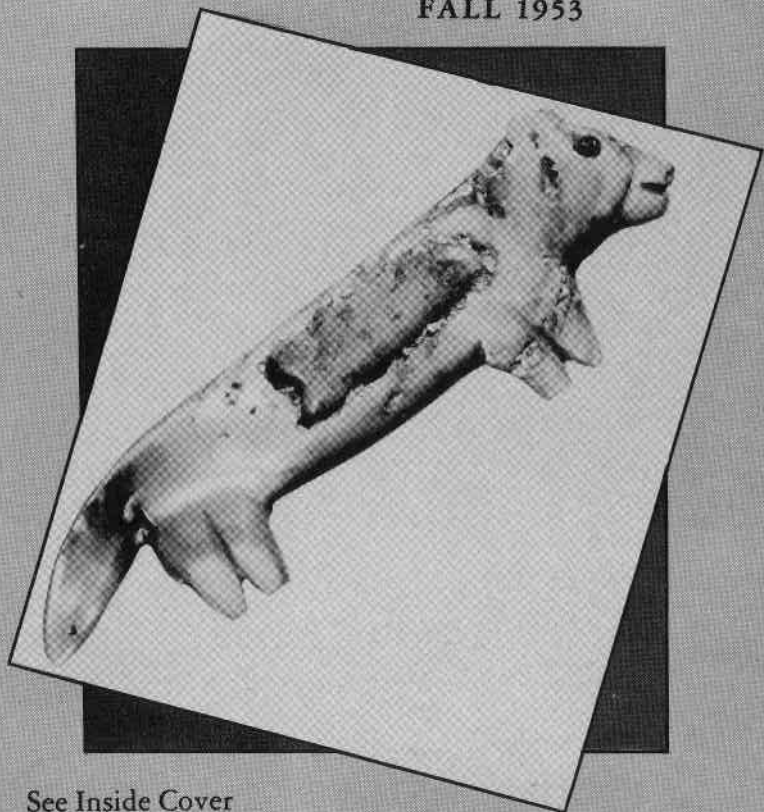


# *Gems and Gemology*

FALL 1953



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# Gems & Gemology

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## On the Cover

*The Indian fetish shown on the cover was presented to George H. Marcher by a Zuni Indian Chief as related in his installment of "Memories" in this issue. Made of abalone shell and turquoise, it is shown actual size.*

# GEM COLLECTION OF THE AMERICAN MUSEUM OF NATURAL HISTORY NEW YORK CITY

by

DR. FREDERICK H. POUGH, Consulting Mineralogist

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The gem and mineral collection of The American Museum of Natural History owes its present magnificence to the pioneer efforts of the Tiffany gem expert, Dr. George Frederick Kunz. Dr. Kunz prevailed upon Tiffany and Company to retain and assemble the best examples of American gemstones, for exhibition in Paris in 1889. The president, Morris K. Jesup interested Mr. J. Pierpont Morgan in presenting this collection intact to the Museum.

The success of the first display encouraged Dr. Kunz to make a collection of precious stones of other than American origin, to which Mr. Morgan agreed. This was also purchased, on the condition that it be shown at the Paris Exposition of 1900, where it received a Grand Prize. The two collections formed the nucleus of the pres-

ent collection, making, as Dr. Kunz says "a crowning glory to the many magnificent assemblages of other things in the Museum."<sup>1</sup> Mr. Morgan's generosity included the purchase and presentation of a third collection, of smaller size, to the Paris Museum of Natural History. Later, Mr. Morgan purchased the Clarence Bement collection of minerals. The Bement collection formed the main body of the Museum's mineral collection, tremendously overshadowing the smaller mineral collection already on display in the museum.

Nine years after the elder Morgan's death, in 1922, his lifelong friend, George F. Baker, presented the Museum with funds for redécoring a hall to house the

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<sup>1</sup>Kunz, George F. "The Morgan Collection of Precious Stones," *The American Museum Journal*, Vol. 13, pp. 159-168, 1913.

gem and mineral collections, to be known as the Morgan Memorial Hall. On its completion, the Bement collection of minerals and the Tiffany-Morgan collection of gems were placed on display in the new hall. Today the collections have been considerably amplified by additions from other benefactors, including most notably the William Boyce Thompson Collection, which actually came to the museum in 1951. Although Mr. Morgan did not, unfortunately, endow the collection so that his share would continue to keep pace, there have been many other contributors. The total of additions to the original display is now so great and so important that the collection is now more accurately and properly known under the Museum's name as the "Gem Collection of The American Museum of Natural History" and is to be found displayed in the Morgan Memorial Hall. The considerable additions to the original display include many outstanding stones. Comparatively few of the important foreign stones were part of the original collection; for, after all, the original purpose of Tiffany's display was largely educational. As originally constituted there was great emphasis on North American localities. An extensive series of small examples illustrates the color range and the many varieties of the various jewelry stones, but in the original series, quality and size were secondary considerations. Even now the collection still has a few gaps, lacking really outstanding examples of the best-known stones. It could do nicely with a fine large diamond, and better specimens of ruby, sapphire and emerald.

Nevertheless, the continued interest of friends of the Museum in the collection has led to the addition of many outstanding examples of the more unusual stones. Most suitable have been the purchases from the endowment funds received from the bequests of Mrs. Bonny Wallace LeClear (known as the Wallace Memorial Fund) and William Boyce Thompson. The stones so acquired highlight the important series of educational exhibits, adding impressive

individual examples. The cut stones, and specimens of uncut gem crystals are arranged in a series of 28 cases that extend down the center of the hall. The displays follow a common jewelry stone sequence, and each case contains an explanatory label written by the late Herbert P. Whitlock, together with smaller individual labels giving the size and provenance of the individual stones.

At the entrance to the hall we see a pedestal, on which there rests a large (7-inch) flawed crystal ball from California. Under it there has been placed an illuminating device which imperceptibly changes the colors reflected from each of the flecks within the stone sphere, and makes it an intriguing beacon to draw visitors.

Below the pedestal there stands a flat-topped, glass-covered safe in which are stored some outstanding specimens of crystallized gold (Thompson Collection), head-dress ornaments from the Chinese emperor, and two fine diamonds, an 8.02 ct. marquise and a 7.32 ct. pear-shape. The Museum has recently acquired a flawed 10-inch crystal sphere in the Thompson bequest, and it will be placed on display later, perhaps on the pedestal in place of the smaller one.

As we go down the hall, the first case on the right contains the diamonds. From the standpoint of rarity and interest, the most important specimens are the rough crystals from Wisconsin and Alabama. The Wisconsin crystals were found in glacial morainal material (they weigh about 16 and 4 cts., respectively). The Alabama crystals, from gold washings, weigh about 4½ ct. each. In addition to these specimens, illustrated, like so many of the Tiffany collection specimens, in Kunz' "Gems of North America" there is a series of diamonds of various types; including ballas, carbonado, and Belgian Congo cubes. A series of small-cut variously colored stones includes a light pink, a pale blue, a fine golden marquise, a pale green and a black.

The next two cases are devoted to the corundum jewelry stones, and in them we find a rather spectacular series of sapphires.

In one section we see several small North Carolina rubies (Kunz types), and near them some typical Oriental stones. The show ruby is a 47 carat, irregularly-shaped cabochon, with numerous flaws, from Burma. Next to it, and part of a color circle, there is a 100 ct. oval, orange Ceylon sapphire, a most unusual stone. Then come several rich yellow sapphires of excellent quality, weighing 62 (Slade gift) 75, 100, and 151 ct., all from Ceylon. A deep green, round, brilliant-cut sapphire from Australia at the bottom weighs 47 ct. (De Long gift). Then comes a series of large, blue Ceylon sapphires, somewhat flawed but very impressive in size, weighing 158, 153, 188, and 69 cts. Lastly in this circle we come to a violet, cushion-cut 85 ct. alexandrite-type sapphire, also from Ceylon, deep in color with a rich blue in the daylight glints seen reflecting from its depths. Near it is a typical unsymmetrical native-cut pink Ceylon sapphire weighing 67 ct. The entire display illustrates in a striking way the color range that is to be found in the corundum stones, and it constitutes the most spectacular series of the collection. These sapphires were not part of the original Morgan gift to the Museum, but, except for those mentioned, were received by the Museum in 1926 from J. P. Morgan, the son of the original donor.

Adjoining the faceted sapphires is a second internally illuminated case in which we find the most impressive stones of the entire collection. The central stone of this case is the De Long Ruby, a 100 carat star ruby of magnificent quality, purchased for the Museum by Mrs. George Bowen De Long in 1936. This Ceylon stone is the largest star ruby of this quality in the world. It is flanked, in the display, by two Morgan stones, a 116.75 ct. deep violet star stone known as the Midnight Star (an unusually large stone of unusual color and fair quality) and by the 563 ct. Star of India. The Star of India is the world's largest blue star sapphire. While it may be a little pale in color, it is doubly remarkable: for the perfection of its star and its complete freedom

from flaws. The sapphire is cut very deeply on the back and actually shows an almost equally fine star on the reverse side.

In addition to these outstanding stones, the Museum has a number of lesser stars and many smaller fancy sapphires in reserve, that are displayed from time to time. They are now arranged in jewelry layouts designed by Black, Starr and Gorham, to show the stages in the production of a piece of fine jewelry. The series progresses from sketches and loose stones, to finished layouts on wax. Like the other duplicates of the collection, they find use in loan collections and special and temporary displays. The case containing the three star stones was designed by William Bayard Okie, Jr., to bring out the beauty of the stars and impress the visitor with their unusual quality.

Next we come to the two cases assigned to the beryl gems. In the first there is a series of emeralds, ranging from the North Carolina matrix stones and specimens of the Kunz book, to an 88 ct. Indian-engraved square emerald tablet, known for its donors as the Schettler emerald. Below this large stone stands a simple ring mount with a fine quality small (about 4 ct.) faceted stone. In the upright, rear, portion of the case we find some fine examples of emerald crystals in matrix, the best being one from Chivor, Somondoco, Colombia, the gift of mine owners. The balance of the case contains some fine aquamarine crystals, the best being those from Brazil.

The table case is filled with aquamarines from various sources. The oldest are several pale aquamarines of considerable size, characteristic of the best of the Russian occurrences (always pale), weighing 271, 93, 52 and 46 cts. and a 355 ct. cushion-cut Ceylon stone. The top quality stone (gift of Mrs. William H. Bliss) is a 144.51 ct. emerald-cut stone from Brazil, and rivaling it we see the recently acquired 400 ct. Thompson stone.

