Gem Stones

By John W. Hartwell [1] and Betty Ann Brett [2]

GEM materials and mineral specimens produced in the United States during 1961 were estimated at $1,309,000—a $121,000 increase over 1960.

According to the U.S. Department of Commerce, there were 326 lapidary plants in 25 States in 1958.[3] New York, N.Y., had the greatest number with 205, followed by Providence County, R.I., 37; and Los Angeles, Calif., 11. The average number of employees in each plant was 6. Four of the larger plants, located in the counties of Westchester, N.Y., Middlesex, N.J., Rolette, N. Dak., and Tarrant, Tex., employed 100 to 249 workers each. Also listed were 249 plants in 15 States manufacturing "jewelry findings and materials." Most plants were in Rhode Island, with 144, followed by New York, 41, Massachusetts, 23, and New Jersey, 20. One plant in Massachusetts employed more than 500 workers. The average plant employed 20 workers.

The Internal Revenue Service amended its regulations covering the Federal retail excise tax on jewelry. The new regulations added to, amended, or superseded sections of Regulation 51 as amended and printed in 1956. The following stones, whether real or synthetic, cut, polished, rough, or in their natural state, were taxable when sold at retail: Amber, beryl (aquamarine, emerald, golden beryl, heliodor, and morganite), chrysoberyl (alexandrite, cat's eye, and chrysolite), corundum (ruby and sapphire), diamond, feldspar (moonstone), garnet, jadeite (jade), jet, lapis lazuli, nephrite (jade), opal, pearl (natural and cultured), peridot, quartz (amethyst, bloodstone, citrine, moss agate, onyx, sardonyx, and tiger's eye), spinel, topaz, tourmaline, turquoise, and zircon. In addition to these stones, the tax applied to all articles commonly or commercially known as jewelry, regardless of the substance of which they were made. In determining the retail price for tax purposes, any charge for the coverings or containers in which the stones or jewelry were delivered to the customer were to be included.[4]

DOMESTIC PRODUCTION

Production data were collected by the Bureau of Mines by canvassing amateur and professional producers of gem stones, but it was not possible to contact all operators. Therefore, information is based on only a partial survey.

[1] Commodity specialist, Division of Minerals.
[2] Statistical clerk, Division of Minerals.
[3] U.S. Department of Commerce. 1958 Census of Manufacturers: Lapidary Work. 1961, p. 72.
[4] Burnstine, Bernard N. A Jeweler's Guide. Jewelers' Circ.-Keystone, v. 131, No. 7, April 1961, pp. 86–89, 102, 104.

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Gem material and mineral-specimen production was reported from 45 States, 1 more than in 1960. California, Oregon, and Texas were the leading States. Eleven States—California, Oregon, Texas, Arizona, Nevada, Wyoming, Washington, Utah, New Mexico, Colorado, and Montana—produced 85 percent of the total value.

An amethyst mine in Roberta, Cabarrus County, N.C., began operating in 1961. Two weeks after mining started, three bushels of amethysts in clusters and single crystals were recovered.[5]

TABLE 1.—Estimated value of gem stone production in the United States

(Thousand dollars)

State	1960	1961	State	1960	1961
Arizona	$120	$119	North Carolina	$4	$6
Arkansas	38	19	North Dakota	1	1
California	150	200	Ohio	3	4
Colorado	45	36	Pennsylvania	4	5
Connecticut	7	9	Rhode Island		1
Delaware		1	South Dakota	20	18
Hawaii	(1)	18	Tennessee	1	1
Maine	15	20	Texas	100	150
Maryland	2	3	Utah	72	73
Massachusetts	1	2	Vermont	1	2
Nebraska	4	5	Virginia	5	6
Nevada	100	100	West Virginia	1	1
New Hampshire	15	(1)	Wyoming	68	83
New Jersey	7	9	Other States [2]	355	361
New Mexico	40	46			
New York	9	10	Total	1,188	1,309

[1] Included with "Other States."
[2] Includes Alaska, Idaho, Illinois, Indiana (1961), Michigan, Minnesota (1960), Missouri (1961), Montana, Oklahoma, Oregon, and Washington with a value of $1,000 or more and those States indicated by footnote 1.

