

# GEM STONES

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The jewelry industry throughout the world improved markedly in 1936, but retail sales in the United States, estimated at \$310,000,000, were only 58 percent of those in 1929. Prices advanced in the latter half of the year owing to the increase in prices of fine gems and platinum. Improved financial conditions stimulated sales of fine jewelry in 1936, which comprised a larger proportion of total sales than in 1935.

If the demand for fine-colored stones continues, increased production will be necessary to avoid a shortage. During the year a number of exceptionally fine jewels were exhibited in the larger cities throughout the country, thereby increasing the interest of the public in gems.

*Fashions in jewels.*—Women's gowns in 1936 were of fine fabrics and required real gems as well as other luxurious accessories. The fashionable world has become "jewel-minded", and even with sport clothes, jewels are considered smart. For more than a year the use of gold has been increasing at the expense of platinum. Bracelets, clips, necklaces, and earrings have been particularly popular, the last frequently being clips covering the lobe of the ear. Jeweled flowers in the form of pins are both beautiful and expensive. Diamond, emerald, sapphire, and ruby are of course the most desired of all gems; however, star sapphire and aquamarine are gaining in popularity, as are also, to a smaller extent, topaz, amethyst, and turquoise. Men continue to favor star sapphire, cat's-eye, and star ruby.

*Domestic production.*—The search for precious stones in the United States in 1936 was more actively pursued than in the past 5 or 6 years, and the total value of products probably approached \$12,500. Lee F. Hand is reported to have produced 545 pounds of turquoise worth about \$4,500 from the Snow Storm claim, Royston district, Nevada. The Mildred and Marguerite properties in the Crow Springs district and the Reik mine near Columbus, Nev., as well as properties in Mineral Park, Ariz., are also reported to have produced turquoise. Some 10 tons of moss and other agate were collected in Montana, and agate and jasper were produced in California. A considerable amount of agatized wood was recovered from private lands around the Petrified Forest National Monument, Ariz., and some 3,250 pounds of irides-

cent obsidian was produced in Modoc County, Calif. About 800 pounds of rose quartz of gem quality was mined in the Black Hills of South Dakota. Walter W. Bradley reports that a diamond weighing  $\frac{3}{4}$  carat was recovered in Butte County, Calif. In addition, the following gem stones were produced during the year: Ruby (Tiger, Ga.); sapphire (Macon County, Ga., and Montana); aquamarine (Park County, Colo.); opal (Nevada and San Bernardino County, Calif.); topaz (Thomas Range, Juab County, Utah, and Fresno County, Calif.), and blue topaz (Teller and Park Counties, Colo.); garnet (Fresno County, Calif., Emerald Creek 12 miles southwest of Fernwood, Idaho; Thomas Range, Juab County, Utah; Montana; Colorado; Black Hills, South Dakota, and North Carolina (rhodolite)); zircon (Fresno County, Calif.); prase opal (Sonoma County, Calif.); amazonite (Florissant district, Colorado); amethyst (Lorimer County, Colo.); and rock crystal (Arkansas).

*Imports.*—According to the Bureau of Foreign and Domestic Commerce imports of precious and imitation stones into the United States in 1936 totaled \$38,146,113, an increase of 38 percent over 1935. Details are shown in the following tabulation:

Diamonds:	Carats	Value
Rough, uncut, duty free.....	97, 677	\$6, 230, 902
Cut, but not set, dutiable.....	445, 610	22, 707, 703
Glaziers', engravers', and miners', not set, free.....	1, 166, 094	4, 328, 603
Pearls, not strung or set, dutiable.....		743, 738
Other precious stones:		
Rough, uncut, free.....		86, 490
Cut, but not set, dutiable.....		2, 342, 358
Imitation, except opaque, dutiable.....		1, 634, 843
Imitation, opaque, including imitation pearls, dutiable.....		38, 708
Marcasites, dutiable.....		32, 768

## DIAMOND

With the United States and other countries again purchasing substantial quantities of stones, the diamond industry improved beyond expectations in 1936; virtually all indicators of the industry showed gains of 25 to 45 percent over 1935. The improvement was due largely to the better world industrial outlook and to a marked increase in demand for industrial stones, as industry now absorbs many stones that 20 years ago would have been cut as jewels. Speculation and investment buying were smaller factors in the increase. Notwithstanding a small increase in production, stocks of rough diamonds decreased markedly. Stocks of polished goods were also low. Prices of both rough and cut diamonds advanced during 1936.