In the adjoining beryl case we find a series of interesting, if smaller, stones; golden beryls and pale aquamarine from

North America, a rich golden Brazilian stone, a remarkable color series from India, and two fine morganites. The deepest pink stone is a 58.79 ct. richly colored, heart-shaped, Madagascar stone; one of the finest morganites known, purchased from Thompson funds. In the upright section behind these stones we find a 13 pound fragment of a 246 pound beryl crystal from Minas Gerais, Brazil. Also the gift of Mrs. William Bliss, it is part of the rough from which the fine quality 144 ct. stone of the preceding case was cut. Immediately in front of the aquamarine chunk stands a 6-inch Chinese carving of a Madagascar morganite crystal, a part of the Thompson collection. This carving is, without any doubt, the largest and finest morganite carving in existence. This same portion of the case contains an interesting series of golden beryl and aquamarine seals, carved in China from Siberian crystals. There are some fine pink beryl crystals from Pala (the original morganite) and a very deeply colored, but flawed, piece from Madagascar. Two crystals, one from California (with a polished face) and one Brazilian, show blue cores and pink outer zones. Pink beryl, morganite, was named by G. F. Kunz for J. Pierpont Morgan in recognition of his contribution to mineralogy in presenting the nucleus of the Museum's unrivaled collection to The American Museum of Natural History.

With the next case we come to topaz, the orthorhombic aluminum fluosilicate mineral that the jeweler distinguishes from quartz by calling it "precious topaz." As would be expected, since the greater number of topazes are white, we find that the largest rough examples of that mineral in the Museum's collections are also white. The rough portion of the case displays several large white well-developed crystals. A still larger crystal, showing faint yellow and blue tints occupies a central position in the hall, in a case of its own, illuminated from below by a light which shines up through the base. On a dark winter afternoon (when the hall needs much more light) the internal brilliance of this

great crystal makes it one of the most striking exhibits of the hall. It is beautifully developed, not too badly bruised, and weighs nearly 600 pounds. So far as is known, it is about twice the size of the next largest topaz crystal.

Other colors of topaz noted among the rough include blue, brown and pink crystals. These same colors, with white, are to be found in the cut stones. The topaz series is both important and spectacular. The original Tiffany-Morgan collection specimens included large white stones 388 and 812 cts. from Ceylon, some white (formerly brown but now faded) specimens from Russia, and a number of pale blue stones 308, 120, 95, and 82 ct. from Russia and Ceylon, and a large stone from Brazil. This 258 ct. stone is about as deep a blue as the clear blue topaz ever seems to occur. In this case we also find the most outstanding example of the lapidary's skill, in the form of a perfectly cut, egg-shaped, 444 facet, 1463 ct. blue Brazilian topaz, originally in the collection of the late Meyer L. Morgenthau. This stone was cut by the well-known New York lapidary Anthony Esposito, and for many years it was on display in one of the Mirror candy stores, along with a number of other attractive mineral specimens.

Unusual both for its color and locality is the 241 pale orange brown Burmese topaz presented by Roswell Miller, Jr. It does not appear to have faded, though it is probably not unlike the original color of the faded Russian stones. Below it are two of the typical golden-brown topazes of the usual type, that the jeweler knows as precious topaz, weighing 61 and 49 cts. The visitor will immediately recognize that their brilliance makes them very different and very much more attractive than the common brown quartz sold as topaz. Beside them are two heated Brazilian topazes weighing 46 and 43 cts., of a lively pink hue. A small, 5 ct., pinkish violet topaz from Sanarka, Russia (Wallace Memorial Fund) illustrates this find of small naturally pink crystals. The stone was once a part of G. F. Kunz' own

collection.

The most recent and most unusual topaz of the whole sequence is an oval brilliant 70 ct., spinel-red stone (also purchased for the Wallace Memorial). The stone (from no recognizable locality) may be from either Brazil or Russia, though the local dealers have never seen anything like it from either country. It has a number of flaws which would certainly tend to extend themselves (and probably break the stone) if it were heated, so it seems certain that the color is natural, rather than the result of treatment.

Next to topaz we come to a case containing two unsung jewelry stones, spinels and garnets. The spinel color series of small stones, the gift of the firm of Robinson and Sverdlík, shows very well the color range that is to be found in this little appreciated jewelry stone. In the original collection there were several fine stones, one a pale amethystine stone of 46½ cts., a blue of 27¾ cts., and a red of 9¾ cts. All are from Ceylon. The outstanding stone is a gem spinel of red, weighing 71.15 cts., purchased in 1949 with Thompson funds. This unusually large example of the best color in spinel shows better than any other the true beauty of the little known and little used gemstone, and is surely one of the outstanding specimens of the collection.

The garnets which share this case include a series of the large, almost black "carbuncles" that are typical of the Indian almandines. Many of these stones reflect the common 4-rayed star when a flashlight is played upon them. Next to them is an attractive deep red cameo, which has been cut in the concave bottom of such a carbuncle, depicting a lion and of unusual quality as a work of art. There is also a little garnet cup, perhaps one of those that are said to have been so useful as liquor (or water) containers when a business deal was being promulgated, keeping its owner's consumption of water a secret from the well supplied guest.

Adjoining these Indian garnets we find another case with typical Bohemian garnet

jewelry, stones from the Kimberley diamond mines ("Kimberley rubies") and a great array of the average size Arizona pyropes. The outstanding orange-brown essonite is a 61½ ct. cameo carving of the head of Christ, a stone which is said to have once been in the Vatican collection. The orange-brown cloudy spessartite series of faceted stones from the Amelia, Va., locality is the largest suite of these stones in existence and includes the large cloudy stone (96 ct.) illustrated by Kunz. A new spessartite locality is represented by the largest stone of the find, a 6 ct. clean brilliant orange stone from Minas Gerais, Brazil. There is also an extensive series of bright green demantoids from Russia, all part of the original Tiffany-Morgan collection (Kunz went to Russia in preparing this exhibit), the largest weighing 5 cts. North Carolina and Ceylon rhodolites complete the long series of garnets that are to be found in this case. On the shelves above is a recently acquired (Wallace Memorial) group of demantoid garnet crystals and pebbles, including one crystal measuring half an inch. There are several fragments of the North Carolina garnet, rhodolite which show why the cut stones must be so small.

With garnets we arrive at the center of the Morgan Hall, and here we find an alcove arranged for special displays. The permanent collection continues on the other side, starting with a large series of tourmalines.

As we cross to the tourmaline case, the first objects to catch our eyes are the large pink crystals of Pala, California, rubellite. Tourmaline owes its rise to popularity as a jewelry stone to the American occurrences. Before the last decade of the 19th Century it was not very well known, and tourmaline gems found comparatively little use. The discovery of fine, light-colored tourmalines in Maine stimulated the rise in the popularity of the stone. For a number of years a great many of these locally-cut Maine stones were marketed to such well-known firms as Tiffany and Co., and many were sold abroad. The prices paid were at least as high as those

of today, and were, of course, for those days, relatively much higher. With the exhaustion of the Maine mines, new deposits were worked in California, so that, for a number of years more, the U.S. held its place as the chief source of tourmaline. It is interesting today to think that at one time, the United States was a really important jewelry stone producing nation.

The American Museum's suite of tourmalines includes some extremely representative samples, which have the virtue of also illustrating the typical cutting of the Maine lapidaries. The usual proportions of their cuts made the pavilion (the bottom of the stone) very deep and the crown (the top) rather high. These dimensions were permissible in these particular stones, because of their unusually light green tints and because of the low c-axis absorption of the Maine tourmalines. The proportions are, of course, the proper ones for stones of this refractive index. Usually the depth of color prevents the correct cutting of tourmaline. The displayed series includes the typical light greens and light blue of the Maine stones (42 $\frac{3}{4}$ , 34 $\frac{1}{4}$ , 34, 17 and 12 cts.) and some of the deep reds (11 $\frac{1}{2}$  ct.)

Balancing the Maine stones, across the flat bottom of the case, we find a series from California, with here, of course, an understandable emphasis on pink. These were the original rubellites, and were very typical of the Pala mines. With them will be seen some of the muddier Meas Grande greens, together with some of the parti-colored stones that give such interesting effects in tourmaline. The largest of these is a parti-colored tourmaline of cat's-eye with one green side and one pink side. As with most tourmaline cat's-eyes, the fibers that make the eye are rather coarse. Alongside, we see a small pink stone that is almost an exception to this rule, for it has an excellent eye. A few carved Chinese figures of pink Pala tourmaline emphasize the international character of the gemstone trade, recalling the days when America was just growing and its raw materials were largely sent abroad in-

stead of being consumed at home. The rarity of clear, clean pink tourmaline becomes particularly obvious when we see none in a collection like this one from California. A study of the display is very useful, for it brings home better than many words, the fact that a flawless rubellite (now the deep red material, no longer the pink) or a pink tourmaline is, like a flawless emerald, an unusual stone. The bright reds are now as rare as any tourmaline color.

Those we have will be found in the center section of the case, the display of foreign tourmalines, representative of the bulk of the material in the hands of the jewelry trade today. Ordinary tourmaline (to the trade this means the dark green material) is represented by a 24 ct. stone from Brazil. A deep, slightly brownish, red rubellite from Madagascar (74 cts.) is typical of much of the material from that locality. The brightest stone of the group is a clear rich blue-green, probably from South-West Africa. It is typical of some of the best of that material, but it is now rarely encountered. In general, this central display makes it apparent that the world does not now supply many tourmalines that can rival those old ones from Maine. Perhaps, too, modern cutting in Brazil does not bring out the brilliance and the fire that the old lapidaries obtained. The visitor to the Morgan Hall has an unequalled opportunity to learn about tourmalines, when he examines them with this background information.

