Gem Stones

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

THE ESTIMATED VALUE of gem material produced in the United States in 1958 exceeded $1 million for the first time. Material collected was nearly 1 million pounds.

The Federal Trade Commission suggested that the descriptive terms—cultured, man-made, and created-by-man—should not be used as designations for laboratory-produced emeralds, sapphires, or other gem stones. It was suggested that they be called synthetic, imitation, simulated, or some word of like meaning to distinguish them from natural stones.

DOMESTIC PRODUCTION

Forty-one States reported production compared with 32 in 1957. Oregon was the leading producing State with an estimated $200,000, the same as in 1957. Ten States—Oregon, California, Texas, Nevada, Arizona, Washington, Wyoming, Utah, Colorado, and Montana—produced 87 percent of the total value. Increased production was reported for 19 States; decreased production, for 3 States.

Gem materials were found in about 200 new localities mostly in Eastern States. The principal varieties of gem material produced in decreasing order, by weight, were petrified wood, agate, rose quartz, quartz crystal, obsidian, and jade. In decreasing order, by value, the principal varieties were turquois, agate, petrified wood, jade, and quartz crystal.

Agate.—Agate produced was valued at $50,000, a 60-percent drop from 1957. Only 39 tons of this material was collected, compared with 200 tons in 1957. The principal States, in decreasing order of production, were Oregon, New Mexico, California, Wyoming, and Texas. The value of production in Oregon was about the same as in 1957; that in New Mexico was about half the 1957 value.

Diamond.—Production of diamond in Arkansas was reported at 475 carats, valued at over $5,000. Hundreds of individuals paid fees for the privilege of searching for the gems on privately owned diamond deposits in Pike County.

Three diamonds, smoky in color, were recovered from a mud pipe in Pershing County, Nev., and a claim was filed on the deposit. Diamond also was discovered 155 feet underground by the Jersey Quarry Co. in an unidentified locality in Illinois. The diamonds from Illinois were reported to be too small for gems.

[1] Commodity specialist.
[2] Statistical clerk.

Jade.—Jade production was valued at $60,000, a 20-percent increase compared with 1957. Alaska was the principal producing State, followed by Wyoming, California, and Colorado.

Jade was found in its place of formation in Fremont County, Nev. All jade previously recovered in this area was from alluvial deposits.

In California, good-quality jade was recovered from a deposit under 36 feet of water off the coast at San Simeon by skin divers. Jade also was produced in Arizona and Nevada.

A new lapidary shop was built at the Shungnak Jade Project School, Shungnak, Alaska, and a portable diamond drill was obtained to core jade boulders as an aid in the search for gem-grade material. A shortage of gem-quality jade prompted intensified prospecting.

Petrified Wood.—Over 110 tons of petrified wood was produced, about equal to the 1957 quantity. Estimated value of production was about $50,000, principally from Arizona, Utah, Wyoming, Oregon, and California. Navajo County, Ariz., was the main producing area, with a value estimated at $12,000.

Turquois.—Arizona was the leading producing State, with 80,000 pounds, but because the turquois was low grade its value was only $16,000. Nevada produced only 1,500 pounds but led in value of production with $30,000. Colorado production was 350 pounds, valued at $16,000. New Mexico production was about 5,000 pounds, valued at $5,000.

Miscellaneous Gem Material.—Rose quartz production in South Dakota was 35 tons, valued at $5,000. A small output also was reported from Maine.

A vein of noncrystalline smoky quartz, ranging from light brown to deep black, was discovered in Jasper County, Ga. Excellent gems were cut from unflawed pieces.[3]

Precious opal produced in Nevada was valued at less than $2,000, compared with $52,000 in 1957.

Obsidian (26,000 pounds) valued at $7,000 was about 2½ times the quantity estimated for 1957. Obsidian was used principally in tumbling machines for making baroque gems.

Quartz crystal (52,000 pounds), valued at $23,000, came principally from Garland and Montgomery Counties, Ark. Other producing States were California, Utah, and Pennsylvania.

Feldspar gem-stone production totaled 9,000 pounds, valued at $5,000. The principal producing States were South Dakota, Virginia, Pennsylvania, and Colorado.

About 1,800 pounds of beryl specimens, valued at $1,500 was produced in Mohave County, Ariz.

Copper mineral specimens totaling 6,800 pounds valued at $11,000 were produced in Arizona. Of this total, 1,300 pounds was chrysocolla, valued at about $3,800.

