Gem Stones

By SYDNEY H. BALL

THE JEWELRY INDUSTRY IN 1947

JEWELERS in 1947 had more competition for the consumer's dollar from dealers retailing other durable goods, long unobtainable, and also found their customers more discriminative. Consequently, whereas retail sales as a whole increased 18 percent in value, jewelry sales were—in dollar value ($1,390,000,000)—about 19 percent below those enjoyed in 1946 and—in volume—owing to increased prices, perhaps 15 percent less. During the wartime boom the jewelers had little competition. They now have returned to their prewar position and must fight for their trade. Although Christmas sales were large, they were somewhat less than in 1946 and were characterized by the slowness with which expensive items moved—especially large diamonds. Retailers' stocks decreased somewhat in 1947, and wholesale jewelers' sales ($494,000,000) were 14 percent less than those of 1946. Factories were plagued by a shortage of skilled labor.

The profits of the industry were built on an exceptionally prosperous national economy—high industrial wages, a record national income, and record exports. Marriages were exceeded in number only by those of 1946.

Exports of jewelry were large, the chief customers—notwithstanding certain Government restrictions—being Brazil, Canada, and the Philippines.

FASHIONS IN JEWELS

Life in 1947 was more formal and entertainment more lavish than in wartime. A greater display of jewels was therefore the order of the day. Costumes required colorful jewelry by day and sparkling jewelry by night, in many instances with movable parts that shimmer in the light. More and more jewelry was selected to suit the type of the wearer; her complexion was as important in her choice of jewelry as in the choice of her gown.

Jewelry in demand during 1947 was notably graceful in lines and delicate in workmanship, emphasizing the femininity of the wearer.

Clips and pins, earrings, bracelets, and rings held their popularity, while bracelets hiding a tiny watch under a jeweled cover were new. A number of small clips of the same design were worn by some. Earrings frequently had long pendants or drops, similar to classical Greek or Roman designs. Choker necklaces remained popular, and bib necklaces of ancient Egyptian design became favorites. Snake necklaces of woven wire frequently carried detachable pendants or clips. Rings were often large. Link bracelets or wide, flexible bracelets with crestlike ornamentation, or tailored ones of bulky gold, were popular.

Ensembles were more and more in vogue—a necklace, a bracelet, a ring, and earrings all of the same design and mounted with the same kind of stone. Formal jewelry that can be broken into two or more pieces continues to gain in popularity—a necklace, for instance, that can also be used as clips and brooches.

The insistent demand for diamonds caused colorless gems to be by far the most widely used, with blue and red almost tied as a poor second, followed by green, yellow, and purple. Emeralds and colored diamonds seemed to be gaining in the finest jewelry. Opal was seen more commonly; aquamarine held its own; and topaz and citrine continued to lose ground.

DOMESTIC PRODUCTION

Although by no means an important factor in the national economy, the value of gem stones produced and their value after cutting has increased impressively for the past 3 years, due mainly to the awakened interest of Americans in the Western States to the beauty of such minerals and the fun of cutting them. Activity in this field is fostered by journals, technical societies, and educational institutions. An adequate supply of gasoline permits not only collectors—amateur miners—to visit the field, but brings to the door of lapidaries and curio shops their best customers, automobile tourists. A broadening demand and reduced imports from Europe have increased prices since the beginning of World War II. Some small mining companies are purchasing bulldozers and other mining machinery to be used on their properties.

No reliable statistics exist as to the value of the domestic product. Last year the writer estimated the value, in the rough, at $325,000. In 1947 it was more—perhaps $570,000—and, after processing, the value might have been several times this figure.

In Idaho, California (San Diego), and Maine, some of the old gem deposits changed hands, and production may increase in the future.

The myriad forms of agate, attractive and widely distributed, easily found and as easily cut, led the field, followed by jade, turquoise, and variscite. Of the States and Territories, Oregon, Wyoming, Washington, Colorado, Alaska, and Nevada produced in about that order of quantity of output.

