

# Gem Stones

By Robert G. Clarke <sup>1</sup>

Although no formal gem stone mining industry exists in the United States, production in 1972 was estimated to be \$2.7 million, an increase of 4% over the value of production in 1971. Individual collectors accounted for most of the quan-

tity and value. Members of clubs in all States collected mineral specimens and rock samples. A few deposits were operated for the production of rough material that was sold directly to wholesale or retail outlets and sometimes to jewelry manufacturers.

## DOMESTIC PRODUCTION

Gem stone production was estimated to be \$1,000 or more for each of 38 States. The following States accounted for 77% of the total production, in thousands: Oregon, \$793; California, \$215; Arizona, \$168; Texas, \$163; Washington, \$163; Wyoming, \$142; Colorado, \$131; Montana, \$120; Nevada, \$110; and Idaho, \$105.

The State of Arkansas purchased the only diamond mine area in North America for development as a State park.<sup>2</sup> The property amounted to 867 acres, including the 78-acre diamond-producing crater. The cost was \$750,000.

A find of semiprecious tourmaline was reported at the Vevel Pit on Plumbago Mountain, near Newry, Maine.<sup>3</sup> High value estimates were made for the find because of the large quantity of watermelon tourmalines, 3 inches in diameter, 4 to 5 inches long, green on the outside and pink inside.

The Ruggles mine, near Grafton, N.H., the oldest mica mine in the United States, was reopened to tourists and rock collectors on a fee basis.<sup>4</sup> The mine was originally opened in 1803 and was operated for the production of feldspar from 1932 to 1959. About 150 minerals have been found at the Ruggles mine. The list, in addition to mica and feldspar, includes amethyst, beryl, rose and smoky quartz, aquamarine, garnet, gummite, autunite, and zircon.

Tourists to the Mt. Washington Valley area of the White Mountain National Forest obtained collector's permits free of charge from the U.S. Forest Service Head-

quarters at Laconia, N.H.<sup>5</sup> The permit allowed hobby collecting only and required restoring work areas. Minerals mentioned as collected included smoky quartz, amethyst, topaz, feldspar, mica, and other pegmatite minerals.

Mines and minerals of the State of Virginia were described in a four-part series.<sup>6</sup>

A 10,000-pound boulder of jade was cut at the Majestic Jade Co., Riverton, Wyo.<sup>7</sup> The boulder was one of several removed by the company from its Verla-Irene operations near Jeffrey City, Wyo. After cutting, the jade sold for an average of \$10 per pound.

Descriptions of field trips, events, and mineral and gem stone finds were reported throughout the year by *Gems and Minerals*, *Lapidary Journal*, *Mineralogical Record*, and *Rocks and Minerals*.

<sup>1</sup> Physical scientist, Division of Nonmetallic Minerals.

<sup>2</sup> *Arkansas Gazette* (Little Rock, Ark.). Crater of Diamonds Land is Purchased by State. Mar. 15, 1972, p. 17.

<sup>3</sup> Shevis, A. \$1 Million Value Newry Tourmaline Trove Is Found. *Daily Kennebec Journal*, Augusta, Maine, Nov. 18, 1972, pp. 1-2.

<sup>4</sup> Bohlin, V. Gems To Fall From the Sky. *Herald Traveler and Boston Record American* (Boston, Mass.), Sept. 6, 1972, p. 22.

<sup>5</sup> Morrisey, C. There's Quartz in Them Thar Hills. *New Hampshire Sunday News* (Manchester, N.H.), Sept. 3, 1972, pp. 31, 37.

<sup>6</sup> Morrill P. Virginia Mines and Minerals. *Rocks and Minerals*. Part I; No. 393, v. 47, No. 6, June 1972, pp. 363-371. Part II; Nos. 394-395, v. 47, Nos. 7-8, July-August 1972, pp. 435-444. Part III; No. 396, v. 47, No. 9, September 1972, pp. 515-523. Part IV; No. 397, v. 47, No. 10, October 1972, pp. 587-596.