*Share dealings.*—Trading in shares of diamond-mining companies was active, especially in the second half of 1936. Six representative stocks advanced an average of 86 percent during the year. At the end of the year they were 65 percent of their high (1927) and 650 percent of their low (1932). Of the 15 more important stocks, 11 paid dividends.

*Market.*—The value of sales of rough diamonds by the Diamond Trading Co. was about £8,500,000 in 1936, a 36-percent gain over 1935. The market was broad; purchasers came from all parts of the world, and all types of stones were sold. Good-quality large stones were scarce at the end of the year.

The market for polished stones was animated, and in the last half of 1936 even the cutters of small diamonds were making reasonable profits. India and the United States were the principal buyers, while Japan's 1936 purchases were more than tenfold those of 1934.

Investment buying of fine stones of more than 1 carat was worldwide; the Continent was a particularly large purchaser.

*Cutting.*—The status of the diamond-cutting industry improved markedly in 1936, and the cutting centers of Belgium, Holland, and Germany showed a more conciliatory attitude toward one another. Better prices permitted the masters to make profits, employment increased, and the men enjoyed better wages and shorter hours. At the end of the year about 310 cutters were employed in the United States.

*Imports.*—Diamond imports into the United States in 1936, by countries, were as follows:

*Diamonds imported into the United States in 1936, by countries*<sup>1</sup>

Country	Rough, or uncut			Cut, but not set		
	Carats	Value		Carats	Value	
		Total	Per carat		Total	Per carat
Africa, British:						
Union of South.....	4,417	\$310,975	\$70.40	266	\$30,815	\$115.85
Other British.....	65	7,030	108.15			
Belgium.....	47,112	3,084,798	65.48	329,520	16,583,968	50.33
Brazil.....	471	11,954	25.38			
British Malaya.....				13	943	72.54
Canada.....	418	27,608	66.05	364	25,790	70.85
Czechoslovakia.....				165	10,990	66.61
Finland.....				1	60	60.00
France.....	79	2,398	30.35	3,619	244,769	67.63
Germany.....				97	5,430	55.98
Hungary.....				177	9,047	51.11
Japan.....	70	5,430	77.57			
Mexico.....	132	9,022	68.35			
Netherlands.....	23,245	1,376,986	59.24	109,349	5,627,199	51.46
Switzerland.....				10	3,743	374.30
United Kingdom.....	21,668	1,394,701	64.37	2,029	164,949	81.30
	97,677	6,230,902	63.79	445,610	22,707,703	50.96

<sup>1</sup> Compiled from records of the Bureau of Foreign and Domestic Commerce.

*Taxes and tariffs.*—On June 22, 1936, the 10-percent excise tax on sales of jewelry items valued at more than \$25 was repealed. In September Italy placed a "temporary" duty of 20 percent on diamond imports.

*World production.*—World production of diamonds in 1936 approximated 8,296,900 carats (1.829 tons) worth about \$35,600,000. Compared to 1935 this is an increase of about 9 percent in quantity and 14 percent in value. As the South African pipe mines operated only on a small scale, the alluvial mines accounted for some 96 percent of the carats and 86 percent of the value.