Agate.—H. C. Dake, in a personal communication, states that he believes Oregon alone produced in 1947 agates to the value of $1,000,000. Oregon has many quartz operations, particularly in the central part of the State, equipped with bulldozers and power shovels, and also an enthusiastic group of lapidaries, amateur and professional, and curio venders. Certain Oregon beaches have also produced well. In "Gem Mining, a New Oregon Industry" (see Bibliography), Dr. Dake describes in detail the various agate-producing districts.

Washington produces considerable opalized wood and other agate gems, part of which are cut in the State. Idaho produces some quartz gem stones, and there are a number of lapidaries at Boise.

The fine moss agate of the Yellowstone Valley, Mont., is still being gathered, but the terrace gravels have been largely picked over. The 1947 production was worth perhaps $10,000. Montana moss agate is sold widely in the West. The west Texas region also produces considerable agate. Arizona has some fine agates, particularly from near Cave Creek. Complaints have been lodged with the Government that so much agatized wood is stolen from the Petrified Forest, an Arizona national park, that the beauty of the park is jeopardized. New Mexico, particularly Luna County, produced some agate, which was shipped to the west coast for cutting.

Turquoise.—In 1947 turquoise production, in dollar value, probably exceeded that of jade. Dan E. Mayers (see Bibliography) contributed interesting data on the American Indian and turquoise. The Southwest Gem & Jewelry Co. produced a fair amount of turquoise, perhaps 200 pounds, from its properties in Mineral Park, Ariz. Collection of turquoise from Castle Dome, N. Mex., was said to be perquisite of being a miner there. Later the company recovered turquoise as a byproduct. It is reported that most of the open-cut is now below the turquoise horizon. The company reported that during 1947 it "recovered several hundred pounds of rough turquoise, as it has for the last few years." G. M. Butler reported that the lapidaries of Miami and Globe, Ariz. treat the stones with an oily substance, improving both the color and the hardness of the chalky, feebly colored product. State highway engineers, drilling to locate the Pinto Creek bridge foundation near Miami, encountered an old tunnel. A cave-in followed, revealing the presence of turquoise among other minerals. The Colorado State Mineral Resources Board stated that in 1947 the King Mine, Manassa, Colo., produced turquoise valued at $30,000. An unusually large turquoise mass, weighing 10¾ pounds originally and 8¾ pounds after trimming, was included. The proprietors were offered $1,000 for it. A little turquoise was produced from the Hachita Mountains, N. Mex. Some development work was done on Los Cerrillos deposit, New Mexico, but net results were not encouraging.

Nevada produced but little in 1947. Some was mined in the Copper Basin district and cut there, but later in the year keen competition from Arizona forced a shut-down.

Jade.—B. D. Stewart, Department of Mines of Alaska, reported that the Kobuk River region produced much less jade in 1947 than in 1946, due to curtailed operations by the principal producer. The local demand exceeded supply, and there was none for export. In addition, at least one Eskimo collected and shipped some material. From $25,000 to $30,000 worth of jade being shipped to China in the spring of 1947 by the Arctic Exploration Co., Inc., was stolen but later recovered. It consisted of boulders weighing 200 to 1,500 pounds each.

In Wyoming there were a number of jade hunters around Lander, but as few large boulders and little high-grade gem material was recovered, results were disappointing compared to those of 1946. A new occurrence was reported in the Shirley Mountains.

The californite locality near Happy Camp in northern California, which furnishes a fair imitation of jade, has long been known, but James L. Kraft, reported boulders of true jade in the vicinity. The California Division of Mines reported that mineral collectors pick up boulders of nephrite from the beaches of Monterey County, between Big Sur and the San Luis Obispo County line. Austin F. Rogers described a massive rock, an intimate mixture of grossularite and idocrase (vesuvianite), from Placer County, Calif. It is white to gray and an attractive ornamental stone that might well serve as a substitute for jade.

Diamond.—The litigation between Glenn L. Martin, the airplane manufacturer, and the Diamond Corp. of America, which once held a 50-year lease on the principal Pike County, Ark., diamond deposit, during the summer of 1947 was dismissed, and $325,000 of the corporation's funds were released. In August 1945, according to the California Division of Mines, a small diamond was found in Yuba County a short distance below Parks Bar by Lewis Drade, while placering. Confirmation of the reported discovery of a 19½-carat stone in the summer of 1947 at Rock Flat 4 miles west of McCall, Idaho, is not yet available.

