

GEM NEWS

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DIAMONDS

Australia

Cutters report problems with Australian diamonds. Mr. S. N. Sharma, president of Hindustan Diamond (an organization owned jointly by De Beers and the government of India, which markets rough to Indian cutters), stated during a recent visit to GIA that Indian cutters dislike working with diamonds from Australia for two reasons: (1) the Australian stones are so irregular in shape that they often require more than one cleavage separation before they can be cut, and (2) they seem to act harder on the wheel and so take about 20% longer to facet.

It is interesting that the diamonds first found in 1851 at Copeton, New South Wales, were also considered to be harder than diamonds from other sources. The Copeton diamonds, which are for the most part roughly round in shape, are still being mined, but because they are so difficult to cut they are used for industrial purposes only. They apparently contain many "knots" and, therefore, are very tough to saw and dangerous to cleave. However, they make superior industrial stones.

Since the lattice constants of diamonds do not vary from deposit to deposit, there is no reason other than gnarled grain or knots that would cause one diamond to be harder than another.

Diamonds at Jubilee. De Beers's international prospecting arm, Stockdale Prospecting, in a joint venture with United Nickel, Ltd., is expected to start drilling for diamonds at the Jubilee Prospect near Kalgoorlie, Western Australia, in the near future. (*Mining Magazine*, June 1984)

Guinea

Aredor diamonds. The Aredor Diamond Mine in Guinea will go to full production this year. Approximately 90% of the mine's total output is expected to be of gem quality, with rough crystals averaging between 0.8 and 1 ct. The reserves of this deposit are estimated to be able to maintain a production level of 250,000 ct per year over the next 14 years. The Aredor diamonds will be marketed through the Basel-registered Aredor Sales, which will be managed by the Industrial Diamond Company. (*Diamant*, February-March 1984)

India

Cutting Industry. Mr. Sharma also reports that more than 400,000 people are now employed in diamond cutting in India, with over 200,000 of these in the city of Surat (about 150 mi., or 242 km, north of Bombay) alone. Mr. Sharma estimates that another 100,000 workers are employed in colored-stone cutting in India.

Kenya

Prospecting in Kenya. The government of Kenya is issuing geological prospecting licenses to foreign companies. A consortium of four Belgian companies—Brai NV, Sanotec NV, Smet DB, and Vanhout NV, collectively known as the Kenyan Engineering, Mining and Construction Company (KEMICO)—is presently exploring the Siaya District, southwest of Kakamega. The company has reported finding indications of both diamond and gold deposits. (*Mining Journal*, April 1984)

COLORED STONES

Another corundum treatment! Surface pits and cavities are common in lower-quality rubies and sapphires. Even finer gems are plagued by such features.

Rather than grind away valuable weight in an attempt to remove them and thus lessen their impact on a stone's value, it has been a common practice for decades to use some type of filler in the largest and most prominent of these cavities and pits. The use of a filler accomplishes three things: (1) it seals the open voids and prevents the entry of dirt or other unwanted foreign matter, (2) it adds weight to the gem by replacing the air-filled space with a denser material, and (3) it improves the appearance of the gem.

In the past at GIA, we have seen everything from wax and plastic glues to epoxy resins used as fillers. But now entrepreneurs in Bangkok, Thailand, have apparently added a new twist to this old treatment: Instead of these relatively soft compounds, a molten glass is being used to seal these voids.

First noticed recently by gemologists at the Asian Institute of Gemmological Sciences (AIGS) in Bangkok, this surface treatment was initially thought to be an accidental by-product of routine heat treatment. However, a fairly constant influx of rubies displaying the characteristics of this process has prompted AIGS to

abandon this theory and to suspect that the cavities are being filled intentionally with a glass to improve the salability of these gems by lessening the visibility of their surface blemishes. AIGS suspects that a high-temperature heat treatment is involved because the material appears to have been fused into the pits and cavities.

The singly refractive filling material has an R.I. of 1.52 and has been tentatively identified as a glass by AIGS gemologists. When immersed in methylene iodide and viewed with diffused transmitted light (the same method used when checking corundum for diffusion treatment), the treated areas of these rubies stand out in high relief under the microscope. Magnification also reveals that the filling material often contains one or more gas bubbles of varying size. AIGS warns that under immersion any highly reflecting areas that break a stone's surface should be suspect, but cautions gemologists not to mistake natural included crystals, which may also break the stone's surface, for this type of treatment.

GEM NEWS Editor's note: In Thailand, it is common practice to use borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) or a borax-based solution in the heat treatment of corundum. Borax melts at 742°C and may form a glassy material (remember the old borax bead tests in high school chemistry?). It is therefore possible that at least some of these filled cavities might still be an accidental product of borax glass formation resulting from common heat or diffusion treatment. Perhaps this treatment technique was accidentally discovered in this way.

A word of caution is also in order. Thai rubies have, as natural inclusions, negative crystals filled with a glassy type of material that may in turn contain one or more gas bubbles. If such an inclusion were cut into during faceting it would then break the surface of the ruby. If a gemologist later encountered this gem and identified it as a surface-treated ruby on the basis of the glassy inclusion, a costly error would result.