The quantity and value of some other gem stones produced were: Fluorite, 5,000 pounds, $1,400; onyx, 15,000 pounds, $5,000; rhodonite, 10,000 pounds, $3,000; and tourmaline, 2,000 pounds, $8,000.

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[3] Gleason, F. E., Smoky Quartz in Georgia: Georgia Mineral Newsletter, vol. 11, No. 4, Winter 1958, pp. 132–133.

TABLE 1.—Estimated production of gem stones in the United States, in thousand dollars

	1957	1958		1957	1958
Alaska	(1)	(1)	New York	5	8
Arizona	$75	$86	North Carolina	(2)	1.3
Arkansas	(1)	23	Oregon	200	200
California	100	150	Pennsylvania	(2)	2
Colorado	35	38	South Dakota	15	16
Connecticut	(2)	3	Texas	100	100
Idaho	5	5	Utah	12	40
Illinois	2	1.3	Vermont	--	1
Maine	(2)	5	Virginia	--	3
Maryland	(2)	1.5	Washington	75	75
Montana	35	35	Wyoming	55	52
Nebraska	2	2	Other States [2]	36	21
Nevada	100	100	Total	882	1,006
New Hampshire	(2)	5			
New Jersey	(2)	4			
New Mexico	30	28			

[1] Included with "Other States."
[2] Less than $1,000 value with "Other States" include: Florida (1957), Georgia (1957–58), Iowa (1957–58), Kansas (1958), Kentucky (1958), Massachusetts (1958), Michigan (1957–58), Minnesota (1957–58), Missouri (1957–58), North Dakota (1957–58), Ohio (1958), Oklahoma (1958), South Carolina (1958), Tennessee (1958), and West Virginia (1958).

CONSUMPTION

Sales of lapidary equipment and supplies, gem materials (excluding diamond), and mineral specimens slightly exceeded 1957 sales, with an estimated $5.5 million. Synthetic and imitation gem-stone sales from domestic and foreign suppliers were estimated at $11 million. Purchases of natural gem materials, exclusive of diamond, were reported to be about $15 million.

The apparent consumption (domestic production plus imports minus exports) of gem stones was over $151 million compared with $142 million in 1957.

PRICES

Retail prices for some natural gem stones, cut and polished in foreign countries, in 1957–58 were as follows:

Variety, size or color:	*Range of prices per carat, dollars*
Alexandrite (1–2 carats)	5–15
Alexandrite (5–20 carats)	Up to 200
Alexandrite (cats-eye, 5–6 carats)	Up to 100
Chrysoberyl (1 carat)	20–25
Garnet (demantoid, 1–2 carats)	Up to 100
Peridot (up to 6 carats)	1–2
Peridot (100 and over)	8–18
Ruby (2 carats and over)	2,500 up
Ruby (½ carat and under)	2–5
Ruby (star, all sizes)	Up to 1,500
Sapphire (golden)	10–25
Spinel (ruby)	Up to 100
Spinel (purple, pink, blue)	Up to 10
Tourmaline (purple, pink, ruby)	Up to 15
Tourmaline (green)	5–10
Zircon (pale blue)	1–2
Zircon (deep blue)	8–10
Zircon (white)	4–7

SOURCE: Jewelers' Circular-Keystone, vol. 128, No. 7, April 1958, pp. 104, 110, 112, 114–117; No. 8, May 1958, pp. 68, 70, 76; No. 9, June 1958, pp. 58, 60, 62.

Wholesale prices paid per carat for rough and uncut alexandrite ranged from $300 to $500 for Ceylon stones and up to $500 for the Siberian variety. Sapphires of the alexandrite variety, from Ceylon, cost about $50 per carat wholesale.

FOREIGN TRADE [4]

Imports of gem stones decreased nearly 2 percent in value from 1957. Gem diamonds supplied 85 percent of total imports, the same as in 1957. Precious stone imports from the Federation of Rhodesia and Nyasaland were reported for the first time and were valued at $141,000.

Decreases in the value of cut but not set imported gem stones were reported for synthetic gems (51 percent), emeralds (31 percent), and rubies and sapphires (10 percent). Increases were noted in natural pearls (24 percent), rough or uncut precious stones (excluding diamond) (22 percent), and cultured pearls (9 percent).