Other Gem Stones.—In 1947 the Montana sapphire mines reported no production. Synthetic sapphire producers have won the principal market, the industrial uses.

At one time Niagara Falls, N. Y., produced satin spar, which James Potter cut for the tourist trade. The local supply is now exhausted.

Mrs. E. M. Roe reported that in 1947, at Pipestone, Minn., more catlinite was mined than for some years by two Indians. Total production probably approached $5,000.

Other gem stones produced in small amounts in 1947 include *agate*, Colorado; *alabaster*, Montana; *amazon stone*, Colorado; *amethyst*, Colorado, Maine, North Carolina; *apatite* (green), Maine; *aquamarine*, Colorado, Georgia; *asteriated quartz*, Maine, North Carolina; *cesium beryl*, Maine; *garnet*, Colorado, New York, North Carolina; *kunzite*,

California; *lapis lazuli*, Colorado; *moonstone*, New Mexico; *peridot*, Maine, New Mexico; *rose quartz*, Maine; *sapphire*, Colorado; *smoky quartz*, Maine, New Hampshire, North Carolina; *topaz*, California, Colorado, New Hampshire, Utah; *tourmaline*, California, Colorado, Maine; and *triphylite* (chatoyant), Maine.

CANADIAN GEM STONES

Time has not fulfilled the hopes of the earlier Canadian explorers. Canada is probably even poorer in gem stones than the United States. A couple of thousand dollars would doubtless cover the value of a normal year's production. There are relatively fewer lapidaries, professional or amateur, in Canada than in the United States; in consequence, a considerable percentage of the present small production is shipped across the border for cutting. Labrador has for decades been the premier source of labradorite; sodalite, albitic moonstone, ordinary moonstone, amazon stone, and chatoyant tremolite are found in the Bancroft area, Hastings County, Ontario; rock crystal near Black Rapids (Lyndhurst P. O.), Ontario, and agate in the Lake Superior region. Scapolite, rose quartz, rhodonite, and sphene (titanite) also occur. F. G. Smith informed the writer that he shipped from about 90 miles northwest of Yellowknife, Northwest Territories, some 200 pounds of iolite which could be cut into 200 carats of flawless gems worth perhaps $10 a carat.

GOVERNMENT REGULATIONS

Regulation of the jewelry industry did not decrease with VJ-day. With few exceptions, the laws attempt either to increase national revenue or to keep currency at home.

Cuba, the Union of South Africa, Palestine, and Singapore, however, reduced certain taxes and the United States some duties in accordance with the General Agreement on Tariffs and Trade, at Geneva, October 30, 1947. In both the United States and Canada, on the other hand, substantial luxury taxes continued to apply to jewelry sales. Peru, Trinidad, and Great Britain introduced or increased luxury taxes. A number of countries, particularly Latin American countries, prohibited the import of jewelry.

IMPORTS [1]

The value of imports of gem stones, real and imitation, exclusive of industrial diamonds, into the United States, as listed by the United States Department of Commerce, totaled $110,537,647, 42 percent less than in 1946. Diamonds comprised 87 percent of the total. Practically every class was less than in the previous year.

[1] Figures on imports and exports compiled by M. B. Price, of the Bureau of Mines, from records of the U. S. Department of Commerce.

Precious and semiprecious stones (exclusive of industrial diamonds) imported for consumption in the United States, 1946–47 [1]

[U. S. Department of Commerce]

Commodity	1946		1947	
	Carats	Value	Carats	Value
Diamonds:				
Rough or uncut (suitable for cutting into gem stones), duty free	1,044,517	$48,668,843	1,075,478	$43,051,210
Cut but unset, suitable for jewelry, dutiable	604,638	117,968,206	347,810	53,471,539
Emeralds:				
Rough or uncut, duty free	544,711	579,745	7,385	258,062
Cut but not set, dutiable	11,902	210,274	4,133	82,747
Pearls and parts, not strung or set, dutiable:				
Natural		619,463		360,963
Cultured or cultivated		1,280,867		737,753
Other precious and semiprecious stones:				
Rough or uncut, duty free		329,552		298,393
Cut but not set, dutiable		8,932,862		3,662,382
Imitation, except opaque, dutiable:				
Not cut or faceted		68,108		118,168
Cut or faceted:				
Synthetic		1,640,426		483,313
Other		8,044,674		7,688,827
Imitation, opaque, including imitation pearls, dutiable		298,545		15,566
Marcasites, dutiable:				
Real		344,907		300,175
Imitation		31,174		8,549
		189,017,646		110,537,647

