GEM STONES

By Sydney H. Ball

SUMMARY OUTLINE

JEWELRY INDUSTRY IN 1943

Retail jewelers have never had a year like 1943. Sales of taxable jewelry totaled $998,094,416, or 26 percent above those in 1942 ($792,000,000). Gains over 1942 reached their peak in the second quarter of the year, then tapered off. The causes were an all-time high national income ($142,000,000,000, compared with $115,500,000,000 in 1942); a large number of weddings (1,725,000—only exceeded by the 1,800,000 in 1942); reduced competition from other luxuries and semiluxuries; and much money in the hands of free-spending warworkers. The increased sales were without Government stimulation. All men of draft age in the industry were nondeferable under the Selective Service System, and the 10-percent excise tax on jewelry sales was effective throughout the year.

Christmas sales were 20 percent larger than in the previous year and began as early as late September, so that our boys (and girls) overseas would get their gifts by Christmas. Gold jewelry, diamonds, costume jewelry, and Swiss watches were in particular demand.

Sales were largely of medium-price articles, although both retailers and art galleries disposed of a number of items running into five figures.

Manufacturing jewelers, with their supplies of metal markedly restricted by Government regulations, continued to make what jewelry they could, although the industry was converted, where possible, to war work. Their sales early in the year were large, although less than those of retailers. By August, however, sales slipped below those of 1942, and stocks decreased. Wholesalers began to sell from stocks accumulated in a happier day.

Luckily, now that the Office of Price Administration has removed price control from all diamonds, the black market in these gems has evaporated. The recently increased excise tax on all jewelry (from

10 to 20 percent, effective April 1, 1944) will scarcely increase the tax collected, as it is likely to cut down on gross sales and may create a black market, for certain of the smaller refugee "merchants" will sell without charging the tax. L–45 (Karat-Gold Limitation Order) has created a black market in carat-gold goods, particularly in wedding rings. It centers in New York. Some of the skilled workmen of the industry have left their former employers and work for fly-by-night shops or work overtime in them. Such shops have no difficulty in getting, at a price, the gold and the modicum of copper required. Low-carat gold rings and some electroplated silver rings are being sold surreptitiously as 14-carat rings.

On January 15, 1944, the War Production Board announced that approximately 50 percent more gold and palladium could be used by jewelers in 1944 than in the latter half of 1943. This liberalization of L–45 will retard the growth of the black market but is not sufficient to crush it.

A year or two hence—unless in the meantime peace is declared—the position of most retailers is not likely to be enviable. In 1943 most jewelers sold their accumulated stock, and adequate replacement is difficult or impossible; further, competent help is hard to find. Perhaps the less-aggressive sales attitude which the British retailers have adopted—namely, sell only that which can be replaced—is to be preferred. Present profits subject to current high tax rates are less desirable than having a going concern when the war ends. More retailers should specialize in diamonds, and they should replenish their stocks from heirloom jewelry. Some few retailers have shut up shop; others are shortening store hours appreciably.

POST-WAR PROSPECTS

As to the post-war outlook, competition within the retail trade will be keen, but reconversion of the jewelry trade should require less time than that of most other industries, and jewelers should be in an advantageous position compared with most of their competitors in being able early to extract from ex-warworkers some of their accumulated savings. Within the industry there will presumably be more competition from department stores, upstairs distributors, and door-to-door solicitors, because medium-price articles are likely to make up a larger percentage of the gross than formerly.

FASHIONS IN JEWELS

Jewelry was never more popular than in 1943 among American women who realize that beautiful jewelry, appropriately worn, may increase the charm of a smart gown. The vogue for gold, often in two or three tints, continued to grow, and more silver was used than ever. Diamonds still show to best advantage when set in white metal. Palladium, the substitute now used for platinum, is so light that it is ideal for earrings, and palladium pins do not "pull down" flimsy textiles. Floral designs and patriotic motifs were particularly popular, followed by geometric, leaf, and Latin-American and Chinese designs. Bizarre insects, animals, and dwarfs were common, particularly in cheaper jewelry. Multiple-use clips and other double-duty jewelry and ensembles, all mounted with the same gem, were widely

used. Earrings and clips were much worn, bracelets and necklaces to a less extent.

