diamond-set ring on your finger. Are you aware of the latest mining methods, the supply chain and the how modern technology is transforming the cutting process? Come along to Doug's seminar to ensure that you have the latest information on diamond, the most desirable of all gemstones.

Also not to be missed will be the presentations by Martin Rapaport, Chairman of the Rapaport Group of Companies, on 'The state of the diamond industry'. Those who have previously attended a talk by Martin Rapaport will not want to miss the fresh, energetic and often provocative insights of this ultimate industry insider. He will be presenting two seminars on Monday 3 September.

Gem-Empathy Awards 2007

Gem-A is delighted to announce that not only are we sponsoring the Gem-Empathy Award at IJL, but we will also be introducing a Designer Edition at this year's show.

Gem-A has always advocated that gem-set jewellery should be designed to show the gemstones to their best advantage. So the Gem-Empathy Award will be presented to the IJL exhibitor displaying, in the opinion of the judges, a single piece or collection of jewellery that makes captivating use of one or more gemstones. Gem-A's criteria for the award will include accurate and ethical descriptions as well as creativity, imagination and attractiveness.

At last year's show, Gem-A was particularly impressed by the high standard and imaginative use of gemstones in the jewellery displayed by the Bright Young Gems and the designers in the Design Pavilion. It was decided that these designers should be judged in a class of their own, so the Gem-Empathy Award Designer Edition is to be introduced in 2007. This new Award will be judged on the same criteria as the Gem-Empathy Award.

Latest books and instruments

Gem-A will be featuring a wide selection of gem-testing instruments and books on gems and jewellery at IJL. Our team at G455 will include gemmologists to answer your questions and advise on the purchase and use of equipment.

SHOW SPECIAL!

Daylight Lamps

Essential to anyone examining coloured gems and diamonds is good lighting. So we are delighted to announce that our Show Special this year is to be the mains-operated Daylight Lamp complete with carry case (220V). The bright 13 watt lamp (75 watt equivalent) is ideal for colour grading diamonds and for coloured stones. Usually offered in our shop at £39.95*, the Daylight Lamp will be be available at the Gem-A stand at only £29.95*.

Rechargeable battery lamp

Especially exciting is the new Ultimate Daylight Lamp, offering all the features of the standard lamp but with the option to operate on rechargeable batteries.

This gives the flexibility to use the lamp wherever you go – ideal with valuers and stone dealers while travelling. The rechargeable batteries give three hours of use. Offered in our shop at £118.00*, you may purchase the new Ultimate Daylight Lamp and carry case at our stand for only £99.00*.

New to Gem-A

Take the opportunity to see what's new in our range. Try for yourself the Presidium Gem Computer Gauge featured in the June 2007 issue of *Gems & Jewellery* (p.11). The gauge is very competitively priced at £225.00*.

Presidium Gem Computer Gauge – try it for yourself!

Also new to our range are small glass-topped boxes with reversible black and white display pads, ideal for displaying individual loose gems. Priced at £3.00* each, the boxes are ideal for displaying loose gems in a shop window.

Come along and browse through the latest books on gems and jewellery. ❑

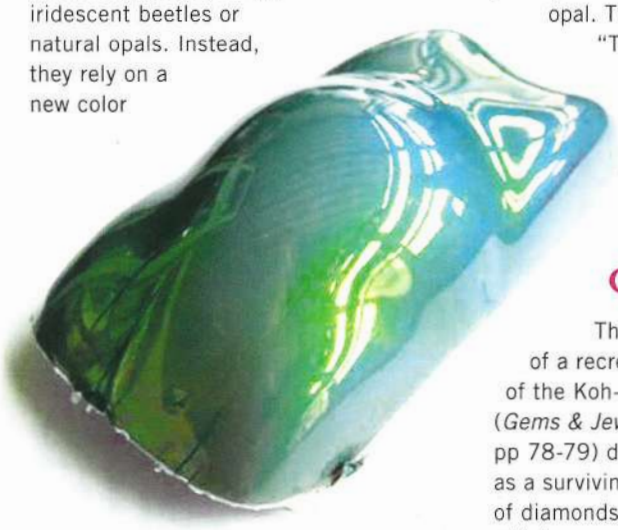
* Prices quoted exclude VAT.