WORLD REVIEW

World diamond production increased 2.7 million carats over 1957. Of the world total, 18 percent was of gem quality. Sales of gem diamond in 1958 were 5.2 million carats valued at about $140 million compared with 5.5 million carats valued at $148 million in 1957.

TABLE 2.—Precious and semiprecious stones (exclusive of industrial diamonds) imported for consumption in the United States

[Bureau of the Census]

Item	1957		1958	
	Carats	Value (thousand)	Carats	Value (thousand)
Diamonds:				
Rough or uncut (suitable for cutting into gem stones), duty-free	[1] 997,162	[1 2] $77,170	1,129,297	$72,430
Cut but unset, suitable for jewelry, dutiable	609,775	65,418	718,422	68,065
Emeralds: Cut but not set, dutiable	37,245	[2] 1,595	38,848	1,100
Pearls and parts, not strung or set, dutiable:				
Natural		480		597
Cultured or cultivated		[2] 9,509		10,347
Other precious and semiprecious stones:				
Rough or uncut, duty-free		[2] 630		717
Cut but not set, dutiable		[2] 3,164		2,904
Imitation, except opaque, dutiable:				
Not cut or faceted		[2] 60		65
Cut or faceted:				
Synthetic		[2] 464		228
Other		[1 2] 10,125		9,311
Imitation, opaque, including imitation pearls, dutiable		[2] 23		17
Marcasites, dutiable: Real and imitation		[2] 26		26
Total		[1 2] 168,664		165,807

[1] Revised figure.
[2] Data known to be not comparable with 1958.

[4] 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.

Countries reporting increases in production were: Tanganyika, 28 percent; Belgian Congo, 7 percent; and Ghana, 7 percent. All other countries reported lower production than in 1957.

TABLE 3.—Diamonds (exclusive of industrial diamonds) imported for consumption in the United States, by countries

[Bureau of the Census]

Country	1957				1958			
	Rough or uncut		Cut but unset		Rough or uncut		Cut but unset	
	Carats	Value (thousand)	Carats	Value (thousand)	Carats	Value (thousand)	Carats	Value (thousand)
North America: Canada	5,850	$568	419	$52	8,085	$885	1,318	$103
South America:								
Argentina	147	3	9	(1)	290	7	10	12
Brazil	3,426	135	778	76	5,631	295	287	17
British Guiana	4,782	136	236	24	6,739	210	40	6
Surinam	2,726	88			27	1		
Venezuela	61,890	2,058	4	(1)	39,405	1,114	40	4
Total	72,971	2,420	1,027	100	52,092	1,627	377	39
Europe:								
Austria							62	9
Belgium-Luxembourg	130,646	13,308	345,899	37,483	192,980	12,831	455,267	40,740
France	21,052	846	6,228	987	11,267	424	7,386	898
Germany, West	588	18	29,873	2,020	784	19	35,323	2,442
Hungary			105	4				
Italy			147	22			119	60
Netherlands	4,248	319	22,686	2,914	8,252	983	24,046	2,927
Switzerland	917	27	134	108			279	100
United Kingdom	[2]646,890	[2] 55,507	3,275	552	646,077	50,448	6,543	1,447
Total	[2]804,341	[2] 70,025	408,347	44,090	859,360	64,705	529,025	48,623
Asia:								
Ceylon							142	21
Hong Kong			3	(1)			207	15
India	23	2	385	259			57	4
Iran			147	13				
Israel	3,462	129	151,488	13,686	7,088	146	150,438	12,769
Japan	249	4	1,297	116			308	22
Lebanon					1,250	60		
Malaya, Federation of; Singapore, Colony of	300	44			290	42		
Thailand			152	1				
Total	4,034	179	153,472	14,075	8,628	248	151,152	12,831
Africa:								
Belgian Congo	4,150	14			5,025	30		
British East Africa			1	(1)	479	15		
French Equatorial Africa	23,690	634			6,521	224		
French West Africa	2,469	52			3,686	92		
Ghana					72,951	553		
Liberia	45,496	1,608			22,989	805	4	(1)
Southern British Africa			42	3				
Union of South Africa	[3] 34,161	[3] 1,670	46,284	7,063	88,815	3,191	36,546	6,469
Western Portuguese Africa					666	55		
Total	[2]109,966	[2 3] 3,978	46,327	7,066	201,132	4,965	36,550	6,469
Oceania: Australia			183	35				
Grand total	[2]997,162	[2 3] 77,170	609,775	65,418	1,129,297	72,430	718,422	68,065

[1] Less than $1,000.
[2] Revised figure.
[3] Data known to be not comparable with 1958.

