Gem Stones

By John W. Hartwell [1] and Eleanor V. Blankenbaker [2]

GEM-STONE production in the United States during 1955 increased 17 percent in value over 1954 and reached an alltime high exceeding $800,000. This was due largely to the increased number of collectors, lapidaries, and "rockhounds." It was estimated that 150,000 to 300,000 individuals were engaged, full or part time, in this field. Some of the added interest was created by the increase in articles on gem stones published in nationally distributed magazines and newspapers. Many retired individuals supplemented their income by collecting, cutting and polishing, and selling gem stones in small shops throughout the United States. These small businesses increased the demand for gem materials, and prices rose as the quantity of good gem material decreased; however, as prices increased, new locations of gem material were found, and old areas were reworked.

DOMESTIC PRODUCTION

In 1955, approximately 65 percent of the total value of gem-stone production was credited to quartz, jade, and turquois, in decreasing order. Eight States—Oregon, Texas, California, Arizona, Nevada, Washington, Wyoming, and Colorado—produced 88 percent of the total value. Oregon was the leading producing State, with an estimated $150,000.

Agate.—As in previous years, agate was the principal gem material produced in the United States. The price varied with the quality of the material, and only estimates could be made on the value of production. The areas near Roosevelt, Klickitat County, Wash., and Miles City, Custer County, Mont., were the most productive, and the price of agate from these localities ranged from $0.50 to $3.50 per pound.

Oregon was the leading producer, with an estimated value of $25,000, more than double the 1954 figure. Owners of about 20 agate-bearing properties in central and eastern Oregon charged fees to collectors, based on the quantity of agate removed.

Agate from New Mexico was produced from a locality near Deming, Luna County, with reported sales exceeding $12,000.

Over 20 tons of agate was produced in Wyoming, mainly from Sweetwater and Fremont Counties.

Other States with a reported agate-production value of over $3,000 were Arizona, California, Colorado, South Dakota, and Texas.

The Yellowstone River Valley in Montana was a good source of moss agate, but more work was required to recover the material than in the past. The better grade of rough agate sold for $2 to $50 per pound and some rare stones up to $150. About 90 percent of the

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TABLE 1.—Value of production and imports of precious and semiprecious stones in the United States,[1] 1867–1955, in thousand dollars

Year	Production	Imports	Year	Production	Imports
1867	(2)	$1,319	1912	$320	$41,363
1868	(2)	1,063	1913	319	45,432
1869	(2)	1,998	1914	125	19,211
1870	(2)	1,779	1915	170	26,194
1871	(2)	2,351	1916	218	50,267
1872	(2)	3,034	1917	131	37,794
1873	(2)	3,134	1918	107	23,443
1874	(2)	2,372	1919	112	102,968
1875	(2)	3,479	1920	265	73,980
1876	(2)	2,617	1921	518	36,525
1877	(2)	2,235	1922	(2)	65,617
1878	(2)	3,071	1923	(2)	74,148
1879	(2)	3,965	1924	(2)	71,264
1880	(2)	6,870	1925	(2)	73,915
1881	(2)	8,607	1926	(2)	78,291
1882	(2)	8,923	1927	(2)	64,950
1883	$206	8,127	1928	(2)	67,964
1884	222	9,139	1929	(2)	75,317
1885	210	6,043	1930	(2)	38,642
1886	119	8,260	1931	(2)	21,126
1887	164	10,832	1932	(2)	12,771
1888	140	10,558	1933	20	13,752
1889	189	11,978	1934	3	17,908
1890	119	13,106	1935	5	27,612
1891	235	12,757	1936	12	38,146
1892	312	14,522	1937	32	50,494
1893	264	10,198	1938	127	28,305
1894	132	7,427	1939	235	40,488
1895	114	6,574	1940	340	37,769
1896	98	4,619	1941	240	33,777
1897	131	6,277	1942	150	28,449
1898	161	10,163	1943	67	72,110
1899	186	17,209	1944	41	77,530
1900	233	13,559	1945	40	114,435
1901	289	22,815	1946	325	189,018
1902	328	24,754	1947	570	110,538
1903	308	26,525	1948	500	115,990
1904	324	27,229	1949	500	84,186
1905	326	36,846	1950	500	118,500
1906	208	43,602	1951	500	128,954
1907	471	31,867	1952	500	124,699
1908	415	13,700	1953	487	130,194
1909	534	40,238	1954	607	[3] 143,589
1910	296	40,704	1955	814	175,262
1911	344	40,820			

[1] Includes Alaska.
[2] Not available.
[3] Revised figure.