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

## World production of diamonds, 1932-36, by countries, in carats

Country	1932	1933	1934	1935	1936
<b>Africa:</b>					
Angola.....	367,334	373,623	452,963	481,615	580,000
Belgian Congo.....	3,990,069	1,975,450	3,331,360	3,812,023	14,800,000
French Africa.....					113,000
Gold Coast <sup>2</sup> .....	842,297	863,722	1,142,268	2,172,563	1,489,410
Sierra Leone.....	749	32,017	68,633	125,000	1450,000
South-West Africa.....	17,944	2,674	4,126	128,464	184,873
Tanganyika.....	1,391	1,432	1,414	1,415	2,700
<b>Union of South Africa:</b>					
Mines.....	307,431	14,149	9,414	274,317	339,718
Alluvial.....	488,096	492,404	430,898	402,405	284,204
	4,798,382	506,653	440,312	676,722	623,922
Brazil.....	34,000	130,000	130,000	150,000	1100,000
British Guiana.....	61,780	48,569	44,569	46,564	147,000
Miscellaneous <sup>4</sup> .....	3,725	1,825	4,000	3,500	6,000
	6,117,671	3,835,865	5,519,645	7,622,866	8,296,905

<sup>1</sup> Estimated.<sup>2</sup> Exports year ended Mar. 31.<sup>3</sup> Exports.<sup>4</sup> Includes a small quantity of diamonds recovered from re-treatment of tailings.<sup>5</sup> 1932-34, includes Borneo, India, New South Wales, and, in certain years, French Equatorial Africa, Rhodesia, United States (Arkansas and California), and Venezuela; 1935, Australia, Borneo, French West Africa, India, Nigeria, and Venezuela; 1936, Borneo, India, Nigeria, Rhodesia, and Venezuela.

The increase in production in 1936 came from the pipe mines of South Africa and the alluvial mines of the Belgian Congo, Angola, and Sierra Leone, that is, from mines administered by interests closely allied to the Diamond Corporation. The Central African field (Belgian Congo-Angola), which for 6 years has been the largest producer by weight, in 1936 for the first time surpassed South Africa in value of production as well. French Africa made its initial appearance as a producer of some importance, whereas the production of the South African alluvial fields continued to decrease. Less than 40 percent of the total production was of gem quality; the increase was in industrial stones.

*Industrial diamonds.*—The rapid development of the use of hard alloys in industry in general and particularly in armaments programs has caused a great expansion in the use of abrasive diamonds. The United States, Great Britain, Germany, and Russia are the principal consumers. The chief use is trueing abrasive wheels, but diamond drills, diamond dies, wheels in which diamond or diamond dust are bonded in either bakelite or metal, diamond-set tools, diamond-bonded tools, and many other uses are also important. Some years ago bort largely supplanted carbonado in most drilling, but recently both types of diamonds have been set in some bits. Some bitmakers are now molding bits, the diamonds being "set" in molten metal. The use of "common goods" (cheaper than bort) in diamond drilling is increasing. Experiments continue to supplant rock drills with diamond drills in driving drifts, and diamond drills are used in stoping at the Noranda mine. On the Rand experiments are being conducted with a diamond-impregnated wheel built on the principle of a coal cutter, with which the "banket" is sliced.

It should be emphasized that 50 to 60 percent of a normal year's production of abrasive diamonds is destroyed in use in various industries.

The trade obtains industrial diamonds from three principal sources: (1) Direct from the Diamond Trading Co. or its affiliates; (2) from that part of cutters' and brokers' purchases from the company not suitable for gem stones or too "knotty" to cut easily; and (3) from "outside" sources, notably the Brazilian carbonado production. At present the Diamond Trading Co. is a more important source of industrial stones than formerly due to two factors: First, many stones once used in low-priced jewelry are now used industrially; and, second, carbonados now make up a smaller part of the total supply of industrial diamonds than a decade ago. Bahia's exports of carbonados in 1935 approximated 21,000 carats valued at \$630,000 (in 1934, about 14,200 carats valued at \$300,000).

Because of the greatly increased demand and the fact that most of the South African pipe mines have been shut down and that the Brazilian carbonado production has been subnormal, there has already been a shortage in supply of certain types of industrial stones. As a result of this scarcity some industrial diamonds were selling at pre-depression prices in 1936. Large industrial stones (over 2 carats) were, however, somewhat cheaper than in 1929, and carbonado was much cheaper. The price of crushing bort, notwithstanding increased use, remained steady.