NORTH AMERICA

Canada.—Upstream gravels near Princeton district, British Columbia, yielded seven or eight minute diamonds. The area was staked, and further prospecting and sampling were anticipated.[5]

An article on industrial minerals in Canada contained a section on the occurrence of gem stones and mineral crystals. Some information was given on the size of the Canadian gem-stone industry.[6]

SOUTH AMERICA

Brazil.—In 1957 the National Department of Mineral Production authorized rough-diamond exports of over 7,800 carats valued at nearly $250,000 and over 55,600 carats of cut semiprecious gems valued at about $5,500.[7]

British Guiana.—Exports of diamond in 1958 were 31,000 carats valued at $1,394,000 or over $42 per carat, compared with 29,000 carats in 1957. The 1958 production of diamond reversed a decreasing trend apparent since 1955.[8]

A new diamond-cutting plant was established, costing $20,000.[9]

Paraguay.—No gem stones were produced, but probable locations were discussed in a report.[10]

Venezuela.—Nearly 14,500 carats of gem-quality diamonds were produced compared with about 24,800 carats in 1957.[11]

EUROPE

Belgium.—The demand for gem diamond lessened throughout the world, especially in the United States, Belgium's principal buyer.

Imports of cuttable gem diamonds decreased 20 percent by weight compared with 1957, and imports of polished gems were 37 percent less. Exports were 7 percent less.

Purchasers in the United States bought 79 percent by weight of all uncut gem diamonds sold and 50 percent of the polished gems.[12]

Portugal.—The Government established a diamond-cutting corporation, Sociedade Portuguesa de Lapidocão de Diamantes in Lisbon. This company will process stones produced in Angola, formerly exported to the United Kingdom, and will purchase additional stones from London diamond interests.[13]

United Kingdom.—Gem-diamond sales of the Central Selling Organization in London were $138.4 million, 6.4 percent below 1957 sales.[14]

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[5] Canadian Mining Journal, Royal Canadian Venturers: Vol. 79, No. 9, September 1958, p. 154.
[6] Western Miner and Oil Review (Vancouver, B.C.), The Search for Industrial Minerals in Canada: Vol. 31, No. 6, June 1958, pp. 36–37.
[7] U.S. Embassy, Rio de Janeiro, Brazil, State Department Dispatch 332: Sept. 23, 1958, p. 2.
[8] U.S. Consulate, Georgetown, British Guiana, State Department Dispatch 150: Mar. 13, 1959, p. 30.
[9] Mining Journal (London): Vol. 251, No. 6426, Oct. 17, 1958, p. 421.
[10] Eckel, E. B., Geology and Mineral Resources of Paraguay, A Reconnaissance: Geol. Survey Prof. Paper 327, 1959, p. 83.
[11] U.S. Embassy, Caracas, Venezuela, State Department Dispatch 856: May 14, 1958, p. 1; Dispatch 962: Apr. 29, 1959, Encl. 1, p. 2.
[12] Bureau of Mines, Mineral Trade Notes: Vol. 48, No. 6, June 1959, pp. 30–32.
[13] U.S. Embassy, Lisbon, Portugal, State Department Dispatch 337: Jan. 2, 1958, p. 1.
[14] Jewelers' Circular-Keystone, vol. 129, No. 5, February 1959, p. 142.

ASIA

Afghanistan.—Lapis lazuli production totaled over 1.5 short tons. The value of the uncut material was $41 to $45 per pound, and the cut and polished gems were valued at $59 to $136 per pound.[15]

India.—The production of emeralds in 1957 totaled 338,000 carats, compared with 474,000 carats in 1956. Diamond production was 790 carats in 1957 and 1,535 in 1958.[16]

Israel.—Diamond exports from Israel were US$32.7 million in 1957, and US$32 million in 1958. It was estimated they would reach US$35 million during the 1959–60 period.[17]

Japan.—Pearl standards were raised to reduce the number of inferior grade pearls exported. Members of the Pan-Japan Pearl Cultivators Cooperation warned all pearl producers to avoid buying or selling cultured pearls produced by using a nucleus of synthetic material. The difficulty of drilling such pearls without breaking caused a damaging effect upon the cultured pearl export trade.[18]