TABLE 2.—Localities in the United States where gem materials were reported to have been found in 1955

State	County or district	Locality	Gem material
Alaska	Seward district	Seward	Pyrite, jasper, plasma, and epidote.
Do	Shungnak district	Kobuk	Jade.
Do	Chichagof district	Baranof	Agate.
Arizona	Apache	Globe	Peridot.
Do	do	St. Johns	Petrified wood.
Do	Coconino	Flagstaff	Do.
Do	Gila	Claypool	Turquois.
Do	do	Globe	Serpentine, turquois, hypersthene, and peridot.
Do	do	Miami	Turquois.
Do	Greenlee	Clifton	Agate.
Do	do	Duncan	Jasper, chalcedony, and agate.
Do	Maricopa	Black Gap	Copper silicate.
Do	do	Cavecreek	Jasper.
Do	do	Globe	Amethyst.
Do	do	Hassayampa	Chalcedony.
Do	do	New River	Agate.
Do	do	Phoenix	Jasper and agate.
Do	do	Rock Springs	Marble.

TABLE 2.—Localities in the United States where gem materials were reported to have been found in 1955—Continued

State	County or district	Locality	Gem material
Arizona	Maricopa	Tonopah	Chalcedony.
Do	Pima	Ajo	Chalcedony (desert rose).
Do	Pinal	Superior	Apache tears.
Do	Yavapai	Prescott	White jade, lavender agate, and chrysoprase.
Do	Yuma	Quartzsite	Quartz crystals and orbicular rhyolite.
Do	do	Salome	Jasper.
Do	do	Yuma	Rhyolite.
California	Amador	Fiddletown	Rhodonite.
Do	El Dorado	Georgetown	Idocrase, vesuvianite, and garnet
Do	Imperial	Winterhaven	Jasp-agate.
Do	do	Ogilby	Chalcedony.
Do	Inyo	Bigpine	Quartz crystals.
Do	do	Trona	Onyx.
Do	Kern	Boron	Morrisonite.
Do	do	Randsburg	Agate.
Do	do	Rosamond	Rhodonite.
Do	do	Tejon Ranch	Do.
Do	Lake	Lower Lake	Quartz crystals.
Do	Marin	Inverness	Petrified whalebone.
Do	Mendocino	Covelo	Jade and jasper.
Do	Monterey	Lucia	Nephrite.
Do	Mono		Geode.
Do	Napa	Etna Springs	Quartz crystals.
Do	Nevada	North Bloomfield	Opal.
Do	do	Nevada City	Do.
Do	Placer	Colfax	Jade (nephrite).
Do	Riverside	Anza	Rose quartz.
Do	do	Blythe	Fire agates.
Do	San Benito	New Idria	Benitoite, jadeite, and silicified serpentine.
Do	San Bernardino	Kramer Junction	Jasp-agate.
Do	do	Needles	Blue agate.
Do	do	Shoshone	Amethyst.
Do	do	Wrightwood	Rhodonite.
Do	San Diego	Mesa Grande	Tourmaline.
Do	do	Pala	Beryl, kunzite, and tourmaline (blue).
Do	do	Ramona	Essonite garnet.
Do	San Francisco	San Francisco	Jasper.
Do	San Luis Obisopo	Nipomo	Agate.
Do	Siskiyou	Happy Camp	Jade.
Do	Tulare	Dunlap	Topaz.
Colorado	Chaffee	Nathrop	Aquamarine and phenacite.
Do	do	Salida	Agate and beryl.
Do	Douglas	Sedalia	Topaz.
Do	do	Westcreek	Amazonstone.
Do	El Paso	Colorado Springs	Phenacite and amazonite.
Do	Fremont	Howard	Agate.
Do	do	Texas Creek	Rose quartz.
Do	Jefferson	Deckers	Amazonstone crystals and amazonstone.
Do	do	Hartsel	Tourmaline
Do	Kiowa	Kiowa	Agate.
Do	Mesa	Grand Junction	Dinosaur bone.
Do	Mineral	Creede	Amethyst and marcasite agate.
Do	Montrose	Paradox	Covellite.
Do	Rio Grande	Del Norte	Marcasite agate.
Do	Saguache	do	Agate.
Do	do	Villa Grove	Turquois.
Do	San Juan	Silverton	Rhodonite.
Do	San Miguel	Nucla	Dinosaur bone, jasper, and sloth bone.
Do	Teller	Colorado Springs	Amazonstone.
Do	do	Florissant	Amazonite.
Do	do	Lake George	Do.
Georgia	Rabun		Amythest.
Do	Towns		Ruby and sapphire.
Do	Troup	La Grange	Rose quartz.
Maine	Oxford	Stow	Aquamarine and beryl.
Michigan	Emmet	Petoskey	Petoskey stone.
Do	Houghton	Calumet	Agate.
Do	Keweenaw	Copper Harbor	Datolite and thomsonite.
Do	do	Phoenix	Cholorastrolite.
Do	Marquette	Ishpeming	Jasper.
Minnesota	Cook	Grand Marais	Thomsonite.
Do	Lake	Beaver Bay	Agate (Lake Superior).
Do	St. Louis	Duluth	Do.

