
GEMOLOGICAL ABSTRACTS

Dona M. Dirlam, Editor

REVIEW BOARD

William E. Boyajian
GIA, Santa Monica
Jeffrey M. Burbank
GIA, Santa Monica
Stephanie L. Dillon
San Clemente, California
Bob F. Effler
GIA, Santa Monica
Joseph O. Gill
Gill & Shortell Ltd., San Francisco
Fred L. Gray
Richter's, Georgia
Mahinda Gunawardene
Idar-Oberstein, Germany

Gary S. Hill
GIA, Santa Monica
Steve C. Hofer
Kensington, Connecticut
Karin N. Hurwit
Gem Trade Lab, Inc., Los Angeles
Robert C. Kammerling
GIA, Santa Monica
Neil Letson
Palm Beach, Florida
Shane F. McClure
Gem Trade Lab., Inc., Los Angeles
Elise B. Misiowski
GIA, Santa Monica

Michael P. Roach
Andin International, New York
Gary A. Roskin
GIA, Santa Monica
James E. Shigley
GIA, Santa Monica
Franceye Smith
GIA, Santa Monica
Carol M. Stockton
GIA, Santa Monica
Sally A. Thomas
GIA, Santa Monica
Jill M. Walker
GIA, Santa Monica

COLORED STONES AND ORGANIC MATERIALS

The black pearl is back. H. Dennert, *Asian Jewelry*, January/February 1985, pp. 10–11.

Here, in an extremely brief overview, is a "who's who" and "what's what" of the black pearl industry. There is a smattering of information on sources, processing, and supply and demand. In addition, some of the important people involved in pearling in French Polynesia are named. The author aptly points out that black refers to the shell of the animal. The pearls range in color from dark gray to light yellow-green. However, the informa-

tion on grading seems to be a thoughtful study in ambiguity: While four grades are mentioned, possible price ranges are given for only three of these.

Dennert breezes through the whole spectrum in a scant two pages, including illustrations, leaving the reader to wonder when a complete report will be forthcoming. For all of its brevity, though, this article is better than the dearth of information that has been available in the past.

Archie Curtis

Blue andalusite from Ottré, Venn-Stavelot Massif, Belgium: a new example of intervalence charge-transfer in the aluminum-silicate polymorphs. K. Langer, E. Halenius, and A. Fransolet, *Bulletin de Minéralogie*, Vol. 107, 1984, pp. 587–596.

Andalusite is an uncommon gemstone that is found either in metamorphic rocks or as a detrital mineral in sediments in Brazil, Sri Lanka, Burma, and other localities. It occurs in a range of colors (usually pinkish or greenish) and is often strongly pleochroic. Some attractive blue andalusite was recently found in the Ottré region of western Belgium. Here it occurs as tabular crystals up to 1 cm in length in metamorphosed sedimentary rocks in association with quartz, kaolinite, and pyrophyllite. The crystals have refractive indices of about $\alpha = 1.637$, $\beta = 1.642$, and $\gamma = 1.647$, and are distinctly pleochroic from blue in the ordinary direction to colorless along the other two axes. The blue color is

This section is designed to provide as complete a record as possible of the recent literature on gems and gemology. Articles are selected for abstracting solely at the discretion of the section editor and her reviewers, and space limitations may require that we include only those articles that will be of greatest interest to our readership.

Inquiries for reprints of articles abstracted must be addressed to the author or publisher of the original material.

The reviewer of each article is identified by his or her initials at the end of each abstract. Guest reviewers are identified by their full names.

© 1985 Gemological Institute of America

caused by the tail of a strong absorption band centered at 770 nm. This absorption band is attributed to an Fe^{2+} – Fe^{3+} charge-transfer mechanism. No indication is given in the article as to the abundance of these crystals or whether they could be faceted. JES

Eudialyt aus Kanada (Eudialyte from Canada). U. Henn, *Zeitschrift der Deutschen Gemmologischen Gesellschaft*, Vol. 34, No. 1/2, 1985, pp. 76–78.