The United States was the biggest market for cultured pearls, taking about 70 percent of exports. The remainder was exported to Europe. Exports of over 54,000 pounds of cultured pearls to the United States was expected in 1958.[19]

Thailand.—Only a small quanity of gem stones originate in Thailand. Imports in 1956 were over 13 million carats, of which 12 million was synthetic stones. Most of the imported gems were cut, polished, and sold locally. Gem-stone exports were over 1 million carats, principally synthetic gems, zircons, and sapphires.[20]

U.S.S.R.—A 7-year plan was drafted for the development of the Yakutia diamond industry in the U.S.S.R. It was expected that the home demand for gem diamonds would be met under this plan.[21] During exploitation of the Yakutia diamond deposits, gem-quality chrysolites were found.[22]

AFRICA

Basutoland.—Diamond was discovered in a kimberlite pipe in the Makhotlong area. Only small gem and industrial diamonds were recovered.[23]

French Guinea.—A short history was written on the occurrence and production of diamond in French Guinea. Most gem diamonds found were of poor quality. Production was 250,000 carats.[24]

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[15] U.S. Embassy, Kabul, Afghanistan, State Department Dispatch 466: May 23, 1959, Encl. 1, p. 1.
[16] Bureau of Mines, Mineral Trade Notes: Vol. 47, No. 2, August 1958, p. 24.
U.S. Embassy, New Delhi, India, State Department Dispatch 1237: Apr. 23, 1958, p. 1.
[17] U.S. Embassy, Tel Aviv, Israel, State Department Dispatch 533: Feb. 26, 1959, p. 10.
[18] Japan Trade Bulletin, Synthetic Nuclei Attacked by Pearl Cultivators: No. 219, Dec. 1, 1958, p. 4.
[19] Jewelers' Circular-Keystone, Japan Expects a Big Boost in Pearl Exports This Year: Vol. 129, No. 5, February 1959, p. 140.
[20] Bureau of Mines, Mineral Trade Notes: Vol. 46, No. 6, June 1958, pp. 37–38.
[21] Mining Journal (London), vol. 251, No. 6428, Oct. 31, 1958, p. 478.
[22] Ilin, I. V., Kuryleva, N, A., Popugayeva, L. A., and Cigal, Ya. B. [Chrysolites From the Kimberlite Tubular Columns of Yakutiya as Precious Stones for Jewelry Industry]: Razvedka; Okhrana Nedr., No. 2, 1958, pp. 8–9; Library of Congress Ref. Card 132, Jan. 17, 1958.
[23] Mine and Quarry Engineering (London), New Diamondfield: Vol. 24, No. 8, August 1958, p. 343.
[24] Moyal, Maurice, Guinea's Mineral Wealth: Min. Mag. (London), vol. 252, No. 6446, Mar. 6, 1959, p. 255.

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Liberia.—Diamond mining was established on a small scale by the Liberian Government in 1936. Real interest in diamond mining began in 1953, and in early 1957, 30,000 people were prospecting and mining around the Lofa River. Because of the disorder of the diamond rush and the loss of manpower for other activities the Government closed the diamond fields in April 1957. In July 1958 they were reopened to prospectors on a controlled basis, except for an area near the Lofa River which was withheld for future large-scale mining by concessionaires. By late 1958 more than 1,300 prospecting licenses and 400 mining licenses had been issued. Foreigners were excluded from mining or prospecting, except in concessions. No thorough geologic survey of the diamond field was made. Diamond production was difficult to estimate because of the great number of diamonds smuggled into Liberia from nearby countries. Illicit imports into Liberia were thought to be valued at $10 million in 1956 and $5 million in 1957. The reduction in 1957 was attributed to stricter export controls in Sierra Leone.[25]

Exports of diamond in 1957 were 800,000 carats valued at $1.5 million, but only 20,000 carats valued at $200,000 was gem quality.[26]

Rhodesia and Nyasaland, Federation of.—Samples of the emeralds found near the Belingwe Native Reserve, known as the Sandawana emeralds, were sent to the United States for valuation. The initial shipment weighed 1.27 ounces and produced 40 cut stones weighing 6.54 carats valued at $375. The second parcel, weighing 5.6 ounces, produced 200 carats of cut gems valued at about $6,000. Many other gem materials, including diamond, chrysoberyl, amethyst, and rose quartz, have been found in Southern Rhodesia.[27]

A second emerald discovery was reported near the initial Belingwe find. The emeralds in this deposit were of lower quality.[28]

South-West Africa.—Production and exports of gem stones in 1958 was reported as follows:[29]

TABLE 4.—Production and exports of gem stones, South-West Africa

Production	Exports	
	Quantity	Value
Diamond [1]	640,752 carats	$32,100,000
Amethyst (20.84 tons)	14.67 tons	7,400
Rose quartz (2 tons)	1.28 tons	616
Tiger's eye [1]	1 ton	560
Tourmaline (10,700 grams)	1,000 grams	420

[1] Data not available.