Next we come to the case devoted to zircons. In its center we have the privilege of seeing another unique stone, with which this collection is replete. The 208 ct. blue stone is believed to be the largest known cut zircon. The deep blue brilliant-cut stone illustrates the best of the heated zircon colors, it was purchased for the collection with Thompson endowment funds. On its left are arranged a series of heated zircons, white and blue stones of smaller size, which illustrate the color range that is to be found in these treated stones. Among them are some that are starting to revert to their original



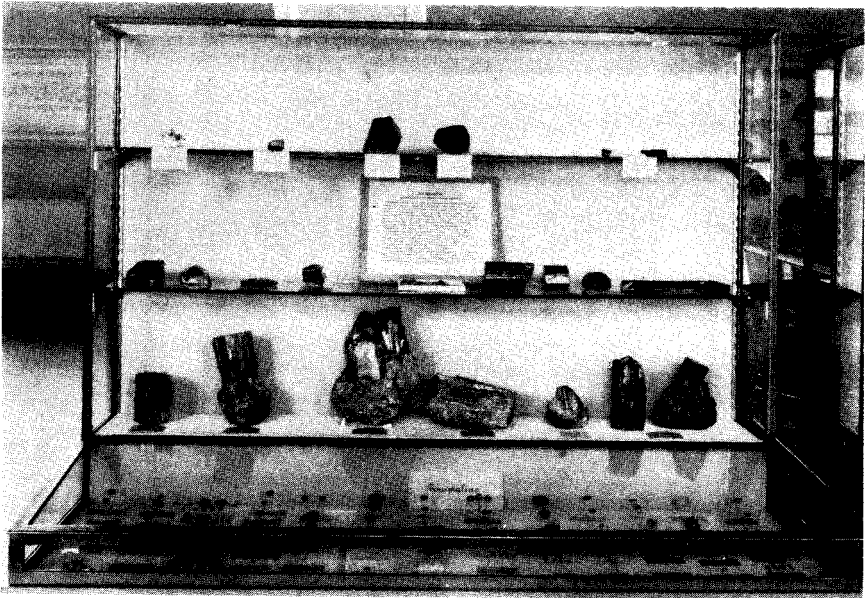
brown, a characteristic, and a weakness, of many zircons. The balance of the case is devoted to a series of natural color zircons, from the soft, cloudy Ceylon greens (24, 9, and 7 cts.) and the clear reds to the brilliant yellows and brown (93 cts.) that find regrettably little jewelry use. The second most interesting stone in this case, however, is a small one. It is the clear bright green 6 ct. brilliant (Wallace Memorial) from Minas Gerais, Brazil. The locality is new for zircons, and such clarity is not known in Ceylon material.

Next to the zircons we find a case that has two different jewelry stones, but the first impression is one of far less color range and variety. This case houses peridots and chrysoberyls. On the left we see the peridots. Chemically it is a magnesium silicate, but the small content of iron gives it a characteristic greenish hue that is quite unmistakable. Peridot is known as the "evening emerald." It is a fairly soft stone of a pleasant yellow-green color, a hue that seems

more green by incandescent light. The chief source is a barren island in the Red Sea, St. John's Island or Zebirget. All the Museum's best examples come from that source. In the upright section we see two large crystals, one measuring several inches. Below there are four large cut stones, 95, 87, 70, and 61 carats. All are large enough to show clearly the strong double refraction, the appearance of fuzziness in their depths, that helps distinguish this jewelry stone. With the Red Sea stones we see a selection of worn pebbles (and below are the cut stones) that were picked up on the Arizona anthills, including some of the brown ones of that locality. One more locality, a rare one, is represented by a single large (82½ ct.) emerald-cut, slightly cloudy stone. Little is known about this Burmese peridot locality and examples are scarce in collections.

Adjoining the peridots in the same case we find an array of chrysoberyl gemstones, and among them there are the usual outstanding examples. The most important

• View of Tourmaline Display Case in Morgan Hall



stone in the case is not the most unusual. It is a 47.8 ct. cat's-eye of the finest quality. It shows an excellent eye and has the rich green-brown body color of the most sought stones. Beneath it, for contrast and to show the color range that is to be found in chrysoberyl cat's-eyes is an example of the paler and greener cat's-eye that some prefer.

Another well-represented variety of chrysoberyl is the alexandrite. This interesting stone is illustrated in the collection by two series from two localities. The six larger ones, coming from Ceylon, total 41¾ cts., while the smaller, and better ones, came from Russia. In neither series is there an outstanding stone, but the 4 ct. Russian serves as a fine example of the striking color change. It shows the fine Russian blue-green by daylight, and in the beam of a flashlight (with which a visitor to the Morgan Hall should provide himself, regrettably) it shows the rich amethystine red. The Ceylon stones are also typical of their locality, with good daylight yellow-greens and slightly brownish artificial light purple-reds.

The other outstanding, and probably unique, chrysoberyl gem of this case is one of the clear faceted chrysoberyls. The 74.44 ct. chartreuse yellow-green emerald-cut chrysoberyl (Wallace Memorial) is believed to be the largest example of a cut stone of this most desirable chrysoberyl color in any collection. In addition to this Brazilian gem we can see a series of the common greenish and brownish Ceylon stones of 50, 35, 30 and 29 cts. Their great hardness and brilliance gives them a place among jewelry stones, but their lesser beauty, in contrast with other less costly stones, results in their finding little use.

Next we come to the opals. Large, important opals were not included in the original Morgan gift, but other friends have seen that the opal collection does not lag behind in quality. The two really outstanding stones in this case are two large black opals. One of these was of such importance that it had been named "The Harlequin Prince" long before it came to the Museum

collection. It is a roughly shaped and polished oval gem weighing 181.20 cts. and shows all of the most desirable characteristics of a black Australian opal. It has the regular "harlequin type" color flashes of red, yellow, and orange as well as the commoner blues, greens and violets, uniformly distributed over its surface, shining out from a very black body color. Its fine quality makes it an extremely important stone. Next to it is a second, only slightly less important, stone of still greater size, 272 cts. It illustrates the slightly grayer (and commoner) body color, which is shot with coarser color patches. Though less sensational than the "Harlequin Prince," it is, nevertheless, an important stone. Both were acquired with Wallace Memorial funds.

In the display with the two large opals there will be found a selection of all the different types of Australian opal. Among them we see three interesting stones, the gift of Dr. A. H. Reynolds: a fine oval "pin-fire" stone, a "Yowah nut" of iron stone matrix, hinged to show the opal core as well as the skin, and an unusual cut stone that shows both black and white opal in a single piece. Among a series presented by the late Mr. Whitlock are Australian "flash fire" opals and a number of opal cameos, as well as a fine series of rough and cut Nevada opals. One of the blackest of these, a small keystone-shaped cabochon, has not checked (a weakness of Nevada opal) and it shows the wonderful deep red fire of the fresh Nevada material. More Nevada opals are shown on the shelves above the case, the most remarkable being a block of opal replacing wood, cut into a slab measuring about 3½ x 2½ x 5⁄8 inches. The old wood grain may be readily seen on the ends, and the specimen shows no sign of checking. Around it are rough (all more or less cracked) examples of the Virgin Valley and Mexican opal.

Coming back down to the gemstone part of the case we find a series of Mexican opals, including faceted fire opals and clear transparent bits of fiery frozen jelly. One

dumb-bell-shaped 21 ct. stone is outstanding, not the least because it is still unchecked after 50 years. Mexican opals tend to crack too, and two of this series are remarkable for the preservation as well as for their fine quality. Before concluding, attention should be drawn to the piece of French "common opal" of an opaque pink color, known sometimes as "quincite," but seldom seen; and to a fiery yellow-white oval stone of 23½ cts., representing an undescribed locality in Ceará, Brazil. This material so closely resembles some of the Australian stones that the first one to come to New York passed through a well-informed dealer's hands as an old Australian stone, routed via Brazil, without any question as to its original source arising. Lastly, we find some white opal jewelry. There is a remarkably fine necklace of white opals, the gift of Edith Lounsbury Warden, which illustrates beautifully this type of opal. They, too, have checked slightly, also a weakness of this material, but they illustrate the beautiful fire possible in the fine Hungarian-type opal (though these are known to be Australian beads). The Lillias A. Betts brooches are made from similar, unchecked (Australian) Hungarian opal and are magnificent examples of this type of jewelry.

Now we come to the quartz varieties. Their abundance and importance to the jewelry trade is attested by the six cases that are accorded to this mineral in the gemstone section of the Morgan Hall. There are few notable stones in the series; a notable quartz would be hard to conceive in view of the abundance of this mineral. The Russian rock crystal carvings are works of art, the crystal balls catch the eye and hypnotize the mind, and the Chinese crystal figures excite admiration. But none is mineralogically unique.

Next to the rock crystals is a more colorful case, with cairngorms, smoky quartzes and citrines. The rose quartz series is interesting because it contains a sphere that shows asterism, a faceted, almost clear, stone of a pale pink hue, and, the first out-

standing stone, a large rose-quartz cat's-eye. This recently acquired (Wallace Memorial) cabochon is a true cat's-eye, the "eye" is formed by the stronger development of one of the arms of a star, with the other two very, very weak. It is a Brazilian stone and a great rarity.

The amethyst series continues the quartz varieties and is similar in importance to the preceding cases. Amethyst, too, is abundant, so the Museum contents itself with illustrations of the different types of amethyst, from the reddish purples that are called Siberian and considered the best of all amethysts to New Zealand gem amethysts, and the typical common Brazilian (Bahia) stones. Crystallized examples of amethyst and carvings of different types of quartz fill out the upright sections of the cases.

We have now reached the end of the central row of cases and are ready for a return trip up the other side of the row, reserving our look around at the other mineral-filled cases for a later visit. In them will be found many additional and supplementary examples of crystals of the gem minerals, along with specimens of most of the known minerals. Most of these are of purely academic interest, a few are valuable ores.

First, as we start back, we come to three more cases of quartz stones. These are mainly the microscopically crystallized ones, in which we cannot see the individual grains with the naked eye. They include the agates, the chalcedonies and the jaspers. Since they are common, too, naturally none are notable specimens as minerals. We do find one rather spectacular cameo of black and white agate, a clock face six inches in diameter. In the cases behind we find, again, large examples of German, Russian and Chinese carvings.

Next we come to the feldspars, and here we see some unusual stones, though there is nothing of great importance. There are the typical moonstones, amazonstones and labradorites, of course. Along with these common stones of some trade interest we find a selection of less common collector's

stones: a large (60 ct.) Madagascar yellow orthoclase, several white North Carolina oligoclases, and some examples of transparent straw-colored labradorite and bytownite from Utah, Mexico, and Oregon.

In the next case will be found the turquoises; and again we must not look for outstanding stones. Just recently the Museum has placed on display, as a loan, its most outstanding turquoise gem, a 196 ct. clear blue, probably Iranian, stone, the property of Joseph M. Rothschild, but on loan to the Morgan display. Accompanying it are the typical American turquoise and turquoise matrix specimens. The most unusual cut stone in the collection is an oval bit of native copper, from Africa, in which there are small blue areas filled with turquoise. The association is uncommon. Behind the gemstone display we see a large and unusual mass of matrix turquoise, with the black lines said to be typical of the Tibetan material, and a Chinese carving of this same material.