[1] In the corresponding table in Minerals Yearbook, 1946, p. 549, revisions for 1945 are as follows: Diamonds, rough and uncut, (carats) 895,219, (value) $43,131,784; cut but unset, (carats) 377,594, (value) $63,815,581. Emeralds, cut but not set, (carats) 107,591. Other precious and semiprecious stones, rough or uncut, $135,062; cut but not set, $5,158,408; cut or faceted, other, $252,388. Total value, $114,128,803.

DIAMOND

Nineteen forty-seven was a good year for diamond wholesalers, a fair or better year for the producers and retailers, and a poor year for master cutters and their employees.

World production was about 4 percent less than in 1946. Union of South Africa and Tanganyika Territory fell off somewhat, but Venezuela percentwise increased markedly. Output from the Belgian Congo, largely industrial stones, continued on the low side.

Sales of rough by the principal wholesalers, the subsidiaries of the Diamond Corp., were £24,500,000, as compared with £30,000,000 in 1946, but the difference was largely made up by rough purchased by the cutters from overstocked American brokers and cutters and from sellers of "outside goods" in the first half of the year. Rough stocks were again depleted.

Retail sales in the United States were good, although less than in 1946. At Christmastime, however, high-priced items moved slowly.

Prices of rough were stable, but some of the less expensive smalls were raised by the beginning of 1948. Cut, particularly that of mediocre quality, declined in the first 7 months of the year, but by the year end had regained its loss.

Industrial imports were lower in weight, but as better stones were bought the dollar value of imports showed only a small decline.

Share Dealings.—The shares of the leading diamond mining companies on the London Stock Exchange, their principal market, lost

Diamonds (exclusive of industrial diamonds) imported for consumption in the United States, 1946–47,[1] by countries

[U. S. Department of Commerce]

Country	Rough or uncut			Cut but unset		
	Carats	Value		Carats	Value	
		Total	Average		Total	Average
1946						
Argentina				114	$20,754	$182.05
Belgian Congo	5,649	$48,834	$8.64			
Belgium	3,104	135,882	43.78	288,929	51,150,251	177.03
Brazil	59,142	2,766,768	46.78	15,939	3,228,079	202.53
British East Africa	12,685	636,129	50.15			
British Guiana	3,246	175,033	53.92	752	84,802	112.77
British Malaya	2,500	20,169	8.07	617	177,379	287.49
Canada				127	8,674	68.30
Cuba	383	4,743	12.38	38,325	7,502,503	195.76
Denmark				4	610	152.50
Egypt				34	10,082	296.53
France				6,042	1,186,641	196.40
Greece				240	16,444	68.52
Hungary				107	4,575	42.76
India				929	183,941	198.00
Iran				200	40,243	201.22
Japan				3	1,215	405.00
Mexico				313	62,566	199.89
Netherlands	124	15,335	123.67	37,473	7,724,355	206.13
Palestine and Trans-Jordan	3,566	115,927	32.51	121,627	21,972,027	180.65
Portugal				671	146,431	218.23
Siam				40	9,411	235.28
Sweden				10	2,183	218.30
Switzerland				7,776	1,470,574	189.12
Union of South Africa	935,824	44,015,089	47.03	56,120	16,783,704	299.07
U. S. S. R.				4,796	1,002,000	208.92
United Kingdom	10,693	351,113	32.84	23,198	5,134,475	221.33
Venezuela	7,601	383,821	50.50	252	44,287	175.74
Total 1946	1,044,517	48,668,843	46.59	604,638	117,968,206	195.11
1947						
Austria				2	300	150.00
Belgium	3,482	45,579	13.09	205,650	30,368,217	147.67
Brazil	29,322	533,796	18.20	7,227	900,317	124.58
British Guiana	822	39,155	47.63	223	26,356	118.19
British Malaya				320	62,884	196.51
British West Africa	1,680	11,680	6.95			
Canada				7	1,924	274.86
China				1,033	245,648	237.80
Cuba				6,422	866,997	135.00
Egypt				6	4,126	687.67
France	131	13,293	101.47	4,339	756,758	174.41
French West Indies	21,093	351,188	16.65			
Germany				1	250	250.00
Hungary				125	23,374	186.99
India				136	28,158	207.04
Italy				9	3,861	429.00
Mexico	70	16,455	235.07	1,021	318,211	311.67
Netherlands				24,011	3,742,952	155.88
Palestine and Trans-Jordan				35,474	4,297,767	121.15
Portugal				96	13,940	145.21
Siam				102	4,902	48.06
Switzerland				4,798	625,621	130.39
Syria				10	2,000	200.00
Union of South Africa	963,969	40,421,913	41.93	38,255	8,749,590	228.72
U. S. S. R.				9,270	707,959	76.37
United Kingdom	10,725	480,310	44.78	9,273	1,719,427	185.42
Venezuela	44,184	1,137,841	25.75			
Total 1947	1,075,478	43,051,210	40.03	347,810	53,471,539	153.74