<sup>7</sup> *Star-Tribune* (Casper, Wyo.). More To Come. Jan. 6, 1973.

## CONSUMPTION

Domestic gem stone output generally went to rock, mineral, and gem stone collections, objects of art, and jewelry. Apparent consumption of gem stones (domestic

production plus imports minus exports and reexports) increased to \$423 million, compared with \$311 million in 1971, because of greater imports of diamond.

## PRICES

During 1972, representative price ranges for first-quality, cut and polished, unmounted gem diamond were 0.25 carat, \$100 to \$400; 0.5 carat, \$300 to \$1,000; 1 carat, \$700 to \$3,500; 2 carats, \$2,000 to

\$11,500; and 3 carats, \$3,500 to \$25,000. The median price for each range was 0.25 carat, \$200; 0.5 carat, \$550; 1 carat, \$1,675; 2 carats, \$4,500; and 3 carats, \$9,000.

## FOREIGN TRADE

Exports of all gem materials amounted to \$184.9 million, and reexports, to \$110.9 million. Diamond was 93% of the value of exports and 92% of the value of reexports. U.S. exports of diamond in 1972, on which work was done prior to reexport, amounted to 371,381 carats valued at \$172.3 million. Of this, diamond, rough or uncut, suitable for gem stones, not classified by weight, was 345 carats valued at \$18,975; cut but unset, not over 0.5 carat, was 63,780 carats valued at \$11.5 million; and cut but unset, over 0.5 carat, was 307,256 carats valued at \$160.8 million.

Reexports of diamond, on which no work was done, amounted to 1,430,244 carats valued at \$101.9 million in categories as follows: Rough or uncut, suitable for gem stones, not classified by weight, 1,335,606 carats valued at \$79.0 million; cut but unset, not over 0.5 carat, 40,384 carats valued at \$7.7 million; cut but unset, over 0.5 carat, 54,254 carats valued at \$15.2 million.

The six leading recipients of diamond exports and reexports accounted for 94% of the carats and 86% of the value and were as follows: Israel, 609,121 carats valued at \$41.0 million; Belgium, 435,075 carats valued at \$28.5 million; Switzerland, 203,209 carats valued at \$37.7 million; Netherlands, 177,003 carats valued at \$40.0 million; Japan, 154,497 carats valued at \$34.7 million; and Hong Kong, 112,124 carats valued at \$71.1 million.

Exports of all other gem materials amounted to \$12.6 million. Of this total, pearls, natural and cultured, not set or strung, were valued at \$0.2 million. Natu-

ral precious and semiprecious stones, unset, were valued at \$9.7 million; synthetic or reconstructed stones, unset, were valued at \$2.7 million. Reexports of all other gem materials amounted to \$9.0 million. Reexports of pearls amounted to \$0.3 million; of natural precious and semiprecious stones, unset, to \$8.5 million; and of synthetic or reconstructed stones, unset, to \$0.2 million.

Imports of gem material increased 36% in value compared with that of 1971. Diamond accounted for 88% of the total value of gem stone imports.

The four leading suppliers of diamond imports were as follows: United Kingdom, 1,334,000 carats valued at \$182.2 million; Belgium-Luxembourg, 1,275,000 carats valued at \$158.1 million; Republic of South Africa, 980,000 carats valued at \$108.3 million; and Israel, 890,000 carats valued at \$103.4 million.

Imports of emeralds increased 63% in quantity and 187% in value. Of 30 countries supplying natural emeralds to the United States, India furnished 276,198 carats valued at \$6.2 million; Brazil, 90,488 carats valued at \$1.5 million; and Colombia, 26,635 carats valued at \$7.2 million. Also furnishing emeralds to the United States, but for which the country of origin was unknown, were Switzerland, 31,266 carats valued at \$2.3 million; Hong Kong, 52,905 carats valued at \$1.4 million; United Kingdom, 31,634 carats valued at \$1.2 million; and France, 4,979 carats valued at \$1.0 million. These seven countries furnished 90% of the quantity (in carats)

and 94% of the value of total emerald imports.