Owing to a shortage of small cut, fewer melee were used in mountings. Huge topaz and aquamarine were mounted in bracelets and bridge rings. Diamond, ruby, and sapphire (the vogue for varied-colored sapphires is expanding) led in popularity, followed by natural and cultured pearl, emerald, topaz and topaz quartz, aquamarine, and moonstone. The insistent demand for diamonds, together with the patriotic motif in jewelry, caused colorless, then red and blue stones to be dominant, followed by green and yellow, and then purple and black stones.

American knowledge of precious stones continues to expand, and American women today use effectively three or four times as many varieties as did their mothers. High school and college girls love their jewelry, and turquoise and pearl are particularly popular with them.

DOMESTIC PRODUCTION

The production of gem stones throughout the world was blighted in 1943 by war, but nowhere more than on the North American Continent, which has no gem field of prime importance. In 1942 a rough estimate of the value of uncut stones used in jewelry and related industries was $150,000; in 1943, it was not over $67,000. The decrease was due to three principal factors: Professional gem miners turned to the mining of one or more of the strategic minerals; amateur collectors did not have enough gasoline (or tires) to rush out over the week-end to well-known mineral deposits; and the best customers of the trade, touring automobilists, were, for the same reason, a tradition. The increased mining of pegmatite bodies for mica and other strategic minerals apparently did not increase the production of beryl and other gems of pegmatite origin; perhaps the miners high-graded these. As opposed to gem miners, professional and semiprofessional lapidaries in the Northwest were busy furnishing jewelers with cabochon quartzes and agates, cut from stones collected in previous years, to supplant the European cheap jewelry which was no longer available. In the East, several firms are dyeing onyx black to be used in cheap jewelry.

As producers, the leading States ranked as follows: Montana, California, Wyoming, Oregon, Washington, Colorado, and Idaho.

The Montana sapphire industry produced about 20,000 ounces of sapphire worth some $20,000. The Perry-Schroeder Mining Co. of Helena was the principal producer. Charles H. Carpp of Philipsburg was also a producer. Although a small part of the product was of gem grade, practically all of it was sold for cutting into watch and instrument jewels. Toward the end of the year, synthetic corundum undercut the natural market badly.

The agate and other quartz species in 1943 were of the same order of value produced as sapphire. Dr. H. C. Dake reports that production, even at well-known localities in Washington and Oregon, was greatly reduced from that of previous years. Idaho's production decreased also.

The moss agate in the gravels of Yellowstone River in Montana continues to be collected, but to a smaller extent than in previous years. The collectors bring these to the two principal cutting and

curio shops in Billings. After splitting the pebbles, the shops buy what small percentage they fancy.

Perhaps $15,000 worth of Wyoming jade was sold in 1943. Nephrite occurs mainly as boulders and pebbles, some of them large, on the hill slopes near Lander. It also occurs in place. The better material, green translucent nephrite, brings as much as $5 a pound, although the 4,000 pounds sold to lapidaries brought but $3 a pound. Several large boulders, one weighing over 8,000 pounds, were found in 1943. A boulder weighing 2,410 pounds and polished on one side is now on exhibition at the Chicago Natural History Museum. Some of the material is being stocked, in the hope of selling it to China after the war to be cut into objets d'art. All the Lander material is nephrite.

Turquoise production languished. The King and Ashcroft mines in Colorado produced turquoise in 1943, although the Hall mine (principal producer in 1942) did not operate. It is stated that the Mineral Park (Ariz.) district produced some turquoise, as did certain deposits in western New Mexico. The manufacturers of Indian jewelry, however, look to Nevada and Colorado for their turquoise, although there is no evidence at hand that the Nevada mines operated in 1943. A turquoise deposit in Culberson County, Tex., is being developed.

Alfred M. Buranek reports that some good plume agate was collected at Jericho, Juab County, Utah, as was fortification agate at the new locality in Sanpete County near Levan; that some 500 pounds of fine variscite was mined at Lucin; that some superb malachite and azurite were recovered from the Dixie Apex mine near St. George; that the black obsidian with white christobalites found near Black Creek (trade names, Flowering Obsidian, Night Blooming Cereus, and Snowflake Obsidian) is increasing in popularity; and that Utah Jade, fabricated into book ends, table tops, and other articles, is merely a quartzite of the Harrison formation of pre-Cambrian age colored by chrome-bearing mica.

