

GEM STONES

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SUMMARY OUTLINE

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The retail jewelry industry was one of the "hardest hit" during the depression, reaching a low point in 1933, when its sales were but 33 percent of those in 1929 (\$536,000,000). Sales increased about 15 percent in 1934 (from \$175,000,000 to \$201,000,000), and in 1935 a further improvement of about 15 percent was noted. Christmas sales in 1935 were "spotty;" some States showed no improvement over 1934, sales in Florida doubled, and the average increase was 16 percent. A promising feature was the greater interest in fine jewels.

Although the increased sales are encouraging, the jewelry dollar is being spent more and more in the department store and, during the depression, in the pawnshop. Bankruptcy sales and distress sales by banks also cut into the jewelers' sales. Under present conditions, the jeweler must look more and more for his customers among the well-to-do, as the number of possessors of great fortunes has decreased markedly in the past 6 years. In 1935 manufacturing jewelers had the best year since 1929.

Fashions in jewels.—The tendency in 1935 to use richer fabrics in women's gowns naturally has led to a greater demand for genuine rather than imitation jewelry. Bracelets, clips, jeweled hair ornaments, and earrings have been popular, as have multiple rings, each ring being set with either diamonds, rubies, or sapphires. Late in the year, necklaces made their bid for popularity. The use of fine jewelry that may be separated into sections to be used for different purposes increased. Besides the four noble gems—diamonds, emeralds, rubies, and sapphires—aquamarines, topazes, and amethysts have been in vogue. Baguettes and other fancy shaped diamonds are losing popularity compared with brilliants. Gold in mountings gained at the expense of platinum.

Jewelry for men appears to be returning to favor, rings in the middle price range having sold particularly well.

Imports.—According to the Bureau of Foreign and Domestic Commerce, imports of precious and imitation stones into the United States in 1935 totaled \$27,612,390, an increase of 54 percent from 1934. Details are shown in the following tabulation:

Diamonds:	Carats	Value
Rough, uncut.....	79, 695	\$4, 261, 921
Cut, but not set.....	330, 617	15, 538, 902
Glaziers', engravers', and miners', not set.....	954, 589	4, 293, 611
Pearls and parts, not strung or set.....		652, 219

	<i>Value</i>
Other precious stones:	
Rough, uncut.....	\$50, 444
Cut, but not set.....	1, 282, 348
Imitation precious stones, except opaque.....	1, 480, 937
Imitation precious and semiprecious stones, opaque, including imitation pearls.....	30, 032
Marcasites.....	21, 976

Domestic production.—As in recent years, the gem production of the United States in 1935 was small and presumably did not exceed \$5,000 in value. Turquoise valued at almost \$2,000 was produced in Nevada from the Blue Jay claim in the Lone Mountain district, Esmeralda County and from the Snow Storm claim near Camp Royston. Rose quartz in South Dakota, kunzite in California, sapphire, ruby, amethyst, rhodolite, and aquamarine in North Carolina, moss agate in Montana, and topaz and pink beryl in the Thomas Range, Utah, were also produced on a small scale. An increasing number of mineral collectors and amateur lapidaries pay annual visits to well-known mineral localities to obtain material to further their hobbies.

DIAMOND

Recovery in the diamond industry, first noted in the summer of 1932, continued at an accelerated rate in 1935, but the industry cannot be prosperous until the United States, its best customer, enjoys good times. The trade, however, is confident of the future, and virtually every index of the industry improved, in comparison with 1934, by 15 to 75 percent.

The reorganized method of marketing by a single sales unit, the Diamond Trading Co., which first functioned early in 1934, worked smoothly and satisfactorily. The cooperation displayed by producers was excellent, and while production exceeded that of 1934, the increase was due to the operations of the larger mining companies, who are responsible for the stability of the industry. De Beers is so confident of the future that the Dutoitspan mine was reopened in March 1936, and a second pipe mine may be operated later in the year.