Imports of rubies and sapphires increased 61% and came from 31 countries. Seven countries accounted for 95% of the value of rubies and sapphires, as follows:

Thailand, \$7.3 million; Sri Lanka (Ceylon), \$1.5 million; Switzerland, \$1.0 million; India, \$1.0 million; Hong Kong, \$0.7 million; France, \$0.5 million; and United Kingdom, \$0.5 million.

Synthetic materials, gem stone quality,

Table 1.—U.S. imports for consumption of precious and semiprecious gem stones  
(Thousand carats and thousand dollars)

Stones	1971		1972	
	Quantity	Value	Quantity	Value
Diamonds:				
Rough or uncut	2,742	254,575	3,096	338,624
Cut but unset	1,925	208,667	2,410	288,055
Emeralds: Cut but unset	351	7,731	573	22,176
Rubies and sapphires: Cut but unset	NA	8,206	NA	13,172
Marcasites	NA	1	NA	96
Pearls:				
Natural	NA	364	NA	571
Cultured	NA	6,895	NA	7,615
Imitation	NA	5,013	NA	3,707
Other precious and semiprecious stones:				
Rough and uncut	NA	3,532	NA	6,210
Cut but unset	NA	13,456	NA	17,238
Other, n.s.p.f.	NA	734	NA	1,107
Synthetic:				
Cut but unset	11,040	9,492	16,957	10,571
Other	NA	137	NA	165
Imitation gem stones	NA	7,180	NA	6,829
Total	NA	525,983	NA	716,136

NA Not available.

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

(Thousand carats and thousand dollars)

Country	1970				1971				1972			
	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
Belgium												
Luxembourg	64	6,572	863	103,705	88	9,092	1,036	113,626	64	10,706	1,211	147,392
Brazil	31	1,134	1	80	3	129	2	232	( <sup>1</sup> )	26	3	321
Canada	2	462	1	60	--	--	1	69	--	--	1	82
Central African Republic	165	5,826	--	--	208	6,785	--	--	207	6,587	--	--
France	4	195	27	2,550	21	634	31	2,514	33	1,564	23	1,895
Germany, West	2	117	4	516	1	121	2	210	( <sup>1</sup> )	31	3	324
Guyana	26	1,074	( <sup>1</sup> )	19	1	49	( <sup>1</sup> )	19	2	96	( <sup>1</sup> )	6
India	--	--	40	3,475	--	--	80	6,429	--	--	186	16,507
Israel	52	6,723	604	61,753	47	3,425	671	69,569	38	5,120	852	98,316
Japan	( <sup>1</sup> )	20	( <sup>1</sup> )	18	( <sup>1</sup> )	33	2	203	--	--	1	129
Liberia	6	1,893	--	--	17	3,797	( <sup>1</sup> )	66	3	1,611	( <sup>1</sup> )	67
Netherlands	23	7,886	13	1,899	31	6,190	20	2,440	37	10,948	15	2,266
Sierra Leone	--	--	6	814	281	14,331	4	527	164	15,593	3	324
South Africa, Republic of	593	54,571	26	6,868	904	83,389	25	6,388	953	100,059	27	8,286
Switzerland	4	354	1	262	16	3,149	11	1,156	47	2,269	8	1,188
U.S.S.R.	--	--	44	6,826	--	--	24	3,324	--	--	35	5,802
United Kingdom	1,432	140,243	6	970	947	118,913	12	1,366	1,302	178,659	32	3,586
Venezuela	223	6,333	--	--	177	4,283	--	--	244	5,118	--	--
Other	6	711	6	918	( <sup>1</sup> )	255	4	529	2	237	10	1,564
Total	2,633	234,164	1,642	190,733	2,742	254,575	1,925	208,667	3,096	338,624	2,410	288,055

<sup>1</sup> Less than ½ unit.

cut but not set, and including others, amounted to \$10.7 million in imports. From West Germany, the value of synthetics was \$3.8 million; from Switzerland, \$1.5 million; from France, \$1.0 million; from Japan, \$0.9 million; and from Austria, \$0.8 million.