TABLE 2.—Localities in the United States where gem materials were reported to have been found in 1955—Continued

State	County or district	Locality	Gem material
Montana	Custer	Miles City	Agate and moss agate.
Do	Dawson	do	Agate.
Do	Fergus		Sapphire.
Do	Prairie	Terry	Agate.
Do	Rosebud	Rosebud	Do.
Nebraska	Sioux	Orella	Chalcedony and agate.
Nevada	Elko	Elko	Chalcedony.
Do	Esmeralda	Tonopah	Turquois.
Do	Humboldt	Denio	Common and fire opal.
Do	do	Golconda	Rhodonite.
Do	Lander	Battle Mountain	Turquois.
Do	Mineral	Mina	Do.
Do	do	Luning	Petrified wood.
Do	Nye	Tonopah	Turquois.
Do	Washoe		Sulfur and piedmontite crystals and schroeckingerite.
New Mexico	Eddy	Carlsbad	Galven and agate.
Do	Hildalgo	Duncan, Arizona	Chalcedony and agate eyes.
Do	Luna	Deming	Agate.
Do	San Juan	Redrock	Ricolite.
Do	Sierra	Bingham	Blue fluorite.
Do	do	Torc	Desert scenic stone.
New York	Warren	North Creek	Garnet.
North Carolina	Alexander	Hiddenite	Quartz and rutile.
Do	Clay		Ruby and sapphire crystals.
Do	Macon	Franklin	Ruby.
Do	Yancey	Spruce Pine	Emerald.
Oregon	Jackson	Medford	Jasper, agate, petrified wood, rhodonite, and quartz.
Do	Jefferson	Madras	Moss agate.
Do	Lake	Burns	Obsidian.
Do	Linn	Crawfordsville	Purple agate.
Do	Wasco		Jasper, quartz, opal, and agate.
Puerto Rico	Cabo Rojo Municipality.	Rio Guanajibo	Chalcedony.
Do	Comerio Municipality.	Rio Pinas	Nephrite.
Do	Humacao Municipality.	Playa de Humacao	Jasper.
Do	San Juan Municipality.	Condado Beach	Jade.
Do	San Sebastian Municipality.	Rio Guatemala	Fossil coral.
South Dakota	Custer	Custer	Agate and rose quartz.
Do	do	Fairburn	Fairburn agate, jasp-agate, and rose quartz.
Do	do	Hermosa	Jasp-agate.
Do	Pennington	Creston	Agatized wood.
Do	do	Keystone	Garnet.
Texas	Brewster	Alpine	Agate.
Do	Gillespie	Eckert	Amethyst.
Do	Mason	Katemcy	Topaz, amazonstone, smoky quartz, and green fluorite.
Do	Travis	Mason	Topaz.
Utah	Beaver	Beaver	Blue valley agate and obsidian.
Do	do	Milford	Obsidian.
Do	Emery	Ferron	Petrified wood.
Do	do	Black Rock	Obsidian.
Do	Garfield	Hatch	Onyx.
Do	Grand	Cisco	Agate.
Do	do	Green River	Lace agate and jasper.
Do	do	Moab	Agate.
Do	do	Thompson	Jasp-agate and dinosaur bone.
Do	Iron	Cedar City	Agate.
Do	Juab	Dragway Mountain	Geodes.
Do	Kane	Orderville	Septarium nodules.
Do	Millard	Cave Fort	Jasper.
Do	do	Milford	Obsidian.
Do	San Juan	Joy	Agate and topaz.
Do	Sevier	Salina	Agate.
Do	Washington	Central	Do.
Do	Wayne	Torrey	Petrified wood.
Virginia	Amelia	Amelia	Amazonite.
Do	Madison	Syria	Unakite (Pikes Peak epidote).
Washington	Benton	Mabton	Opalized wood.
Do	Kittitas	Ellensburg	Agate and petrified wood.
Do	Klickitat	Roosevelt	Moss agate.
Wisconsin	Clark	Greenwood	Agate.