Next we come to a case of stones that are used in ornamental carvings. In it we find examples of serpentine, Styrian chlorite, satin spar (gypsum), "blue john" (fluorite from Derbyshire, England), and jade. The jade series attracts attention with its set of cabochons that illustrate the different colors of jade, and including a fine green example of "jewel jade." Perhaps the most interesting piece in the case is a watch charm that once belonged to Dr. George F. Kunz. It is a short blade of nephrite dull green in color but translucent, perhaps the most translucent piece of nephrite ever seen. Standing upright in the case behind are a number of excellent examples of Chinese carvings, some old and some modern. Most interesting to the student of gemology is the Burmese jade boulder, with the original brown skin and Oriental markings and the grooves that are customarily cut in such boulders before they are auctioned; to give a hint to the bidders about their interiors.

The next case, too, is devoted to jade, and it includes carvings of very fine quality.

The most remarkable specimen in this case is a Chinese figurine of mauve jade, one section of which shows the deepest mauve color that can be found in jade. This piece was purchased as a part of the Thompson Collection. The remainder is from the original Morgan gift, except for a pair of bright green jadeite beads from Mexico, illustrative of that American occurrence.

In the center of the hall we find a separate case containing a small, 9-inch statuette of bluish chalcedony, carved by George Tonnelier. Originally the figurine of a dancer was given to Charles Lanier by J. Pierpont Morgan. It was placed in the Morgan Memorial Hall by Mr. Lanier when the hall was planned, with the support of Mr. Baker, as a fitting setting for this beautiful miniature statue.

As we pass the center, the first case we come to contains, appropriately, a fine series of the spodumene gem, kunzite. The hall is really something of a memorial for Dr. Kunz, too, and it is right that it should contain a fine set of crystals and cut stones of that gemstone variety. In the upright portion of the case there are several large crystals of the stone that was recognized by Kunz as being at last, the long sought gem variety of spodumene. New England occurrences had hinted that it might someday turn up in usable examples, and its discovery in these lovely crystals in the Pala tourmaline mines was not wholly unexpected. Recently there have been some additions to the rough stones in the form of large fragments of white, pale yellow and pale green spodumene from Brazil. In the lower section there are a number of large kunzites, the largest being 224 and 192 cts. A 9.29 ct. rich emerald green spodumene, known as hiddenite, is the largest cut stone of this material in existence. Beside it are several crystals of the rare green rough material, one of them almost as large as the biggest one known. A 155 ct. pale green Brazilian spodumene (this material should not be called hiddenite) is the largest stone of this variety and the largest greenish stone in the

case. It was acquired as an addition to the Thompson Collection. Below it are a number of smaller stones, including a yellow Cuité, Brazilian stone weighing 8.74 cts., about as large as this material comes. This particular type of spodumene is interesting in not showing the pleochroism characteristic of the mineral; hence it is still properly cut even though the long (c-) axis lies lengthwise in the stone. This orientation permits the maximum recovery from small fragments or crystals, the characteristic rough of this locality.

The adjoining case of this row is one of the most interesting of all to the gemologist; for it contains a part of the Museum's series of unusual gemstones. These are stones that have no real place in commerce because of their rarity. Nevertheless, unprepossessing as they may appear, there are some very rare stones here. First in the series are several andalusites, including one of 27 carats that may be the largest known (Brazil - Wallace Memorial), along with two smaller ones from Ceylon. Just below them, alphabetically, come the apatites, notable for an 11 carat, light blue (and strongly dichroic — yellow and blue) stone from Burma. The Museum's largest benitoite is a  $4\frac{1}{2}$  ct. deeply cut stone. The oval 19 ct. brazilianite gem is one of the first two stones cut from this new mineral, and behind it stand the two original crystals, part of the material on which the description of the mineral was based (Thompson Fund).

Other stones of unusual interest in this case include a fine series of crystals and cut euclase stones (Thompson Fund), with, among others, the only known sapphire blue (Ceylon sapphire color) stone, a white and a green. The series of crystals is the greater part of a twenty-five year collection by the mine owner in Brazil and is unequalled. Scapolites include clear Brazilian stones and pink and white cat's-eyes. The sphenes are especially fine, the largest of the group weighs 10 cts. and shows well the remarkable fire of this material. Lastly, we might mention Nicola D'Ascenzo's donation of a

12 ct. zincite; the largest of the group that he described. Still undisplayed are a number of other interesting stones that will be additions to this collection of unusual stones. The Museum's collection of such stones is far and above the most complete collection of this sort of material, and merits a visit for it alone.

Next to the faceted unusual stones we find a display of opaque cabochon-cut stones, including cassiterite, pyrite, azurite and hematite. The large hematite intaglio is rather spectacular (James A. Drilling) but the balance of this case is not especially unusual.

This display leads logically to the next, a case of decorative carvings including lapis lazuli, rhodonite, azurite, malachite and obsidian. The only notable examples in this case are a rhodonite Easter egg, and a necklace of very fine lapis lazuli (gift of Mrs. Henry Fairfield Osborn). Two cases beyond this one we see examples of similar materials in cylinder seals and beads of ancient origin, and above them a case with a display of the stones that were used by the American Indians for decorative or useful purposes. The most notable specimen in this case is the Babylonian axhead dating back to 2000 B.C. and acquired by Mr. Morgan from the Cardinal Borgia collection.

Next in the sequence are two cases of organic gem materials: pearls, coral and amber. Most of the pearls are American fresh-water pearls; for a large collection of these were displayed at the Paris Exposition and they were a love of Dr. Kunz'. However, the series has been expanded to show a series of pearls from common oysters, edible clams, abalones, conches, and two fine salt-water pearls. The display is very useful, since many people harbor delusions about the value of the pearls they find in the edible molluscs (they are worthless). There is also a small display of cultured pearls, including some that have been sectioned to show the nuclei; small nuclei in the hand-picked examples presented by Mikimoto in the early days of the industry,

and large nuclei with thin skins that represent actual sawn examples taken from commerce.

Next we see a series of corals, which include a number of Chinese figurines and two fine necklaces. One of these, the gift of Mrs. Edward Harkness, is a remarkable string of matched oxblood beads, a really outstanding piece of jewelry. With the coral display the visitor may see necklaces of amber beads and amber carvings, along with a number of polished pieces showing trapped insects. Behind this collection may be seen some rough pieces of amber, including the largest known boulder of amber.

Next to the end, after the Indian display, we come to a case of stones that finds a place in the Hall because of the enormous importance of the contents to the jewelry trade, the synthetic minerals that are used in jewelry. First we see the traditional synthetics that have been made for fifty years, the synthetic rubies, sapphires and spinels. With them, there is a display of the newer stones. The National Lead Company has presented a collection of its titanias, highlighted by an 80 ct. brilliant. More interesting than ordinary titanias, because they are less well known and less widely distributed, are the colored titanias, including yellow, amber, green, blue and red. The cabochon-cut titanias have unexpected charm resulting from their high refractive index. The boules (over 300 cts.) are about as large as titania boules can be grown. Next we see a small display of the Bell Laboratories' synthetic quartz; not of gem interest but of great mineralogical interest and in crystals that are as fine as those of Nature. In the center of the case will be seen a number of synthetic emeralds, grown by a process not very different from that of the Bell Laboratories' quartz, by Carroll F. Chatham, of San Francisco. Two of the crystals are quite large, but they are accented by a cluster of small gem crystals and a 2.9 ct. cut stone of a quality that makes it a close rival of the natural emerald.

Lastly, and the prize of this case, is the

109 ct. Linde Synthetic star ruby, displayed under a spotlight in a setting that brings out perfectly the sharpness of the star; surrounded by a series of blue synthetic star sapphires. In the case below this large stone there are displayed two of the star boules. This is the material from which the star stones are cut, in just the condition in which it comes from the furnace. Those who see this case will appreciate a little better that the star boules are not so easily grown as the clear boules, and that the 109 ct. stone, the largest grown to date, was a real feat.

The final case in the gemstone series is devoted, appropriately, though inconsistently, to the other mineral products so important to the jewelry trade, the precious metals. It contains a notable display of native gold specimens, including a large nugget from California, a second and only slightly lighter nugget from Alaska, some magnificent crystallized golds from Colorado and California and a few examples of natural wire silver.

With these glittering bits of metal, we reach the end of our tour of the American Museum of Natural History's Morgan Memorial Hall. In it we have seen the world's finest publicly displayed educational series of gemstones. It includes some of the largest and finest examples of the different gems that have ever been seen, and it is the most complete display of its kind in the world. The people of New York and America should be proud of this display; it was a great privilege to be able to make some contributions of selection to it. However, it must not be allowed to languish; let us hope that the jewelers of the country, as well as private individuals who are in a position to do so, will help to keep it in its preeminent position. Many jewelers have helped, with contributions of stones, with assistance in case arranging and lighting (Marcus and Co., American Gem and Pearl Co.) and by thinking first of the Museum when they have encountered something unusual. Often they have passed on

*(Continued on page 351)*

# COSTUMING and the sale of COLORED STONE JEWELRY Part II

by

ROBERT CROWNSHIELD

Various authorities claim that the most pleasant outline for a woman's face is the oval shape.

Since the face is the most important focus of attention, the hair-do, dress, coat, hat and neckline should be chosen to make the face the most attractive feature. Certain defects such as too squarish a jaw, short neck, or off-centered features, can seemingly be corrected — or at least minimized by careful planning. Very often, if a woman will look at herself critically in an ensemble in which she feels she looks her best, she will find that among other things it is because the outfit contributes most to making her face close to the ideal oval and at the same time minimizes bad features which are accentuated by other costumes.

Jewelry is one of the most important factors in attaining this effect since by its very nature it attracts attention. Further, at least two common items are intimately associated with facial outline, namely, earrings and necklaces and, to a lesser extent, clips and brooches.

Let us see for a moment what various types of necklaces can do for a woman's face. For our purpose we will speak of three general types of facial outline: (1) just right, (2) thin, and (3) too broad, or too fat.

First, let us examine what the choker type of necklace does for a woman's face. This necklace tends to broaden the face and

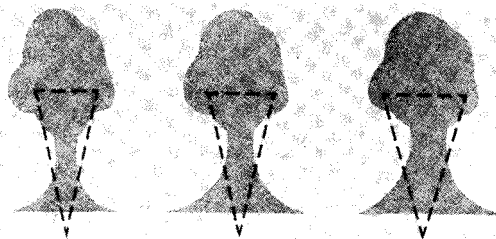
to add fullness to the neck — the more so with large beads. Therefore, it is most easily worn by the woman with a thin face and neck. An exception is the multi-strand choker often adopted by older women on the assumption that they are hiding a wrinkled neck. Actually, the choker calls attention to the very feature they are trying to hide, but actually can't.

Fashion writers say that a scarf is a much better concealing agent, and that necklaces for the older woman should be simple with the strongest element of interest low over the dress material, thus not attracting attention to the throat.