[25] U.S. Embassy, Monrovia, Liberia, State Department Dispatch 180: Jan. 6, 1959, pp. 16–17.
[26] Mining Journal (London), Liberia's Diamond Laws: Vol. 251, No. 6429, Nov. 7, 1958, p. 506.
[27] Jason, Lewis, Valuing Gems Stones Found in Rhodesia: Rhodesian Min. Eng. (Salisbury), vol. 23, No. 8, August 1958, p. 38.
[28] Bureau of Mines, Mineral Trade Notes: Vol. 47, No. 6, December 1958, p. 35.
[29] U.S. Consulate, Johannesburg, South-West Africa, State Department Dispatch 245: Mar. 3, 1959, p. 2.

Tanganyika.—The De Beers Consolidated Mines, Ltd., and the Tanganyika Government became equal owners in the Williamson Diamond, Ltd., mine at Mwadui under terms of an agreement signed August 13, 1958.[30]

Diamond production from the Williamson mine was 515,762 carats valued at over $12 million, an alltime high and an increase of 143,160 carats over 1957 production. The recently constructed treatment plant of the Williamson Diamond, Ltd., operated at full capacity during the year.[31]

A mining claim acquired by Tanganyika Corundum, Corp., Ltd., in 1958 contained ruby of near precious quality and corundum associated with zoisite as an apple-green rock suitable for art objects. Early production was anticipated.[32]

The De Beers Consolidated Mines, Ltd., 71st Annual Report, 1958, included a statement by the chairman of the board that the most important development during 1958 was the purchase jointly with the Government of Tanganyika of the entire share capital of the Williamson Diamond, Ltd. For 50 percent interest about $7.1 million was paid and in addition a loan of nearly $3.7 million was made to the Tanganyika Government to assist them in financing their share of the business. This loan is repayable out of dividends received by the Government on its shareholding in Williamson Diamonds.

The financing of the sale of the Williamson mine was unusual in that it was based indirectly on an issue of Anglo American Corporation of South Africa, Ltd., bonds that were offered by the Deutsche Bank Aktiengesellschaft of Frankfurt, West Germany, for sale to the public in Germany. The capital thus raised was used to support a loan by the Anglo American Corporation to De Beers Consolidated Mines, Ltd. Details of the transaction were presented in a joint announcement by the Directors of De Beers and the Anglo American companies issued September 3, 1958.

Union of South Africa.—A new $4 million diamond treatment and recovery plant at the De Beers mine at Kimberley was opened by H. F. Oppenheimer, chairman of De Beers Consolidated Mines, Ltd., June 10, 1958. The plant was capable of handling 20,000 tons of ore a day. The plant will serve Du Toitspan, Bultfontein, and Wesselton mines, as well as the De Beers mine, should it come back into production.[33]

A diamond deposit discovered near Swartruggens, Transvaal, was described.[34]

OCEANIA

Australia.—Precious opal weighing 136 pounds was discovered in southern Australia. Three pieces of these opal in the rough, valued at $175,000 were shipped to the United States.[35] Another opal, weigh-

[30] Bureau of Mines, Mineral Trade Notes: Vol. 47, No. 5, November 1958, pp. 30, 31.
[31] U.S. Consulate, Dar es Salaam, British East Africa, State Department Dispatch 272: Mar. 20, 1959, p. 3.
[32] Mining Magazine (London), Corundum (Ruby): Vol. 100, No. 3, March 1959, p. 149.
[33] Engineering and Mining Journal: Vol. 159, No. 7, July 1958, p. 159.
[34] Mining Magazine (London), Investigation of a Transvaal Diamond Occurrence: Vol. 100, No. 3, March 1959, pp. 181–182.
[35] Wall Street Journal, Unfinished Pieces of Largest Opal Stone Ever Found Arrive in U.S. From Australia: Vol. 152, No. 80, Oct. 16, 1958, p. 4.

ing 5 pounds, 14 ounces, was found in the Andamooka opal field. It contained about 2 pounds of precious opal valued at $337 an ounce.