TABLE 2.—Localities in the United States where gem materials were reported to have been found in 1955—Continued

State	County or district	Locality	Gem material
Wyoming	Carbon	Baggs	Turitella agate.
Do	do	Saratoga	Agatized wood.
Do	Fremont	Lander	Jade, sweetwater agate, and petrified wood.
Do	do	Riverton	Agate and jade.
Do	do	Shoshoni	Jade.
Do	do	South Pass City	Algae.
Do	do	Three Forks	Jade.
Do	Natrona	Casper	Agate.
Do	Sweetwater	Eden	Petrified wood.
Do	do	Farson	Agatized wood, eden-valley wood, and petrified wood.
Do	do	Green River	Agate.
Do	do	Rock Springs	Petrified wood.
Do	do	Wamsutter	Agate and turitella.

agate found had no value. The value of moss-agate production from this area was estimated at $5,000 to $10,000.

Jade.—Alaska jade continued to be the most important gem material of the Territory. A large quantity of the raw material was shipped to Germany and Japan for cutting and polishing. The business of selling jade handicraft to tourists continued to flourish.

Wyoming production had some importance, but the float material was more difficult to find. The 1955 jade production in Wyoming was valued at $10,000 and came mainly from an area near Lander, Fremont County.

California production was reported to be approximately $5,000. Nephrite was probably the most important jade material in the State and ranged in color from pale to dark bluish green. A new jade locality was discovered near Cloverdale, Sonoma County, Calif.

Arizona produced a small quantity of white jade near Prescott.

Opal.—The Rainbow Ridge mine near Denio, Humboldt County, Nev., was reported to be developing a vein of precious opal within streaks of opalized wood. This mine has produced opals since 1909 and recovered one of the largest pieces of precious opal ever recorded, weighing 7 pounds.[3] Production from this area was about $4,000 in 1955.

Some opal was produced in Nevada County, Calif.

Petrified Wood.—It was reported that in Wyoming the largest production of petrified wood was from an area around Farson, Sweetwater County, where 2 tons was collected. The total value of Wyoming production was approximately $10,000.

About 10 tons of petrified wood was produced near Medford, Jackson County, Oreg.

Rhodonite.—Some interest was shown in rhodonite during 1955, and a large deposit of this material was reported in Amador County, Calif. Most of it was poor grade.

About 2 tons of rhodonite was produced in Humboldt County, Nev., and smaller quantities were recovered in other States. The total production in the United States was less than $10,000.

Topaz.—A new discovery of topaz crystals was reported in New

[3] Mining World, vol. 17, No. 9, August 1955, p. 100.

Hampshire in the vicinity of Conway, Carroll County. Only a few clear 5- to 10-carat pieces suitable for cutting were obtained from each crystal.

The production of topaz from Mason County, Tex., continued during 1955, and it was estimated that 5,500 grams with a value of over $6,000 was recovered. These stones were fine light-blue and made excellent gem stones. In the San Creek area, Tulore County, Tex., a production of over $1,000 was reported.

Turquois.—Large quantities of low-grade turquois from Arizona were reported sold as gem material at prices ranging from $1.50 to $3 per pound.

The Lone Mountain Turquoise mine, Nye County, Nev., produced about $20,000 of turquois in 1955. Another producer was the Blue Gem lease near Battle Mountain, Lander County. Some turquois was mined on claims north and west of Columbus Flat near Candelaria, Mineral County, Nev.

Miscellaneous Gems and Specimens.—A report was published on garnet deposits near Wrangell, Alaska.[4] These garnets were of the almandite variety and averaged ½ to ⅝ inch in diameter.

