GEM NEWS

John I. Koivula, *Editor*

DIAMONDS

Cubic zirconia coated by synthetic diamond? Over the past few years, Gem News has reported periodically on the new technology of coating with synthetic diamond. Thus far, this technology has been researched and developed for application in various industries, but not as a method of gemstone synthesis or enhancement.

Now that may have changed. Bernice Backler, of Barnscott Gemological & Metallogical Laboratory in Pinetown, South Africa, reports that a client brought in a "diamond" ring for laboratory certification. It had been purchased in Bangkok, Thailand, for $1,000, with a "guarantee that the stones were white De Beers diamonds cut in Belgium," according to Ms. Backler.

The ring was stamped 18K and was bezel set with seven reportedly 0.20-ct stones and pavé set with 12 reportedly 0.05-ct stones, for a presumed total weight of 2.00 ct of "diamond." The two things that first made the laboratory personnel suspicious were the unusually low price paid for the ring and the fact that they "could see through the stones." The setting was also found to be gold-plated base metal.

Although a thermal probe indicated that the stones were diamonds, further testing showed that they were in fact "cubic zirconias coated with a fairly heavy coating." When examined with the microscope, the coating was determined to match that "described by O'Donoghue" for synthetic diamond (*Identifying Man-made Gems*, p. 89). It was "very granular, in some cases almost mountainous," with "many high heaps and ridges near the girdle and running right up to the crown and star facets. . . . The whole appearance was one of an amateurishly performed job." We are most grateful to Bernice Backler for reporting this item to Gem News.

Editor's Note: To date, neither the GIA Research Department nor the GIA Gem Trade Laboratory has encountered a cubic zirconia layered with any coating that would fool a thermal diamond probe. However, we are aware that a number of companies have applied polycrystalline diamond coatings to a variety of materials, although cubic zirconia was never specifically cited.

Figure 1. For the first time in many years, fine iris agate such as this 70.2 × 35.0 × 2.0-mm piece was available at the 1987 Tucson Gem and Mineral Show. Photo © Tino Hammid.

TUCSON '87

From February 7 through 15, the desert city of Tucson, Arizona, was once again transformed into a gem and mineral fancier's paradise. Each year this event seems to get larger and that trend was not broken this year, with dealers working out of more than a dozen hotels as well as the convention center.

Without question, Tucson has become the largest

gem and mineral show in the world. And again this year, dealers from virtually every gem-producing country were present in abundance. As a result, many interesting and unusual items were there waiting to be discovered. The following report of new and different items seen at Tucson this year was compiled by the Gem News editor with the help of Emmanuel Fritsch, Pat Gray, James Shigley, and Carol Stockton.

Amber. Dominican amber was available in large amounts, although pieces with interesting inclusions were, as usual, difficult to find. Good pieces of the so-called blue (strongly fluorescent) amber were fairly common this year. A few of the amber dealers also reported a small but steady market for transparent Polish amber and for the cloudy, translucent to opaque, Russian material.

Aquamarine. Zambia is said to be the source for a new find of aquamarine. The gems are a darker shade of what has become known in the trade as "aquamarine" blue, and are very similar in color to some of the fine aquamarines that have come out of Nigeria over the past few years. The color in these Zambian stones, as with their Nigerian counterparts, is said to be natural and not the result of heat treatment.

Chalcedony. For the first time in many years, a few very fine iris agates were being offered for sale. Acting as a diffraction grating, the ultra-fine fortification banding in these agates splits any source of transmitted white light into a rainbow of bright spectral colors (figure 1). It is hoped that more of this phenomenal material will be available in the future.

Chrysoberyl. A number of very fine alexandrite chrysoberyls from Sri Lanka, Brazil, and even the Soviet Union were available in sizes up to 8 ct. All of the Soviet gems were said to be from old stock, and their appearance on the market does not reflect any renewed mining activity.

Diamond. The Tucson Gem and Mineral Show is generally not thought of as a diamond show but each year more and more diamond dealers are involved. Melee-sized diamonds seem to be very popular, usually purchased as accent stones for the major colored gems that are so abundant at the Tucson show. This year, however, several major white diamonds were on display, as well as a number of fancy pink, blue, green, and yellow stones. Some of these faceted diamonds were as large as 20 ct.

Euclase. Colorless Brazilian euclases can be irradiated with gamma rays to produce a pale green color. After hearing a rumor to the effect that colorless euclase was being enhanced in this manner, Pierre Bariand, curator of the Sorbonne Collection, personally conducted a euclase-irradiation experiment and verified that this color change will take place.