A pink sapphire weighing 14 ounces, estimated to contain 2,000 carats of cuttable material, was found in the Cowee Valley gem field, Macon County, N.C. A 24-ounce ruby weighing 3,400 carats also was found. The ruby contained many flaws, but from the unflawed material within the stone 800 to 1,200 carats may be cut.[6]

New synthetic emeralds were available to U.S. jewelers as a result of a contract between Linde Co. and a Brazilian gem stone dealer, a worldwide distributor of Austrian-manufactured synthetic emeralds. The new synthetics were to retail for $62 to $75 per 1-carat stone, compared with the Chatham-created emeralds priced at $50 to $280 for the same size.[7]

Agate.—Nearly 180 tons of agate valued at $130,000 was reported produced in 23 States in 1961. Estimates were that an additional 200 tons valued at $150,000 was produced in States from which no reports were received. Principal States, in decreasing order of production, were Oregon, South Dakota, New Mexico, Arizona, Washington, Utah, California, and Montana.

Moss agate production was valued at $6,000; turritella, $8,000; and fire agate, $4,000. Plume agate was not reported produced.

[5] Rocks and Minerals. Amethyst Mine Opens in North Carolina. V. 36, Nos. 9, 10, September–October 1961, p. 458.
[6] The Evening Star, Washington, D.C. Carolina Gem-Hunter Finds 2 Giant Stones. No. 205, July 24, 1961, p. 24.
[7] Jewelers' Circular-Keystone. The New Synthetic Emeralds. V. 131, No. 12, August 1961, pp. 156, 158, 160, 161.

Diamond.—Production of diamond at "Crater of Diamonds" near Murfreesboro, Ark., was 121 carats valued at $7,260. Kimberlite was still being sold, but production and value were not reported. The two largest diamonds found during 1961 weighed 3.42 and 3.27 carats.

A washing and concentrating plant, capable of processing 100 cubic yards of diamond-bearing kimberlite per day, was in operation during 1961 at the Arkansas Diamond Mine near Murfreesboro, Ark. A total of 9 carats valued at $320 was reported recovered during the year.

Jade.—Jade production from Alaska, California, Nevada, and Wyoming was 24,000 pounds valued at $73,000. Wyoming was the leading State with 9,000 pounds valued at $42,000. Jade was reported discovered in the Lake Huron region, Mich. No other information on this new source was given.

Outcroppings of green, yellow, blue, gray, and brown jade were discovered southwest of Twenty Nine Palms, Calif.

Obsidian.—Obsidian production, totaling 90,000 pounds valued at $25,000, was reported from six States. Utah was the leading State with 42,000 pounds valued at $13,000. Some of the obsidian varieties collected included rainbow, golden sheen, snowflake, black, and white.

Petrified Wood.—About 80 tons of petrified wood valued at $69,000 was produced in 12 States. South Dakota led with nearly 26 tons, followed by Arizona, Wyoming, Utah, Nebraska, and Nevada. Petrified palm wood production was 5,300 pounds valued at nearly $4,000, and petrified bone produced was 11,000 pounds valued at $6,600.

Quartz Crystal.—Reports indicated that about 35 tons of quartz crystal and miscellaneous quartz specimens, except smoky and rose, was produced, valued at $20,000. Arkansas was the leading producing State with 26 tons valued at $8,000.

Smoky and rose quartz production was 10,000 pounds valued at $8,000.

Tourmaline.—Production of tourmaline from Maine was reported to be over 4,000 carats valued at $500, and 10,000 pounds of tourmaline specimens valued at more than $1,000 were produced. Most of the material came from the Harvard Mine near Greenwood, Maine, and from areas around Newry. Specimens of apatite, cookeite with quartz, and lepidolite also were obtained from the Harvard Mine.

Turquoise.—Five States reported production of 5,300 pounds of turquoise valued at $40,000. Arizona produced 2,900 pounds valued at $12,000; Nevada, 1,800 pounds, at $20,000; and Colorado 100 pounds, at $5,000. Minor values were reported from California and New Mexico.

The Blue Star mine, north of Carlin, Nev., a producer of turquoise for 25 years with an output of about $400,000, was being developed into a gold-producing property during 1961.

Miscellaneous Gem Material.—Mineral specimens produced in the United States were estimated at 350,000 pounds valued at $200,000. Principal producing States were Texas, South Dakota, California, Colorado, and New Mexico.

Rough garnet production was 1,700 pounds valued at $2,100, principally from California. Sales of 458 carats of cut and polished stones valued at $916 were reported from a garnet mine at North Creek, N.Y.

A few pounds of gem opal valued at $3,000 were reported produced from the Rainbow Ridge and Bonanza opal mines in Virgin Valley, Nev. Another producer from a locality south of Yerington, Nev., reported production of 1,500 pounds.

Output of 100 pieces of jet valued at $200 was reported from New Mexico for the first time in many years.