Pretty Polymer

Readers of the summary of Emmanuel Fritsch's talk about the structure of opals in the previous issue of *Gems & Jewellery*, or those lucky enough to have heard his paper at the Gem-A Scottish Branch Conference in May, will be interested to learn of research by a joint University of Southampton, Merck KGaA and Deutsches Kunststoff-Institut team. They have created an opal-like effect by producing regular arrays of minute polystyrene spheres (down to 200 nm diameter) and can in effect 'tune' the colours. Their recently published article* details the process and the effects, and they have kindly allowed us to use their illustration of a miniature moulded 'polymer opal' automobile. They note that this type of photonic crystal could be produced on an industrial scale and in very large sheets.

Getting the right colour effect requires introducing sub-50 nm nanoparticle dopants into the interstices of the photonic 'crystal' lattice of hardened polystyrene spheres. One of the dopants found to work successfully was hematite (minute inclusions of hematite were found by Fritsch to be the cause of the cherry red colour in natural opal). In their article the authors note: "These crystals exhibit color features not explained by any conventional Bragg diffraction scheme, which is the normal mechanism invoked for the structural colors of butterfly wings, iridescent beetles or natural opals. Instead, they rely on a new color generation phenomenon arising from resonant scattering events that take place inside the structured environment of the photonic crystal."

Their final sentence is "Finally we believe such effects may also be widely found in nature." Are they suggesting we might have to rethink our views on natural opals? In any case I wonder when we will see the first jewellery incorporating this 'polymer opal'? (And, of course, when might clever manipulation of nano-rods and so forth be able to replicate the optical effects of star and cat's-eye stones?).



Polymer opal car. © T. Ruhl, DKI.

Old Opal

Whilst in an opal frame of mind, it is perhaps worth noting that the first appearance of black opal is usually tied into the discovery of opals in Australia at the end of the nineteenth century. In fact we find occasional black opals, and imitations of black opal, prior to this date. An early mention is in Thomas Nicols' *A Lapidary; or, the History of Precious Stones: with Cautions for the undeceiving of all those that deal with Precious Stones* (1652) where he describes four types of opal. The first is our white opal, but "The second type is black, and doth out of its blackness send forth as it were a flame. This is very pleasant, very rare and very precious."

Cast diamonds

The article about the cutting of a recreation of the original form of the Koh-i-Noor by John Hatleberg (*Gems & Jewellery*, December 2005, pp 78-79) described the starting point as a surviving plaster cast. This casting of diamonds is an old practice and one which can serves a practical purpose as well as simply recording the shape.

The first reference I know of a model of a diamond can be found in Cellini's anything-but-modest autobiography. He says: "The Pope had sent me all those precious stones, except the diamond, which was pawned to certain Genoese bankers for some pressing need he had of money. The rest were in my custody, together with a model of the diamond." This model allowed Cellini to pursue his work designing the setting without the stone itself being in his possession.

Cellini doesn't say what the model was made of, but lead is most probable. In the past, diamond dealers cast lead replicas of rough diamonds which could then be filed to the shape of a cut diamond. From this they could tell what optimum weight and shape the rough might yield. H.D. Steele explains this in his 1779 *Portable Instruction for the Purchasing the Drugs and Spices of Asia and the East Indies*. He notes that you can then easily calculate the weight of the eventual cut stone "... lead being exactly three times as heavy as a diamond." The specific gravity of lead (11.35) is actually well over three times that of diamond (3.52), but if by 'lead' they actually meant one of the lead-tin alloys more usual in day-to-day life – such as for musket balls or 'soft solders' – the formula is more accurate. ❑

J.O.