One hundred and fifty pounds of dinosaur bone was found near Thompson, Grand County, Utah, and 300 pounds was found near Grand Junction, Mesa County, Colo. Smaller quantities were reported elsewhere. Petrified whalebone valued at over $200 was recovered in Inverness, Marin County, Calif.

Additional varieties of specimens reported found in 1955 from various localities were: Amber, sulfur, piedmontite, schroeckingerite, copper silicate, quartz, pyrite, and others.

Gem stones reported as more precious types than the common varieties were highly esteemed when cut and polished and had a greater value in the gem-stone trade. They are listed in table 3, according to variety, State, and value of 1955 production.

TABLE 3.—Value of selected gem stones produced in 1955

Variety	State	Value	Variety	State	Value
Amethyst	Arizona	$18,500	Fire chalcedony	Arizona	$2,500
Do	Texas	(1)	Fire opal	Nevada	4,000
Amethyst agate	New Mexico	2,000	Peridot	Arizona	2,500
Aquamarine	Colorado	1,800	Pink chalcedony	do	200
Blue tourmaline	California	2,000	Purple agate	do	4,800
Desert rose	Arizona	500	Rose quartz	Georgia	400
Fairburn agate	South Dakota	500	Sapphire	Montana	800
Fire agate	Arizona	500			
Do	California	2,500			

[1] Value not reported.

CONSUMPTION

A survey was taken by N. W. Ayer & Son, Inc., to establish trend information on sales, inventories, prices, and customer preferences on diamond jewelry. It is estimated that the United States consumes three-fourths of the world cut-diamond production, and in 1955 its value was approximately $151.5 million. The Central Selling Organ-

[4] Houston, J. R., The Garnet Deposits Near Wrangell, Alaska: Rocks and Minerals, vol. 30, No. 11-12, November-December 1955, pp. 563-569.

ization reported sales of gem and industrial diamonds to be 10 and 45 percent, respectively, greater in 1955 than in 1954.[5]

The consumption of gem stones (excluding diamonds) in the United States during 1955 was greater, in line with increased imports of sapphires, rubies, emeralds, pearls, and semiprecious stones and the larger quantity of gem stones domestically produced. Amateur lapidaries consumed most of the domestic gem-stone production.

PRICES

The average retail prices for gem diamonds in 1955 follow: ¼-carat, $130; ½-carat, $310; 1-carat, $860; 2-carat, $2,140; 3-carat, $3,530.[6] The greater demand for precious and semiprecious gem stones increased the prices of imported material.

FOREIGN TRADE [7]

The value of gem-stone imports into the United States in 1955 increased 22 percent over 1954. Gem diamonds composed 86 percent of the total value of imports. Pearls (precious and semiprecious) and synthetic gem-stone imports increased 11 percent in 1955 over 1954.

The value of imports of gems and precious stones into the United States from 1867 to 1955, inclusive, is shown in table 1. Table 4 lists the 1954 and 1955 imports of precious and semiprecious stones, and table 5 shows the imports of gem diamonds for the same period.

In 1955 the United States exported 46 percent more gem stones (precious, semiprecious, synthetic, and imitation) than in 1954.

TABLE 4.—Precious and semiprecious stones (exclusive of industrial diamonds) imported for consumption in the United States, 1954–55

[U. S. Department of Commerce]

Item	1954		1955	
	Carats	Value	Carats	Value
Diamonds:				
Rough or uncut (suitable for cutting into gem stones), duty free	[1] 887,702	[1] $59,423,768	1,064,932	[2] $76,735,186
Cut but unset, suitable for jewelry, dutiable	594,772	62,758,349	707,859	[2] 74,833,550
Emeralds: Cut but not set, dutiable	24,460	385,063	45,235	1,564,676
Pearls and parts, not strung or set, dutiable:				
Natural		503,753		669,351
Cultured or cultivated		[2] 4,333,890		[2] 6,197,897
Other precious and semiprecious stones:				
Rough and uncut, duty-free		[2] 265,837		228,939
Cut but not set, dutiable		[2] 1,848,989		[2] 2,837,932
Imitation, except opaque, dutiable:				
Not cut or faceted		[2] 37,902		[2] 25,885
Cut or faceted:				
Synthetic		[2] 283,302		[2] 298,985
Other		[2] 13,651,937		[2] 11,806,001
Imitation, opaque, including imitation pearls, dutiable		[2] 35,014		[2] 19,185
Marcasites, dutiable: Real and imitation		61,073		44,439
Total		[1] [2] 143,588,877		[2] 175,262,026

[1] Revised figure.