Actually, if the neck is badly aged it is best to avoid necklaces entirely and a jeweler is certainly not rendering a dis-service when he tactfully recommends some other item of jewelry more apt to please the wearer. For instance, a clip or brooch or pin that can be worn to one side will direct attention away from the throat.

The woman with the full, broad face should *not wear* choker-type necklaces unless other items of her dress are carefully chosen to minimize the squaring effect of the choker line. This applies also to the woman *with too many chins!*

The oval outline is accented by a moderately short necklace. The whole face-throat area, in combination with the oval line of hair-do and hat, is thus accentuated. This will be becoming to the woman who re-



• Spare

• Oval

• Square

quires only slight assistance to make her facial appearance most pleasant. At the same time the short necklace is only slightly less ruinous than the choker type of necklace for the woman whose face is much too full. The latter might well wear two or three longer strands of small beads or pearls to add apparent length to the neck, and give an illusion of ovalness to the face. The thin woman with the long neck could knot this same necklace to give bulk to the neck and minimize the length of her face.

If earrings are becoming to a woman they add interest to the face, a certain amount of animation, and may accentuate certain good features such as the eyes or the hair by virtue of their shape and color.

All earrings, however, tend to increase the apparent width of the face, leading the observer's eye *across* the face rather than *up and down*. Thus they are particularly good for women with thin faces, or a narrow facial structure. For this type of woman earrings are a *must* and the jeweler can render real service by tactfully using this knowledge in selling either while talking to her or when advising those selecting gifts for her.

Large, round, button-type earrings are most apt to add fullness to the face and should be avoided by the woman whose face is naturally full and who for the same reason avoids round collars, bangs, and large round glasses. Such a face cannot stand the repetition of rounded lines. In fact, many women destroy what resemblance of ovalness their

faces possess through their injudicious use of earrings.

Naturally, it is not usually to the advantage of the jeweler to discourage the sale of *any* merchandise. But if, by tact and judgment, it is possible for him to make suggestions, then, knowledge of what would better accentuate pleasant features will help him to suggest items most apt to make the wearer happy, and at the same time have a more satisfied customer.

Perhaps at this time it would be wise to repeat that the tactless use of this information—as with any phase of gemology used with faulty judgment—becomes a powerful sales deterrent.

Oval and rectangular earrings, close to the face, add very little width—and even some length—and may thus be becoming to women who otherwise destroy their oval outline with large hoops, or round buttons.

Extremely long, massive pendant styles of earrings—reaching beyond the chin line—tend to hide the neck and add to the width of both face and figure. Thus, only a very tall, thin woman—who may need this effect—will find that she looks other than ridiculous. Perhaps this is the reason such earrings are not featured at the moment. Long, delicate earrings may add some length to a slightly full face, but are apt to make a *truly full face* look even more full by contrast. Earrings should not be recommended for the woman of such facial contour.

The effect of long earrings should be studied from front, back and sides as round



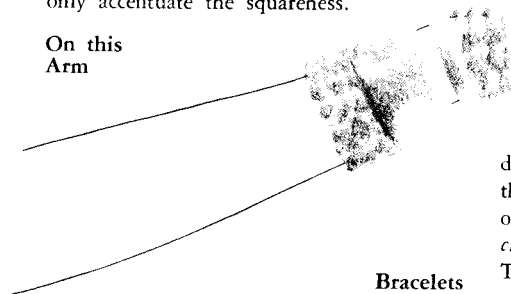
shoulders are accentuated, and some ears are even pulled to distortion by them.

Clips are especially useful in changing apparent facial contour. A single clip, or brooch, placed front and center has a slenderizing effect. Two clips, spaced apart, give an effect of increasing the apparent width of the face. A large clip placed over the belt buckle area will tend to *minimize a too broad waistline.*

Bracelets, while not having anything to do with facial outlines, do have some line-contributing functions. The woman who has long, thin arms will find that if bracelets are worn at all they should be numerous and may be worn on both wrists. Certainly this season has seen this style introduced as a fashion. On the plump arm or wrist few and smaller bracelets are more becoming.

Rings are an important costuming accent. Perhaps this is more true than in any other item of jewelry for, by the movements of the hands, rings are in constant display. A few cautions are needed in the selection of *ring shapes.* Just as the oval is considered the ideal shape for the face, so is a pleasant hand shape based upon a long oval. Hands which depart too greatly from this ideal can have the defect apparently minimized by the shape and interest of the rings worn. The length of a hand with long fingers will be accentuated by a ring with a small round setting. It would be better for this person to wear larger emerald-cut, oval or marquise shapes. A little finger ring may help to diminish the length of the hand, while the same ring on a squarish hand will only accentuate the squareness.

On this  
Arm

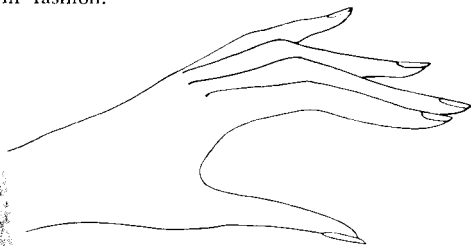


Bracelets  
Are Right

It might be well to mention that rings, perhaps more than any other piece of jewelry, can accentuate a woman's personality. It is very possible, of course, for a woman's rings and other jewelry to be out of keeping with her personality. For instance, the large uncut emerald crystal worn in a ring by a noted woman publisher, would probably be ludicrous if worn by a less forceful and retiring woman.

During, and just after, World War II when large emerald-cut aquamarines, citrines, and amethysts were popular as ring-stones, we saw many examples of indiscriminate wearing of these jewels both with respect to the personality and the hand shape of the wearer. Perhaps this is one factor which contributed to the diminishing fashion for such rings.

A factor to be considered in making recommendations is the difference between style and fashion. A style, insofar as women's dress is concerned, is a long-range thing which may or may not be the height of fashion. For instance, decollete necklines may be a *style* which is most becoming to some women, but they may or may not be *in fashion.* Many styles of past seasons seem laughable because women indiscriminately followed fashion's trend without regard to the individual suitability of the style then in fashion.



Best-dressed women are those who have discovered over-all styles which best suit them and then, from season to season, adopt only those *fashion changes* within their *chosen styles.* Especially is this true of hats. The hats which make men groan inwardly are those chosen without regard to the

suitability of the style, although they may be in high fashion.

So far our discussion has been equally applicable to costume jewelry and fine jewelry—diamond and pearl jewelry, as well as colored stone and gold jewelry.

Now we would like to consider the subject of colored stones and their contribution to costuming. Here, too, our observations will be applicable both to costume jewelry and to real jewelry. However, as gemologists, we are interested in increasing the sale of genuine stones and it is with this in mind that we proceed.

When a woman learns a little more about the romance, rarity and beauty of precious stones, compared to that of imitations and synthetics, she begins to appreciate them as a final touch to her costume which can help to give assurance and poise as well as complimenting her good taste.

Once a customer has reached this stage of appreciation she is prepared to select her gowns to enhance her real jewelry—rather than to purchase costume junk to go with her gowns. It has been our observation that this is an excellent means to secure a steady customer bent on securing a few well-chosen colored stone pieces which will serve many purposes. It is well for the jeweler to be

wrong



Broad throat: high four-strand choker

right



Dowager pearls knotted at the waist

wrong



Tall and lean: tiny, subtle pin

right



A few large pins, varying shapes high at neckline

Courtesy Coro, Inc.

right



Slim waterfall earrings, extending to mid-neckline

wrong



Round, full face: large button earrings

wrong



Long face: dangly earrings

right



Jaw-hugging cluster earrings

Courtesy  
Coro, Inc.

able to aid in this process, though we are aware that it is not easy for a man to advise a woman in the matter of color. Again, tact and judgment are prime requisites.

The colors of stones a woman can choose are almost limitless—no hard or fast rules need be observed. In general, a woman can wear any color which appeals to her. However, certain colors "go with" certain types. For instance, yellow gems are equally flattering to the blonde or brunette, but may be trying for the woman with graying hair.

Green gems, especially emeralds, have long been a must for the lady with red hair, while amethysts and sapphires are associated with gray to white hair. Pink gems—especially when worn next to the skin—must have contrast, and they may be lost next to a florid skin.

Perhaps no other gem has such general "wearability" as the pearl. However, necklaces should be tried in various lights to see just which tint is most flattering. When a woman thinks she can't wear pearls, it is sometimes the texture rather than the color of her complexion which detracts. The high regard for so-called Oriental pearls with their cream-rose tint is no accident—they actually go most easily with occidental skin tones and textures.

(Continued on page 351)

# A Visit to IDAR-OBERSTEIN

by

DR. WILLIAM F. FOSHAG

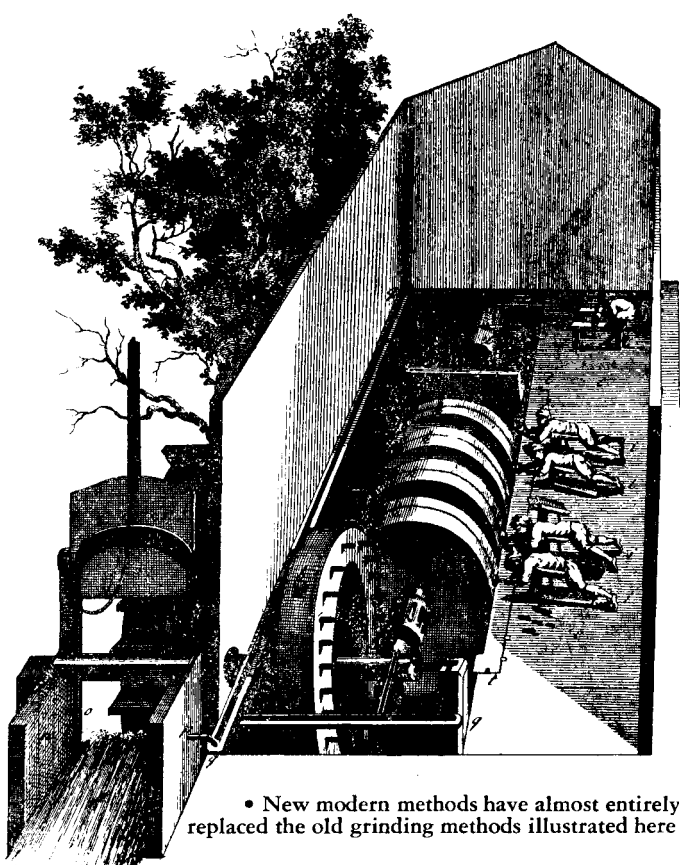
*(Head Curator of Geology, Smithsonian Institution)*

In southern Germany, in the old principality of Birkenfeld, lie the neighboring towns of Oberstein and Idar. These towns have been important lapidary centers since the 15th century. It has been suggested that the Romans introduced the lapidary art into the region. Oberstein, with a population of about 20,000 inhabitants, lies in the narrow valley of the Nahe River. One of the sights of the town is an ancient church high up on a cliff above the river, in part carved out of an old agate-bearing lava flow. Idar, with a population of about 12,000, forms that part of the twin town that lies in the steep-walled tributary of the Idar Brook.