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

*Industrial diamonds (glaziers', engravers', and miners') imported into the United States, 1932-36*<sup>1</sup>

Year	Carats	Value		Year	Carats	Value	
		Total	Per carat			Total	Per carat
1932.....	163, 704	\$1, 061, 823	\$6. 49	1935.....	954, 589	\$4, 293, 611	\$4. 50
1933.....	263, 484	1, 263, 156	4. 79	1936.....	1, 165, 894	4, 328, 429	3. 71
1934.....	526, 007	2, 862, 349	5. 44				

<sup>1</sup> Compiled from records of the Bureau of Foreign and Domestic Commerce.

### EMERALD, RUBY, AND SAPPHIRE

The Colombian Government abandoned the Muzo emerald mine about 5 years ago and in 1932 opened a new mine 3 miles distant. For the past 3 years the average annual production is said to have been about 400,000 carats worth 400,000 pesos. Some 300 workmen and a guard of 60 to 100 soldiers are employed. A few emeralds are recovered from the beryl pegmatites and surrounding schists near Gravelotte, northeastern Transvaal. Sales in 1935 were 148,451 carats worth £10,756.

Burma increased its ruby production considerably in 1935. The total output was 105,484 carats worth 114,063 rupees (in 1934, 21,622 carats); 2,431 carats of sapphires and 6,687 carats of spinels were produced as byproducts.

The Padar district of Kashmir, where operations at the sapphire mines were resumed in 1933, produced about 800,000 carats in 1935 compared with 1,075,000 carats in 1934. The total Indian output in 1935 was 904,571 carats. Ceylon's production of precious stones (largely sapphire) is apparently increasing; some estimates place it as high as Rs.2,000,000 in 1935. The Ratnapura, Matara, and Kandy

districts were especially active. Sapphire and beryl were recently discovered in abundance in the last two districts named. For some years the American Gem Mining Syndicate has operated its mine near Philipsburg, Mont., for industrial sapphires only. Production in 1936 was 17,200 ounces worth about \$25,000. Sapphire was the only gem produced in Queensland in 1935, and sales totaled £1,804 15s. compared with £3,055 in 1934. The mine is at Sapphire. The Belgian Congo sapphire mines of the *Minière des Grands Lacs* have not been worked for several years.

### LESSER GEMS

In 1935 Prussia produced 102,489 kilos of amber and purchased 9,484 kilos from small producers (in 1934, 107,026 and 9,165 kilos, respectively); 22,900 kilos valued at 258,000 RM were exported in 1935, or the highest exports since 1931. Most of the amber output was used industrially. In 1935 Burma produced 18.57 cwt. of amber valued by the Government at \$777 and 1,264.75 cwt. of jadeite valued at \$71,465. Meerschaum mining at Eskisehir, Asia Minor, has been encouraged by the Eti-Bank in connection with the Turkish 5-year plan. In pre-war days about 280 metric tons a year were exported, but less than 28 tons were shipped in 1935. Ninety percent of the output is exported. In 1935, 9,000 pounds of tiger-eye were exported from South Africa. The lighter-colored varieties occur in slabs 9 to 12 inches long, but the darker-colored only in smaller pieces. Brazil produces six types of quartz, of which 90 percent comes from Minas Geraes, and exports of rock crystal have averaged 5 tons yearly for the past 7 years. The United States and Japan are the principal consumers. In 1935, 230,862 kilograms valued at 998,701 paper milreis were exported. Madagascar continues to export much low-priced gem material to France, Japan, the Netherlands, Great Britain, and Czechoslovakia. In addition to 20,000 carats of precious stones about 1½ tons of garnet, amethyst, beryl, optical rock crystal, rose quartz, and chalcedony were exported in 1935. South-West Africa in 1935 exported gems other than diamonds valued at £1,818 to Germany. The mandated area is a source of aquamarine and heliodore, red and green tourmaline, topaz, and almandine garnet.

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