Production of black coral, obtained by divers off the islands of Kauai, Lanai, Maui, and between Maui and Molokini Islands in Hawaii, was about 3,200 pounds valued at $18,000. Due to the depths to which divers were required to go to recover the coral, prices were expected to increase from $5 to $8 per pound in 1961 to $12 in 1962.

The quantity and value of some other gem stones and mineral specimens produced were: Amethyst, 1,000 pounds, $1,000; beryl specimens, 1,000 pounds, $6,000; copper minerals, 10,000 pounds, $12,000; feldspar gems, 15,000 pounds, $3,000; fluorite, 2,000 pounds, $1,500; fossils, 5,000 pounds, $3,000; geodes, 25,000 pounds, $15,000; gold nuggets, 2 pounds, $1,000; idocrase, 3,000 pounds, $2,500; jasper, 75,000 pounds, $25,000; lepidolite, 2,000 pounds, $1,000; marcasite, 2,000 pounds, $1,500; onyx, 50,000 pounds, $10,000; ornamental stone, 50,000 pounds, $8,000; peridot, 10,000 pounds, $15,000; rhodonite, 30,000 pounds, $10,000; rhyolite, 5,000 pounds, $1,500; topaz, 1,000 pounds, $2,000; and verd-antique, 15,000 pounds, $1,500.

CONSUMPTION

Diamond consumption, $193 million was 16 percent greater than in 1960; sales of synthetic and imitation gem stones, $5.3 million were 12 percent lower; and sales of natural and cultured pearls, $17 million were 16 percent higher.

Apparant consumption (production plus imports minus exports and reexports) of gem stones in the United States was over $181 million, compared with $164 million in 1960.

PRICES

Prices quoted during October 1961 for cut and polished gem diamonds were: ¼ carat, $70 to $295; ½ carat, $170 to $540; 1 carat, $400 to $1,680; and 2 carats, $1,090 to $4,000. The range in price of each size depended upon quality (cut, clarity, and color).

The price of medium-grade, rough, green opal from Australia increased from US$45 per ounce in 1959 to US$90 in 1960, and to US$135 in 1961. Best-grade, rough, black opal was selling at US$448 or more per ounce in mid-1961.

A report on the diamond industry was published. This publication contained information on diamond marketing and world prices of gem and industrial diamonds during 1960.[8]

[8] Switzer, George. Thirty-Sixth Annual Report on the Diamond Industry—1960 Jewelers' Circ.-Keystone, 1961, 53 pp.

FOREIGN TRADE [9]

Imports.—Gem stone imports increased 16 percent in value over 1960. Gem diamonds accounted for 87 percent of the total imports and increased 947,000 carats in quantity and $28 million in value over 1960.

Diamonds, cut but unset, were principally imported from Israel and Belgium-Luxembourg, with 51 percent from the latter. The average values per carat of diamond imports from the principal exporting countries were Belgium-Luxembourg, $98.02; France, $96.24; Israel, $78.97; Netherlands, $112.46; Union of South Africa, $179.18; United Kingdom, $129.82; and West Germany, $66.73. Average value of all imports of these cut but unset diamonds was $93.67.

Imports of emeralds, cut but not set, increased 146,000 carats over 1960; 89 percent came from India. The average values per carat of emerald imports from the principal exporting countries were Brazil, $23.12; Ceylon, $48.53; Colombia, $78.35; France, $30.29; Hong Kong, $86.34; India, $5.36; Italy, $84.78; Pakistan, $87; Switzerland, $138.13; Union of South Africa, $114.64; United Kingdom, $16.91; and West Germany, $37.47.

The value of imported cultured pearls increased about $2.5 million over 1960, but the value of natural pearls decreased $129,000.

Rubies and sapphires, cut but not set, valued at $675,000 were imported from 13 countries. Imports from Colombia, the principal source, were valued at $506,000.

TABLE 2.—U.S. imports for consumption of precious and semiprecious stones, exclusive of industrial diamonds

Stones	1960		1961	
	Carats	Value (thousands)	Carats	Value (thousands)
Diamonds:				
Rough or uncut, suitable for cutting into gemstones, duty free	1,365,529	[1] $87,518	2,274,923	$114,670
Cut, but unset, suitable for jewelry, dutiable	801,945	78,037	839,150	78,605
Emeralds: Cut but not set, dutiable	81,207	1,463	227,284	2,090
Pearls and parts, not strung or set, dutiable:				
Natural		629		500
Cultured or cultivated		13,934		16,425
Other precious and semiprecious stones:				
Rough or uncut, duty free		620		1,169
Cut but not set, dutiable		3,967		3,899
Imitation, except opaque, dutiable:				
Not cut or faceted		74		54
Cut or faceted:				
Synthetic		334		346
Other		5,897		4,907
Imitation, opaque, including imitation pearls, dutiable		8		14
Marcasites: Real and imitation, dutiable		7		36
Total		[1] 192,488		222,715

[1] Revised figure.