The surrounding hills consist of an old basaltic lava, in the steam cavities of which occur numerous small amygdules of calcite, quartz or agate. This agate perhaps attracted the Roman lapidaries, and certainly later sustained a cutting industry for several centuries. It found wide acceptance in the arts throughout Europe during the 15th, 16th, 17th and 18th centuries. Outstanding examples of the lapidary art in Idar agate were to be seen in the exhibition of the art treasures from the Vienna Collections recently shown in the United States.

The 15th century saw a well established lapidary industry in Idar, devoted entirely to cutting the agate mined from local deposits. A cutters' guild was organized in 1609 with membership confined largely to the Klein, Leyser, Becker and Wild families—names still prominent in the Idar lapidary industry today. The early 19th century saw the exhaustion of the local agate supply, but the industry managed to continue in reduced activity through the use of Swiss rock crystal and smoky quartz, Saxon and Bohemian amethyst, and later Indian carnelian, moss agate and jasper.

In 1827 the Uruguay-Brazil agate fields were discovered by emigrants from the Idar district. The importation of this material revived the languishing lapidary industry. One by one other gemstones were added to those fashioned in Idar: amethyst from Uruguay and Brazil, East Indian garnet, tiger-eye from Africa, moonstone from Ceylon, New Zealand nephrite, Australian opal and sapphire, and, finally, in the early years of the 20th century, Brazilian and Madagascar fancy gems. With the introduction of synthetic sapphire and spinel, these, too, were added, and with the discovery of diamonds in



• New modern methods have almost entirely replaced the old grinding methods illustrated here

South-West Africa (then German territory) a diamond-cutting branch was established.

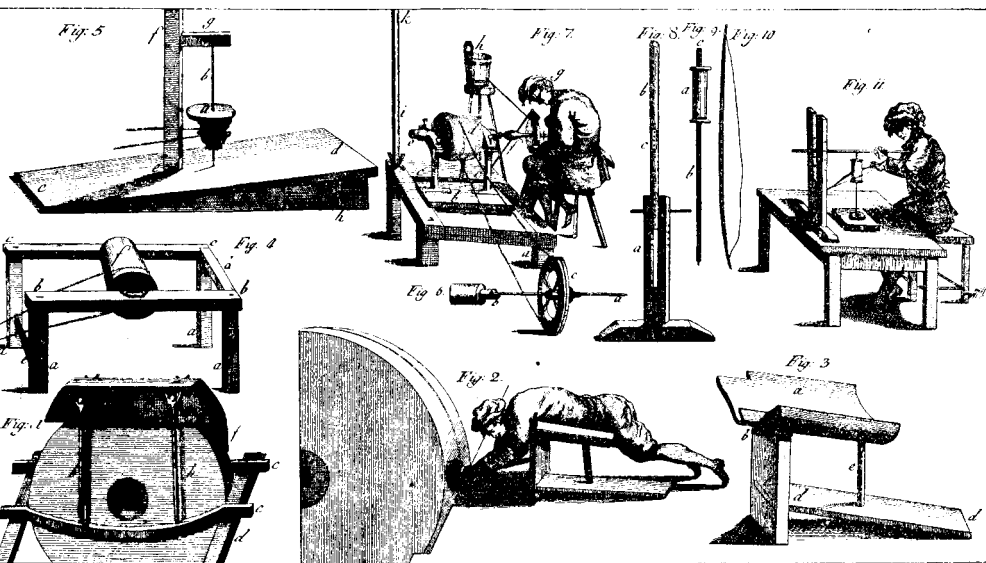
The Idar-Oberstein agate is a distinctive type, usually easily recognized. It is, generally, more colorful than agates from other areas; many show a rich, red color delicately mottled or spotted. Other types show a sharp narrow zoning of dense layers. A common characteristic is an outer zone of dense, finely banded agate with a central filling of crystalline quartz or amethyst. Although many small amygdules of agate can be seen in the basalt cliffs, pieces of usable size were and are now extremely rare.

Today, cutting works are to be found not only in the twin town but in the surrounding villages and farms as well. The cutting of agate offers a supplementary source of income to farmers, woodcutters and others during winter months and other periods of slack time. Facet cutting is done in work-

shops in the towns and two of the most important villages.

The numerous mountain streams furnished waterpower for the small mills along their banks. Now, electrically driven machinery has replaced the more picturesque waterwheels. The old-fashioned manner of agate cutting, in which the cutter lies prone before a large sandstone wheel, so frequently pictured in descriptions of Idar, is now entirely obsolete. It is reported that one small and one larger mill on a remote hill farm still employ this tedious system.

The two towns, recognizing the historic interest of the industry and their commercial dependence upon it, have taken steps to foster it. The *Handelskammer*, or Chamber of Commerce, is now engaged in rebuilding the industry. The Gemological Institute has been placed under the direction of Professor Dr. K. Schlossmacher, widely known



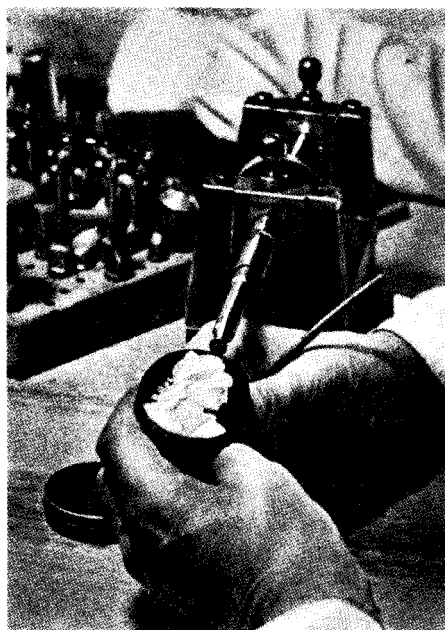
• Detail of ancient methods

authority in gemology and author of the standard reference work, *Edelsteinkunde*. The building also houses the laboratory of Mr. Georg O. Wild, well-known gemologist. Spectroscopic studies on the chromophoric or coloring elements in gemstones have particularly engaged Mr. Wild's attention.

A lapidary school, under the direction of Dr. Walther Fischer, famous mineralogist and former director of the Dresden Museum (including the world renowned Grüne Gewölbe), occupies a three-story building on the hill slope above the Idar brook. The school has three neat, well-lighted and equipped workshops, one each for agate cutting, faceting and engraving.

In addition to this lapidary school, a school of gemology is conducted by Georg Wild in a restored old lapidary mill in a nearby valley. The mill, now more than two hundred and fifty years old, was acquired by Mr. Wild to preserve as an example of

• Cameo engraving in Idar



an old historical mill. It is located at the foot of the pine-clad mountains, overlooking green meadows. The terrace in front of the mill consists of an accumulation of minute fragments of gems from all parts of the world. In front of the terrace flows the Schwollbach, abounding in trout. The students live in the nearby village of Niederbrombach where room and board can be had for a dollar a day. Mornings are spent in studies in the classroom in the old mill; afternoons in trout fishing, swimming in the old millpond, or hunting for agates in the surrounding hills. Evenings are spent in music and dancing in the old mill. The school draws its students from all parts of Germany.

Due to lack of quality rough for cutting, the industry is dependent at present upon pre-war reserves of agate for cabochon cutting, and synthetic corundum and spinel for faceted stones. Since only minor allocations of dollars are granted the lapidary industry, practically no quality gems are being cut except where rough is shipped for cutting, to be returned in manufactured form to the shipper. On the other hand, diamond cutting of single cut melee has increased to such proportions that Germany is now the third largest diamond cutting country, with an estimated 6,000 cutters occupied. Many home lapidaries in Idar-Oberstein and sur-

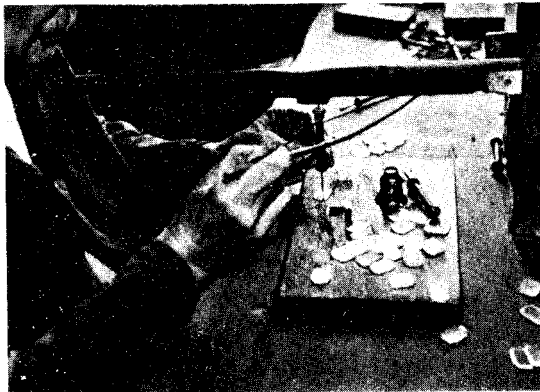
rounding villages are occupied in this diamond cutting.

Cameo engraving is an important element of the trade. Besides the usual small agate cameos or intaglios, large master works are produced when suitable agate is available. Suitable material for important pieces is rare. The banding must be straight, the individual bands dense, and of uniform quality. Upon a suitable piece agate a master engraver may spend months of painstaking work. Among the Idar masters in this art are: August R. Wild, Richard Hahn, Otto Minn, and others.

Figure carving is also undertaken, but this branch of the art languishes for lack of appropriate rough material, although the demand for animal figures is strong. The cutting of agate bowls, superb examples of which were produced in the past, is now little engaged in because of the high production costs.

As a center of the cutting of quality gemstones, Idar-Oberstein is at present a negligible factor in the market. The old skills, however, remain, as does the will to work. What is lacking are dollars to purchase fine rough. The present tendency in German fiscal circles is to deny dollar requests from the dollar pool for gem materials, although the Idar-Oberstein industry would be an important earner of foreign currency.