Diamond prospecting and mining in Australia were discussed.[36] The government of Western Australia granted a temporary reserve in the Kimberley area for diamond prospecting. In New South Wales placer diamond mining has been active for a number of years. The diamonds are of high quality but small, and only a few are suitable for jewelry.

TECHNOLOGY

Geochemical prospecting for diamonds by testing soils and plants for nickel was noted as a possibility.[37]

The history, geology, and use of diamond found in India were published.[38]

A British Guiana Geological Survey publication reported a complete survey of the diamond resources of the colony.[39]

The history and geology of the Bubani Emerald mine, India, were published. The emeralds, found in pockets or lenses in a talc-actinolite-biotite schist in the vicinity of pegmatites, often are associated with apatite and green mica.[40]

A review of the gem-stone industry in California included mineralogy and geology, occurrences, locations of deposits, and a bibliography.[41]

Each monthly issue of the Mine and Quarry Engineering (London) journal 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 1958 issues the minerals in chronological order were: Vanadinite, wollastonite, pyromorphite, vivianite, monazite, graphite, magnesite, bauxite, garnet, lepidolite, dioptase, and sphaerocobaltite.

The method used by the Consolidated Diamond Mines of South-West Africa, Ltd., in developing its 240-mile-long diamond property on the sea coast was described. The report of the recovery procedures including sampling, overburden removed, excavation and tramming, and preliminary treatment of the diamondiferous gravels.[42]

A series of articles published in German on synthetic emeralds contained information on varieties produced, manufacturing methods, characteristic differences between American and German synthetic emeralds, and causes of cracks formed in production. All articles were illustrated.[43]

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[36] Mining Magazine (London), Diamonds: Vol. 99, No. 3, September 1958, p. 164.
[37] Mine and Quarry Engineering (London), Geochemical Prospecting for Diamonds: Vol. 25, No. 4, April 1959, p. 192.
[38] Kulkarni, M. G., Prosperity Through Diamonds: Malaney & Co., Bombay, India, 1958, 98 pp.
[39] Pollard, E. R., Dixon, C. G., and Dujardin, R. A., Diamond Resources of British Guiana: British Guiana Geol. Survey (Georgetown); Min. Mag. (London), vol. 98, No. 4, April 1958, pp. 195–196.
[40] Bagchi, T. C., The Geology of the Bubani Emerald Mine: Indian Min. Jour. (Calcutta), vol. 6, No. 3, March 1958, pp. 1–4, 11.
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Details were given on the synthesis of gems, differentiation of synthetic from natural stones, and the manufacture of rutile, quartz, emerald, and diamond.[44]

Information on the production of strain-free synthetic sapphire by a hydrothermal technique was given. The process involves dissolving and recrystallizing aluminum oxide from an aqueous solution under high pressure and temperature. Synthetic rubies also could be made, using the same process, if a small quantity of a chromate was added to the nutrient.[45]

Other articles on synthetic gem stones were published concerning the production and properties of synthetic corundum, quartz, and garnet; [46] the historical development of synthetic gems with references to optical and physical properties,[47] and methods of producing and crystallizing synthetic corundum.[48]

Processes used in the manufacture of synthetic crystals for industrial use were described.[49]

Synthetic lapis lazuli was made with color and appearance equal to the natural material but with the hardness and wear resistance of spinel.[50]

Black pearls were made by exposing white pearls to neutron bombardment in a reactor. The black luster was said to be permanent.[51]

The judging diamond with relation to origin, weight, luster, and color, and methods of cutting was discussed.[52]

A new system of calculating the weight of a cut gem stone was given.[53]

Ultrasonic methods used in cutting, drilling, and carving hard gem material were reviewed.[54]

It was determined that a small percentage of iron oxide—not chromium or vanadium—caused the colorization of green amazonite.[55]

Optical, electrical, and other physical tests were made on more than 1,000 gem diamonds to show adsorption by infrared light and to identify the variety of impurities.[56]

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Foreign patents were issued on gem construction,[57] color improvement of pale diamonds,[58] and an apparatus for manufacturing synthetic jewels.[59]

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