Because of its higher zirconium content (about 30%), eudialyte occurs only in Zr-rich deposits. The refractive indices are $n_e = 1.600$ – 1.601 , $n_o = 1.596$ – 1.597 , with a birefringence of 0.004. Pinkish red eudialyte from Kippaw in Quebec, Canada, occurs in transparent, gem-quality material. Similar stones are also found in Sweden. Microprobe chemical analyses of both the Canadian and the Swedish material, as well as the optical absorption spectrum of the Canadian eudialyte, are provided. MG

Farblose Cordierite und Cordierit-Katzenaugen aus Sri Lanka (Colorless cordierite and cat's-eye cordierites from Sri Lanka). H. Bank, *Zeitschrift der Deutschen Gemmologischen Gesellschaft*, Vol. 34, No. 1/2, 1985, pp. 79–80.

The mineral cordierite (often called iolite by gemologists) commonly occurs in a blue color. However, it has now been found as a colorless stone in Sri Lanka. The iron content is very low, which further lowers the physical properties of the stone. The recorded refractive indices for the colorless cordierite are $n_x = 1.527$, $n_y = 1.532$, and $n_z = 1.536$, the lowest indices ever observed for gem cordierite. The specific gravity is 2.55 g/cm^3 .

A rough grayish white stone that was also thought to be cordierite revealed a cat's-eye effect that is due to unidentified fibrous inclusions. MG

Glimpses of a Tertiary forest in amber. G. O. Poinar, *Pacific Horticulture*, Vol. 46, No. 3, 1985, pp. 39–41.

"The age of Dominican amber ranges from twenty to thirty million years, and no one knows what kinds of forests grew in that part of the world in the early Miocene." Professor Poinar, an entomologist at the University of California, Berkeley, shows how plant parts included in amber are helping to disclose that information. All sorts of biological matter, from bacteria to parts of angiospermous plants, can be found preserved in amber. A page of clear and delightful photographs by the author shows a petal, a leaflet, part of a flower, a twig, moss, and a seed. FS

An investigation of nephrite jade by electron microscopy. M. Dorling and J. Zussman, *Mineralogical Magazine*, Vol. 49, No. 1, 1985, pp. 31–36.

Nephrite jade is a form of the amphibole minerals actinolite and tremolite. Several specimens of nephrite

jade from Wyoming were examined by transmission electron microscopy (TEM) in order to better understand the extreme toughness of this material. These examinations showed that the jade specimens consist of clusters of very small lath-like crystals. Within each cluster the c-axes of the crystals are approximately parallel, but the clusters themselves are randomly oriented. It is suggested that the clusters are the result of recrystallization of strained amphibole crystals, and that they inherit the crystallographic orientation of the original crystals. The extreme toughness of nephrite jade is attributed to a number of submicroscopic features, including the sizes, shapes, and orientations of the very small crystals within the clusters and the nature of the intervening grain boundaries. Two additional factors noted are the monomineralic nature of nephrite jade and the lack of secondary alteration minerals along grain boundaries. JES

Untersuchungen an Kornerupin und Sinhalit von Elahera, Sri Lanka (Investigations on kornerupine and sinhalite from Elahera, Sri Lanka). U. Henn, *Zeitschrift der Deutschen Gemmologischen Gesellschaft*, Vol. 34, No. 1/2, 1985, pp. 13–19.

During a recent visit to a new gem locality in the central province of Sri Lanka, the author obtained samples of kornerupine and sinhalite for which he describes the chemistry, spectra, and inclusions. The chemical properties of both gemstones are almost identical to those reported by other investigators for stones from Sri Lanka. The inclusions found are typical two-phase feathers and zircons with haloes. Microprobe chemical analyses and optical absorption spectra for both materials are reported. Six photomicrographs are also included. MG

DIAMONDS

Aggregation and dissolution of small and extended defect structures in type Ia diamond. L. A. Bursill and R. W. Glaisher, *American Mineralogist*, Vol. 70, No. 5/6, 1985, pp. 608–618.