* O.L. Pursiainen, J.J. Baumberg, H. Winkler, B. Viel, P. Spahn, and T. Ruhl, 2007. Nanoparticle-tuned structural color from polymer opals. *Optics Express*, **15**(15), 9553 –61). The abstract can be found at http://www.opticsexpress.org/abstract.cfm?id=139950 and there is a link there to the full paper in pdf format. These full links were emailed to Gem-A MailTalk subscribers on 3 August 2007.

SJH celebrates 30 years

In celebration of the 30th birthday of The Society of Jewellery Historians and its close association with the Society of Antiquaries of London, a visit has been arranged on Wednesday 31 October to the Antiquaries' Tercentenary Exhibition, 'Making History: Antiquaries in Britain 1707-2007' at the Royal Academy (4:30 and 4:45 pm, timed tickets).

Following the exhibition visit there will be a lecture in the Antiquaries by the Curator, David Starkey FSA, and a reception. An application form is enclosed for SJH Members.

Forthcoming meetings

Tuesday 25 September
The Royal Society, 6-9 Carlton House Terrace, London SW1
SIMON FRASER
Men and Jewellery

The nineteenth-century reformation of men's dress into a formalized set of costumes also codified what jewellery men wore and what sorts of jewellery were appropriate for a man. The austerity inherent in those codes is still seen as essential to the public construction of masculinity in the developed world. Despite much social change, men on the whole still don't wear much jewellery. Ranging across groupings including hip hop and rock music industry performers, body modificators and consumers engaged in branded goods purchasing, the paper will examine how men really wear jewellery in 2007.

Simon Fraser is Course Director, MA Design by Project, Central Saint Martin's College of Art and Design, University of the Arts London.

Tuesday 23 October
The Society of Antiquaries, Burlington House, London W1
DAVID POSTON
My Life and Work

David Poston trained as a jewellery designer at Hornsey College of Art from 1967, initially under Gerda Flockinger. His belief that jewellery will contribute better to society if its role is challenged, informs all of his work, and since 2001 he has been exploring the presentation of jewellery 'as worked', and has thus increasingly abstained from post-manufacturing refinement and the concealment of process. He also incorporates some narrative elements to raise questions and provoke responses.

Tuesday 27 November
The Society of Antiquaries, Burlington House, London W1
KATE HARRISON
Art Medals and Jewellery-making: examining the links

Although jewellery and the art medal complement each other, comparatively few jewellers and silversmiths are engaged in art medal production. As small-scale objects they share several characteristics: they have a similarly intimate relationship to the owner or wearer, they are two-sided and can be held in the hand, the back of a jewel can be as important as the front, and they can reflect personal concerns or ideas. At the same time there is a technical similarity: from the use of shallow relief by etching, chasing and repoussé, of lettering, wax modelling and cire perdue, through to batch production, using centrifugal or sand casting or stamping, even cad cam and laser methods of production. ❑

David Poston: Rings. Forged titanium, 99.9% gold onlay, 2004. Photo: David Poston. Courtesy of Lesley Craze Gallery.

SJH Meetings

All lectures start a 6:00 p.m. sharp and are followed by an informal reception with wine.

Please note the changes of venue:

Tuesday 25 September
The Royal Society, 6-9 Carlton House Terrace, London SW1
SIMON FRASER
Men and Jewellery

Tuesday 23 October
The Society of Antiquaries, Burlington House, London W1
DAVID POSTON
My Life and Work

Wednesday 31 October
The Royal Academy, Burlington House, London W1
Visit to the exhibition
'Making History: Antiquaries in Britain 1707-2007'
and lecture by
DAVID STARKEY FSA
(further details given on facing page)

Tuesday 27 November
The Society of Antiquaries, Burlington House, London W1
KATE HARRISON
Art Medals and Jewellery-making: examining the links

Dates for Tuesday meetings in 2008:
22 January, 26 February, 22 April, 20 May, 24 June, 23 September, 28 October and 25 November. Details of venues and speakers to be announced.

Meetings are open only to SJH members and their guests. A nominal charge is made for wine to comply with our charity status. For those requiring further information, contact details for the Society are given on p.2.