Source: Bureau of the Census.

[9] Figures on imports and exports compiled by Mae B. Price and Elsie D. Jackson, Division of Foreign Activities, Bureau of Mines, from records of the U.S. Department of Commerce, Bureau of the Census.

TABLE 3.—U.S. imports for consumption of diamonds (exclusive of industrial diamonds), by countries

Country	1960				1961			
	Rough or uncut		Cut but unset		Rough or uncut		Cut but unset	
	Carats	Value (thousands)	Carats	Value (thousands)	Carats	Value (thousands)	Carats	Value (thousands)
North America:								
Canada	13,751	$1,004	936	$74	7,772	$833	79	$10
Mexico			173	16	257	3	160	14
Panama							23	3
Total	13,751	1,004	1,109	90	8,029	836	262	27
South America:								
Brazil	26,811	907	34	8	42,962	759	706	36
British Guiana	22,102	743	23	1	26,150	686	93	8
Venezuela	41,220	1,161			111,700	3,151		
Total	90,133	2,811	57	9	180,812	4,596	799	44
Europe:								
Austria			753	47				
Belgium-Luxembourg	207,225	14,354	435,284	44,462	210,419	15,391	428,054	41,957
France	45,965	1,803	13,337	1,181	47,857	1,522	10,578	1,018
Germany, West	553	13	59,703	3,974	896	28	52,154	3,480
Italy			66	15			541	59
Netherlands	22,512	1,432	33,869	3,762	50,563	2,360	28,756	3,234
Switzerland	2,501	138	99	10	6,526	269	349	205
U.S.S.R.							1,023	85
United Kingdom	829,523	[1] 59,555	7,133	1,094	1,561,423	81,702	5,238	680
Total	1,108,279	[1] 77,295	550,244	54,545	1,877,684	101,272	526,693	50,718
Asia:								
Hong Kong							1	[2]
India			86	15			9	3
Iran							56	4
Israel	54,894	1,801	213,013	17,453	50,744	1,938	278,229	21,971
Japan			6,398	81	244	26	942	91
Singapore, Colony of							38	11
Thailand							83	1
Total	54,894	1,801	219,497	17,549	50,988	1,964	279,358	22,081
Africa:								
Congo, Republic of the, and Ruanda-Urundi [3]	22	1			10,860	228	10	1
Western Africa, n.e.c. [4, 5]	7,180	259			80,243	2,097		
Western Equatorial Africa, n.e.c. [6]	3,494	105			3,863	51		
Ghana	7,104	47						
Liberia	23,567	879			8,113	280		
Union of South Africa	56,185	3,198	30,955	5,843	54,331	3,346	31,951	5,725
Total	97,552	4,489	30,955	5,843	157,410	6,002	31,961	5,726
Oceania: Australia	920	118	83	1			77	9
Grand total	1,365,529	[1] 87,518	801,945	78,037	2,274,923	114,670	839,150	78,605

[1] Revised figure.
[2] Less than $1,000.
[3] Effective July 1960; formerly Belgian Congo.
[4] Effective July 1960; formerly French West Africa and Republic of Togo.
[5] N.e.c.—not elsewhere classified.
[6] Effective July 1960; formerly French Equatorial Africa.

Source: Bureau of the Census.

Exports.—Exports of gem stones, precious and semiprecious, were $14.8 million, compared with $7.6 million in 1960. Diamonds, cut but unset, accounted for 76 percent of the total.

The value of gem stones exported, except diamonds, was over $2 million, of which 50 percent went to Switzerland and West Germany.

Reexports of gem stones, precious and semiprecious, were $28 million, compared with $21.7 million in 1960. Diamonds, rough, uncut, and suitable for cutting into gem stones, accounted for 80 percent of the total.

WORLD REVIEW

Gem and industrial diamond sales through the Central Selling Organization (London) were a record $268 million. No breakdown between gem and industrial sales was given. The previous sales record was $255.2 million, set in 1959.