While much of this state-of-the-art discussion of nitrogen in type Ia diamonds will seem overly technical to most gemologists, it is nonetheless worth the extra effort that may be involved in disentangling the meat of the article from the scientific discourse. The article focuses on the distribution of nitrogen in type Ia gem-quality diamonds, which encompass approximately 95% of all gem diamonds.

The authors begin with an excellent discussion of the various ways in which nitrogen can be bonded into the atomic structure of diamonds. The accompanying diagrams and tabulated definitions take much of the confusion out of terms such as "N3 center" and "split-nitrogen interstitial" that are slowly finding their way into the gemological literature in association with dis-

cussions of the causes of color in diamonds. The report proceeds with a description of how nitrogen atoms migrate through the diamond structure to form one or another type of color center. These processes were reproduced in the laboratory at high temperatures and pressures, but they have by no means been reduced to standard recipes. While the extreme conditions under which these experiments were performed preclude any practical commercial applications, this is an example of the type of important research that is being done internationally on natural and artificially induced color mechanisms in diamonds, and that will no doubt benefit the gemological community in the determination of color origin in diamonds.

The article is accompanied by numerous diagrams, including excellent depictions of the diamond structure in various configurations of nitrogen, and fascinating high-resolution electron microscope photomicrographs of actual defects in diamonds that show structural features as small as several Angstroms in diameter.

CMS

Diamond mining: a South African adventure. J. Thompson, *Modern Jeweler*, Vol. 84, No. 5, 1985, pp. 24–33.

This panoramic view of South African diamond mining caters to jewelers who believe that broad product knowledge will enhance their careers. Employing just enough statistics and details to illustrate his points, Joe Thompson unravels the geography, geology, mining methods, and recovery techniques of the South African diamond kingdom. Such information equips jewelers to answer customers' questions and stimulate their interest.

The article covers the De Beers-owned/controlled mines in South Africa, Botswana, and Namibia, all of which together produced 23.3 million carats in 1984—more than half the world's total production. Thompson's facts may be a welcome review for many readers, but most will discover something new, such as "Fanakalo," a language derived from English, Afrikaans, and five native dialects that is spoken in the mines to overcome language barriers. Phrases such as "diamond fever" and "wonderland" typify the writer's ambition to imbue his topic with an adventurous, human character.

Richard F. Buonomo

Meet the king of minerals. K. Doyle, *Civilized Man*, Vol. 2, No. 8, 1985, pp. 54–67.

Doyle presents a rare and sympathetic view of the man who has guided Anglo American Corporation and De Beers over the past three decades: Harry Oppenheimer. The profile includes fascinating glimpses of Oppenheimer's family, his business career, his South African estates, his political philosophy, and even his manner of entertaining. Mr. Oppenheimer is portrayed as a lion of capitalism, convinced that the socialist gov-

ernments of many countries neighboring South Africa have limited the choices of their inhabitants and made them poorer. A lifelong foe of apartheid, Oppenheimer opposes the disinvestment approach taken by some countries and companies to try to force change. He fears that the change some have in mind is to a socialist/Marxist government and that this can best be deterred by the strong presence of capitalist engagement. Readers of *Gems & Gemology* will enjoy this personal and pleasant article.

James R. Lucey

Siberian diamonds. R. V. Huddleston, *Journal of Gemmology*, Vol. 19, No. 4, 1984, pp. 348–369.

Based on a 1983 lecture presented by the former director of London's Diamond Laboratory to the Gemmological Association of Great Britain, this article provides a fascinating glimpse of the Russian diamond industry.

Diamonds were first found in Siberia in 1829, but not until Larisa Popugayeva's 1954 discovery of the Zarnista (Thunderflash) and subsequent Mir (Peace) pipes was Russia's potential as a world-class producer realized. In 1958, Mir began production, and the nearby town of Mirny (built in 1957 expressly to support the mine) was occupied by the workers and their families.