[1] In the corresponding table in Minerals Yearbook, 1946, p. 550, revisions for 1945 are as follows: Rough and uncut: Belgian Congo, (carats) 15,054, (value) $108,985, (average value) $7.24; Union of South Africa, (carats) 830,851, (value) $41,277,299, (average value) $49.68. Total, (carats) 895,219, (value) $43,131,784 (average value) $48.18. Cut but unset: Belgium and Luxembourg, (carats) 104,953, (value) $14,544,028, (average value) $138.58; Brazil, (carats) 28,573, (value) $4,653,438, (average value) $162.86; India, (value) $135,764, (average value) $193.12; Palestine and Trans-Jordan, (carats) 106,036, (value) $17,716,906, (average value) $167.08. Total, (carats) 377,594, (value) $63,815,581, (average value) $169.01.

about 7 percent during 1947, as compared with an over-all loss of 2 or 3 percent on the New York Stock Exchange. Quotations were at their low in July–August, after which investment buying and Indian speculation caused a moderate improvement up to the year end. All the principal companies except Premier paid dividends.

Imports.—Imports of gem-grade diamonds into the United States decreased from $166,637,049 in 1946 to $96,522,749 in 1947, a loss of 42 percent. The dollar value of rough was off 12 percent and that of cut, 55 percent. In both cut and rough, quality deteriorated. In 1946 Belgium furnished 43 percent of the cut and in 1947, 57 percent. Palestine fell from 19 percent to 8, while Union of South Africa gained a bit (from 14 percent to 16). Cuba and Brazil lost their importance.

Judging from prices per carat, the Union of South Africa and United Kingdom furnished the best cut and Cuba and Palestine the poorest.

Cutting.—The gross overstaffing of the cutting industry has become apparent, and employment shrank from about 30,200 employees in 1946 (excluding those in Borneo and India) to 26,500 in 1947. Wages continued to fall—principally owing to competition caused by shortage of rough—and strikes, lock-outs, and lay-offs still consumed at least one-third of the men's time. Cuba and Brazil almost disappeared as cutting centers, and Palestine found the political situation withering. The United States continued unsurpassed as a cutter of large stones.

World Production.—Accurate figures regarding diamond production are not available for all countries, but the estimates in the following

World production of diamonds, 1943–47, by countries, in metric carats

[Including industrial diamonds]