For the latest information on forthcoming events visit the Society's website at:

www.SocietyofJewelleryHistorians.ac.uk

Gem-A Meetings and Events

Gem-A Conference 2007
Gems of the Orient:
Pearls and Jade
Sunday 28 October
The Renaissance London
Heathrow Hotel
Further information is given on p.2.

Midlands Branch

Friday meetings will be held at the Earth Sciences Building, University of Birmingham, Edgbaston. For information contact Paul Phillips on 02476 758940 email pp.bscfgadga@ntlworld.com

Friday 28 September
RICHARD DIGBY
Cameos and intaglios

Friday 26 October
MAGGIE CAMPBELL PEDERSEN
Gems from life

Sunday 18 November
ALAN HODGKINSON
Opals galore

Friday 30 November
GWYN GREEN
The observation of bubbles as an aid to gem identification

Saturday 8 December
55th Anniversary Branch Dinner

North East Branch

Meetings are held at the Ramada Jarvis, Hotel, Wetherby. For information call Mark Houghton on 01904 639761 email Mark at markhoughton@hotmail.co.uk or Sara North Sara_e_north@hotmail.com

Thursday 13 September
DON ARIYARATNA
Gems and the gem industry of Sri Lanka

North West Branch

Meetings will be held at YHA Liverpool International, Wapping, Liverpool L1 8EE. For further details contact Deanna Brady on 0151 648 4266.

Thursday 20 September
Branch AGM and social event

Scottish Branch

For information call Catriona McInnes on 0131 667 2199, e-mail scotgem@blueyonder.co.uk website www.scotgem.demon.co.uk

Tuesday 20 November
MEMORY STATHER
Gem carving
A joint meeting with the Scottish Mineral and Lapidary Club

Gem Discovery Club

The Gem Club meets every Tuesday evening when we examine the widest possible variety of stones. Once a month there is a guest specialist.

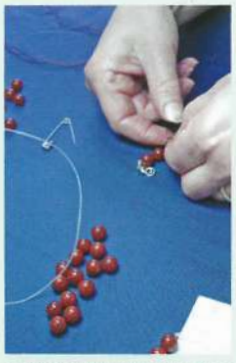
Tuesday 11 September
JOHN TAYLOR and PETER ROME
Gem Cutting

Tuesday 2 October
HAROLD KILLINGBACK
Asterism in Quartz

One-Day Workshops

Held at Gem-A's London headquarters

Bead Stringing



This course is an excellent introduction, whether you are wondering where to begin or want to refresh existing skills. Join our guest expert Beatrice Gimpel in a friendly and practical atmosphere to learn the techniques required for successful stringing. All materials needed for the day will be provided.
Wednesday 26 September and Wednesday 31 October
Price £160 (Gem-A members £149.00)

Pearls – Nature's Gift

From the origins of natural and cultured pearls, marine and freshwater, to the treatments and simulants in the trade today. Examine factors affecting quality and the commercial aspects of pearls through hands-on observation with guidance from our tutors and guest lecturers.
A thoroughly enjoyable and informative day for anyone with a passion for pearls!
Friday 26 October
Price £160.00 (Gem-A members £145.00)

The Good, the Bad and the Ugly

Estate Jewellery: understanding styles over the last 200 years
A stimulating day on the dating and valuing of antique and period jewellery with valuations' expert Brian Dunn. The emphasis will be on using the tools of the trade to assess a selection of jewellery representative of period, style and condition.
Thursday 18 October
Price £160.00 (Gem-A members £145.00)

For full details of Gem-A Workshops and Short Courses go to www.gem-a.info/education/londonwrkShops.htm or call Claire on +44 (0)20 7404 3334.

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Tel 0141 332 2848 Fax 0141 332 5370
Manchester 1st Floor, Paragon House, Seymour Grove M16 0LN
Tel 0161 877 5271 Fax 0161 877 5288
Plymouth Hare Park House, Yelverton Business Park, Yelverton PL20 7LS
Tel 01822 855555 Fax 01822 855566
Sevenoaks Sackville House, 55 Buckhurst Avenue, Kent TN13 1LZ
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