

GEM NEWS

John I. Koivula and Robert C. Kammerling, *Editors*

DIAMONDS

Diamond dredging in a big way. During Gem News editor John Koivula's visit to Brazil in the fall of 1987, he observed the operation of the "Tejucana diamond dredge," an unusually large and efficient floating earth mover-processor that is currently operating near the city of Diamantina, in Minas Gerais (figure 1). Modeled after the gold dredges used in the western United States in the early 1900s, this dredge has been considerably enlarged and modernized to handle diamonds as well as gold. It is reported to be approximately 90% effective in its recovery of both diamonds (the primary target) and gold.

The Tejucana dredge floats on a lake that it manufactures by diverting nearby streams, in an area where diamondiferous gravels have been identified in ancient riverbeds. As it moves slowly along, the dredge excavates (down to the bedrock) all of the soils and gravels in its path. A conveyor system of buckets 3-4 ft. in diameter (figure 2) carries these materials into the processing plant atop the dredge. Here the gravels are mechanically sorted by size and density, and the gold and diamonds are eventually separated out. Once processing has been completed, the residual gravels and other materials are ejected from the dredge into piles on either side of, and

behind, it. Although very efficient, this process leaves massive scars on the land, which is the main reason such dredges are illegal in the U.S.

This dredge is one of two that the owners (Mineração Tejucana S.A.) operate on two different water systems approximately 40 km apart. In September 1987, it was producing an average of about 2,500 ct of gem diamonds, and as much as 25 kg of gold, per month.

Diamond brings largest per-carat price at auction. A 52.59-ct emerald-cut diamond (see figure 3) sold at the April 1988 Christie's auction for US\$7.48 million. The US\$142,232 per carat commanded by this D-internally flawless diamond is the highest per-carat price ever paid at auction for a colorless diamond.

COLORED STONES

More on Mexican andradites. More iridescent andradite garnet from Sonora (see Gem News, Fall 1987) has been brought to our attention by Mr. Ralph Coello of Oasis Investments USA, Sherman Oaks, California. Mr. Coello's samples (which he had obtained from Bernhard and Muriel De Koning of R&B Gems, Temple City, California) included rough similar to the iridescent material



Figure 1. The Tejucana diamond dredge (here, operating near Diamantina, in Minas Gerais, Brazil) removes river gravels and mechanically sorts them for diamonds and gold. Photo by Kristi A. Koivula.

that we previously noted and a few small, transparent, slightly brownish yellow faceted stones. Each of the latter stones showed a very distinct, colorful, internal diffractive quality when viewed through the table using darkfield illumination (figure 4); we were told that these stones had been cut from small euhedral crystals.

The larger, iridescent pieces of rough showed two distinct layers of color (figure 5). The underlying layer consisted of a translucent dark red-brown material; the outer layer, which provided the iridescence, was bright yellow with a very slight brownish cast. X-ray diffraction analyses of both layers by Chuck Fryer showed the material to be andradite garnet.

Ruby from North Carolina. While digging through "gray muck" at a corundum-producing area near Franklin, Macon County, North Carolina, gemologist John Fuhrbach recovered a fine 2.53-ct tabular ruby crystal (figure 6). For size, color, and overall quality, it is an unusual crystal from this North American locality.

Figure 2. Dredge buckets on the Tejucana diamond dredge systematically scrape the river bottom and bring all of the material into the dredge for sorting. Photo by Kristi A. Koivula.



Figure 3. This 52.59-ct D-internally flawless diamond brought the largest per-carat price at auction ever received for a colorless diamond. Courtesy of Christie's; photo © Tino Hammid.