Country	1943	1944	1945	1946	1947
Africa:					
Angola	794,990	799,120	803,887	[1] 806,961	799,210
Belgian Congo	4,881,639	7,533,365	10,386,000	6,033,452	5,474,469
French Equatorial Africa	56.183	60,000	82,849	87,381	[1] 90,000
French West Africa	36,193	69,726	79,802	51,834	[1] 90,000
Gold Coast [2]	1,317,798	1,165,858	812,451	653,196	852,493
Sierra Leone	834,492	608,744	504,309	559,229	605,554
South-West Africa	94,427	154,379	152,629	163,611	180,739
Tanganyika	52,998	90,667	115,666	[1] 119,446	74,825
Union of South Africa:					
Mines	84,342	552,974	878,713	1,025,019	918,042
Alluvial	217,987	380,708	262,529	256,768	[3] 286,692
Total Union of South Africa	302,329	933,682	1,141,242	1,281,787	1,204,734
Brazil [1]	275.000	301.000	275,000	325,000	275,000
British Guiana	18,272	[2] 13,911	15,442	22,413	24,669
Venezuela	22,846	22,037	12,769	20,912	61,634
Other countries	6,804	12,000	2,000	[4] 1,600	[5] 3,500
Grand total	8,694,000	11,764,000	14,384,000	10,127,000	9,737,000

[1] Estimated.
[2] Exports.
[3] Includes an estimate of 100,000 carats for State Mines of Namaqualand.
[4] Partly estimated; includes India, Borneo, Australia (New South Wales), and U. S. S. R.
[5] Includes India, Russia, Borneo, New South Wales, and United States.

table are believed to be fairly reliable. World production (gems and industrials) in 1947 is estimated to have been 9,737,000 carats (2.15 short tons), worth at the mine some $75,105,000, which compares with 10,127,000 carats (2.23 short tons) in 1946. This is about 96 percent of the 1946 production as to weight and 92 percent as to value. By weight, 1,120 pounds were gem stones and 3,173 pounds industrials.

Belgian Congo was the leading producer, by weight (56 percent), although it represented only 12 percent of the value. On the other hand, the output of the British Commonwealth, which was only 30 percent of the weight, represented 68 percent of the value. The Belgian Congo, the Union of South Africa, and Tanganyika produced less than in the previous year, while the Gold Coast, Sierra Leone, Southwest Africa, and Venezuela produced more.

Industrial Diamonds.—It appears that during the recent World War brokers of industrial diamonds and manufacturers of tools utilizing them overstocked, contributing to the decline in the quantity of industrials imported in 1947. Imports were much below those of 1942–44, whereas values were comparable. Early in 1948 production and consumption were in approximate balance, assuming that manufacturers are ingenious enough to use the grades available.

Industrial diamonds are being stockpiled by the Munitions Board.

The year saw many advances in the use of industrials mechanically, but only one new use, as counters for alpha, beta, and gamma rays, replacing in some instances the Geiger-Muller counter. As the diamond is sensitive to radioactivity, fine colorless crystals form the most sensitive and enduring counters.

The use of the diamond drill in oil-well and blast-hole drilling increased.

Figure 1, originally prepared by Herbert Backman several years ago, shows the tremendous increase in use and the sharp decline in the price per carat of American imports in the past 29 years.

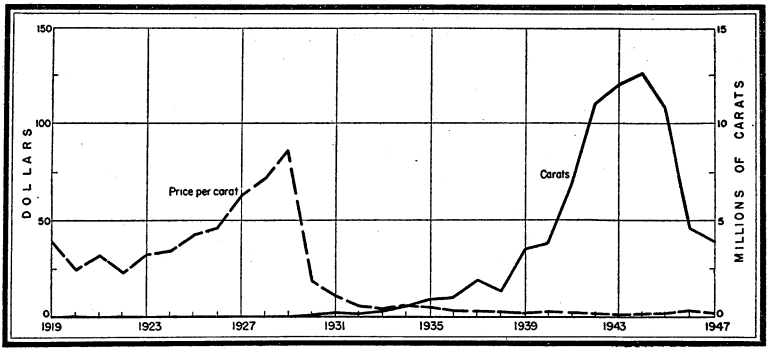

FIGURE 1.—United States imports and average price per carat of industrial diamonds, 1919–47.

Imports of industrial diamonds into the United States during the past 5 years are shown in the accompanying table.

Industrial diamonds (glaziers', engravers', and miners') imported for consumption in the United States, 1943–47

[U. S. Department of Commerce]

Year	Carats	Value		Year	Carats	Value	
		Total	Average			Total	Average
1943	12,084,133	$21,890,568	$1.81	1946	4,625,282	$14,297,536	$3.09
1944	12,614,507	22,894,244	1.81	1947	3,920,012	12,840,866	3.28
1945	10,733,411	12,823,962	1.19				

In 1947 the United States exported 92,626 carats of industrial diamonds valued at $512,273 or $5.53 per carat.

