

Gem Stones

By Benjamin Petkof¹

Domestic gem stone production was estimated during 1967 at \$2.4 million, unchanged from 1966. Gem stone collec-

tion continued to be essentially a recreational activity of individual collectors and hobbyists.

DOMESTIC PRODUCTION

Production estimates indicated that 38 States produced gem material in 1967. The leading producing States were Oregon, California, Idaho, Arizona, Texas,

Wyoming, Colorado, Montana, and Nevada with each State producing material valued over \$100,000. These States provided 77 percent of total production.

CONSUMPTION

Consumption of gem diamond, both rough and cut, reached \$387 million, only a small increase from \$374 million in 1966. Value of imported synthetic and imitation gem stones including imitation pearl reached \$11.5 million, compared with \$10.0 million in 1966; natural and

cultured pearls declined 19 percent from 1966.

Apparent consumption of gem stones (domestic production plus imports minus exports and reexports) was \$304 million, compared with \$289 million in 1966.

PRICES

During the year, price ranges for cut and polished, unmounted gem diamond were 0.25 carat, \$80 to \$375; 0.50 carat,

\$200 to \$800; 1 carat, \$500 to \$2,500; 2 carat, \$1,800 to \$7,000.

FOREIGN TRADE

Exports of precious and semiprecious gem stone were valued at \$6.5 million, compared with \$64.1 million in 1966. Diamond, over one-half carat in weight, cut but unset, made up the bulk of the exports.

Reexports of all varieties of gem stone reached \$72.0 million, a decline of \$3.2 million from those of 1966. The major portion of reexports consisted of rough or uncut gem quality diamond.

Ruby and sapphires valued at \$5.7 mil-

lion were imported from 27 countries. Thailand, India, and Ceylon supplied about 70 percent of the total.

Imports of emerald rose in quantity but declined in value. India supplied 38 percent of all imports.

India and Japan were the major sources of imported natural pearl. However, Japan remained the largest supplier of cultured pearls.

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Table 1.—U.S. imports for consumption of precious and semiprecious stones, exclusive of industrial diamond

(Thousand carats and thousand dollars)

| Stones | 1966 | | 1967 | |
|---|----------------|-----------|----------|-----------|
| | Quantity | Value | Quantity | Value |
| Diamond: | | | | |
| Rough or uncut, suitable for cutting into gem stones | | | | |
| Cut but unset, suitable for jewelry | carats.. 2,032 | \$208,039 | 2,506 | \$212,902 |
| Emeralds: Cut but unset | do..... 1,452 | 165,737 | 1,455 | 174,570 |
| Rubies and sapphires: Cut but unset, suitable for jewelry | do..... r 218 | r 5,994 | 242 | 5,518 |
| Marcasites: Real and imitation, dutiable | NA | 7,163 | NA | 5,685 |
| Pearls and parts, not strung or set: | NA | 5 | NA | 3 |
| Natural | NA | 733 | NA | 576 |
| Cultured or cultivated | NA | 21,236 | NA | 17,140 |
| Imitation | NA | 506 | NA | 374 |
| Other precious or semiprecious stones: | | | | |
| Rough or uncut | NA | 2,483 | NA | 4,900 |
| Cut but unset | NA | 4,972 | NA | 6,539 |
| Other n.s.p.f. | NA | 320 | NA | 270 |
| Imitation: | | | | |
| Cut but unset, synthetic | number.. 2,699 | 1,178 | 3,042 | 1,382 |
| Other | NA | 8,341 | NA | 9,786 |
| Total | NA | r 426,707 | NA | 439,645 |

r Revised. NA Not available.

Table 2.—U.S. imports for consumption of diamond (exclusive of industrial diamond), by countries

(Thousand carats and thousand dollars)