Stuart A. Northrop states that some attractive "moonstone" (presumably sanidine) appears to be coming from Grant County, N. Mex., and that during the year there was a small demand for garnets from the Navajo Reservation, staurolites from Taos County, and agate from near Hot Springs, Sierra County.

Stanley I. Perham reports among other gem stones found in Maine during the year: Purple apatite at Greenwood, Oxford County; beryl approaching a light emerald in color and golden beryl from West Peru; fine golden beryl from Waterford and Brunswick; white caesium beryl and rose quartz at Newry; and aquamarine and asteriated rose quartz from Albany.

Little pipestone (only about 1,000 pounds) was mined at Pipestone, Minn., as most of the former diggers are in the army.

Scott's Rose Quartz Co. (South Dakota) reports the sale of about 800 pounds of rose quartz, although little was mined because of the labor shortage.

Edward P. Henderson reports that the National Museum has an 18.7-carat brilliant cut from transparent scheelite from Kernville, Kern County, Calif. The stone has good brilliancy although a bit frosty, and makes quite an attractive gem.

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Quartz for use in radios and radar equipment was mined in California, Arkansas, and North Carolina. The usability of American quartz is low, but some of it may be suitable for objets d'art.

A few small diamonds were recovered at Murfreesboro, Ark. (see Diamond—World production).

Other gems produced in the United States in 1943 included agate (Maine); aquamarine (Maine, North Carolina, and Virginia); bloodstone (San Bernardino County, Calif.); chrysocolla (Arizona); golden beryl (Virginia); jasper (Maine); banded "onyx" (calcite) (Lusk, Wyo.); malachite (Arizona); petrified wood (Arizona); pink beryl and tourmaline (Pala district, Calif.); and smoky quartz (Maine).

CANADIAN GEM STONES

A small amount of clear, glassy beryl from the Winnipeg River and Bird River pegmatite areas in Manitoba is cut for the Winnipeg tourist jewelry trade. Dr. A. L. Parsons reports that excellent rock crystal has been found in Lansdowne Township, Ontario, and a little iolite in Haliburton Township. Both localities furnish material for amateur lapidaries.

IMPORTS [1]

The value of imports of precious and semiprecious (real and imitation) stones (exclusive of industrial diamonds) totaled $72,109,788, over two and one-half times that of 1942. The big increase was in the importation of rough and cut diamonds and cut precious stones. Details are as follows:

Precious and semiprecious stones (exclusive of industrial diamonds) imported for consumption in the United States, 1942–43

Commodity	1942		1943	
	Carats	Value	Carats	Value
Diamonds:				
Rough or uncut (suitable for cutting into gem stones), duty free	278,437	$11,546,712	751,674	$37,443,240
Cut but unset, suitable for jewelry, dutiable	126,004	14,640,236	193,701	31,453,840
Emeralds:				
Rough or uncut, free	6,506	676	8	248
Cut but not set, dutiable	21,209	205,717	3,194	32,508
Pearls and parts, not strung or set, dutiable:				
Natural	----------	179,169	----------	167,284
Cultured or cultivated	----------	----------	----------	107
Other precious and semiprecious stones:				
Rough or uncut, free	----------	72,895	----------	47,726
Cut but not set, dutiable	----------	1,583,600	----------	2,589,904
Imitation, except opaque, dutiable:				
Not cut or faceted	----------	195	----------	2,621
Cut or faceted:				
Synthetic	----------	87,062	----------	167,166
Other	----------	97,857	----------	100,841
Imitation, opaque, including imitation pearls, dutiable	----------	2,622	----------	8,149
Marcasites, dutiable:				
Real	----------	101,785	----------	96,154
Imitation	----------	1,544	----------	----------
	----------	28,520,070	----------	72,109,788

[1] Figures on imports compiled by M. B. Price, of the Bureau of Mines, from records o ithe United States Department of Commerce.