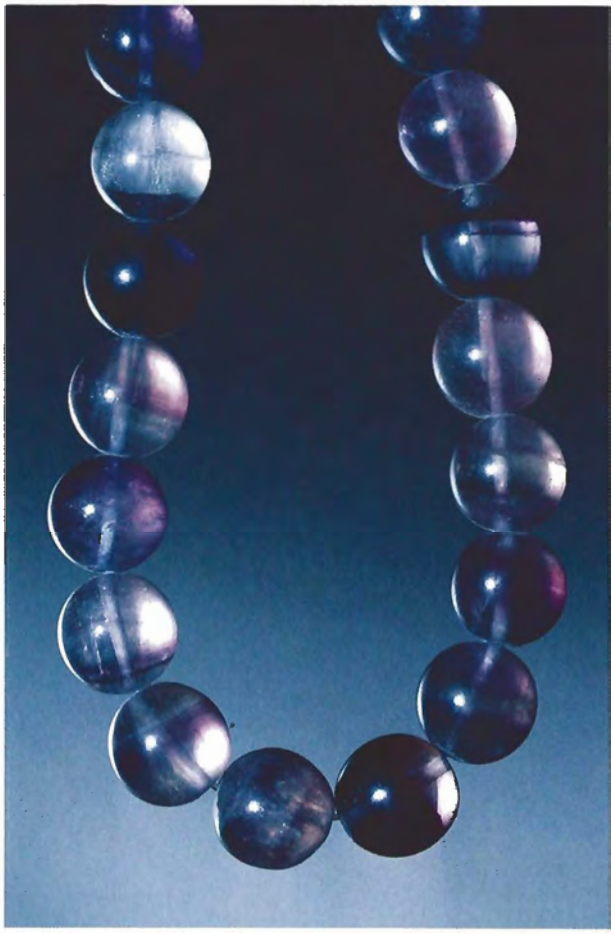

Figure 2. These 11-mm color-zoned fluorite beads were sold as "multi-color amethyst." Photo © Tino Hammid.

Fluorite. Strands of typical purple-to-colorless color-zoned fluorite beads were being sold as "multi-color amethyst." As shown in figure 2, these beads are obviously fluorite and should not fool the competent gemologist.

Garnet. Intense green grossular garnets from East Africa in sizes over one carat have all but disappeared from the gem marketplace. Apparently, the deposits that produce this beautiful gem are no longer producing it in large quantities. Some feel that the mines may be played out, while others speculate that they simply are not being worked as heavily as they were in the past.

Kornerupine. Some cat's-eye kornerupines from an unknown locality were being sold by one gem dealer as cat's-eye quartz.

Figure 3. Harold Van Pelt created this unusual fluted three-piece rock crystal quartz container (36.8 cm high) in honor of this year's show mineral. Photo © Harold & Erica Van Pelt.

Moonstone. For the second year in a row, so-called "rainbow" moonstone from India was being marketed at the show. Last year it was virtually unknown, but this year it was one of the popular new gems. Only small stones of 2 ct or less were available last year, but this year gems as large as 15 ct were being sold. The most expensive of these was cut in a well-polished high-domed cabochon that brought out a reddish adularescence. Other moonstones displayed green, blue, orange, and yellow adularescence.

Opal. The breakup of a large old collection of small but very fine Australian black opals resulted in a number of these gems being offered for sale at Tucson this year. The opals had a medium-gray to jet-black body color, which was ideal to show off their intense play of spectral colors.

Peridot. Peridot was available from a number of both classic and new localities. Fine large Burmese gems up to 75 ct were reportedly at the show. One Burmese gem of note was a 5+-ct star. Both cut and rough peridot from Nordfjordeid, Norway, was available in faceted sizes up to 6 ct. Two relatively new localities for gem peridot—Tanzania and Zambia—were also represented by small faceted gems. The gem peridot potential of these two sources is unknown. A few specimens of well-formed peridot crystals in matrix were available at the main convention center show. Nodules of peridot in basalt from San Carlos, Arizona, were also available.

Quartz. The official theme mineral of this year's Tucson show was quartz, and to celebrate this fact the world's largest known doubly terminated quartz crystal, found in Africa, was on display. This remarkable specimen was more than 2 m (6 ft.) long and weighed 3,454 kg (7600 lbs.).