Marcasites, cut, not set, and suitable for jewelry were imported from two countries. From France, the value of marcasites was \$77,000, and from Israel, \$19,000.

Precious and semiprecious stones, rough and uncut, amounted to \$6.2 million in imports. Three countries accounted for 75% of the value as follows: Colombia, \$2.7 million; Brazil, \$1.0 million; and Australia, \$0.9 million.

Precious and semiprecious stones, cut but not set, amounted to \$17.2 million in imports. Six countries accounted for 86% of the value as follows: Hong Kong, \$7.8 million; Brazil, \$2.2 million; Australia, \$2.2 million; West Germany, \$1.3 million;

Japan, \$0.9 million; and Taiwan, \$0.5 million.

Natural pearls and parts imported from India were valued at \$0.4 million. Other leading suppliers of natural pearls and the value of imports were as follows: France, \$57,500; Hong Kong, \$35,500; and Japan, \$29,000. Imports of cultured pearls from Japan were valued at \$7.3 million. Cultured pearls were also imported from Hong Kong valued at \$112,600; from Burma, \$89,000; and from Switzerland, \$67,600.

Four countries accounted for nearly 100% of the value of imports of imitation pearls, as follows: Japan, \$3.0 million; Hong Kong, \$0.5 million; Taiwan, \$0.2 million; and Spain, \$0.04 million.

Of 18 countries supplying imitation gem stones to the United States, five countries accounted for 97% by value, as follows: Austria, \$3.2 million; West Germany, \$1.9 million; Czechoslovakia, \$0.8 million; Japan, \$0.4 million; and Hong Kong, \$0.3 million.

## WORLD REVIEW

**Angola.**—The consortium composed of Companhia de Diamantes de Angola (45%), De Beers Consolidated Mines, Ltd. (45%), and the Angolan Government (10%) reported the finding of two promising and extensive kimberlite deposits in its concession area.<sup>8</sup> No announcement of significant finds during the past year was made by the smaller companies.

**Australia.**—Australian production of natural sapphire was the world's largest in 1970.<sup>9</sup> Recovery of alluvial sapphires were mainly from Swanbrook Creek near Inverell and from Frazer Creek near Glen Innes, both in New South Wales. Dominion Mining, Ltd. commissioned a new \$600,000 sapphire washing plant, claimed to be the world's largest. The sapphires ranged from colorless to dark blue, blue green, green, yellow, and blue yellow. A large portion of the marketable gems weighed more than 1 carat each, and some weighed as much as 40 carats.

**Botswana.**—The Orapa diamond mine, which became fully operational in June 1972, was the only producer of diamonds. It was estimated that 85% of the diamond production by weight was industrial diamond, and that 50% of the value was gem stone. About 8,540 tons per day were

mined from the open pit. Little additional cost would be involved to expand processing by 50% should the market demand warrant the increase.<sup>10</sup>

**Brazil.**—Mineração Tejuca S.A. continued to be the largest diamond mining operation. The company operated two electric bucket dredges (12- and 9-cubic-foot buckets) on the Jequitinhonha River 54 miles north of Diamantina, Minas Gerais. The company also operated a suction dredge to remove barren sand ahead of the bucket dredges. Early in 1972, a large aquamarine weighing 65 kilograms was found near Ihla Grande, Município of Itaobim, Minas Gerais, and was the largest found in Minas Gerais since 1947.

**Burma.**—Burma's Eighth Annual Gem, Jade, and Pearl Emporium closed March 5, 1972, with reported sales of US\$2.3 million, a 12% decrease from the previous year's record sales.<sup>11</sup> Jade was the biggest

<sup>8</sup> Bureau of Mines. Diamond: Angola. Mineral Trade Notes, v. 69, No. 10, October 1972, p. 3.

<sup>9</sup> World Mining. Mechanization Boosts Australian Sapphire Output. V. 26, No. 1, January 1973, p. 55.