GOVERNMENT REGULATIONS

Owing to the war, Government regulations covering the jewelry industry and originating in 1943 were legion. Many were primarily to raise revenue and to discourage luxury spending (for example, the 100-percent tax on jewelry sales in Great Britain); others to conserve labor or to control the supplies of valuable metals; others to prevent the export of easily converted wealth; and still others to protect home industries (for example, to protect its precious stone industry, Brazil requires a permit, difficult to obtain, to import synthetic stones).

In Germany all shops selling jewelry were closed in February, and jewelry manufacture was prohibited after April 1. In all, 3,300 shops were closed, the blow of course falling most heavily on middle class proprietors. German war prisoners in Canada, remembering what happened to the mark after World War I, are buying plain gold rings.

The Nazis closed jewelry shops in the Netherlands in March. The Germans continue to buy any fine jewels they can in the Netherlands black market, even if the prices are exorbitant. On September 29, the Nazi-controlled Department of Commerce decreed that pearls, rubies, sapphires, and emeralds could be bought only against surrender of ration coupons. Precious stones were one of the few means left for the Netherlanders to invest money. The decree will force such excess money into the Netherlands Bank, where the Nazis can confiscate it.

EFFECT OF WAR ON GEM-STONE TRADE

War continues to change the picture of the gem trade; for example, the recent reopening of the Dutoitspan pipe is a direct result of the tremendous fall in world diamond stocks due to war's insatiable demand for industrial diamonds and the large demand for gem diamonds. We are, on the other hand, cut off from the ruby and sapphire fields of Burma and Thailand; the Burmese jade fields are languishing because China, their main market, is no longer open to them; and the Badakshan lapis lazuli mines have lost their former market, Germany.

Our boys overseas are matching their wits with those of local jewelers of many lands. Ceylon's precious stones have mounted in price, and not only are jewel brokers bidding for them, but our boys are getting their part there as well as in India. Our soldiers have already purchased most of the lovely old silver jewelry in the Algerian shops; Italians are now attempting to foist flimsy trinkets on them as fine heirlooms.

Our domestic production of gem stones is down, since professional mines are mining strategic minerals, and amateurs have neither the tires nor the gas to seek them. Similarly, in Brazil accelerated quartz and mica mining draws from the same pool of labor as diamond and other gem-stone mining, and in consequence the production of the latter two is affected adversely.

In Great Britain, wedding rings are so scarce that some brides use their grandmothers' or mothers' rings. The production quota of 9-carat utility rings has been increased, and many brides are reluctantly accepting them rather than the better rings they hoped to wear. South African brides refuse to accept them.

War has brought about important (though possibly temporary) geographic adjustments in various branches of the jewelry industry. The wide dispersal of the cutting of gem diamonds is an instance in point. Argentina is making the cheap jewelry which it once imported and even exports some of it. Great Britain and the United States now produce synthetic sapphire and ruby, and after the war these will be used for jewelry. Czechoslovak refugees in each country are making fine colored glasses to be used as imitation precious stones.

One of the few humorous incidents of the war is the fact that our boys find that the South Pacific island natives will do nothing for money but are enchanted to work hard for second-hand "junk" jewelry. Tons are being collected and sent to the Pacific isles.

DIAMOND

Paradoxical as it seems, in 1943—the fifth year of World War II—the diamond industry reached an all-time peak of prosperity, owing to an unprecedented demand for industrial stones and an enormous demand for gem diamonds created by high war wages and fear of inflation.

Production continued downward, that of 1943 being but 88 percent of the 1942 output and only 63 percent of the production in 1940. The war demand has dangerously reduced the large stocks of both industrials and gem stones accumulated in the past 16 years; in consequence, the United Nations have requested the Belgian Congo to double its production of crushing bort, and DeBeers has reopened Dutoitspan, one of its pipe mines. Diamond cutting continued to increase.

Price of gem stones, both rough and cut, surged forward; that of industrial stones continued stable, although sellers of industrial stones claim that the quality of the shipments had deteriorated, amounting to a price rise.

The division between diamonds used for industrial purposes and those used ornamentally is yearly becoming more sharply defined.