Mir, along with a number of other primary and alluvial deposits (a map accompanying the article shows 12 Siberian deposits), has produced over 10,000,000 carats annually since 1977. Since 1978 (when Zaire production declined), the USSR has been the world's largest producer of diamonds. Huddleston expects the Siberian mines to be productive for many decades. He estimates the quality to be 20% gem and 80% industrial. The average weight of the rough is reported at 0.50–0.55 ct, and a number of octahedral "glassies" are illustrated. The article does not specify to what extent the pipes are still open-cast mined or underground-shaft mined.

The separation plant at Mirny is perhaps the world's largest: the 14 windowless stories of roaring, almost totally automated, machinery that operates around the clock "sometimes produces enough diamonds in one day to pay for the annual operating cost of the plant." Ore from the Aikal (Glory) mine, in the Arctic Circle, is trucked across 250 miles of tundra also to be processed in Mirny.

Six thousand to 10,000 Russians are employed in the Soviet cutting industry. Russian cutting is reputed to be of very high quality.

Two controversies related to Russian diamonds are addressed. Huddleston controverts Edward Epstein's 1982 claim that the Russians are synthesizing significant quantities of gem diamond. He contends that the same greenish, sharp-edged octohedra that Epstein finds suspiciously uniform are feasibly typical for a given natural deposit. Furthermore, the current cost of synthesizing gem diamond is at least 10 times that of mining the natural stones, and the sharp-edged octahedron would not be the most weight-effective shape to produce.

Huddleston also argues, but with more conjecture, against the "rumor" that Russians occasionally "flood" the market with their polished goods. Since 1972, when Moscow modified, then terminated, their CSO (De Beers) contract, Moscow's marketing has been problematic; indeed, some Russian diamonds still find their way into London CSO sights. Huddleston accepts a Russian official's statement that overselling could depress diamond prices and therefore would not be in Russia's best interest. This premise is perhaps too simple for a country that produces 25% of the world's total diamond output and yet also suffers well-publicized, cyclical, cash shortages. (For a more involved treatment of this topic, see: "An Interview with GIA's Glenn Nord," *Goldsmith*, February, 1985.) *Richard F. Buonomo*

INSTRUMENTS AND TECHNIQUES

Application de la radiographie en bijouterie-joaillerie (Application of X-radiography in jewelry). J.-P. Poirot, *Revue de Gemmologie a.f.g.*, No. 82, 1985, pp. 15-17.

The author discusses the use of X-radiography in identifying natural and cultured pearls. First, the structural differences of natural and cultured pearls are explained. A natural pearl can be formed by any pearl-producing mollusk such as the pearl oyster (*Meleagrina* or *Margaritifera*) in saltwater or by various pearl-producing mussels in freshwater. An intruding parasite (usually a cestode) causes the mollusk to secrete concentric nacreous layers (a mixture of aragonite, a calcium carbonate, and conchiolin, an organic keratin) around the irritant. Occasionally, the nacreous layers will be richer in organic material, thus forming darker center layers that can slightly influence the appearance of the pearl. The term *blue pearl* is applied in this instance.

A cultured pearl is formed by the artificial insertion of a nucleus, which causes the mollusk to secrete nacreous layers around the irritant. In saltwater oysters, a round mother-of-pearl bead together with a piece of graft tissue will produce a round pearl. Freshwater mussels such as *Dipsas plicatus* (Lake Biwa) will produce irregular-shaped pearls around the organic material.

X-radiography reveals the structural differences between the different types of pearls so that natural versus cultured origin can be established. Specifically, organic material such as conchiolin is very transparent to X-rays, whereas nacreous layers that contain less organic material are more opaque. Therefore, on an X-radiograph, the conchiolin layers will show up as dark lines; a bead-nucleated pearl, however, will show one distinct demarcation line around the round nucleus, and a tissue-nucleated pearl will show an irregular void in the center of the pearl.