<sup>10</sup> Bureau of Mines. Diamond: Botswana. Mineral Trade Notes, v. 69, No. 9, September 1972, p. 3.

<sup>11</sup> Bureau of Mines. Gem Stones: Burma. Mineral Trade Notes, v. 69, No. 6, June 1972, p. 10.

seller, accounting for US\$1.7 million in sales. Several Burmese press accounts commented unfavorably on the status of the gem industry and suggested that a better system should be found. A ruby deposit was reported 60 miles northwest of Mogong, Kachin State.<sup>12</sup>

**Guyana.**—M & V Diamond Mines was incorporated in Canada under a Dominion charter with the objective of mining diamonds in Guyana.<sup>13</sup> The company qualified in Guyana on December 31, 1971. The company obtained five diamond locations covering a combined length of 5.5 miles on the Potaro and Kopinang Rivers in the Mazaruni Mining District, the main diamond area of Guyana.

**India.**—All diamond production in 1972 was from the Panna District, Madhya Pradesh. Diamond mining operations were controlled and supervised by the Government of India-owned National Mineral Development Corporation (NMDC) in collaboration with the State Government of Madhya Pradesh. About 82% of the production was gem quality. NMDC imported mine-run diamond from African sources for cutting, polishing, and reexport, which in 1971 amounted to US\$28 million as imports and US\$42 million as exports.

**Ivory Coast.**—Diamond production was the only output of the mining industry in Ivory Coast since the stoppage of manganese ore mining in 1970.<sup>14</sup> Société Anonyme de Recherches et d'Exploitation Minières en Côte d'Ivoire (SAREMCI) produced 250,367 carats in 1971 and aimed for a similar production in 1972. Société Diamantifère de Côte d'Ivoire (SO-DIAMCI) stopped activities at Sassandra and at Seguela. On the other hand, the Waston Co. put into operation in January 1971 a processing plant that produced 65,382 carats in 1971 and for which the objective in 1972 was 72,000 carats.

**Lesotho.**—London and Rhodesian Mining and Land Co. (Lonrho) ceased prospecting operations at Kao in Butha Buthe district that it had begun in 1969 in a search for diamond.<sup>15</sup> Rio Tinto-Zinc Corp. (RTZ) pulled out of Letseng-la-Terai in the Mokhotlong district after more than 3 years of prospecting and sampling. Lonrho spent approximately \$1.25 million and RTZ about \$3.75 million on their respective operations. Newmont Mining Corp., which began prospecting at Kao

in 1971, has spent \$1.9 million on its operation.

**Sierra Leone.**—The "Star of Sierra Leone," a 969-carat diamond, third largest ever found in the world, was sold to Harry Winston, Inc., of New York for more than 900,000 pounds sterling or over \$2 million. The sale of "The Star of Sierra Leone" contributed greatly to the profits of the National Diamond Mining Co. (DIMINCO). DIMINCO is 51% owned by the Government.<sup>16</sup> Diamond sales represented more than 60% of all Sierra Leone official exports in 1971. The importance of the diamond mining industry to the economy resulted in further prospecting for kimberlite sources by DIMINCO to offset projected decreases in production from alluvial areas.

**South Africa, Republic of.**—The Republic of South Africa and the Territory of South-West Africa combined are credited with over 40% of the gem-quality diamond output of the world in the period 1966 to 1971.<sup>17</sup> The De Beers group of mines, open pit, underground, and coastal, accounted for over 90% of the combined output of the two countries. De Beers developed a long-term mining plan for its mines under which part of the operations will be on standby to stretch out the lives of all the mines. Also, preference can be given to the sizes of diamond stones in demand by opening mines that satisfy the demand and by closing those that do not meet the demand.

**United Kingdom.**—A comprehensive list of sites in England was published for collectors of gem stones and ornamental rocks.<sup>18</sup> General locations for 18 mineral and rock types were shown on an accompanying map.