Stocks of rough diamonds decreased somewhat during the year, the sale of all sorts of industrial stones being especially large. Stocks in the hands of retailers are low and will have to be increased markedly if business continues to improve.

Prices of rough, firm throughout the year, were raised 7½ percent in September. The price of large cut stones advanced. Due to destructive competition between the cutting centers, however, small polished goods were less firm in price but toward the end of the year began to follow upward the price of rough.

Share dealings.—Trading in shares of diamond-mining companies was rather active, and during the year the shares of the ten principal companies gained 26 percent in price. They were at year end about 45 percent of the all-time high (1927) and over four times the all-time low (1932). Of the 17 principal companies, 11 paid dividends in 1935.

Market.—Sales of rough by the Diamond Trading Co. exceeded £6,000,000, a 55-percent increase over those of 1934. The market was broad as to the number of buyers and varieties of diamonds purchased and the sale of fine-quality stones increased markedly.

The market for cut or polished diamonds was the best since 1929, but the cutters made little money as the market was oversupplied, particularly with small sizes.

India has been, perhaps, the most important buyer of diamonds in late years and, when the price of gold was raised, converted much of its store into fine gems. The United States increased its diamond imports by about 57 percent, and Hungary and Austria increased their purchases markedly.

Fine cut stones of 1 carat or more were in demand throughout the year, indicating investment buying, in which, at one time or another in 1935, Americans, British, Hungarians, French, and Belgians participated.

Imports.—The source of diamonds imported into the United States in 1935 follows:

*Diamonds imported into the United States in 1935, by countries*¹

Country	Rough, or uncut			Cut, but not set		
	Carats	Value		Carats	Value	
		Total	Per carat		Total	Per carat
Albania.....				33	\$1,547	\$46.88
Australia.....				3	92	30.66
Belgium.....	36,383	\$1,926,697	\$52.96	234,429	11,032,946	47.06
British Guiana.....	505	7,015	13.89			
Canada.....	1,019	29,832	29.37			
Ecuador.....				58	4,019	69.29
France.....				7	3,500	500.00
Germany.....	1,485	465,248	313.30	1,634	110,800	67.81
Mexico.....				147	6,545	44.52
Netherlands.....				4	200	50.00
Switzerland.....	19,058	789,383	41.42	93,656	4,319,912	46.13
Union of South Africa.....				1	158	158.00
United Kingdom.....	8,269	417,727	50.52	156	12,886	82.60
	12,976	626,019	48.24	489	46,297	94.67
	79,695	4,261,921	53.48	330,617	15,538,902	47.00

¹ Compiled from records of the Bureau of Foreign and Domestic Commerce.

Tariffs.—On April 5, 1935, Japan reduced the tariff on diamonds from 100 percent ad valorem to 5 percent ad valorem on industrial stones and 10 percent on gem stones. In February 1936, Indian duties on diamonds were reduced from 25 to 10 percent. Italy, on the other hand, on February 16, 1935, increased the duty on precious stones from 3 to 6 percent and imports are strictly controlled.

Cutting.—The struggle between Belgium, Holland, and Germany for supremacy in diamond cutting continued in 1935, but, of the three countries, only Germany improved its position. The master cutters made little profit, but there was more work in 1935 for the artisans and their wages were increased in the last half of the year. The cutting industry in the United States improved by perhaps 20 percent, but that of France suffered greatly.

Comparative hardness.—Charles E. Wooddell, research engineer of the Carborundum Co., presented a most valuable paper on the relative hardness of electric furnace products and natural abrasives before the October 1935 meeting of the Electrochemical Society. He found considerable difference in hardness between gem diamonds from different fields—carbonado softer than most diamonds and diamonds immeasurably harder than any artificial substance. As is well-known, he found the diamond much harder, compared with

ruby, than the single number in Mohs' scale would indicate. His table of comparative hardnesses by the abrading method follows:

	Scale: Corundum = 9 Diamond = 10	Scale: Quartz = 7 Corundum = 9
South American brown bort.....	10. 00	42. 4
South American Ballas.....	9. 99	42. 0
Belgian Congo yellow (cubic crystals).....	9. 96	41. 0
Belgian Congo clear white (cubic crystals).....	9. 95	40. 7
Belgian Congo gray opaque (cubic crystals).....	9. 89	38. 7
South American carbonados.....	9. 82	36. 4
Boron carbide.....	9. 32	19. 7
Black silicon carbide.....	9. 15	14. 0
Green silicon carbide.....	9. 13	13. 4
Tungsten carbide (13 percent cobalt).....	9. 09	12. 0
Fused alumina (3.14 percent TiO ₂).....	9. 06	11. 0
Fused alumina "A".....	9. 03	10. 0
African crystal corundum.....	9. 00	9. 0
Rock-crystal quartz.....	8. 94	7. 0

World production.—World production of diamonds in 1935 was approximately 7,300,000 carats, worth about \$30,000,000. Compared to 1934 this is an increase of about 32 percent in carats and 45 percent in value. The South African pipe mines washed only a little blue ground, and in consequence the alluvial mines of the world accounted for some 96 percent of the carats and 93 percent of the value.

The following table gives, with the accuracy available statistics permit, world diamond production for the past 5 years:

Production of diamonds by countries, 1931-35, in carats

Country	1931	1932	1933	1934	1935
South Africa:					
Mines.....	1, 470, 376	307, 431	14, 149	9, 414	274, 316
Alluvial.....	647, 044	488, 096	492, 404	430, 898	402, 404
Angola.....	¹ 2, 119, 155	¹ 798, 382	¹ 506, 553	¹ 440, 312	¹ 676, 720
Brazil.....	351, 495	367, 334	373, 623	452, 963	482, 000
British Guiana.....	30, 000	34, 000	² 30, 000	² 30, 000	50, 000
Congo.....	63, 479	61, 780	48, 569	44, 569	45, 000
Gold Coast ³	3, 528, 200	3, 990, 069	1, 975, 450	3, 331, 360	² 3, 500, 000
Sierra Leone.....	880, 479	842, 297	863, 722	1, 142, 268	2, 172, 563
South-West Africa.....		749	32, 017	68, 633	² 250, 000
Tanganyika.....	71, 532	17, 944	2, 674	4, 126	² 125, 000
Miscellaneous ⁴	7, 790	1, 391	² 1, 432	1, 414	² 1, 714
	3, 600	3, 725	1, 825	4, 000	² 3, 500
Grand total.....	7, 105, 730	6, 117, 671	3, 835, 865	5, 519, 645	7, 306, 497

¹ Includes a small quantity of diamonds recovered from re-treatment of tailings.

² Estimated.

³ Exports year ended Mar. 31.

⁴ 1931-34 includes India, Borneo, New South Wales, and, in certain years, Rhodesia, Venezuela, French Equatorial Africa, and the United States (Arkansas and California); 1935, India, Borneo, Australia, French Equatorial Africa, and Nigeria.

The increased production over that of 1934 came largely from the pipe mines of South Africa and from the alluvial mines of Sierra Leone, Gold Coast, South-West Africa, and Congo. Of the total production, about 60 percent was bort and only 40 percent suitable for the jewelry trade, and an unusually high percentage of this was too small to cut into stones of appreciable value.

In addition to newly mined diamonds, a varying number of diamonds appears on the market annually for resale. In 1935 the quantity

was relatively small, and these were sold at firm prices. In January a few Russian seconds were marketed.

Industrial diamonds.—Sales of industrial diamonds exceeded those of 1934 by about 40 percent, partly due to the increased demand for war equipment. This brought about a shortage of good industrial diamonds, especially in 1-carat sizes, as the South African pipe mines, normally responsible for much of the supply, are shut down and the Brazilian carbonado production remains small.