According to the author, the Laboratory of the Chamber of Commerce and Industry in Paris employs a Sécurex X-ray unit, which is operated for three minutes

between 50 and 90 kV, depending on the size of the pearl. The X-ray film is Kodak type M. Seven X-radiographs of different types of pearls illustrate this informative article. *KNH*

Ein verbesserter Probenhalter und seine Anwendung auf Probleme der Unterscheidung natürlicher und synthetischer Rubine, sowie natürlicher und synthetischer Amethyste (An improved sample holder and its application to the distinction of natural and synthetic ruby and amethyst). K. Schmetzer, *Zeitschrift der Deutschen Gemmologischen Gesellschaft* Vol. 34, No. 1/2, 1985, pp. 30-47.

In normal gemological practice, the horizontal gem microscope with immersion fluid employs a stone holder. This can easily be rotated 360° vertically while the stone is immersed, and a great deal of information can thus be obtained. The improved version of the stone holder described in this paper can be rotated horizontally as well as vertically. The vertical axis is fixed with a dial that has 360° subdivisions. With the help of this new sample holder, the optic axis of a cut gemstone can be placed parallel to the microscope axis so that the angles between crystal faces can be determined. For example, natural ruby can be distinguished from most commonly available synthetic rubies by using the new stone holder to help determine characteristic angles between the growth planes of the material. The modified stone holder can also be used to determine the twinning nature in amethyst, which can lead to the separation of natural from synthetic stones. These techniques are apt to be difficult, however, for the gemologist not thoroughly familiar with crystallography.

The article is well illustrated with diagrams and 31 photographs. *MG*

Möglichkeiten und Grenzen der röntgenographischen Untersuchung von Perlen (Possibilities and limitations of X-radiographic investigations of pearls). I. Lorenz and K. Schmetzer, *Zeitschrift der Deutschen Gemmologischen Gesellschaft*, Vol. 34, No. 1/2, 1985, pp. 57-68.

Various X-ray methods have been used to distinguish between natural and cultured pearls for many years. Such methods can now be applied to most of the natural and cultured pearls that are currently available in the trade. To demonstrate the usefulness of these methods, the authors conducted a systematic investigation of pearls, using direct radiography as well as X-ray diffraction techniques and luminescence in response to X-ray excitation. A simple diffraction camera was developed that produces diffraction patterns of pearls at precise angles. The sample holder was constructed on the principle of a double-circle goniometer, such that rotations are possible in the horizontal as well as the vertical planes. With the use of an additional sample holder, diffraction patterns of one single pearl from a necklace

can be produced. Unfortunately, during the investigation of freshwater pearls (natural and cultured) with X-ray diffraction techniques, it was found that radiation defects generate a dark spot on the pearl's surface.

Satisfactory results were obtained in the determination of natural freshwater pearls, natural saltwater pearls, cultured freshwater pearls (with or without seed), cultured saltwater pearls with seed, and Keshi pearls. Some difficulties were encountered in the distinction of a small number of Keshi cultured pearls from natural saltwater pearls and in the separation of a small number of non-bead-nucleated cultured freshwater pearls from natural freshwater pearls because of the overlap of their characteristic radiographic features. MG

New techniques in shaft sinking. J. Collings, *Optima*, Vol. 32, No. 3, 1984, pp. 116–125.

For the last half-century, there have been few important changes in the basic approach to sinking deep mining shafts. The conventional method employs a large crew operating hand-held rock drills at the bottom of the shaft. The holes are then packed with explosives. After the explosion, the rock is removed and the shaft is lined with concrete.

In the diamond and gold mines in South Africa, new methods are beginning to appear. One method uses pneumatically driven drills that are held in a rig called a "jumbo." Since more downward pressure can be placed on the drill, faster penetration is possible. At the Premier diamond mine, a method called sequential raise-boring is used. Here, a pilot hole is drilled to a tunnel below. Then a drill head is attached to the piping from below and brought upwards while rotating, which reams the hole to a larger dimension.

Experiments are currently being conducted on boring shafts without a pilot hole. Economics is the governing factor in developing new techniques in shaft sinking, so, to be successful, any new method must be at least no more expensive than conventional methods. This article is well illustrated with three color photographs and four drawings. GSH

Spectrophotometric measurements of faceted rubies.