**U.S.S.R.**—V-O Almazjuvelireport, the

<sup>12</sup> World Mining. Burma. Jadeite and Precious Stones. V. 26, No. 1, January 1973, p. 38.

<sup>13</sup> Northern Miner (Toronto). Form New Company To Mine Diamonds In South America. V. 57, No. 51, Mar. 9, 1972, p. 15.

<sup>14</sup> Ivory Coast Bureau of Mines and Geology. Translations on Africa, No. 1242. Joint Publications Research Service, No. 57754, Dec. 12, 1972, pp. 16-20.

<sup>15</sup> Bureau of Mines. Diamond: Lesotho. Mineral Trade Notes, v. 70, No. 3, March 1973, pp. 3-4.

<sup>16</sup> Meisler, S. Diamond Digging in Sierra Leone is Dirty Business. The Denver Post, Sept. 28, 1972, p. 47.

<sup>17</sup> Engineering and Mining Journal. Diamonds: One of South Africa's Best Friends. V. 173, No. 11, November 1972, pp. 184-185.

<sup>18</sup> Adamson, G. L. S. Gems and Decorative Stones in England. Mine & Quarry (London), v. 2, No. 1, January 1973, pp. 35-37.

U.S.S.R. foreign trade organization specializing in diamond and jewelry exporting, exhibited amber products and diamonds at Unimart 1972, the Annual International Trade Fair, at Seattle, Wash.<sup>19</sup> Representatives of U.S.S.R. claimed that the produc-

tion of diamond from Siberia equals that of the Republic of South Africa in quantity and quality. It was also claimed that the Kaliningrad amber fields are the largest in the world and constitute more than two-thirds of the world's amber reserve.

**Table 3.—Diamond (natural): World production by country<sup>1</sup>**  
(Thousand carats)

Country	1970			1971			1972 <sup>p</sup>		
	Gem	Industrial	Total	Gem	Industrial	Total	Gem	Industrial	Total
<b>Africa:</b>									
Angola.....	1,797	599	2,396	1,810	603	2,413	1,171	391	1,562
Botswana.....	r 47	r 417	r 464	82	740	822	360	2,043	2,403
Central African Republic.....									
Republic.....	313	169	482	288	149	437	346	178	524
Ghana.....	255	2,295	2,550	256	2,306	2,562	266	2,393	2,659
Guinea <sup>e</sup> .....	22	52	2 74	22	52	74	25	55	80
Ivory Coast.....	85	128	213	130	196	326	131	199	330
Lesotho <sup>3</sup> .....	4	13	17	1	6	7	1	8	9
Liberia.....	4 577	4 235	4 812	4 532	4 277	4 809	532	278	8 10
Sierra Leone <sup>3</sup> .....	723	1,232	1,955	715	1,220	1,935	609	1,038	1,647
<b>South Africa, Republic of:</b>									
Premier mine.....	623	1,867	2,490	609	1,828	2,437	613	1,841	2,454
Other De Beers Company <sup>6</sup> .....	2,615	2,140	4,755	2,162	1,769	3,931	2,291	1,874	4,165
Other.....	520	347	867	398	265	663	466	310	776
Total.....	3,758	4,354	8,112	3,169	3,862	7,031	3,370	4,025	7,395
South-West Africa, Territory of.....									
Tanzania.....	1,772	93	1,865	1,566	82	1,648	1,516	80	1,596
Zaire.....	359	349	708	419	418	837	365	365	730
Zaire.....	1,649	12,438	14,087	1,250	11,270	12,520	980	12,380	13,360
<b>Other areas:</b>									
Brazil <sup>e</sup> .....	r 150	r 150	r 300	r 150	r 150	r 300	155	155	310
Guyana.....	24	37	61	19	29	48	20	29	49
India.....	17	3	20	16	3	19	17	3	20
Indonesia <sup>e</sup> .....	14	6	20	12	3	15	12	3	15
U.S.S.R. <sup>e</sup> .....	1,600	6,250	7,850	1,800	7,000	8,800	1,850	7,350	9,200
Venezuela.....	r 131	r 378	r 509	114	385	499	141	315	456
<b>World total.....</b>	<b>13,297</b>	<b>29,198</b>	<b>42,495</b>	<b>12,351</b>	<b>28,751</b>	<b>41,102</b>	<b>11,867</b>	<b>31,288</b>	<b>43,155</b>

<sup>e</sup> Estimate. <sup>p</sup> Preliminary. <sup>r</sup> Revised.