It is also possible that some of these glassy filled cavities with bubble(s) result from the melting of preexisting solid inclusions during a high-temperature heat treatment. Many of the inclusions found in natural corundum have melting points far below that of corundum. These may melt during heat treatment and expand sufficiently to fracture their host slightly, thereby relieving the internal pressure by leaking some of the original contents from the area. This rapid release of pressure would cause an instantaneous cavitation in the remaining liquid, producing one or more vapor bubbles. Depending on the chemistry of the environment and the speed of cooling, the inclusion might either form a natural glass or recrystallize. In either case, the gas bubbles would remain, giving it the appearance of a glass.

This writer has seen only one of these "new treated

stones" to date, and it was not available for detailed testing. This stone, a ruby, had a cavity in it with internal growth steps and hillocks decorating its inner walls. Filling it, even into the tightest convoluted corners, was a glassy substance containing numerous gas bubbles. The opening to the surface of the ruby was so small that it is difficult to imagine a mechanism in which a molten viscous glass could be injected into such a cavity, so perfectly, from the outside.

However, reports in the trade of parcels of rubies displaying these features must lead one to speculate that someone has found a way to accomplish such a treatment.

Gem auction in Pakistan. The Gemstones Corporation of Pakistan (GEMCP) held another gem auction in Karachi, from May 28 to May 30 of this year. A number of gemstones, notably emeralds and rubies (some of fine quality) from Pakistan, and lapis lazuli and red spinel smuggled across the border from Afghanistan, are offered to foreign buyers at these auctions. To decrease the problems of illegal mining and smuggling in the gem-mining areas of Pakistan itself, and to increase the volume of gems offered at these auctions, GEMCP is now offering joint mining ventures to the various tribes living in the mining areas. (*Journal of Gem Industry*, May-June 1984)

Manganese find. According to the Geological Survey of India, a 1.6-km zone bearing high-grade manganese ore has been found in the Nishikhal area of the Koraput District, Orissa, India. Reserves in the zone have been estimated at 323,444 total tons; 254,871 tons are expected to grade at 36% manganese, and the remainder at 29% manganese. With the discovery of a new manganese ore body, the potential exists that manganese-containing gems, such as sugilite, might be found. This deposit therefore deserves watching. (*Mining Magazine*, January 1984)

MMTC activities. In India, the Minerals and Metals Trading Corporation (MMTC) has been quite active. Rough gem-quality diamonds from Ghana are being marketed to diamond exporters. MMTC has just contracted to handle Brazilian emeralds and expects to market a large percentage of the Brazilian output of other gemstones. They are also attempting to import large quantities of rough emeralds from Africa, and negotiations are under way with the Soviet Union to handle some of the Soviet output of rough gem diamonds. (*Gem and Jewellery Business Intelligence*, 1984)

Zambia cancels emerald-mining contract. Zambia has cancelled an emerald-mining agreement with Saudi Arabia's International Development and Construction Company because of the Saudi company's failure to honor the contract. Zambia has now signed a new con-

tract with a consortium of emerald-mining companies from Europe and South America for the rights to mine the Zambian emeralds. (*Mining Journal*, June 1984)

PRECIOUS METALS

East Rand platinum. East Rand Consolidated, a South African investment finance company, will cultivate a new platinum prospect located in the Lydenburg District of Eastern Transvaal, South Africa. The mineral rights to the platinum are held by Erconovaal Ltd., a wholly owned subsidiary of East Rand. (*Mining Journal*, June 1984)

Gold production in Ghana. Ghana has announced its intentions to resurrect its gold-mining industry. The government has given foreign mining companies the right to retain 20% of their export earnings to help stimulate this effort. A large portion of monies received from the International Monetary Fund will also be allocated for this project. The State Gold Mining Corporation intends to triple its production within the next three years. (*Precious Metals Monthly Review*, May 1984)

Japanese gold find. Mitsubishi Metal Corp. has discovered a promising gold vein at its Yatani lead-zinc mine in northern Japan. Values averaging 50 g/ton gold and 220 g/ton silver have been reported.

The geologic extent of the gold-bearing vein has not yet been established, and drilling and analyses will be required before mining on a commercial scale can be considered. (*Mining Journal*, May 1984)

New reserves at Knob Hill. With the discovery of additional ore reserves, Hecla Mining Company of Wallace, Idaho, has decided to continue production at its Knob Hill gold and silver mine located at Republic, Washington. The newly discovered reserves are expected to yield approximately 15,000 oz. of gold, and between 60,000 and 70,000 oz. of silver, per year for at least the next two years. (*Precious Metals Monthly Review*, July 1984)

Pascalis gold reserves. Soquem and New Pascalis Mines have announced that preliminary exploration indicates a reserve of 834,000 tons of ore at a grade of 8.26 g (0.26 oz.) of gold per ton for their Soquem property. The property is located east of the Val d'Or district of Quebec on land owned by New Pascalis. The reserve tonnage estimate is based on 41 completed diamond drill holes placed to evaluate the mineralization to a depth of 155 m below the surface. Two of the holes intersected the gold-bearing dike at a greater depth, giving rise to plans for a further drilling program designed to determine if the gold mineralization is present as deep as 365 m below the surface. (*Mining Magazine*, January 1984)