Also on display in honor of the show mineral was the most recent piece created by Harold Van Pelt (see the article by John Sinkankas in the Winter 1982 issue of *Gems & Gemology* on his unusual carving techniques): a three-piece fluted rock crystal container (figure 3). This unusual container is 36.8 cm (14.5 in.) high; the body has 72 flutes and is only 3-4 mm thick at any point. The body was carved, using special long-shafted tools because of the depth, from a single piece of quartz.

Bi-colored gems of amethyst and citrine quartz, known in the trade as Ametrine, have been marketed for several years. Yet the precise locality of these mixed crystals has been in question until now. Kirby Siber, of Siber and Siber, Switzerland, has purchased gem rough at the mines and provided Gem News with the following updated locality information. The confusion about the exact location of this gem deposit resulted from the fact that it is situated in Bolivia near the Brazilian border about 650 km southeast of Santa Cruz, far inside a highly restricted military area. To compound this problem, the terrain is very rough and the area is difficult to access. The locality is actually a crescent-shaped mining area covering about 60 km.

More "Witches' Brew" quartz, with supposed magical powers, was also seen at Tucson. In actuality, these pieces are manufactured by sawing the tips off crystals of Arkansas rock crystal quartz near their bases, and then gluing an intensely colored slice of glass or small dark-colored transparent stone to the sawed end. The quartz crystal tip would then appear to be brightly colored when a light was shone into it through the color-capped end.

Ruby. A new find of gem-quality ruby was also reported. The eluvial rubies are being mined from an area midway along the border between Laos and Cambodia (Kampuchea). The stones range up to about 1.5 ct and are of good-to-fine gem quality. The internal characteristics of these rubies are very similar to rubies from Thailand and are probably from a similar basaltic source.

Sapphire. Unusually large amounts of intense pink sapphire were seen at this year's show. We did not learn the geographic source of these "hot-pink" gems but it is probable that they are from Sri Lanka. It was rumored that pink sapphires were being heat treated to intensify their color or even to produce ruby, but we were unable to verify these speculations. If such a treatment were possible, then it might involve a heat-induced change in the valence state of preexistent chromium ions.

Scapolite. A number of large faceted intense reddish purple scapolites were available this year (figure 4). These gems ranged up to 27 ct and were said to come from Tanzania. Most purple scapolites are generally rather small, and these are the largest that we have seen to date.

Spodumene. Some translucent pale pink to white cabochon-cut spodumenes were being offered as "sheen phenakite."

Turquoise. "Stabilized" natural turquoise, primarily from Cannanea, Mexico, is probably the most available form of turquoise on the market today, even eclipsing Gilson's man-made turquoise. However, both could be found at this year's Tucson show together with a turquoise substitute imported from Germany. The low-priced substitute is composed primarily of the aluminum hydroxide mineral gibbsite. It is dyed, stabilized with a polymer, and used either alone or mixed with some natural turquoise. Some color stability problems have been mentioned in connection with this turquoise substitute: After a year or so of normal jewelry wear, the blue color reportedly shifts toward gray. This color change is probably due to the slow degradation of the dyed polymer under the influence of the ultraviolet rays of sunlight and many common artificial light sources.

Zircon. Zircons in virtually every color were available this year, including some heat-treated blue stones. One Sri Lankan stone of particular interest was an 11-ct cat's-eye that had the body color of a fine chatoyant chrysoberyl and a sharp bluish eye.

In addition to the opportunity it provides to view a full range of gems and minerals, the Tucson show is also a good place to pick up current gem-related news. This year, Mr. Gordon T. Austin, the gemstone commodity specialist with the United States Bureau of Mines, provided a variety of useful information. Mr. Austin informed us that many of the East African nations are pushed for hard currency. They have been gearing up their production of gemstones, most notably tanzanite and all varieties of garnet, to help solve their currency problems.

Figure 4. This intense reddish purple scapolite (8.94 ct) was one of a number of unusually fine Tanzanian scapolites seen at Tucson this year. Photo © Tino Hammid. Stone courtesy of B. Alex Bahtiarian.

He also informed us that while reading through the government's monthly import statistics he noted that Ecuador has suddenly become a significant exporter of ruby, sapphire, emerald, aquamarine, and amethyst. He has no explanation for this. Perhaps Ecuador is becoming some sort of a pipeline for gems into the United States.

Another very interesting bit of information provided by Mr. Austin concerns Chinese diamonds. Within the last few months, China and De Beers have signed a joint contract to handle the output from the four currently producing Chinese diamond mines. China, with De Beers's help, hopes to train 500,000 diamond cutters within the next five years and plans to compete with India in the small goods market.