TABLE 4.—World production of diamonds, by countries

(Thousand carats)

Country	1960		1961	
	Gem	Industrial	Gem	Industrial
Africa:				
Angola	658	400	688	460
Central African Republic	30	[1] 50	41	70
Congo, Republic of the	413	13,040	405	17,738
Ghana	[1] 773	[1] 2,500	740	2,300
Guinea [2]	447	670	490	730
Ivory Coast	80	120	219	330
Liberia [3]	577	400	595	500
Sierra Leone	912	1,050	887	1,050
South-West Africa	[1] 885	[1] 50	816	90
Tanganyika	287	250	340	345
Union of South Africa:				
Pipe mines:				
Premier	309	1,000	360	1,200
De Beers Group	717	580	953	760
Other "pipe" mines [2]	[1] 40	[1] 100	35	80
Alluvial mines [2 4]	240	160	240	160
Other regions:				
Brazil [2]	[1] 175	[1] 175	175	175
British Guiana	[1] 61	[1] 40	68	45
Venezuela	14	57	60	74
India, Borneo, Australia, U.S.S.R., and Others [2]	[1] 60	[1] 360	80	420
World total	[1] 6,700	[1] 21,000	7,200	26,500

[1] Revised figure.
[2] Estimate.
[3] Exports only.
[4] Including State-owned mines.

NORTH AMERICA

Canada.—The possibility of finding diamond in Canada was reported to be good because of the similarity between the diamond-bearing rocks in Siberia and those of northern Canada.[10]

SOUTH AMERICA

Brazil.—A deposit of tourmaline was discovered in pegmatites at Serra da Cacunda, Minas Gerais. Three other tourmaline mines were registered with the Government, one each in the States of Minas Gerais, Ceara, and São Paulo.[11] The quantity produced was unknown.

[10] Jewelers' Circular-Keystone. Diamond Finds in Canada Likely. V. 131, No. 7, April 1961, p. 134.
[11] Mining Journal (London). Mining News from Brazil. V. 257, No. 6593, Dec. 29, 1961, p. 675.

Reactivation of an old diamond mine, the Boa Vista, in the State of Minas Gerais, was planned by a group of investors from the United States. The new company's name was Diamonds of Brazil, Inc.[12]

Exports of semiprecious stones in 1960 were 533 tons valued at US$481,321, compared with 317 tons valued at US$27,173 in 1959. These figures were compiled from export licenses issued by the Brazilian Department of Mineral Production.[13]

British Guiana.—Diamond production was 112,679 carats in 1961, of which 67,600 was gem material. This was an increase of about 12,000 carats over 1960. A new diamond deposit was discovered during 1961 at Kurupung.

Chile.—Exports of lapis lazuli in 1961 were 1.8 short tons valued at US$6,400, compared with 4.4 tons valued at US$2,840 in 1960. In both years West Germany was the leading customer.[14]

Colombia.—A new company, Empresa de Esmeraldas, was formed by the Banco de la Republica to take over and work the existing emerald mines. Reports were received that new deposits of emerald were found in the western Department (State) of Boyaca.[15]

Venezuela.—Diamond production in 1961 was 134,000 carats, of which 60,500 carats was gem quality. Exports of 54,000 carats were to Bermuda and the United States. The discovery of several large deposits in the Caroni River bed resulted in increased production of all types of diamonds during the year.[16]

EUROPE

U.S.S.R.—After the discovery of the first kimberlite pipe in Yakutia in 1954, about 200 pipes and dikes were reported found. Only seven or eight had a diamond content high enough for economic exploitation. Two of these were in southern Yakutia; the rest were in the north or near the Arctic Circle.

It was estimated that 900,000 carats was produced in Yakutia and about 50,000 carats in the Ural Mountain region in 1960. Of the total produced, about 5.5 percent was gem diamond. Gem diamonds were being cut and polished in Leningrad and Sverdlovsk.[17]

ASIA

Bahrain.—Expectations were that the 1961 pearl harvest from the Persian Gulf would exceed the 1960 production of US$210,000. The pearling fleet consisted of 11 boats with 450 divers, compared with over 1,800 boats used 30 years ago. Most of the pearls were polished and drilled in India before being made into jewelry.[18]

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[12] Jewelers' Circular–Keystone. American Investors Seek Diamonds in Brazil Mine. V. 131, No. 9, June 1961, pp. 95–96.
[13] Mining Journal. Notes on the Mineral Potential of Brazil. V. 256, No. 6560. May 12, 1961, p. 535.
[14] U.S. Embassy, Santiago, Chile. State Department Dispatch 645. Apr. 17, 1962, p. 31.
[15] Mining Journal (London). Mining Miscellany. V. 257, No. 6580, Sept. 29, 1961, p. 317.
[16] Bureau of Mines. Mineral Trade Notes. V. 54, No. 5, May 1962, p. 10.
[17] Kowalewski, Jan. Mineral Resources Development in U.S.S.R.—II. Min. J., v. 257, No. 6571, July 28, 1961, p. 94.
[18] Foreign Commerce Weekly. Forecast for Bahrain Pearl Harvest Appears Optimistic. V. 67, No. 2, Jan. 8, 1962, p. 60.