A. Banerjee, J. Himmer, and H.-W. Schrader, *Journal of Gemmology*, Vol. 19, No. 6, 1985, pp. 489–493.

In 1982, G. Bosshart described the separation of natural from synthetic rubies by means of a dual-beam spectrophotometer. However, effects brought about by refraction and reflection of the light beam by the facets on gems have reduced the usefulness of Bosshart's test. The immersion of faceted natural and synthetic rubies in methylene iodide is now proposed as a way to reduce light scattering and resulting noise on the spectrum. As the authors point out, methylene iodide absorbs virtually all light below about 440 nm, but very clean spectral diagrams are obtained and illustrated for the rest of the

visible light range. Thus, the immersion method is shown to have distinct advantages.

Unfortunately, the distinction of natural from synthetic rubies as described by Bosshart depends on the accurate measurement of an absorption minimum found only in the ultraviolet range; the strong absorption of this region by methylene iodide effectively negates its value as an immersion liquid in the spectrophotometric distinction of natural from synthetic rubies. CMS

JEWELRY ARTS

The ancient ts'ung jade tube. L. Berglund, *Arts of Asia*, Vol. 4, No. 5, 1984, pp. 56–62.

Lars Berglund writes a refreshing article on ts'ung jade tubes, Chinese art objects of unknown function and symbolism, some of which may be over 4,000 years old. Since much mystery surrounds the purpose of the ts'ung jade tube, Berglund begins by first quoting Laufer's opinion that it is a symbol of Earth as a deity. He also presents Karlgren's theory that it is instead a stand for ancestral tablets of phallic origin. Berglund, however, feels that Laufer's theory has more validity—in fact, it paves the way for his own notion of what the ts'ung tube represents.

Laufer notes that much of Chinese philosophy is expressed by a fixed numerical system, and that Chinese art frequently reflects this mental construction. On the basis of these observations, Berglund proposes a new interpretation for the ts'ung tube: it is a fixed numerical system whose meaning is found in a magic square of three generally called the Lo Shu, that is, the diagram of the Lo River. This mathematical diagram is supposed to have been presented by a turtle of the Lo River to Yu, the heroic founder of the Hsia dynasty, as a model of government virtue and order. (The Hsia dynasty is still regarded as mythical, although indications that it did exist are being researched now.) The balance of Berglund's article is spent explaining the numerical form of the Lo Shu as well as other applications that the Lo Shu had in Chinese symbolism. Illustrated with many photographs of ts'ung tubes, and diagrams of the Lo Shu, this article presents an interesting theory that will undoubtedly stimulate much discussion among jade scholars. JMW

Francis Sperisen: master lapidary. J. Frosh, *American Craft*, Vol. 45, No. 1, 1985, pp. 40–43.

This article is a short biography of Francis Sperisen, the innovative San Francisco lapidary whose methods opened a new world of creativity to jewelers and designers. It reveals the special talents and interests that led to Mr. Sperisen's unique style of gemstone cutting. Because the lapidary arts in the early 1900s were usually trade secrets handed from father to son, Sperisen (whose father was *not* a gem cutter) taught himself the skill by

observation and experimentation. In 1935, he founded the Mineral Society of San Francisco, whereby he contributed to the dispersal of the lapidary arts through teaching. Collaboration with innovative designer-jeweler Margaret De Patta inspired further originality in Sperisen's work and brought his creations to the attention of other jewelers, thus creating a demand and a market for nontraditional cuts. *GSH*

Gold. P. Linden, *Town & Country*, Vol. 139, No. 5061, 1985, pp. 130–131, 170, and 174.