RUBY, SAPPHIRE, AND EMERALD

Compared with the diamond, the 1947 sales of rubies, sapphires, and emeralds were small. As most of the deposits of the noble gems do not lend themselves to large-scale operations, precious-stone mining by large companies is confined to the diamond, notwithstanding the fact that fine emeralds and rubies bring higher prices than most fine diamonds. Fine rubies come from Burma; sapphires from Siam, Ceylon, Indochina, and Kashmir (rumor has it that the deposits of the last two countries are virtually exhausted), and emeralds from Colombia and the U. S. S. R. Political conditions in most eastern countries are not conducive to successful mining, and the Colombian emerald mines are not being operated. But fine gems are not only in demand, they are also in short supply—a deficiency met only partly by stones from outmoded jewelry.

The gem gravels of Ceylon furnish not only rubies and sapphires but also many other gem stones. The gem diggers of the Ratnapura district, while active, are not increasing their output, notwithstanding the very high prices gems bring. The mining is done by Singhalese diggers, who work only in certain seasons. The annual value of production is from £66,000 to £82,500, unless exceptionally valuable stones are found.

C. C. Morton (Queensland Government Mining Journal, vol. 47, November 1946, p. 340) describes the Willow sapphire field, Central Queensland. The gems occur in white clay at from 1 to 10 feet below the surface. The good stones are yellows and blues, although the dominant colors are green or blue-green. One yellow weighed about 218 carats. Sapphires were first found at Withersfield, Queensland, in 1870. Partial records of the production of sapphires and associated gems in Queensland from 1892 to the end of 1946 totaled £657,180.

Transvaal, South Africa, produces a few gem beryls, some of which are dark enough to be classed as emeralds; on the average, they are of

mediocre grade. The principal producer is the Somerset mine of the South Africa Beryl Mining Co. If the stock on hand brings a satisfactory price (the stock is about 100,000 carats), the Beryl mine (Beryl Mining Co., Ltd.), may be reopened and cutting be done in the company's own shop.

In the first half of 1947, South Africa produced 7,260 carats of emeralds as compared with 5,572 carats in the corresponding period of 1946.

Neither the Colombian Government mine, Muzo, nor the company-owned Chivor mines has been operated for some time, although in 1947 the Government gave the right to the Banco de Republico to exploit Muzo, and it is reported that the bank, in turn, has contracted for the mining, grading, and cutting of the stones. A decree effective August 1, 1947, is aimed at suppressing the rather large black market in emeralds, which has existed for some years in Colombia, by controlling the mining, sale, possession, export, and cutting of rough emeralds. (Information received in part through the courtesy of Clinton Bernard.)

LESSER GEMS

The American Gem Society, by a vote of its members, has discontinued the use of the term "semiprecious," as the adjective is considered to be meaningless.

The finest of opals, the Australian, is growing in popularity and increasing in price, partly due to the purchases by GI's stationed "down under." There is some evidence that the Lightning Ridge, Queensland, black opal deposits are playing out. In the heyday of the field (1910), a thousand miners worked the field; today, only 20 to 30, and buyers avidly snap up the few gems found, even at present high prices. The "Shallow Four Mile" workings, once largely neglected, are the site of today's main workings. From 1892 to the end of 1946, Queensland had an official opal production of £189,150.

New Zealand jade (nephrite) used to be recovered as a byproduct of gold sluicing, but with the decline in alluvial mining, the supply does not satisfy local demand.

H. Buttgenbach described a fine topaz crystal weighing 2½ kilograms found near the Gitshie River, a branch of the Kungwe, in the Ruanda, Belgian Congo.

A large, fine aquamarine brooch was presented to Mrs. Harry Truman when, late in 1947, she and President Truman visited Brazil for the Pan American conference. Raymond M. Miller reports that Brazilian gem merchants still export quantities of blue topaz, particularly to the Central American and Cuban markets, as aquamarine. In Brazil, he says, aquamarine sells at three times the price of blue topaz.