Imports of industrial diamonds into the United States during the past 8 years are given in the following table:

*Industrial diamonds imported into the United States, 1928-35*¹

Year	Carats	Value	Value per carat	Year	Carats	Value	Value per carat
1928.....	38,342	\$2,756,895	\$71.90	1932.....	163,704	\$1,061,823	\$6.48
1929.....	46,901	4,060,577	86.58	1933.....	263,484	1,263,156	4.79
1930.....	145,958	2,756,630	18.89	1934.....	526,007	2,862,349	5.44
1931.....	224,970	2,400,879	10.67	1935.....	954,589	4,293,611	4.50

¹ Includes glaziers', engravers', and miners' diamonds; compiled from records of the Bureau of Foreign and Domestic Commerce.

The dollar value of 1935 imports was 50 percent greater than those of 1934 and over 5 percent greater than those of the boom year—1929. The price per carat fell markedly from 1929 to 1935 due to the increased use of bort for drilling and in the past 3 years to larger imports of diamond dust for abrasive wheels.

Perhaps a third more diamond drilling was done during 1935 than in 1934. Prospecting for gold, the chief use of the diamond drill for the past 5 years, was supplemented by search for deposits of base metals, due to the better market outlook for these metals. During the year further successful experiments were made in diamond drilling with "common industrial goods", a grade still cheaper than borts. In certain mines drifting is being done with light, portable diamond drills rather than with percussion drills. The use of bonded diamond wheels, described in this review last year, increased, as is indicated by the larger imports of crushing bort.

OTHER GEM STONES

The 1935 production of emerald, particularly that of good quality, was small because the Colombian mines were shut down. Cobra Emeralds, Ltd., Leydsdorp District, South Africa, apparently operated during 1935, and a Swiss company is reported to have reopened the Habachthal mine in Austria.

In 1934 the Mogok ruby district in Burma showed renewed activity and produced 21,622 carats in addition to returns by local miners.

In 1934 Kashmir produced 1,071,869 carats of sapphire, and the Anakie field in Queensland sold stones valued at £3,055. Many of the sapphires exported from Siam are produced in Cambodia; normal production is about 3,500 carats.

In 1934 New South Wales produced opal valued at £3,283, largely from Lightning Ridge. Three districts in South Australia also produced opal.

Czechoslovakia exported 110 kilos of garnet-decorated articles in 1934, valued at 710,000 crowns.

Burma's 1934 jadeite production was normal—105 tons, worth presumably, about 3,500 rupees per ton. Jordansmuhl Nephrite Gesellschaft M. B. H., formed in 1933, quarries nephrite at Jordansmuhl, Silesia, which is sent to Idar to be cut.

Government amber mines in Samland, Prussia, produce about 1,350 troy pounds yearly. As export demand has diminished since the war German chemists are seeking commercial uses for substances derived from amber. In 1934 Burma produced 414 pounds of amber. Fifty tons of labradorite were quarried from Tabori Island, Labrador, last year. Brazil and Madagascar each produce annually somewhat over 400 pounds of rock crystal. In 1934 Brazil exported 307 contos worth of declared precious stones and in 1933 Madagascar exported stones valued at 300,000 francs. About 7 tons of tiger-eye (worth about £350) were shipped from Prieska, South Africa, in 1935.

SYNTHETIC STONES

"Igmerald", produced in 1935 by Doctor Jager and Doctor Espig, chemists of the I. G. Farbenindustrie at Bitterfeld, Germany, is, without doubt, a synthetic emerald but to date, at least, the product is made only in small hexagonal crystals, the value of which does not approach the cost of production. The specimens so far produced are reported to lack transparency and can be differentiated readily from the gem. Synthetic beryl is said to have been made in France as early as 1884. The Bitterfeld plant makes a number of other synthetic gems used both as ornaments and as bearings for watches and meters.

No striking developments in the synthetic production of ruby, sapphire, and spinel were announced during the year. They are produced in a wide suite of colors. In the spring of 1935 some "sharpshooters" in London attempted to pass a synthetic spinel as a synthetic diamond.

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