Share dealings.—The shares of diamond-mining companies, virtually all of which are listed on the London Stock Exchange, were market leaders and doubled in value in 1943, accentuating their rise in the past 2 years. Indeed, one who had put $1,000 in these shares in mid-1941 would have a value on paper of $4,500 by mid-1943. The 1943 advance culminated late in June; thereafter the market weakened a bit. The companies paid generous dividends in 1943.

Market.—In 1943 the Diamond Trading Co., which in normal times sells about 95 percent of the world output, is said to have sold almost £20,000,000 worth of rough (£10,694,671 in 1942), the highest sales since 1919. Sales of both cuttables and industrials gained. The company instituted the practice of selling crushing bort by the kilogram, although American brokers continue to use the carat.

In 1943 the United States bought large quantities of medium-size diamonds, and the United States, Palestine, and South Africa bought cuttables for their cutting shops. Black markets thrived in all the warring nations, diamonds being a favorite investment of citizens of conquered countries and those of belligerent countries whose war future is precarious. Americans bought fine diamonds heavily, partly to supply their craving for beauty, partly as a hedge against inflation.

Since 1939 the price of fine large rough has increased at least 70 percent, and the price is boosted by the Trading Co. on every favorable occasion. As to cut stones, melee under ¼ carat has tripled or quadrupled in value since 1939; ½-carat sizes have gained 80 to 125 percent; 1-carat stones, 67 to 100 percent; and larger stones progressively less. Increases include the excise tax (1943, 10 percent; 1944, 20 percent). Diamonds have never sold higher; and prices may have been advanced too rapidly for the good of the industry.

Stocks of both fine rough for gem purposes and many grades of industrials have been reduced, possibly to a dangerous degree, since demand has markedly exceeded supply. In America the cutters have a more or less satisfactory supply of most grades of rough; but supplies of melee and fine cut in certain sizes are short.

Imports.—As the following table shows, in 1943 the total value of imports of gem diamonds was 163 percent higher than in 1942, the gain being particularly great in rough or uncut diamonds (225 percent); that in cut was also large (115 percent). The quality of both rough and cut paralleled that of 1942, the rise in price during 1943 accounting for the increased prices per carat.

Diamonds imported into the United States, 1942–43, by countries

[Exclusive of industrial diamonds]

Country	Rough or uncut			Cut but unset		
	Carats	Value		Carats	Value	
		Total	Average		Total	Average
1942						
Argentina				36	$32,013	$889.25
Belgian Congo	205	$4,573	$22.31			
Belgium and Luxemburg				26,755	2,049,057	76.59
Brazil	6,320	477,812	75.60	23,842	2,686,071	112.66
British Guiana	591	19,775	33.46	55	5,810	105.64
British Malaya				278	19,628	70.60
Canada				1	395	395.00
Colombia				18	2,666	148.11
Cuba				2,746	321,863	117.21
France				1,327	184,250	138.85
Germany				162	7,520	46.42
India and Dependencies				1	50	50.00
Mexico				365	41,211	112.91
Netherlands				960	83,341	86.81
Netherlands Indies				117	13,579	116.06
Palestine and Trans-Jordan				20,502	2,994,830	146.08
Switzerland				175	19,346	110.55
Union of South Africa	253,191	10,553,052	41.68	35,351	4,767,308	134.86
United Kingdom of Great Britain and Northern Ireland	1,683	102,154	60.70	13,307	1,410,598	106.00
Venezuela	16,447	389,346	23.67	6	700	116.67
	278,437	11,546,712	41.47	126,004	14,640,236	116.19
1943						
Argentina				67	12,590	187.91
Belgian Congo	1,840	42,294	22.99			
Belgium and Luxemburg	1,369	21,444	15.66	19,630	1,329,527	67.73
Brazil	6,207	557,541	89.82	40,933	6,487,150	158.48
British Guiana	2,254	46,243	20.52	185	21,839	118.05
Canada				49	5,255	107.24
Cuba				21,913	3,337,950	152.33
France				567	99,401	175.31
French Guiana				19	2,010	105.79
Gambia and Sierra Leone	3,861	80,432	20.83			
Gold Coast	1,000	17,653	17.65			
India and Dependencies				63	10,717	170.11