M. F. Beliakov reports lazulite in a quartz vein in the vicinity of Mount Sura-iz, northern Urals. The quality of some warrants its use in jewelry.

Edward R. Swoboda [2] describes the garnet deposits of Brazil opened up since the war-boom development of the national lapidary industry. Both fine essonites and almandites are produced.

In 1947 andalusite of fine color but small size appeared on the American market. The American Gem Society believes it comes from the gravel near Santo Teresa, State of Esperitu Santo, Brazil. The discovery was made in wartime prospecting for strategic minerals. The stone ranges in color from brick-red to yellowish-green and is quite brilliant.

Raymond M. Miller reported that the recent find of large pockets of deep-colored amethyst near Bahia has caused a fall in the price of that stone in Brazil. The Bahia amethyst, when burned, turns to a fine "citrine." Natural citrine also occurs near Bahia.

The best Ceylonese gem zircon, one of the dominion's widely disseminated gems, is found in Dediyagalemukulane, in the Southern Province.

It is stated that India yearly exports 118,000 rupees worth (about $35,000) of agate.

SYNTHETIC GEM STONES

Nineteen forty-seven was a year of great advance in making synthetic gem stones. Late in September the Linde Air Products Co. astonished gem experts by putting on the market synthetic star sapphires and rubies. Both "star" and color are well-developed in many examples. Production was limited, but the synthetic stars can be sold at one-tenth or even one one-thousandth of the price of the natural gem. By microscopic examination, the differentiation of natural and synthetic stones is easy. While one cabochon stone weighed 109.25 carats, most of the cut stones released weighed from 4 to 15 carats. The stones, clearly advertised as synthetic, were being sold through a single channel.

Carroll F. Chatham of San Francisco improved appreciably the size and quality of his synthetic emeralds; these can readily be differentiated from the natural gems by the microscope. Such synthetic gems are still relatively small.[3]

During the war, German scientists found that bearings could be shaped from synthetic spinel with the use of only 30 percent of the diamond dust required for sapphire or ruby. Later, upon being heated to 950° to 1,050° C., the spinel bearings hardened and replaced sapphire bearings satisfactorily.

[2] Jewelers' Circular-Keystone, March 1947, pp. 270–272.
[3] Pough, Frederick H., Jewelers' Circular-Keystone, 1947, pp. 176, 178, 224–226.

Linde Air Products Co. and the National Lead Co. in 1947 produced synthetic rutile of several colors. While not as yet on the market, eventually gems of high brilliancy, but rather too soft for many jewelry purposes, may be available.

During the recent World War, both Great Britain and the United States became self-sufficient in producing synthetic corundum and in shaping it for watch and instrument jewels. In 1946 import of foreign synthetics was resumed, and in October 1946 prices dropped markedly. The synthesis of corundum continued after the war in America, and ruby and sapphire were used in medium-price jewelry, for bearings, in various tools, gages, and tips for micrometers and for small mortars and pestles.

A Swiss manufacturer has produced ball bearings from synthetic corundum. In comparison with steel balls, they are hard and have a high modulus of elasticity, great chemical resistance, and physical stability.

It is reported that during the war Germans produced a sintered-ruby material superior as an abrasive to other aluminum oxide abrasives.

RELATIVE VALUE OF GEM STONES

Gem stones are valued for many reasons but mainly for their beauty and rarity. Value is so dependent on perfection that it is difficult to rank gems rigidly. A fine spinel may well be more valuable than a diamond of mediocre quality. In a broad way, the noble gems rank highest, about as follows: Deeply and attractively colored diamonds (fancies), emeralds, rubies, colorless diamonds, and sapphires. The other gems follow in about this order: Imperial jade, star ruby, black opal, cat's eye, alexandrite, star sapphire, spinel, demantoid, kunzite, morganite, peridot, aquamarine, topaz, white opal, jade, tourmaline, amethyst, zircon, garnet, citrine, turquoise, and moonstone. To assign a dollar value to the foregoing would have little meaning. A pound of "fancies" might be worth $11,350,000, or $5,000 a carat, and a pound of turquoise but $15, or, say, 1 cent a carat.

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