Figure 2. Material similar to the pale green cat's-eye chrysoberyl on the left was irradiated to produce the 3.5 ct radioactive dark brown cat's-eye chrysoberyl on the right. Photo courtesy of Kenneth Scarratt.

Thailand. Robert E. Kane, director of the Gübelin Gemmological Laboratory in Lucerne, Switzerland, reported seeing several examples of this material at the September 1997 Hong Kong Show. Mr. Scarratt advised that members of the gem trade immediately check all cat's-eye chrysoberyls of an unusual dark brown color for excessive radioactivity.

Demantoid garnets from Russia . . . The greater availability of fine Russian demantoid was described by W. R. Phillips and A. S. Talantsev in the Summer 1996 *Gems & Gemology* ("Russian Demantoid, Czar of the Garnet Family," pp. 100–111). The editors saw an excellent demonstration of the return of this material earlier this year. Bear and Cara Williams of Bear Essentials, Jefferson City, Missouri, showed us several bright green demantoids that were reportedly from the Bobravka River, near Nizhniy Tagil. These stones had been fashioned in the nearby Ekaterinburg region. We borrowed two stones, weighing 1.34 and 1.18 ct (figure 3), for gemological characterization.

Gemological properties were as follows (largest stone first, where different): shape—oval brilliant, oval mixed cut; color—yellowish green; color distribution—even; pleochroism—none; optic character—singly refractive; Chelsea color filter reaction—deep orangy red, weak orangy red; R.I.—greater than 1.81; S.G.—3.87, 3.86; inert to both long- and short-wave ultraviolet radiation; no visible luminescence ("transmission luminescence"); absorption spectrum—460 nm cutoff, 620 nm line, 638 nm line, weak 690 nm line (difficult to see in the large stone), 680 nm cutoff (large stone only); inclusions—"horsetails" (both stones), fractures (both stones), large cavity on girdle (large stone only). An energy-dispersive X-ray fluorescence (EDXRF) spectrum taken on the largest stone showed major Si, Fe, and Ca, minor Cr, and trace V.

. . . . and from Namibia. A number of people have brought to our attention the fact that demantoid garnets—long thought to occur almost exclusively in Russia (see, e.g., the Phillips and Talantsev article cited in the previous entry)—are now commercially available from a new locality in the southern African nation of Namibia. Contributing editor Henry Hänni first brought these stones to our attention. In spring 1997, he received two demantoid garnet crystals that were reportedly from a new source in Namibia; they were sent by Mr. Hilmar Bosch, Hilton, Natal, South Africa. The two crystals weighed 13.52 and 3.87 ct (Mr. Bosch reported seeing crystals as large as 30 ct). They had the following properties (largest first, where different): shape—both were partial rhombic dodecahedra (figure 4); surface texture—stepped growth in small steps, with features resembling slight corrosion; color—light yellowish green,

Figure 3. These two demantoid garnets, 1.18 and 1.34 ct, were recently recovered from Russian deposits. Stones courtesy of Bear Essentials; photo by Maha DeMaggio

Figure 4. These two crystals (3.87 and 13.52 ct) are demantoid garnets from a new locality in Namibia. Photo courtesy of Henry Hänni.

grayish green (both resembling peridot in color); color distribution—yellower at the core (in the first stone), even (in the second); absorption spectrum—sharp band at 425; reaction to Chelsea filter—reddish. With magnification, we saw open fissures in both crystals and some tiny fluid inclusions in the smaller piece; however, no "horsetail" inclusions were seen in either crystal. EDXRF spectroscopy gave Si, Ca, and Fe—consistent with andradite—but very little chromium (the green chromophore), which was estimated at 0.05 wt.% Cr_2O_3. An article by Thomas Lind et al. in a recent issue of the *Zeitschrift der Deutschen Gemmologischen Gesellschaft* ("Neues Vorkommen von Demantoid in Namibia," Vol. 46, No. 3, 1997, pp. 153–160) reported between 0.02 and 0.13 wt.% Cr_2O_3 in this material.

Marc Sarosi, a gem dealer in Los Angeles, California, shared seven fashioned demantoids (0.71–3.42 ct), two small demantoid crystals (8.91 and 9.54 ct), and one 1.11 ct yellowish brown andradite from this locality with the Gem News editors (some of these stones are shown in figure 5). Gemological properties of the fashioned demantoids were as follows: color—green to yellowish green; refractive index—over the limits of our standard refractometer (greater than 1.81); optic character—singly refractive with strong anomalous double refraction; inert to both long- and short-wave ultraviolet radiation; Chelsea filter reaction—orange to red; specific gravity—3.83–3.85; absorption spectrum (using a handheld spectroscope)—band at 445 nm, general absorption below 450 nm, and (one stone only) diffuse 580 and 630 bands. Magnification revealed strong dispersion, "fingerprints," crystals (some of which could be resolved as prismatic in shape), a negative crystal with a two-phase inclusion, and needles in two samples. No sample contained "horsetail" inclusions, although the 1.11 ct yellowish brown andradite contained yellow needles (some of which curved slightly); Lind et al. also found no "horsetails" in the Namibian demantoids they examined. The stones showed pronounced angular or straight transparent growth zoning, and, in one case, iridescence along the growth planes (so-called "rainbow graining"). EDXRF analysis of the green fashioned stones revealed major Ca, Fe, and Si, and minor Mn and Cr. The two rough specimens we examined showed parallel growth of smaller crystals, with smooth dodecahedral faces and etched trapezohedral faces; one piece had grown on a 5 mm white "scepter" quartz crystal.

A published report in *Jewellery News Asia* (August 1997, p. 36) states that the source for these demantoids and other andradites is the Usakos mine in Namibia, and that the largest stone fashioned to date weighs 9.89 ct. The deposits are reportedly alluvial in nature.

A gem-quality ettringite group mineral, probably sturmanite. Each February, the gem and mineral shows in Tucson provide many interesting, sometimes important, gemological discoveries. Although some of these are relatively easy to analyze and describe, others are much more

Figure 5. The newly discovered Namibian deposit reportedly produced these rough and fashioned demantoids and yellowish brown andradite from the new find in Namibia. The largest crystal (right) measures 13.91 × 12.06 × 7.27 mm, and the largest pear-shaped demantoid weighs 1.95 ct. Stones courtesy of Marc Sarosi, Los Angeles, CA; photo by Maha DeMaggio.