[2] Owing to changes in tabulating procedures by the U. S. Department of Commerce, data known not to be comparable to years before 1954.

[5] Switzer, George, 31st Annual Report on the Diamond Industry, 1955: Jewelers' Circ.-Keystone, 1955, p. 2.

[6] Switzer, George, 31st Annual Report on the Diamond Industry, 1955: Jewelers' Circ.-Keystone, 1955, p. 3.

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

TABLE 5.—Diamonds (exclusive of industrial diamonds) imported for consumption in the United States, 1954–55, by countries

[U. S. Department of Commerce]

Country	Rough or uncut			Cut but unset		
	Carats	Value		Carats	Value	
		Total	Average		Total	Average
1954						
North America:						
Bermuda	6,231	$118,899	$19.08			
Canada	4,984	514,120	103.15	275	$59,487	$216.32
Mexico	100	750	7.50			
Total	11,315	633,769	56.01	275	59,487	216.32
South America:						
Brazil	6,890	161,606	23.46	350	28,985	82.81
British Guiana	2,064	63,591	30.81			
Venezuela	81,442	2,421,299	29.73			
Total	90,396	2,646,496	29.28	350	28,985	82.81
Europe:						
Belgium-Luxembourg	67,969	7,232,086	106.40	335,173	35,110,962	104.75
France	14,563	346,162	23.77	4,405	594,543	134.97
Germany, West				38,724	2,645,535	68.32
Netherlands	11,673	802,417	68.74	25,866	2,973,356	114.95
Switzerland	1,455	82,314	56.57	208	124,199	597.11
United Kingdom	632,394	44,923,762	71.04	4,732	1,267,999	267.96
Total	728,054	53,386,741	73.33	409,108	42,716,594	104.41
Asia:						
Ceylon				12	1,717	143.08
India				1,156	216,743	187.49
Israel	4,066	42,836	10.54	137,073	11,620,417	84.78
Japan	186	2,779	14.94	398	34,751	87.31
Lebanon	1,325	146,867	110.84	53	22,271	420.21
Malaya	453	55,351	122.19			
Total	6,030	247,833	41.10	138,692	11,895,899	85.77
Africa:						
Belgian Congo	204	24,717	121.16			
French Equatorial Africa	16,812	731,630	43.52			
Liberia	2,843	35,729	12.57			
Union of South Africa	[1] 32,048	[1] 1,716,853	[1] 53.57	46,347	8,057,384	173.85
Total	[1] 51,907	[1] 2,508,929	[1] 48.35	46,347	8,057,384	173.85
Grand total	[1] 887,702	[1] 59,423,768	[1] 66.94	594,772	62,758,349	105.52
1955						
North America:						
Bermuda	2,205	228,467	103.61			
Canada	5,900	569,306	96.49	127	14,125	111.22
Netherlands Antilles				29	39,955	1,377.76
Total	8,105	797,773	98.43	156	54,080	346.67
South America:						
Brazil	4,127	199,085	48.24	113	13,427	118.82
British Guiana	2,566	73,104	28.49			
Venezuela	90,236	2,642,087	29.28	48	7,662	159.63
Total	96,929	2,914,276	30.07	161	21,089	130.99
Europe:						
Austria				7	3,674	524.86
Belgium-Luxembourg	102,676	10,692,952	104.14	427,422	45,354,711	106.11
France	9,203	730,133	79.34	4,470	869,862	194.60
Germany, West	1,141	11,215	9.83	48,948	3,452,716	70.54
Italy				136	127,461	937.21
Netherlands	2,573	261,443	101.61	22,243	2,633,320	118.39
Switzerland	29,965	1,911,100	63.78	250	58,799	235.20
United Kingdom	728,285	56,960,288	78.21	5,464	947,127	173.34
Total	873,843	70,567,131	80.75	508,940	53,447,670	105.02

See footnotes at end of table.