Diamonds imported into the United States, 1942–43, by countries—Continued

Country	Rough or uncut			Cut but unset		
	Carats	Value		Carats	Value	
		Total	Average		Total	Average
Mexico				406	$41,273	$101.66
Netherlands				569	121,524	213.57
Palestine and Trans-Jordan				50,361	9,153,273	181.75
Peru				14	1,283	91.64
Portugal	11	$225	$20.45	83	10,888	131.18
Portuguese Guinea and Angola	1,664	40,141	24.12			
Switzerland				112	22,773	203.33
Union of South Africa	702,858	35,338,584	50.28	33,394	6,667,871	199.67
United Kingdom of Great Britain and Northern Ireland	22,833	945,929	41.43	25,336	4,128,516	162.95
Venezuela	7,777	352,754	45.36			
	751,674	37,443,240	49.81	193,701	31,453,840	162.38

Cutting.—Before 1940 the Low Countries cut about 90 percent of the world's diamonds. Since then the industry has been widely scattered over the world. Some 10,000 artisans and apprentices (about one-third of the pre-war force) now supply (except in time of lock-out or strike) an adequate quantity of cut stones. Palestine (3,000 employees), the United States (1,800 employees), and South Africa (550 employees) are now the principal centers of cutting. Brazil, Great Britain, Cuba, Puerto Rico, Canada, India, and Borneo are less important centers.

With the rebirth of the Belgian and Netherlands industries after the war, competition will be keen. Perhaps the United States and South Africa can continue—notwithstanding fantastically high wage scales—to cut large stones profitably, and Palestine may be able to cut small stones.

World production.—Owing to the war accurate diamond-production statistics are not available, but the estimates in the following table are believed to be fairly reliable. World production (gems and industrials) in 1943 is estimated to have been 8,191,360 carats (1.64 metric tons), valued at $27,000,000. The quantity was about 12 percent less and the value 4 percent less than in 1942. The quality was slightly better than in 1942, cuttables making up, by weight, some 22 percent of the total. Belgian Congo was the leading producer, both as to weight and value, although the collective value of the British production exceeded that of the Belgian colony. As DeBeers reopened Dutoitspan on September 1 pipe mines yielded almost 1 percent of the production, but over 99 percent came from placer mines.

The following table shows, as accurately as available statistics permit, world production for the past 5 years.

World production of diamonds, 1939–43, by countries, in metric carats

[Including industrial diamonds]

Country	1939	1940	1941	1942	1943
Africa:					
Angola	690,353	784,270	787,000	[1] 791,850	800,000
Belgian Congo	8,360,000	9,603,000	5,866,000	6,018,000	4,580,000
French Equatorial Africa	[1] 16,000	[1] 16,000	20,000	20,000	20,000
French West Africa	56,314	[1] 75,000	35,000	36,000	36,000
Gold Coast [2]	1,087,652	[1] 825,000	1,000,000	[1] 1,000,000	1,000,000
Sierra Leone	[1] 600,000	750,000	850,000	[1] 850,000	850,000
South-West Africa	35,470	30,017	46,578	56,420	100,000
Tanganyika (exports)	3,445	2,250	[1] 1,750	1,000	500
Union of South Africa:					
Mines	1,089,144	[1] 371,447			[1] 70,000
Alluvial	160,684	[1] 172,027	112,300	117,628	[3] 103,210
Total Union of South Africa	1,249,828	[1] 543,474	112,300	117,628	173,210
Brazil	[1] 350,000	[1] 325,000	325,000	300,000	275,000
British Guiana	32,491	[1] 26,764	27,000	27,000	27,000
Other countries [4]	19,000	31,750	34,350	40,836	29,650
Grand total	12,500,553	13,012,525	9,104,978	9,258,734	8,191,360

[1] Estimated.
[2] 1939–40: Exports; 1941–43: Production.
[3] Cape and Transvaal, without Namaqualand, estimated at 53,210 carats.
[4] 1939: Venezuela, India, Borneo, New South Wales, and U. S. S. R.; 1940–41: Borneo, India, New South Wales, U. S. S. R., and Venezuela (Venezuela produced, respectively, 14,525 and 29,399 carats); 1942: Borneo, India, New South Wales, Rhodesia, U. S. S. R., and Venezuela (Venezuela produced 31,570 carats); 1943: Venezuela (23,020 carats), Borneo, India, New South Wales, U. S. S. R., United States (Arkansas), and Bolivia.