This article highlights gold in history, fashion, and the stock market, with special focus on jewelry fashion. *Passé* fashions include tri-colored gold, charm bracelets, memorials, zodiac signs, and black and blue gold. Textures such as florentine, filagree, and hammer are also fashions of the past. The latest fashion trends in gold jewelry include the use of 18K gold and the combination of gold with a white metal such as white gold, platinum, silver, stainless steel, or titanium. Bright, highly polished surfaces or a smooth, matte finish put the finishing touches on the new look in gold jewelry. Dainty jewelry has given way to massive, overstated pieces. According to the author, this is a response to voluminous, exaggerated shapes in clothing. Jean-Claude Affolter, of Gübelin, foresees yellow gold set with pearls and colored stones as the newest fashion trend, or the very latest—brown diamonds.

The use of alloys to increase wearability or vary the color of gold, the origin of the word *karat*, and definitions of *solid gold*, *gold-filled*, *gold-plated*, and *Vermeil* are all clearly and simply explained.

According to the International Gold Corporation, untapped resources will carry us comfortably into the 21st century. The largest supplier of gold is South Africa (responsible for nearly half the world's supply). Russia provides an estimated 23%, Canada 5%, and the USA and Brazil 3.5% each.

Governments and "international monetary institutions" are the largest users of gold. Next is the jewelry industry, at approximately 750 tons a year, followed by dentistry and other industries. Gold coins, bullion, futures, options, and certificates are also mentioned, but details are not supplied by the author. In conclusion, the article implies that gold can be not only a financial investment, but also an investment in beauty and fashion. *Marcia Hucker*

Jewelry's new glitterati. R. Lubar, *United*, Vol. 30, No. 1, 1985, pp. 33–36.

Today's top women jewelry designers are producing pieces that are "assertive and sensuous—like the eighties woman." This article sketches the work (and backgrounds) of designers Paloma Picasso, Elsa Peretti, Angela Cummings, and Marsha Breslow. Their dynamic jewelry is equally brilliant whether it is worn at the office or a gala—or both. Priced from \$40 to \$110,000,

these pieces can add color and a touch of drama to any woman's wardrobe.

Each of these designers has created a distinctive style; yet when all of these styles are viewed together, they reflect the depth and complexity of the modern woman. Picasso's cold, bold jade earrings collide with Peretti's slippery, free-form hearts, while Cummings's clean geometrics complement Breslow's sinuous chains and pearls.

Clearly, these individuals have been successful in expressing themselves through their work, and in doing so they have given more women the opportunity to express *themselves* through affordable high-fashion jewelry. *SAT*

Profile: Nancy Ancowitz. *Saturday Review*, July/August 1985, pp. 7–8.

The meteoric career of 25-year-old jewelry designer Nancy Ancowitz is highlighted in this brief article, which tells how the young woman, who had studied language and communications in college, started her own jewelry catalog-sales company at the age of 20. Five years and a Masters in Business Administration later, Ancowitz has parlayed her creative flair and her business acumen into a thriving profession. Her trademark is a rather fanciful combination of various decorative elements—such as the placement of gemstones within ball bearings to create bracelets and necklaces. Through an aggressive self-marketing program, Ancowitz succeeded in catching the eyes of jewelry retailers as well as of fashion magazine editors. Her gold-plated ball-bearing creations can now be seen in the pages of magazines such as *Glamour* and *New York*, often modeled by her dog, Moffat. The essay features three photographs that spotlight the jewelry, the artist, and her dog.

This article is part of the "Briefings" section of *Saturday Review*, a section that often features small articles on the jewelry arts. For example, elsewhere in the section (p. 20) is a note on the recent auctioning by Christie's of the Cartier "Mystery Clock," the first of a series of 12 animal clocks fashioned by Cartier in the 1920s and 1930s. The agate, mother-of-pearl, and rock-crystal timepiece (with a diamond-studded dial) had been "lost" for some 40 years, and fetched \$264,000 at the recent auction. *JMB*

SYNTHETICS AND SIMULANTS

Farbloser Chrysoberyll—natürlich oder synthetisch? (Colorless chrysoberyl—natural or synthetic?). K. Schmetzer, *Zeitschrift der Deutschen Gemmologischen Gesellschaft*, Vol. 34, No. 1/2, 1985, pp. 6–12.