TABLE 5.—Diamonds (exclusive of industrial diamonds) imported for consumption in the United States, 1954–55, by countries—Continued

[U. S. Department of Commerce]

Country	Rough or uncut			Cut but unset		
	Carats	Value		Carats	Value	
		Total	Average		Total	Average
Asia:						
Hong Kong	294	$1,177	$4.00			
India				249	$29,042	$116.63
Indonesia	130	19,497	149.98			
Iraq				103	9,284	90.14
Israel	4,136	44,821	10.84	157,326	13,735,028	87.30
Japan				837	80,848	96.59
Lebanon	549	44,750	81.51			
Malaya	71	12,201	171.85			
Saudi Arabia				2	700	350.00
Total	5,180	122,446	23.64	158,517	13,854,902	87.40
Africa:						
French Equatorial Africa	8,110	383,815	47.33			
Liberia	14,536	422,726	29.08			
Nigeria	415	6,158	14.84			
Rhodesia and Nyasaland, Federation of				21	8,365	398.33
Union of South Africa	57,814	1,520,861	26.31	40,064	7,447,444	185.89
Total	80,875	2,333,560	28.85	40,085	7,455,809	186.00
Grand total	1,064,932	[2]76,735,186	72.06	707,859	[2]74,833,550	105.72

[1] Revised figure.
[2] Owing to changes in tabulating procedures by the U. S. Department of Commerce, data known not to be comparable to earlier years.

TECHNOLOGY

Several books were published during 1955 on identification of rocks and minerals.[8] The structure and optical behavior of jadeite [9] and methods of identifying petrified wood [10] were discussed. Articles were published on the origin of jadeite and rose quartz.[11]

Block caving was initiated at the Kimberly, Union of South Africa, diamond mine.[12]

Methods of cutting amethyst [13] and asterated quartz [14] were described. The process of "tumbling" gem stones, giving instructions on types of equipment and abrasives for grinding and polishing, was published.[15] Polishing and cutting of cleavable gem stones such as kunzite, zircon, spodumene, and barite were discussed in an article.[16]

[8] Pearl, R. M., How to Know Minerals and Rocks: McGraw-Hill Book Co., Inc., New York, N. Y., 1955, 192 pp.
Wahlstrom, E. E., Petrographic Mineralogy: John Wiley & Sons, Inc., New York, N. Y., 1955, 408 pp.
Jensen, D. E., My Hobby Is Collecting Rocks and Minerals: Hart Publishing Co., New York, N. Y., 1955, 122 pp.
[9] Raman, C. V., and Jayaraman, A., The Structure and Optical Behavior of Jadeite: Proc. Indian Acad. Sci., vol. 41a, 1955, pp. 117–120; Chem. Abs., vol. 50, No. 19, Oct. 10, 1955, column 13031–f.
[10] Mineralogist, Identifying Wood: Vol. 23, No. 2, February 1955, pp. 72–74.
[11] de Roever, W. P., Genesis of Jadeite by Low-Grade Metamorphism: Am. Jour. Sci., vol. 253, No. 5, May 1955, p. 9283.
Petrun, V. F., [The Origin of Rose Quartz in Hydrothermal Veins]: Zapiski Vsesoyus. Mineralog. Odshchestva, vol. 84, 1955, pp. 191–197. Chem. Abs., vol. 50, No. 22, Nov. 25, 1955, column 15650–i.
[12] Gallagher, W. S., New Approach to Diamond Mining at Kimberly: Optima (Johannesburg, South-West Africa), vol. 5, No. 2, June 1955, pp. 52–61.
[13] Dake, H. C., How to Cut Amethyst: Mineralogist, vol. 23, No. 2, February 1955, pp. 92–94.
[14] Bly, Merwyn, The Cutting of Asterated Quartz Cabochons: Mineralogist, vol. 9, No. 9, September 1955, pp. 327–330.
[15] Dake, H. C., The Tumbled Gems: Mineralogist, vol. 23, No. 3, March 1955, pp. 133–138.
[16] Zinkanikas, John, Treatment of Cleavable Gemstones: Rocks and Minerals, vol. 30, No. 5–6, May–June 1955, pp. 266–269.

The investigation on discoloring of ordinary violet amethysts that change to a colorless, yellow or brown variety at 400°–500° C. and a discolored green amethyst was reviewed.[17]

The Consolidated Diamond Mines of South-West Africa, Ltd., have developed a method to recover diamonds from gravel by treating them with a water-repellent coating.[18] A summary of the latest metallurgical methods for the recovery of diamonds in the Belgian Congo was given by the Academie royale des sciences coloniales, Paris, France.[19]

An article described the formation of various varieties of quartz and chalcedony and their modes of occurrence.[20]

A new lapis-lazuli-colored synthetic gem stone with a hardness of 8 and specific gravity of 3.58 was developed in Germany.[21] A process for purifying alumina used to produce synthetic gem material was developed in Japan.[22] Included was the removal of iron, titanium, and rarer elements by only two recrystallizations.