Hong Kong.—The Colonial Government with the help of Japanese consultants was reviving its pearl industry. Although it was still in the experimental stage, the developers hoped to produce cultured pearls within a few years.[19]

India.—The National Mineral Development Corp., owned by the Government of India, proved a diamond deposit in the Panna region and planned production of 40,000 to 50,000 carats by 1963. It was estimated that 65 percent of total production would be gem diamonds.[20]

Emerald deposits in the Udaipur region at Gamgudha, Kalouman, and Tikhi had yielded high-grade gems in past years, and the possibilities of again producing in these areas were being explored.[21]

Israel.—A new diamond center, sponsored by the Government-controlled Diamond Development Corp. and the Jerusalem Economic Corp., was opened in Jerusalem in November 1960. The Israel diamond industry in 1961 employed about 8,000 people, with an expansion of an additional 4,000 people expected in the near future.

In 1960, Israel imported nearly 1.5 million carats of rough diamonds valued at US$51 million and exported about 618,000 carats valued at US$61 million, of which US$18 million were sent to the United States.[22]

The value of exports of polished gem diamonds increased 425 percent in the 10-year period, 1951–60. Total carats exported increased 365 percent in the same period. The United States was the largest customer for the cut stones.[23]

The finding of malachite in the King Solomon mine was reported. Some of the copper ores found in the mine contained blebs of minerals with a coloring of turquoise, beige, blue, and black with specks of white, and they were used for decorative purposes. Some of the softer nuggets were broken up and cemented together in a mosaic pattern for jewelry.

The entire gem stone industry was controlled by the Government, and those wishing to purchase malachite or other gem materials for jewelry were required to obtain a license from the Ministry of Development.[24]

AFRICA

British East Africa.—Tanganyika's production of diamond in 1961 was valued at US$17 million. Crude ruby and ruby-bearing corundum were sold for US$41,000.

Federal Ventures, Ltd., Tanganyika, finished preliminary examination of the ruby and sapphire occurrence in the Umba River area, Lushoto district in 1960. A processing plant was planned, and production was expected to start in 1962.

Specimens of semiprecious stones found by prospectors during 1961 included quartz, garnet, zircon, sphene, beryl, chrysoberyl, and tourmaline.

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[19] Foreign Trade (Ottawa). Commodity Notes. V. 116, No. 7, Sept. 23, 1961, p. 14.
[20] Engineering and Mining Journal. In India. V. 162, No. 10, October 1961, p. 182.
[21] Mining Journal (London). Udaipur's Mineral Wealth. V. 257, No. 2572, Aug. 4, 1961, p. 108.
[22] Bureau of Mines. Mineral Trade Notes. V. 53, No. 4, October 1961, pp. 19–21.
[23] Bureau of Mines. Mineral Trade Notes. V. 53, No. 4, October 1961, pp. 19–21.
[24] Gold, Gertrude. King Solomon's Mine Produces Riches Again. Jewelers' Circ.–Keystone, v. 131, No. 10, July 1961, pp. 48, 50.

Tanganyika Crystals, Ltd., at Anusha, was reported to be producing high-quality cut stones, especially amethysts.

Overseas companies were investigating opportunities for investments in the local precious and semiprecious gem stone industry.[25]

British West Africa.—During 1961 a report from Kenya indicated that 1,000 carats of sapphire valued at US$846 was produced.[26]

Cameroun, Republic of.—Three diamonds, the largest of which was 1.7 carats, were discovered in the Méré and Vina regions during 1960. Extensive prospecting during 1961 was proposed by the Government of Cameroun.[27]

Ivory Coast.—Ivory Coast Diamond Company, State-owned, was to be formed to mine diamond in the Ivory Coast and to help stop illegal mining. Exports of gem diamond for the first 11 months of 1961 were valued at US$2 million.[28]

Malagasy Republic.—One of the outstanding characteristics of the mineralization in Malagasy is the occurrence of a wide variety of semiprecious gem stones. The most highly prized gems came from deposits in the Sahatany Valley and from Antsirabe, Ankazobe, and Ikalamavony pegmatite fields. Domestic production during 1961 was sporadic and barely supplied local lapidaries. Some of the more important gems mined were beryl (morganite, aquamarine, and heliodor), tourmaline (rubellite, indicolite, and others having colors of green, brown, violet, and pink), spodumene (kunzite and others of yellow and greenish yellow color), garnet (spessartite and almandite), topaz (colors range from water clear to a slightly greenish tint), sapphire (cordierite), feldspar (amazonite, moonstone, and others water white to golden yellow in color), and quartz (rock crystal, citrine, smoky, amethyst, chalcedony, and jasper).