Natural chrysoberyls are colored by the presence of trace elements such as iron, chromium, or, in rare instances, vanadium. Those that contain iron are primarily yellow,

yellowish brown, or brown. Iron and chromium are responsible for the most prized change-of-color variety, alexandrite. However, colorless chrysoberyl is seldom encountered in the trade and those stones found are said to be from Burma or Sri Lanka. The former, however, tend to have a light greenish tone and therefore cannot be classified as truly colorless chrysoberyl.

The two colorless samples investigated in this study were purchased in Sri Lanka. The physical and chemical properties of these two chrysoberyls were investigated in order to determine whether they were of natural or synthetic origin. The data for the two chrysoberyls were compared with those of natural near-colorless, yellow, brown, and change-of-color chrysoberyls from different localities such as Sri Lanka, Brazil, the USSR, Zimbabwe, and Tanzania. Further comparisons were done with synthetic alexandrite from three different manufacturers.

The refractive indices, color, chromium and iron contents, and inclusions were sufficiently similar for the two chrysoberyls and other comparison stones that no conclusion could be drawn as to origin. However, X-ray fluorescence analysis revealed the presence of gallium in all the natural specimens that were examined in this study; no gallium was found in the two colorless samples. This suggests a synthetic origin, but Dr. Schmetzer feels that this is insufficient evidence on which to base a firm conclusion. Five photomicrographs are included with the article. MG

Glass infilling of cavities in natural ruby. K. Scarratt, R. R. Harding, *Journal of Gemmology*, Vol. 19, No. 4, 1984, pp. 293–297.

The most recent ruby identification problem is surface cavities that have been filled with glass. The first of these rubies to show up at the British Gem Testing Laboratory had a very large filled cavity on the pavilion with large eye-visible gas bubbles. Subsequent stones have contained less conspicuous fillings with no bubbles.

Microprobe analysis of one of the fillings proved the substance to be essentially an alkali aluminosilicate glass. The refractive index was approximately 1.51 and the hardness less than six.

The best method for initial detection is to examine the stone in reflected light. If an area has an obvious difference in luster compared to an adjacent area, such as is seen in a garnet-and-glass doublet, then further investigation is warranted. Care must be taken not to confuse a filled cavity with a natural included crystal that breaks the surface. SFM

Man-made rubies (How to detect the latest synthetic gems—part 1) and Synthetic review (How to detect the latest synthetic gems—part 2). P. Read, *Canadian Jeweller*, Vol. 105, Nos. 9 and 10, pp. 21 and 29, respectively.

These two brief articles summarize the identifying characteristics of a number of synthetics that have appeared on the market since 1970.

The first deals with three synthetic rubies—the Kashan, Knischka, and Ramaura products. Inclusions, color zoning, and growth anomalies are keys to the identification of these materials, and are listed accordingly. In addition, the following can be of assistance: dichroism (Kashan), morphology and short-wave ultraviolet transmission (Knischka), and long-wave ultraviolet fluorescence (Ramaura).

The second part summarizes key identifying properties of several other man-made gems: Chatham synthetic orange and synthetic blue sapphire (inclusions; ultraviolet fluorescence in the blue synthetic sapphire); Lennix synthetic emerald (inclusions, refractive index, birefringence, specific gravity); Biron synthetic emerald (inclusions); Regency synthetic emerald (inclusions, short-wave ultraviolet transmission, ultraviolet and visible-light fluorescence); Creative Crystals synthetic alexandrite (inclusions, short-wave ultraviolet transparency); Seiko synthetic alexandrite, ruby, and sapphire (inclusions); Seiko synthetic emerald (inclusions, refractive index, birefringence, specific gravity); and Gilson synthetic fire opal (structure, ultraviolet fluorescence).

Included in each article are rough line drawings of some of the key inclusions mentioned. The articles, while they provide some excellent information, would have been even more useful had they contained some photomicrographs of characteristic inclusions. RCK