| | 1965 | | | | 1966 | | | | 1967 | | | |
|---------------------------------------|------------------|---------|------------------|----------|------------------|---------|------------------|----------|------------------|---------|------------------|----------|
| | Rough or uncut | | Cut but unset | | Rough or uncut | | Cut but unset | | Rough or uncut | | Cut but unset | |
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Argentina..... | | | | | | | | | 4 | \$241 | | |
| Belgium-Luxembourg..... | 75 | \$7,597 | 680 | \$78,928 | 72 | \$9,520 | 787 | \$94,858 | 47 | 6,111 | 775 | \$96,676 |
| Brazil..... | 4 | 293 | 1 | 97 | 4 | 425 | | | 21 | 1,009 | 2 | 169 |
| British West Africa..... | | | | | 2 | 325 | | | 2 | 380 | | |
| Canada..... | 7 | 1,138 | (¹) | 44 | 10 | 1,663 | (¹) | 16 | 5 | 847 | (¹) | 64 |
| Central African Republic..... | 144 | 8,865 | | | 187 | 9,885 | | | 183 | 9,002 | | |
| Cyprus..... | | | | | | | | | 2 | 281 | (¹) | 89 |
| France..... | 2 | 70 | 16 | 1,665 | 3 | 211 | 18 | 1,902 | 1 | 101 | 17 | 2,085 |
| Germany, West..... | | | 19 | 1,370 | (¹) | 1 | 17 | 1,441 | 2 | 227 | 11 | 1,089 |
| Ghana..... | 3 | 146 | (¹) | 16 | 20 | 464 | | | 5 | 68 | | |
| Guinea..... | 2 | 205 | | | 1 | 66 | | | | | | |
| Guyana..... | 19 | 742 | | | 25 | 995 | (¹) | | 8 | | | |
| India..... | | | 2 | 342 | | | 8 | 720 | 31 | 1,370 | | |
| Ireland..... | 4 | 71 | (¹) | 3 | 56 | 2,248 | 2 | 101 | 132 | 571 | 14 | 1,239 |
| Israel..... | 57 | 3,310 | 473 | 42,134 | 36 | 3,096 | 525 | 51,446 | 46 | 4,079 | 533 | 55,083 |
| Japan..... | (¹) | 8 | 1 | 142 | (¹) | 6 | 1 | 78 | (¹) | 14 | 2 | 150 |
| Liberia..... | 7 | 674 | | | 16 | 1,831 | | | 26 | 3,946 | | |
| Netherlands..... | 34 | 4,094 | 21 | 2,835 | 49 | 8,825 | 21 | 3,013 | 39 | 8,565 | 14 | 2,065 |
| Sierra Leone..... | 44 | 2,818 | | | 161 | 7,705 | (¹) | 53 | 180 | 5,921 | 3 | 307 |
| South Africa, Republic of..... | 159 | 15,380 | 27 | 6,166 | 121 | 13,023 | 28 | 7,001 | 333 | 39,852 | 32 | 7,766 |
| Southern Africa, n.e.c..... | | | | | | | | | 2 | 101 | (¹) | 31 |
| Switzerland..... | 104 | 9,879 | 1 | 633 | 69 | 8,504 | | | 7 | 1,524 | (¹) | 174 |
| U.S.S.R..... | | | 11 | 1,410 | | | 29 | 3,391 | (¹) | 17 | 39 | 5,918 |
| United Kingdom..... | 1,142 | 113,481 | 6 | 857 | 1,106 | 131,809 | 10 | 1,354 | 1,339 | 122,000 | 10 | 1,395 |
| Venezuela..... | 54 | 1,950 | | | 66 | 2,525 | | | 64 | 2,347 | | |
| Western Africa, n.e.c..... | 35 | 4,903 | | | 21 | 3,446 | | | 35 | 4,260 | (¹) | 6 |
| Western Portuguese Africa, n.e.c..... | 2 | 124 | | | 7 | 1,445 | | | | | | |
| Other countries..... | 3 | 259 | 1 | 186 | (¹) | 71 | 5 | 438 | (¹) | 67 | (¹) | 180 |
| Total..... | 1,901 | 175,457 | 1,259 | 131,828 | 2,032 | 208,039 | 1,452 | 165,737 | 2,506 | 212,902 | 1,455 | 174,570 |

¹ Less than 1/2 unit.

WORLD REVIEW

Brazil.—The diamond mining industry has been undergoing a change from hand mining method to the application of large hydraulic dredges for large-scale recovery. A dredge has been placed in operation on the Jequitinhonha River by Meneração Tijucana S.A., Dragagem de Ouro S.A., and Pacific Tin Corporation which moves material at the rate of 400 cubic yards per hour in 12-cubic-foot buckets. Test drilling has shown that the diamond re-

covery rate averaged 0.01 carat per cubic yard of diamondiferous gravel. Eighty percent of the material recovered is of gem grade.

The Mining Department of the Federal Government began prospecting and evaluating the Tocantins River area for available diamond by the interpretation of aerial photographs and coring operations. This area has previously been worked by crude hand methods.²

Table 3.—World production of gem diamond, by countries¹

(Thousand carats)