• Stones still drilled with "fiddle-bow"



# INCLUSIONS in YELLOW CHRYSOBERYL

by

ROBERT WEBSTER

(*Gemmological Laboratory, London Chamber of Commerce*)

During a recent session of practical instruction at Chelsea Polytechnic, London, the writer's attention was drawn to the inclusions in a specimen of yellow chrysoberyl that a student was examining. These inclusions consisted of what may well be described as 'twin planes,' and which, by alteration of the direction of the sub-stage lighting—in England no facilities are yet available to employ the special dark-field illumination used in North America and Switzerland—showed various 'bladed' or 'stepped' effects. *Figures 1 to 3.*

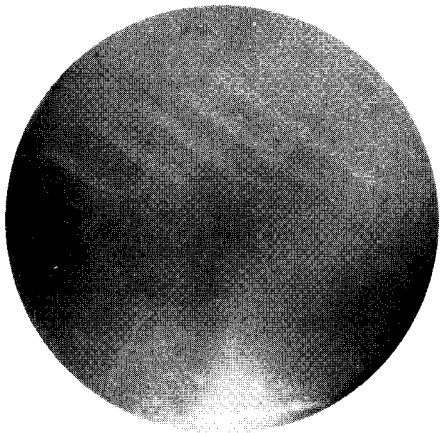
Conscious that the information on the inclusions of yellow chrysoberyl is sparse, examination was made of a number of other yellow chrysoberyls, and these 'twin planes' were found quite often. It was observed that the 'planes' ran in two directions and it was considered to be of some interest to attempt to obtain evidence of their crystallographic directions. Examination of a broken crystal, which, however, showed a sufficient number of natural faces to allow it to be oriented, showed that similar 'twin planes' were present.

It seemed clear from visual inspection that these 'planes' were running roughly parallel to the faces of the brachydome (011).

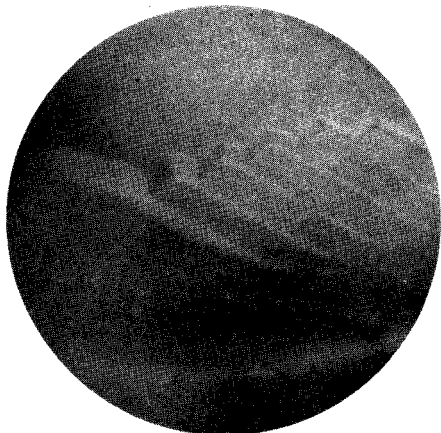
One of the natural faces of this form was present on the damaged crystal. According to Dana's *Textbook of Mineralogy* (4th edition by W. E. Ford) the angle between these faces is  $60^{\circ}14'$ . Measurement of the angle made by the 'planes' observed in the crystal examined, employing for the purpose the ocular crosswires and the graduations on the rotating stage of the microscope, an angular value of approximately  $60^{\circ}$  was found. Within the limit of accuracy of the method used, this value agrees with the published figure for the interfacial angle of the brachydome faces. *Figure 4* shows the 'planes' as seen in the crystal.

Owing to the lack of visibility of the edges of the 'planes' seen in the cut stones—the 'planes' being well seen only when at an angle to the light beam from the microscope lamp, when they either appeared light (by light reflected from the planes), or dark (when total internal reflection occurred)—no accurate measurement was possible.

Examination between crossed nicols of those stones which showed 'planes,' showed polarization colors having an angular arrangement, but they appeared to have no particular agreement with the direction of the 'planes.'



*Figure 1.* 'Bladed' or 'Stepped' planes in yellow chrysoberyl. x12

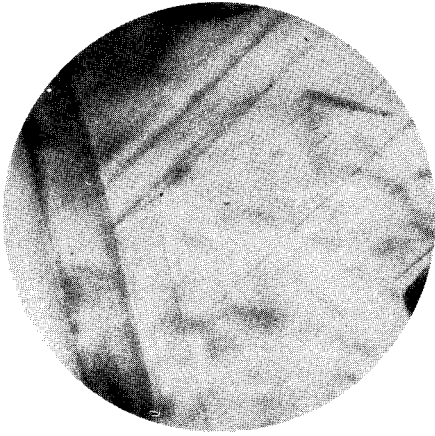


*Figure 2.* 'Steps' in yellow chrysoberyl. x12



*Figure 3.* 'Steps' in yellow chrysoberyl. x25

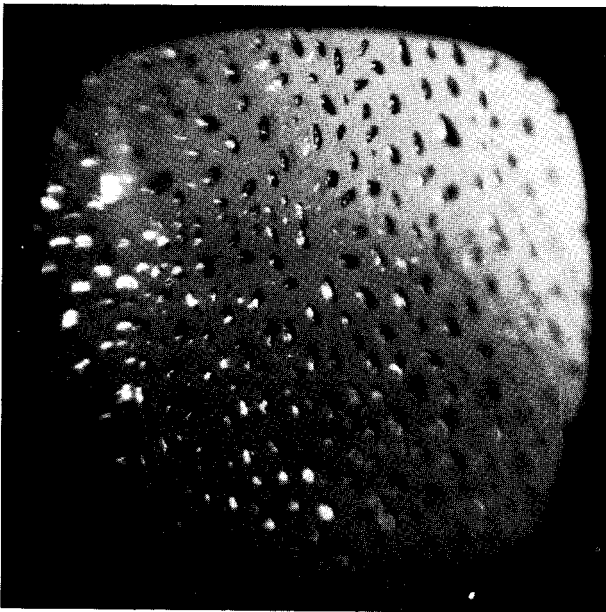


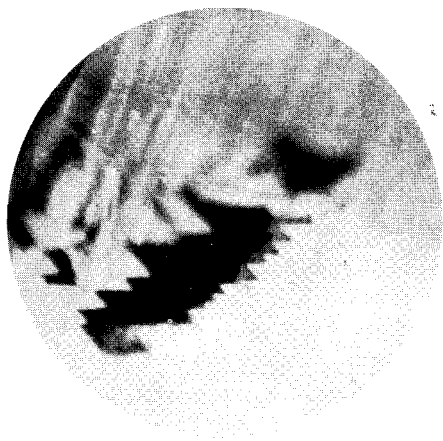


*Figure 4.* Planes seen in crystal of yellow chrysoberyl at left. In *Figure 5* below two-phase inclusions are visible. x12

As far as the writer is aware, such 'stepped planes' now described are not found in any other gemstone other than the greenish yellow chrysoberyls, and sometimes those of a deeper orange-yellow color. The

brown chrysoberyls do not seem to show the effect, at least as far as the limited number of such stones examined has shown. Nor are the 'planes' seen in that most highly prized alexandrite variety of the



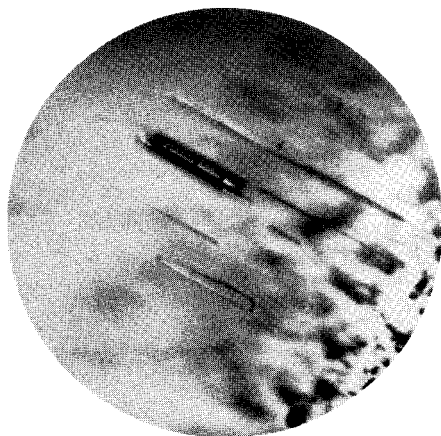


**Figure 6.** Flat liquid-filled cavities are seen in chrysoberyl.



**Figure 7** shows long tubes in the same gemstone.

**Figure 8.** Cavities with nonmiscible liquids in a yellow chrysoberyl. x30



species. As has often been found to happen when dealing with a matter which does not appear to have been well considered before, it turns up unexpectedly elsewhere. Within the last few days, and after this article was first drafted, B. W. Anderson observed what appeared to be similar 'planes' in a yellow sphene which was understood to have emanated from Ceylon.

Other types of inclusions seen in yellow chrysoberyl include: 'feathers' composed of hollow cavities containing two phases of matter (liquid and gas) as illustrated in *Figure 5*; flat cavities, probably filled with liquid (*Figure 6*); long tubes (*Figure 7*), or even cavities with nonmiscible liquids (*Figure 8*). These are commonly seen in other species and thus can have little diagnostic value.

In conclusion, my thanks are due to Dr. E. H. Rutland for allowing the use of photomicrographs 5, 6 and 7 which were taken from his collection.

PAGES FROM  
A JEWELER'S NOTEBOOK  
OF  
MEMORIES

Part III

by

GEORGE MARCHER, C.G.

Now I wish to raise the curtain on another episode that was filled with new experiences—a trip to the Zuni Indian Reservation. Before leaving Gallup, 32 miles north, we were told that the dirt road was very bad on account of deep ruts in the frozen mud. "Drive carefully and keep out of the ruts or you may damage the under side of your car."

Early in the morning we added some alcohol to the radiator—as an anti-freeze used at that time—and started on our way. We slid into the ruts occasionally, but managed to get out undamaged. But our principal worry was about the alcohol. Due to hardening of the arteries or something in the cooling system of the machine, every time we came to a strong upgrade the motor would boil.

Since the alcohol would boil at a much lower temperature than the water, the mixture was losing its antifreeze element at an alarming rate and might freeze quickly in the radiator after stopping the motor. Finally, however, we reached our destination without mishap.

In Zuni we learned that a special celebration was going on consisting of various preliminaries during the afternoon, culminating in a Rain Dance in the evening. Although the streets were teeming with Indians talking in their native language, there was but little noise and no boisterousness.

After finishing some business with a couple of Traders stationed there we returned to the street activities just in time to see the Indian congregation pouring forth from the quaint little Catholic Church located right in the center of the town. Practically all of them were squaws, young and old. Their costumes were striking. Besides a bright-colored, full length skirt each squaw wore a large shawl over her head and shoulders. According to my recollection these shawls were made of silk woven into intricate patterns of extremely vivid, but harmonious, colors. Bright red and Nile green seemed to predominate. I had expected to find all Indians loyally wearing blankets of their own weaving, but such was not the case here.

While a group of 50 or 60 of them moved slowly away from us up a little hill, which brought their colorful figures into view all at once, they resembled a slow motion section of a wallpaper design, if such a thing were possible.

Something more practical now urged us away. In former dealings with the Traders we were always pleased to get, for example, an "old pawn bracelet." To do business, a Trader had to carry a stock of many things needed by the Indians—flour, sugar, other groceries; Germantown yarn and other supplies for them to make into blankets; rugs,

pillow tops, etc.; hammers and anvils and other tools for making their jewelry. The Trader even kept a stock of Mexican silver coins for them to hammer into finger rings, bracelets, necklaces. Often, or perhaps usually, the Indians were short of cash so they would take in some of the things they had made and barter, or trade them, for what they needed — hence the Indian "Trader" cognomen.

Now these Indian jewelers like turquoise jewelry for their own adornment and when they make an article for their own personal use they naturally put into it their best effort. But sometimes when a real pinch comes, instead of selling it, they pawn it with the Trader for emergency needs. In case it should not be redeemed on time the Trader becomes the owner. Since silver is rather soft and the Indian's life is usually a rugged one, the sharp newness of the article gives way to softer lines and a characteristic surface that cannot be fully imparted to it at the time the piece is made. It conveys the impression that someone else once cared for the article.

It was with this in mind that we left the church scene to try to find some individual tribesmen who had that type of merchandise. We scored a little success on two such visits. Although most of the Zunis seemed unable to talk English passably well, they were adept at bargaining. Soon we were directed to the Chief of the Zuni tribe, who was reputed to be especially fond of turquoise.