Because of a shortage of supplies, the Belgian Congo produced 19 percent less diamond in 1943 than in 1942, and Brazilian and the South African alluvial production decreased; that of South-West Africa increased somewhat.

Dr. N. R. Junner published a most valuable bulletin on the Gold Coast diamond fields. Sierra Leone produced two large gem stones during the year, thus joining the select coterie of large stone producers—India, Borneo, South Africa, and the Bagagem district in Brazil. The occurrence of diamonds in eastern Bolivia is reported.

The Federal Bureau of Mines did some exploratory work on the diamond-bearing kimberlite pipe at Murfreesboro, Ark. It put down 51 bucket drill holes 30 inches in diameter through the softer surface material. They ranged from 10 to over 50 feet in depth, averaging slightly over 30 feet. In all, over 425 tons of samples were taken. These have been washed by South African methods and all diamonds recovered with adequate safeguard to insure reliability of results. The stones recovered are being evaluated by a number of experts and the data assembled and studied. Results are not yet available.

Industrial diamonds.—In 1835 the great British scientist, Sir David Brewster stated that were the diamond not as a gem the "head of the mineral kingdom," "it would have attained the same distinction from its great utility in the arts." World War II has certainly proved the truth of the statement. There is no important war weapon used by our forces that does not employ the diamond in its manufacture.

The use of industrial diamonds, particularly of crushing bort, continues to increase by leaps and bounds under the stimulus of war, although much of the gain will be retained in post-war times. Consumption greatly exceeds production. Finer grades continue scarce, but research and experience prove that the grades available are satisfactory substitutes.

Germany and Japan are already pinched for industrial diamonds, hence their desperate efforts to smuggle this superabrasive into the homelands. Stocks in the United States are adequate, and in case of need the large stock established in Canada by the Diamond Corporation and the principal producers is available.

Before the war the United States consumed about 1,250,000 carats of industrial diamonds a year. The figure had increased to some 10,000,000 carats in 1943. World consumption must be double present production.

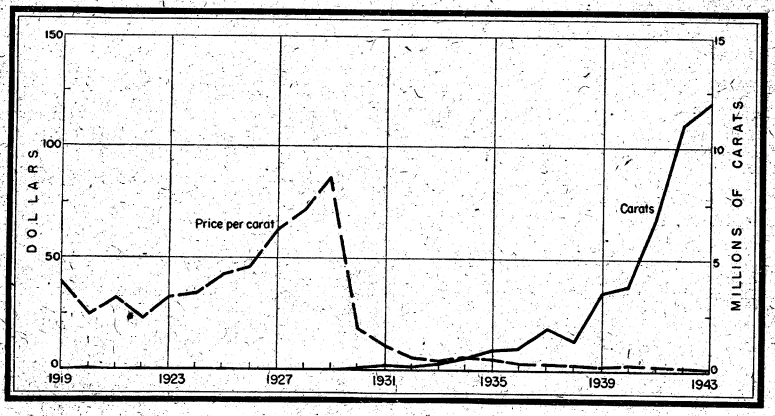

FIGURE 1.—United States imports and average price per carat of industrial diamonds, 1919–43.

Figure 1, prepared by Herbert Backman, illustrates the two outstanding features of the industrial diamond trade in the past quarter century: The tremendous increase in use, particularly since 1938, and the sharp decrease in the average price of the stones used. In 1929 the carbonado market—then the principal source of our imports—was cornered. Now most of our consumption is that of crushing bort.