Sri Lanka update. Mr. Gordon Bleck, a geologist who currently resides in Viyalagoda Eheliyagoda, Sri Lanka, recently wrote to Dr. Emmanuel Fritsch, of the GIA Research Department, with news of his latest discoveries from this prolific gem-producing island. Bleck reports that because most of the gem workings involve various small, quickly executed, dispersed mines, each visit to the gem-mining areas of Sri Lanka inevitably reveals many surprises. Following are some of the more interesting discoveries reported by Bleck:

- He observed a beautiful 10-ct color-change sapphire with a large, well-defined, doubly terminated zircon crystal as an inclusion near the surface of the pavilion.
- A dark green 190-ct piece of rough ekanite, with a natural shape that mimics the outline of the island of Sri Lanka, was found near the village of Maligavila, in the Monarayala district of the well-known gem-producing area of Okkampitiya. This piece was mined on jungle flat land from a depth of approximately 3–4 ft., under a layer of small alluvial boulders. This area started producing significant quantities of ekanite about two years ago. At least 50 to 60 kg of ekanite have been recovered since then, with some pieces as large as 1.5 kg. Because of the limited demand for this material, mining for ekanite has now come to a halt.
- A well-formed, relatively fresh, twinned crystal of opaque metallic-black, highly radioactive uraninite

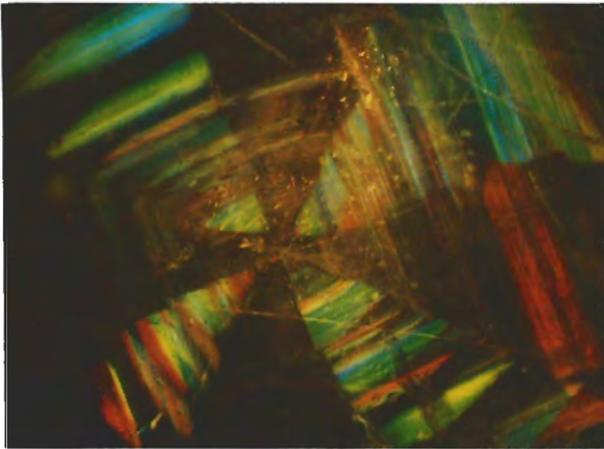


Figure 4. Bright, diffraction-caused colors are visible in this faceted andradite from Hermosillo, Mexico. Darkfield illumination; magnified 25 \times . Photomicrograph by John I. Koivula.

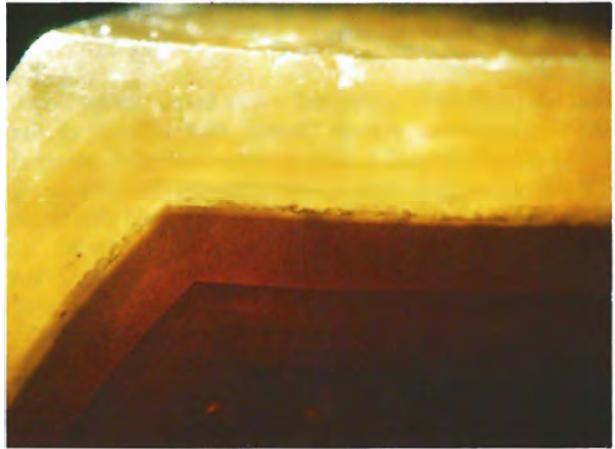


Figure 5. This layered structure is typical of the iridescent andradite garnets from Mexico; both layers are andradite. Magnified 10 \times ; photomicrograph by John I. Koivula.

(uranium oxide) was discovered in Rajaweka, a small village approximately 10 km (6 mi.) from the town of Balangoda. Bleck made the identification based on the fact that a similar crystal that he had sent to GIA Research earlier was determined to be uraninite. This earlier crystal was so radioactive that a special "stone paper" was constructed for it out of 2-mm thick lead sheet. Even when the stone was encased in the lead sheet, radiation was easily detected.

- An apparently flawless rough orange scapolite (118 ct) was found at the village of Ellawel near the town of Eheliyagoda, approximately 5 mi. (8 km) from where most of the colorless Sri Lankan scapolite is found. Thus far, this is the only known orange scapolite from this area. It was recovered from a long-standing mine (approximately 10 m deep) in a rice paddy. A 100-ct piece of green beryl was also recovered from the same mine in recent months.