Philippine gold. In 1983 a farmer located a rich gold lode at the foot of a mountain on the Island of Negros. Miners pouring into the area have since established a gold town called Hinoba-an. Some independent miners at the workings are producing from 12 to 15 g of gold a week. The mining town now produces a total of approximately 70,000 g of gold each week. Under protest from the individual miners, a gold-mining company has filed a claim to the lode in an attempt to take it over. (*Jewellery News Asia*, May-June 1984)

Zimbabwe gold. Plans have been announced to develop an open-cast gold mine in southwest Zimbabwe at Filabusi, 80 km south of Bulawayo. The developer is Cluff Mineral Exploration of Zimbabwe, a subsidiary of the U.K. Cluff Oil group. It is estimated that 326 kg of gold will be recovered over the next two years at this prospect. Active mining was scheduled to begin in June of this year. Further exploration continues, and Cluff Mineral Exploration expects to find similar prospects elsewhere in Zimbabwe. (*Mining Journal*, April 1984)

SYNTHETICS AND SIMULANTS

Simulated pearl ruling. The actions of some suppliers who recently began marketing simulated pearls as "premature cultured pearls" caused the Jewelers Vigilance Committee to submit to the Federal Trade Commission (FTC) an addendum to the rulings that deal with pearl definitions. The addendum states that it is an unfair trade practice to use the term *pearl*, *cultured pearl*, or *cultivated pearl* to describe a pearl-like product "whose outer surface does not consist wholly of naturally occurring concentric layers of nacre applied by a mollusk host."

Working with the JVC and FTC, Jill Fisher, of the Gemological Institute of America, said that the addendum was intended to clarify the difference between cultured pearls and the most sophisticated simulated pearls. (*Jewelry Appraiser*, May-June 1984)

An interesting man-made glass. In response to the Winter 1983 article by George Bosshart entitled "Cobalt Glass as a Lapis Lazuli Imitation," Mr. Kenzo Kato of Iimori Laboratory, Ltd., Tokyo, Japan, donated a collection of five interesting glasses manufactured by Iimori to *Gems & Gemology*. The glasses are "Victoria Stone," "Meta-Jade," "Cat's-Eye," "Iris Jasper," and "Maple Stone." This writer was familiar with all of these except the "Maple Stone," which has a dark brownish green body color with brownish red arborescent dendritic "flowers" of devitrification. The sample studied had a refractive index of 1.603. In hand-specimen form, this material resembles bloodstone chalcedony, but under the microscope (figure 1) the "flowers" are quite obvious. Once this pattern is observed and associated with this glass it is not soon forgotten.



Figure 1. Dendritic areas of synthetic cuprite devitrification in Iimori's "Maple Stone" glass. Magnified 20x.

ANNOUNCEMENTS

April 1984 marked the centennial of the **National Gem Collection**, which is located in the National Museum of Natural History (Smithsonian Institution) in Washington, D.C. The first public display of a portion of the collection took place in April 1884, when Curator of Mineralogy F. W. Clarke prepared an exhibition of American gemstones for the New Orleans Exposition.

To celebrate the centennial, two major new additions to the collection have been placed on display for the first time. They are the 318.44-ct Dark Jubilee, an Australian black opal donated by the Zale Corporation, and the 182-ct Star of Bombay sapphire (figure 2), a bequest from movie actress Mary Pickford.

The Society of Jewellery Historians of the British Museum in London is pleased to announce the advent of their new annual journal, *Jewellery Studies*. The 96-page publication will contain feature articles, exhibition news, book reviews, and a current bibliography. The journal will be highlighted by numerous black-



Figure 2. The 182-ct Star of Bombay sapphire, recently placed on display at the Smithsonian Institution, Washington, DC. Photo by Victor Krantz.

and-white and color photographs. The society meets approximately seven times a year, and holds a number of two-day symposia. They also publish two newsletters as well as the proceedings of their symposia. For information regarding memberships and subscriptions, please contact Ms. Judy Rudoe, Department of Medieval and Later Antiquities,

British Museum, London WC1B 3DG, England.

AGA Conference. The Accredited Gemologists Association (AGA) has set the dates for its 1985 conference to be held in Tucson, Arizona, in conjunction with the annual Tucson Gem and Mineral Show. The conference will be held February 4 and 5 at the Palo Verde Holiday Inn. For further information, please contact Neil H. Cohen, 99 Pratt St., Suite 211, Hartford, CT 06103.

A Special Request. GIA has a slide library that now numbers over 10,000. We are trying to obtain color 35 mm or other format transparencies from every gem locality in the world. Since GIA personnel cannot travel to and photograph all of the world's gemstone localities, we would very much appreciate receiving any labeled or otherwise explained slides taken at any and all gemstone localities both major and minor. Such slides are invaluable educational tools. As with any donation made to GIA, all donors of slides will be duly acknowledged.