<sup>1</sup> Total (gem plus industrial) diamond output of each country is actually reported except where indicated to be an estimate by footnote. In contrast, the detailed separate reporting of gem diamond and industrial diamond represents Bureau of Mines estimates in the case of all countries except Lesotho (all years), Liberia (1970 and 1971) and Venezuela (all years), where sources give both total output and detail. The estimated distribution of total output between gem and industrial diamond is conjectural in the case of a number of countries, based on unofficial information of varying reliability.

<sup>2</sup> Official estimate by Government of Guinea.

<sup>3</sup> Exports of diamond originating in Lesotho; excludes stones imported for cutting and subsequently reexported.

<sup>4</sup> Exports for year ended August 31 of that stated.

<sup>5</sup> Exports.

<sup>6</sup> All company output from the Republic of South Africa except for that from the Premier mines; also excludes company output from the Territory of South-West Africa and from Botswana.

## TECHNOLOGY

A description of a technique to pan for diamond was published.<sup>20</sup> By a modification of the method used to pan for placer gold, it is possible to find diamond specimens in the United States. The specific gravity of gold is 19.3 in the pure state and may decrease to 15.0 with impurities. The specific gravity of diamond is 3.52. Hence, the difference between diamond

and quartz or common sand, specific gravity of 2.7, indicates the care to be exercised in the panning operation for diamond. The technique was used by the

<sup>19</sup> Barnett, C. Soviet Diamonds Mined in Siberia Dazzle Onlookers at Trade Fair. *J. of Commerce*, v. 313, No. 22, 762, Aug. 15, 1972, p. 3.

<sup>20</sup> Joque, M. S. Prospecting for Diamonds. *Lapidary J.*, v. 26, No. 10, January 1973, pp. 1501-1507.

author at localities in California. In addition, to these finds, Frank Fischer, an entrepreneur now of Lake Hamilton, Ark., applied his knowledge of diamond identification that he gained from 10 years experience in the diamond fields of Minas Gerais, Brazil, to sites south of Murfreesboro, Ark. Mr. Fischer reported diamond finds at several locations. He believed that the lack of familiarity with diamond by most collectors explains the dearth of diamond finds in the United States.

The quality of synthetic crystals was improved by application of computer controls to the growth process.<sup>21</sup> The system was developed for producing the rare-earth garnet (gadolinium gallium garnet or GGG) and can be adapted to growing other kinds of crystals.

At least 15 lasers were in use by diamond cutters around the world in New York, Antwerp, Israel, and India to in-

crease the value of diamond gem stones by 100% or more.<sup>22</sup>

A yearlong scientific study of the patented 144-facet diamond cut showed that the new cut had an average brilliance 32.2% higher than that of the conventional 58-facet cut.<sup>23</sup>

The most valuable gem stone of the feldspars is moonstone. A complete description of the chemical and physical requirements for forming moonstone was presented in an article that also described means for proper identification.<sup>24</sup>

<sup>21</sup> American Metal Market. Crystals of Gadolinium Produced at Bell Labs. V. 79, No. 176, Sept. 26, 1972, p. 11.

<sup>22</sup> Ward, A. Pique Diamonds, Treated By Lasers On The Increase In World Markets. Jewelers' Circular-Keystone, v. 142, No. 6, March 1972, pp. 98-100.

<sup>23</sup> Jewelers' Circular-Keystone. 144-facet diamonds more brilliant: Zeiss. V. 143, No. 3, December 1972, p. 109.

<sup>24</sup> Rieman, H. M. Moonstone. Lapidary J., v. 25, No. 11, February 1972, pp. 1560-1564.