Figure 6. This 2.53-ct ruby crystal (10.51 \times 7.47 \times 2.63 mm) was found recently in Macon County, North Carolina. Courtesy of John Fuhrbach; photomicrograph by John I. Koivula.



Clarification. With regard to the report on inclusions in the new Hematita alexandrites that appeared in the Spring 1988 Gem News section, it was Dr. Edward Gübelin who actually identified the apatite inclusions in this new material and initially suspected that fluorite

Figure 7. These watches are decorated with plastic imitation malachite. Photo by Robert Weldon.



inclusions might also be present (on the basis of the isometric morphology of the inclusions in question and their similarity in appearance to inclusions of fluorite identified in topaz from Nigeria). Following preliminary testing of these inclusions by Dr. Karl Schmetzer and Mr. Charles Schiffman, at Dr. Gübelin's request, Dr. Henry Hänni performed the chemical analysis that proved that they were indeed fluorite.

SYNTHETICS AND IMITATIONS

Plastic imitations of lapis lazuli and malachite. Watches decorated with inlaid gem materials are currently a popular item in the jewelry trade. Ellie Page, a resident instructor at GIA-Santa Monica, informed us that some of these watches may actually be decorated by plastic substitutes for malachite (figure 7) and lapis lazuli.

To the unaided eye, the authentic gem-decorated watches and the plastic imitations appear virtually identical. In addition to standard gemological testing techniques, however, there are three simple methods that can be used to spot a fake. First, heft the watch. A watch decorated with one of these gem materials will feel much heavier than its plastic imitator, because the specific gravities of lapis and malachite are much greater than that of plastic. Second, examine the unpolished edges between each link of the band. Since lapis and malachite are aggregates, the unpolished surfaces will be grainy to uneven, in contrast to the smooth-textured surface of plastic. Last, the asking price for the watches made of the actual gem material (which ranges from about \$35.00 to \$100.00 or more) is significantly greater than that of the plastic imitation (approximately \$15.00-\$25.00).



Figure 8. These blister packs contain synthetic spinels, designed for mass marketing just like pills. Photo by Robert Weldon.

Clever marketing. A new, somewhat humorous method of "packaging" synthetic gems was recently brought to our attention. Dark blue "cobalt"-colored synthetic spinels, faceted into uniform 6-mm round brilliants, were placed in blister packs in much the same way as cold pills or similar medicines. They were positioned individually in plastic depressions, uniformly spaced on a large sheet that was backed and sealed by metal foil. And, just like pills, if you need one, a little finger pressure on the plastic bubble will pop a spinel out through the foil backing (figure 8).

ANNOUNCEMENTS

The American Museum of Natural History has opened an exhibit of 153 colored diamonds compiled from the Aurora Gem Collection and the Goldberg Collection. This display, in the Morgan Memorial Hall of Gems, is the largest and most comprehensive suite of colored diamonds ever shown at a public institution. A superb range of colors, as well as numerous localities, are represented. For more information on the museum and this unique exhibit (which is scheduled to remain on display until at least March of 1989), telephone (212) 769-5800.

Matrix: A Journal of the History of Minerals was introduced at the February 1988 Tucson Gem & Mineral Show. This informative and well-illustrated 16-page newsletter (scheduled to be published six times a year) is dedicated to the history of minerals and significant people in mineralogy. For subscription information, contact Matrix Publishing, P.O. Box 129, Dillsburg, PA 17019.

The Sixth Jewel and Diamond Fair will be held in Antwerp September 4-6, 1988. Over 100 exhibitors will participate in the Bouwcentrum.

For more information and reservations, contact: Promaz BVBA, Lamounierestraat 69-71, B2018 Antwerp, Belgium; telephone (03) 239-51-22.

The Hong Kong Jewelry & Watch Fair is scheduled for September 18-21, 1988, at five area hotels in Hong Kong. Over 500 exhibitors from 25 countries will be represented. For information, contact: Headway Trade Fairs, Ltd., 9/F Sing-Ho Finance Building, 168 Gloucester Road, Hong Kong; telephone 5-8335121.