Other varieties of gems found in Malagasy that may be cut and polished are alabaster, chrysoberyl, danburite, diopside, epidote, ferropecotite, kornerupite, labradorite, opal, rhodonite, rhodizite, scapolite, serpentine, spinel, and turquoise.

Other mineralogical specimens highly prized by collectors included ampangabeite, befanamite, betafite, and grandidierite.

Rhodesia and Nyasaland, Federation of.—The Sandawana emerald deposits, owned by Rio Tinto Co., Ltd., were reported producing high-quality gems during 1960. Production and values were unknown. Two new emerald deposits were reported in the Fort Victoria district.[29] Another emerald discovery was reported in the Mazoe district 20 miles north of Salisbury.[30]

South-West Africa.—In June 1961, Marine Diamond Corp., Ltd., was formed to mine diamond by dredging in a coastal area extending from the mouth of the Orange River north 172 miles and extending from the low-water mark on the coast to the 3-mile limit.[31] Also, Atlantic

[25] Mining Journal (London). Tanganyika's Mining Industry in 1961. V. 258, No. 6605, Mar. 23, 1962, pp. 288–289.
[26] U.S. Consulate, Nairobi, Kenya. State Department Dispatch 400. Mar. 26, 1962, p. 2.
[27] Bureau of Mines. Mineral Trade Notes. V. 53, No. 3, September 1961, p. 16.
[28] Mining Journal (London). Mining Miscellany. V. 258, No. 6600, Feb. 16, 1962, p. 173.
[29] Rhodesian Mining and Engineering (Salisbury). News Concentrates. V. 26, No. 6, June 1961, pp. 30, 50.
[30] Bureau of Mines. Mineral Trade Notes. V. 53, No. 5, November 1961, p. 17.
[31] Bureau of Mines. Mineral Trade Notes. V. 53, No. 5, November 1961, pp. 14–15.

TABLE 5.—Production, exports, and value of gem stones from South-West Africa during 1961

Gem	Production	Exports	
	Quantity	Quantity	Value
Diamonds—carats	816	787,949	US$47,267,567
Amethyst—pounds	6,658	658	111
Chalcedony—do	30,200	2,600	1,960
Rose quartz—do	980	980	140
Tourmaline—do	73	11	4,900
Aragonite—do	400	400	280

Diamond Corp., Ltd., was seeking an 8-mile concession north of the Orange River along the coast to the 3-mile limit.[32]

Union of South Africa.—Emerald production from northeastern Transvaal increased to 3,600 pounds in 1960 from 1,800 pounds in 1959. African Emerald Mining Company (Pty.) Ltd., African Gem Company, and Gravelotte Emerald Mine were the only producers. Virtually all of the emerald was exported to Switzerland and the United Kingdom. Tiger's eye production was about 3 tons.[33]

Plans were made for reopening the famous de Beers' diamond mine at Kimberley.[34] This mine, also known as the "Big Hole," was mined to a depth of 3,520 feet and produced over 14 million carats before mining stopped in 1908.[35]

OCEANIA

Australia.—The value of opal reported in official statistics was the amount buyers reported to the Government as the price paid for rough material. Opal production in 1960 was valued at US$1.5 million, and exports were US$2.3 million.[36]

TECHNOLOGY

A list of mineral species, some of which were found only in California, was published.[37]

Information on jade gem material in Washington was given.[38]

A new book on opal, published in Australia, contained information on the history of opal mining and discussed modern methods of extraction. It was illustrated with drawings and photographs of different types of opal.[39]

Gem stones of South Africa and their locations were described.[40]