A couple blocks away we found him in his large adobe house finished neatly on the outside with white plaster and built with a strong flat roof. It was apparently quite like all the other finer homes although possibly larger and better. We were admitted to a large room about 25x40 feet, with a ceiling about 15 feet high supported by huge logs about 16 or 18 inches in diameter spaced about six feet apart. The walls inside also were of white plaster. Near the center of the room was a tall wood-burning heater.

The Chief, who probably was in his forties, was genteel in his appearance and in his clear but broken English. Around his neck hung several pounds of turquoise jewelry in the form of beads and silver-mounted pieces. (Sometimes, I was informed, Indians wear as much as 15 pounds of turquoise around the neck and it is used as a medium of exchange in place of money.)

Later in the afternoon, while still showing stones to His Highness, I was told that some activity was going on in the patio so I went to a window to look. Men with tall peaked caps, at least three feet above the head and of green and pink pastel colors, were bobbing around to the beat of the peculiar Indian music. All around the edge of the roof, as well as in the open end of the patio, were Indians solemnly watching the dancers.

After returning to the business at hand darkness and colder weather sent several Indians inside to keep warm. Soon five or six blanketed figures were stretched out around the stoked-up heater, their motionless bodies radiating from the stove on the bare adobe floor, presumably asleep.

After finishing some unimportant business with the Chief who seemed well pleased with our visit for some reason, he presented me with a crudely-made fetish as a token of his pleasure and good will. Fashioned of a piece of bone, hollowed out to hold some broken bits of turquoise, it resembled a fox. (*See Cover.*)

Soon after I left the home of the Chief I met one of the Traders and told him a little about my deals with the Indians. In a very friendly attitude he informed me that what I had done was technically illegal. "Since you do not have a license from the federal authorities to deal with Indians you are not allowed to sell to them. You can buy from them, but not sell to them."

Naturally I was concerned to learn that I had infringed on the law. "Does that apply everywhere?" I inquired further, "even to Indians who have gone to Hollywood? How

can they get along under such restrictions? They have to buy many things to live."

"Oh," he replied, "when the Indian is away from the reservation and out on his own doing business they do not enforce the provisions."

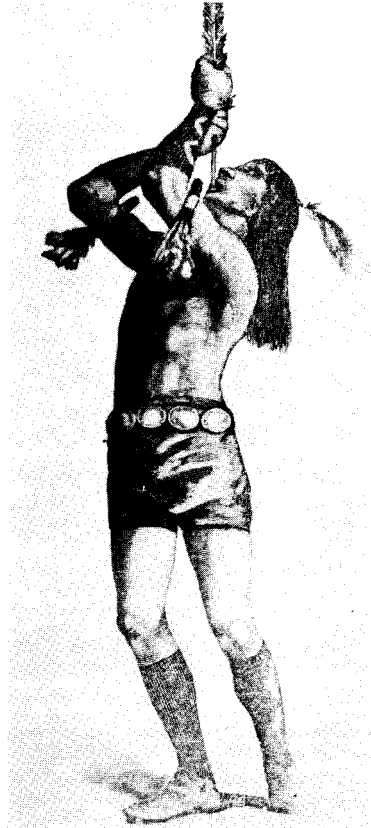
Although I was certain that the authorities would not bother one on so small an infringement I wanted to learn so I asked, "What might they do in such a case?"

"They might," he replied, "write and demand that you appear at Fort Defiance to explain the matter."

Before leaving Zuni I went back to the other Trader and explained frankly what I had done. Then I sort of turned the dealings over to him by giving him a few stones as a commission. This I felt would serve to demonstrate that the infringement was innocently done.

By this time the real climax of the celebration, the Rain Dance, was soon to take place. Joining the general traffic we shivered our way down the street to a capacious shed-like hall. The crowd, composed almost entirely of Indians, was arranged all around the sides of the room to leave the center clear for the dusky dancers. Luckily, we found ourselves quite close to the orchestra which was to be the point of special interest. Soon the music started and the pom, pom, pom of the kettle drums, accompanied by some high-pitched wind instruments with which I was not acquainted, started the moccasined feet of three or four men dancers stomping back and forth before the orchestra.

Although I cannot recall the appearance of the costumes worn by the various participants, I remember quite vividly the broad-bladed, blunt-ended, short swords with about ten-inch blades that were flourished about by two of the dancers. Why do I still see those long knives? To my amazement, during a certain rhythm of the music, both knife-wielding Indians threw their heads back and in exact unison plunged the long blades down their throats, and as quickly withdrew them without losing step with the music.



• Indian dancer swallowing plumed arrow as author saw other dancers swallow swords during Zuni Rain Dance.

*Photograph courtesy Southwest Museum, Los Angeles.*

After perambulating around a bit more one of the swordsmen danced up to an Indian pounding a drum, who in turn threw his head back and opened his mouth while the sword was slipped down his gullet and pulled out with the same incredible facility as was evidenced in the former instance. According to my best recollection, the act was performed without apparent discomfort and without any aversion to an unclean blade but with a sober spirit of cooperation. And the Indians in the audience, just as stoically, watched the procedure without applause. After this sensational Rain Dance I expected to go out and find it raining, but only cold dry weather greeted us.

*(To be continued)*

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# Book Reviews

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CONTEMPORARY JEWELLERY AND SILVER DESIGN by E. D. S. Bradford, published by Pitman Publishing Corporation, New York, Toronto, London. \$6.00. 134 pages including index, excellently illustrated. Reviewed by B. Butler.

This well-illustrated book can not fail to be of interest to those who are studying present day design in silver and jewelry, and also to all those who are interested in making, buying or selling examples of art in silver and design.

As Mr. Bradford explains in the introduction, the object of the book has not been an attempt to teach but only to summarize those present day trends in Great Britain in respect to design, execution and craftsmanship in silver and jewelry.

In the first section of the book the author describes silver designers at work in Britain today, pointing out that a new school of British design is being born. He discusses the work of leading designers, the reasons which underlie the change in British design, and uses excellent illustrations to emphasize his remarks. He then considers how conditions of function affect practical design in tea and coffee services. In natural sequence he then points out the necessity for cooperation between the manufacturer and designer and stresses the common error made by designers in not realizing some of the difficulties experienced by manufacturers in turning a design into a finished product.

In his discussion of jewelry today he brings out the effect fashion has on modern design which is reflected in today's trend toward gem-set jewelry. He continues this discussion by bringing out the importance of the small-worker, the artists who design those various objects which range from gem-set compacts to the engraved gold cigarette boxes. He concludes this section by describ-

ing styles in costume jewelry in which both fashion and fancy are active.

The last chapter sums up the importance of scientific research in devising new methods and techniques which offer advantages to the designer in both silver and jewelry.

The skillful use of illustrations throughout and the well written discussions achieve the author's purpose in compiling a reference book which students, teachers or designers, as well as the average reader can turn to either for purpose of study or pleasant reading.

SCHMUCK UND EDELSTEINKUNDLICHES TASCHENBUCH (Pocket Book of Jewelry and Gemstones) by Drs. Karl F. Chuboda and Eduard J. Gubelin, Published in Germany by Verlag Bonner Universitäts-Buchdruckerie Gebr. Scheuer G. M. B. H. Reviewed by Martin L. Ehrmann.

A new book on the identification of gemstones has just appeared in Germany. Essentially, this book is a pocket book of gem identification. It contains two color plates, 150 black and white plates, and 27 tables containing gemological data. Its most noteworthy aspect is the alphabetical arrangement of the best-known gemstones, with nomenclature as used by the trade, gem collectors, and gemologists throughout Germany. It also gives several simple methods for identifying the most popular gemstones.

The glossary of gemological terms seems to be complete, as are the localities of the more important gemstones. The chapter on inclusions in gemstones and in synthetics and doublets is very thorough.

The book contains an appendix of 124 photomicrographs, some of which appeared in the recent book published by the Gemological Institute of America, "Inclusions as a Means of Gemstone Identification," by Dr. Eduard J. Gubelin.

The various tables of physical properties are extremely effective. Of particular note is the chart on specific gravity of the most important transparent gemstones. It is in graph form, and the desired specific gravity is quickly determined by glancing at the left side of the table for the name of the gemstone. On the right side, the various colors of each stone are described. These tables should prove most helpful to the layman and the advanced gemology student.

The book is written in German.

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## Costuming...

*(Continued from 338)*

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Colored stone jewelry has a definite function in costuming. It contributes a part to the whole costume quite distinct from its intrinsic beauty and value. As an accent near the face it focuses attention there. Conversely, a too generous bosom can, by jewelry's form and color, be seemingly minimized by placement of pins or clips high on the neckline, and off center.

Effective use of colored stone jewelry can help a woman to feel that one gown becomes many, because various jewelry pieces act as a contrast in texture or in color, or as harmonizing accessories. In addition, her jewelry can assist in creating a desired mood. Thus, her evening jewels will undoubtedly be more elegant than jewelry worn while shopping or at home.

The jeweler, who has succeeded in convincing his customer that jewelry should be the first consideration when about to purchase new apparel, will succeed not only in the *sale of more jewelry* but will *help put jewelry in the class of a necessity* and thus help make his customers' trips to the jewelry store more frequent and not just on special gift-buying occasions.

We have talked with women who have become convinced that they should choose

their gowns with a thought in mind of the jewelry they possess. Several have told us that it is now a pleasure to plan their costumes as they have a definite aim in mind where formerly they were simply the victim of whims.

As women enlarge their collection of real jewelry pieces, the possibility for wearing clothes they once thought impossible will become apparent. In short, dressing—once considered a problem—will become a real pleasure and the jeweler will have contributed to their greater happiness.

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## Collection...

*(Continued from 334)*

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fine stones without a profit, so that they could be purchased with the, regrettably, limited funds of the Museum.

There are still a few gaps, as we mentioned at the outset. The collection needs a fine faceted ruby, a good Kashmir sapphire that will serve as a guide to gemstone quality, and a similarly typical emerald. It needs better labels and it needs, badly, good illumination. Most of all it needs the support and the encouragement of the nation's jewelers. Its visitors come from every corner of the globe, they are not just New Yorkers. The American Museum is a truly national museum, for all that it is partly supported by the City of New York. No trip to New York is complete without a visit to the Museum. No greater encouragement to the purchase of fine gemstones and gem-set jewelry could be found by the jewelers of the country than the stimulation of a trip through the collection in the Morgan Hall. The jeweler will find that his support of the Museum's educational work will be well repaid; he should send his customers who visit the city into the Museum, and he should cooperate with the Museum in any way that he possibly can. He will find that it will pay him.

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