| Country | 1963 | 1964 | 1965 | 1966 | 1967 ^p |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Africa: | | | | | |
| Angola..... | 759 | 804 | 878 | 964 | ^e 1,000 |
| Central African Republic..... | 121 | 221 | 268 | 270 | 260 |
| Congo (Kinshasa)..... | 296 | 295 | 14 | 15 | 263 |
| Congo (Brazzaville) ^{e 2 3} | 341 | 316 | 318 | ^r 300 | 300 |
| Ghana..... | ^r 4 | ^r 378 | ^r 25 | 282 | 254 |
| Guinea ^e | ² 22 | 21 | 21 | 21 | 20 |
| Ivory Coast..... | 63 | 120 | 119 | 110 | 105 |
| Liberia ² | 240 | 298 | 277 | 343 | 353 |
| Sierra Leone..... | 555 | 585 | 658 | 629 | ^e 600 |
| South-West Africa, Territory of..... | 1,076 | 1,387 | 1,491 | 1,583 | ^e 1,700 |
| Tanzania..... | 276 | 338 | 414 | ^r 474 | 494 |
| South Africa, Republic of: | | | | | |
| Premier..... | 522 | 556 | 610 | 625 | NA |
| De Beers group ⁴ | 921 | 928 | 985 | 1,429 | NA |
| Other pipe mines..... | 16 | 18 | 123 | 131 | NA |
| Alluvial..... | 338 | 288 | 230 | 300 | NA |
| Total South Africa..... | ^r 1,797 | 1,790 | 1,948 | 2,485 | ^e 2,100 |
| Total Africa..... | ^r 5,550 | ^r 6,553 | ^r 6,431 | ^r 7,476 | 7,449 |
| Other areas: | | | | | |
| Brazil ^e | 175 | 175 | 175 | 150 | 160 |
| Guyana..... | 60 | 60 | 45 | 37 | 38 |
| India..... | 1 | 2 | ^r 3 | 2 | 6 |
| Indonesia..... | NA | NA | 1 | 2 | 2 |
| U.S.S.R. ^e | ^r 600 | ^r 800 | ^r 1,000 | ^r 1,200 | 1,400 |
| Venezuela..... | ^r 38 | ^r 57 | ^r 52 | 42 | 38 |
| World total ⁵ | ^r 6,424 | ^r 7,647 | ^r 7,707 | ^r 8,909 | 9,093 |

^e Estimate. ^r Revised. ^p Preliminary. NA Not available.¹ Compiled mostly from data available April 1968.² Exports.³ Probable origin, Republic of the Congo.⁴ Includes some alluvial from De Beers properties.⁵ Totals are of listed figures only; no undisclosed data included.

Canada.—A recent paper postulates that the source of the diamond previously found in the glacial deposits of Ohio and Wisconsin was kimberlite deposits in the James Bay area.³

Lesotho.—The Government and The Rio Tinto-Zinc Corp. Ltd. announced an agreement for diamond prospecting and eventually mining at the Lesotho State Diamond deposit at Letseng-la-Terai in northeastern Lesotho. The agreement pro-

vided for a 2- to 3-year prospecting period to determine if large-scale mining operations are justified.⁴ A large pale-brown stone weighing 601 carats was recovered.

² Linder, P. H. Modern Dredges Successful in Recovering Brazilian Diamond. *Lapidary J.*; v. 21, No. 2, May 1967, pp. 298-305.

³ Northern Miner (Toronto, Canada). Diamond-Type Rocks in James Bay Area No. 1, Mar. 30, 1967, p. 15.

⁴ U.S. Embassy, Maseru, Lesotho. Department of State, Airgram A-83, Oct. 27, 1967, pp. 1-2.

Sierra Leone.—In terms of value diamond was the major mineral product of Sierra Leone.

Sierra Leone Selection Trust Ltd. (SLST) and the Government renegotiated the SLST leases, providing for an increase in the income and diamond profits tax paid by the company. SLST also agreed to release certain locations in Kono and Tongo for licensed alluvial mining, to allow licensed diggers to recover diamond from its mine tailings, to begin a program of rehabilitating mined-out areas, and to study prospecting potential for more diamond.⁵

South Africa, Republic of.—The Finsch diamond mine was formally opened on February 24, 1967. The ore reserves were estimated at 110 million tons down to the open pit mining limit of 900 feet; at a planned production rate of 17,000 loads (16 cubic feet per load) per day, minimum life would be 25 years. The recovery rate was 38 carats per 100 loads.⁶ About 75 percent of the diamond recovered was industrial grade. The average overall recovery ratio is 1 to six million.

The Finsch is the first new pipe mine since the Premier mine was opened in 1903.⁷

Tanzania.—Williamson Diamonds, Ltd. and two subsidiary companies, New Alamasasi and Kahama Mines, Ltd., supplied most of the diamond production and exports. The Government has 50 percent interest in this group. The company mined 3,285,038 tons of ore which yielded 923,423 carats at the Mwadui mine. Ore production at the New Alamasasi totaled 411,512 tons of ore which contained 23,176 carats. The ore body was mined out at the Kahama Mines Ltd., and treatment of the stockpile began. Completion is expected in 4 years. Williamson Diamond continued to look for diamond north of Kahama during 1967, but nothing of value was found.⁸

⁵ Bureau of Mines. Mineral Trade Notes. v. 64, No. 6, June 1967, p. 5.

⁶ U.S. Embassy, Johannesburg, Republic of South Africa. Department of State, Airgram A-351, Mar. 28, 1967, p. 1.

⁷ World Mining. What's Going On in World Mining. v. 3, No. 4, April 1967, p. 41.

⁸ Bureau of Mines. Mineral Trade Notes. v. 65, No. 1, January 1968, p. 7.