[32] Mining Journal (London). Mining Miscellany. V. 257, No. 6586, Nov. 10, 1961, p. 485.
[33] U.S. Consulate, Johannesburg, Union of South Africa. State Department Dispatch 7. July 7, 1961, p. 14, encl. 3, pp. 1, 2.
[34] Mining World and Engineering Record (London). De Beers Well Equipped to Meet Difficult Times Ahead in Africa. V. 177, No. 4551, June 1961, p. 243.
[35] Rocks and Minerals. Kimberley Diamond Mine May Reopen. V. 36, Nos. 1 and 2, January–February 1961, p. 41.
[36] Bureau of Mines. Mineral Trade Notes. V. 54, No. 1, January 1962, pp. 40, 41.
[37] Stinson, Melvin C. The Mineral Kingdom. Miner. Inf. Service, California Div. of Mines, San Francisco, Calif., v. 14, No. 8, August 1961, 16 pp.
[38] Waskey, Frank H. Washington State Jade. Rocks and Minerals, v. 36, Nos. 1 and 2, January–February 1961, pp. 30–31.
[39] Leechman, Frank. The Opal Book. Ure Smith Pty. Ltd., Sydney, Australia, 1961, 255 pp.
[40] Blignaut, Adi. Gemstones of Southern Africa. Geol. Museum of Johannesburg, Transvaal, South Africa, 1961, 28 pp.

Each monthly issue of Mine and Quarry Engineer (London) beginning with October 1953 described a mineral, giving the synonyms, nomenclature, varieties, composition, crystallography, physical and optical properties, tests, diagnoses, occurrences, and uses. Each mineral was illustrated in color. In the 1961 issues the minerals in chronological order were strontiamite, wavellite, cryolite, aurichalcite, datolite, hemimorphite, adularia, diopside, gibbsite, topaz, rutile, and opal.

A series of articles on quartz as a gem material were published.[41]

Data on gem stones having dichroism, the property of presenting different colors in two directions by transmitted light, were given.[42]

The origin of jadeite and experimental studies on its synthesis were described.[43]

Recent developments in the synthesis of gem material for jewelry and industrial applications were reviewed.[44]

Single crystals of corundum made by the Verneuil method were investigated to determine the quantity, color, and degree of oxidation of manganese which they contained. The crystals contained from 0.1 to 20 mole-percent manganese oxide. Chemical and microscopic examinations were reported.[45]

A Russian publication reviewed the history of emerald synthesis in Germany. Past and recent methods used to manufacture emeralds were described. The synthesis of phenakite, zircon, garnet, titanite, and rutile also was mentioned.[46]

Methods of growing crystals of synthetic ruby in a closed system[47] and of producing garnet synthetically were patented.[48]

An improvement in the color of pale yellow or brown gem diamonds by exposure to gamma radiation was described.[49]

The design of an apparatus for use in extraction of diamonds was patented in Russia.[50]

A method of producing diamonds by explosive force was described.[51]

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[41] Pough, Frederick H. The Many Faces of Quartz. Jewelers' Circ.–Keystone, v. 132, No. 1, October 1961, pp. 80, 82, 102–103; No. 2, November 1961, pp. 68, 70, 77–78; No. 3, December 1961, pp. 50, 52, 54, 56.

[42] Pough, Frederick H. Bi-Color, Parti-Color and Dichroic Stones. Jewelers' Circ.–Keystone, v. 131, No. 10, July 1961, pp. 52, 54.

[43] Moskaleva, V. N. The Problem of Jadeite. Econ. Geol., v. 56, No. 8, December 1961, p. 1480.

[44] Chemical Engineering. Flame-Grown Gem Stones Enjoy Broadened Use in Optics and Fashion Jewelry. V. 68, No. 26, Dec. 25, 1961, pp. 26–28.

[45] Baumgärtel, Rolf. (Investigations on Corundum Single-Crystals Containing Manganese.) Chem. Tech., No. 10, 1961, 615 pp.

[46] Espig, Hermann. (Emerald Synthesis.) Chem. Tech., No. 6, 1960, pp. 327–331.

[47] Ballman, Albert A., Anthony J. Caporaso, and Robert A. Laudise (assigned to Bell Telephone Laboratories, Inc.). Method of Growing Corundum Crystals. U.S. Pat. 2,979,413, Apr. 11, 1961.

[48] Van Uitert, L. G. G. (assigned to Bell Telephone Laboratories, Inc.). Polycrystalline Garnet Materials. U.S. Pat. 3,003,966, Oct. 10, 1961.

[49] Custers, J. F. H., H. B. Dyer, and R. W. Ditchburn (assigned to Industrial Distributors Ltd. (1946)). Treatment of Diamonds. U.S. Pat. 2,998,365, Aug. 29, 1961.

[50] Lomakin, G. A. Russian Pat. 129,146, June 15, 1960.

[51] Van Tilburg, J. Australian Pat. 226,337, Nov. 27, 1959.