Imports of industrial diamonds into the United States during the past 5 years were as follows:

Industrial diamonds (glaziers', engravers', and miners') imported for consumption in the United States, 1939–43

Year	Carats	Value		Year	Carats	Value	
		Total	Average			Total	Average
1939	3,568,730	$9,725,683	$2.73	1942	11,203,704	$22,057,577	$1.97
1940	3,809,071	11,026,563	2.89	1943	12,172,679	21,938,368	1.80
1941	6,882,248	14,908,809	2.17				

RUBY, SAPPHIRE, AND EMERALD

The production of fine gem stones—rubies, emeralds, and sapphires—is meager and entirely in the hands of individuals and small partnerships. The ruby mines of Burma and the sapphire mines of Thailand and Indochina may still be operated on a small scale by the natives, but they are shut off from their principal markets, America and western Europe. The Japanese market must be quite restricted.

The Muzo emerald mines have not been operated for several years. The Ceylon sapphire mines and perhaps those of Kashmir are presumably booming, and the American troops stationed in the East constitute an enlarged local market. Before the war the Australian sapphire mines were languishing, and war has also interfered with production at most of the minor gem localities, including the Russian emerald mines and the Montana sapphire mines. Egypt, in its program to develop the mineral resources bordering the Red Sea, has recently announced that the ancient emerald mines are to be reopened; but little, if any, desirable material can be expected from this source.

Paradoxically, there is no dearth of fine gem stones, which, incidentally, have never been more popular. The supply, however, is coming from stocks and from old jewelry, now being bought by almost every jeweler. The restricted production and the phenomenal demand, which are likely to continue after the war, point to higher prices in the future.

Since the war, New York and London have supplanted Paris as the principal colored-stone markets and are now receiving stones direct from the East.

LESSER GEMS

Brazil continues to supply our market with fine and barbarically large aquamarine, topaz and citrine, and other precious stones.

The press reports the Government of Kashmir has authorized exploitation of an opal deposit. If the report is reliable, perhaps Pliny was correct, when 1,900 years ago he emphasized the wealth of India in opal.

From 1890 to the end of 1938, Australia had produced opal worth £1,627,000 in the rough. The 1938 production, largely from South Australia and New South Wales, was worth £8,876, and in 1941 the diggers were said to be busy, so that presumably there is still a small production.

Dr. Henry W. Nichols (see Bibliography) describes a 312-pound block of lapis lazuli exhibited in the Field Museum, Chicago (now Chicago Natural History Museum). It is 2 feet long, 1⅛ feet wide, and three-quarters of a foot thick.

In August importers and retailers unabashedly launched Imperial Mexican Jade on the market in a national advertising campaign. The flagrant fake was detected almost immediately, it being proved that the "jade" was merely calcium carbonate ("Mexican onyx") stained green.

Iran and the United States signed a Reciprocal Trade Agreement on April 8, 1943, by which the import duty on cut turquoise into the United States from Iran is reduced from 10 to 5 percent; uncut turquoise has been duty-free for some time. Owing to adequate turquoise deposits, the United States for some years has imported little cut turquoise from Iran.

INSTRUMENT AND CHRONOMETER JEWELS

When the war started, the United States was dependent on Switzerland and France, not only for the synthetic corundum and spinel from which instrument jewels are made but also for their fabrication. Now, the Linde Air Products Co., the Bulova Watch Co., and several smaller

companies produce an adequate supply of synthetics, and other firms have adequate fabricating facilities to satisfy the national demand for instrument jewels, which, of course, has been greatly increased by the war. Production increased 370 percent in 1943. War Production Board Order 4717, issued December 23, 1943, eases controls and restrictions on instrument and jewel bearings.

Thus war has introduced in America two more industries—manufacture of synthetics and fabrication of instrument jewels. That of making synthetics presumably should survive after peace is declared.

Small ball bearings have replaced jewels in watches and some instruments, but it is not believed that this substitution will become general.

Out of synthetic sapphire, one American company is now making gages, Diesel injector nozzles, dies for drawing wire from soft metal, and machining tools for soft metals. The gages are of longer life and closer tolerances than those of steel.

Late in the year, the Government of India inquired of Ceylon whether it could furnish 8,000 sapphires and garnets for instrument jewels; further, whether this material could be cut by local lapidaries into instrument jewels. Owing to a shortage of skilled lapidaries, the Colombo jewelers approached were unwilling to attempt to fabricate the jewels.

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