A patent was obtained for an apparatus by which synthetic jewels are manufactured.[23] Another patent was issued for a process whereby cobalt or nickel oxide is added to TiO_2 to produce a single crystal varying in color from yellow to deep red when fired in an oxidizing atmosphere.[24]

WORLD REVIEW

The 1955 world diamond production reached an alltime high of 21.5 million carats, exceeding by 5 percent the previous record high reported in 1954. Of this total over 4 million carats were gem quality. Countries reporting major increases in production in 1955 were Belgian Congo, French West Africa, Gold Coast, Sierra Leone, South-West Africa, and Venezuela. Table 6 shows the world production of diamonds, 1951–55, by countries.

Angola.—The production of diamonds in Angola during 1955 was 743,378 carats. The proportion of gem diamonds was unknown.[25]

Belgian Congo.—All the diamond companies in Belgian Congo pooled their resources to conduct geological surveys of the areas in their respective concessions during a period of 3 years beginning July 1955.[26]

The production of diamonds in Belgian Congo from 1913–55 is shown in table 7.

Brazil.—Discovery of an aquamarine weighing 134.5 pounds was reported in the State of Minas Gerais. Its value was placed at $400,000.[27]

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[17] Rose, H., and Lietz, J., [A Green Discolored Amethyst]: Naturwissenschaften, vol. 41, 1954, p. 448; Chem. Abs., vol. 50, No. 17, Sept. 10, 1955, column 11511–d.
[18] Mine and Quarry Engineering, vol. 21, No. 11, November 1955, pp. 463–471.
[19] Bureau of Mines, Mineral Trade Notes, Special Supplement 47: Vol. 41, No. 4, October 1955, pp. 5–7.
[20] Walton, James, The Formation of Quartz and Chalcedony: Gemologist (London), vol. 24, No. 288, July 1955, pp. 119–123; vol. 24, No. 289, August 1955, pp. 139–142; vol. 24, No. 290, September 1955, pp. 164–169; vol. 24, No. 291, October 1955, pp. 191–194.
[21] Bambauer, H. V., and Schmitt, C. H., [A New Lapis-Lazuli-Colored Synthetic]: Fortschr. Mineral., vol. 33, 1955, p. 130; Chem. Abs., vol. 49, No. 21, Nov. 10, 1955, column 14587–d.
[22] Shiro, I., Alumina for Synthetic Gem Material: Jour. Chem. Soc. (Japan), Ind. Chem. Sec., vol. 58, 1955, pp. 181–183; Chem. Abs., vol. 49, No. 20, Oct. 25, 1955, column 14282–i.
[23] Dauncey, L. A. (assigned to General Electric Co., Ltd., London), Apparatus for Manufacturing Synthetic Jewels: U. S. Patent 2,692,456, Oct. 26, 1954.
[24] Merker, Leon (assigned to National Lead Co., New York, N. Y.), Colored Rutile Boules and Method for Making the Same: U. S. Patent 2,715,071, Aug. 9, 1955.
[25] Bureau of Mines, Mineral Trade Notes: Vol. 42, No. 4, April 1956, p. 25.
[26] Bureau of Mines, Mineral Trade Notes: Vol. 41, No. 4, October 1955, p. 35.
[27] Washington Post and Times Herald, Dec. 21, 1955.

TABLE 6.—World production of diamonds, 1951–55, by countries, in carats [1]

(Including industrial diamonds)

	1951	1952	1953	1954	1955
Africa:					
Angola	734, 324	743, 302	729, 337	721, 607	743, 378
Belgian Congo	10, 564, 667	11, 608, 763	12, 580, 256	12, 619, 378	13, 041, 487
French Equatorial Africa	136, 000	163, 400	140, 144	152, 529	136, 900
French West Africa	101, 000	136, 080	180, 000	216, 000	318, 450
Gold Coast	1, 752, 878	2, 189, 557	2, 180, 728	2, 135, 141	2, 276, 631
Sierra Leone	475, 759	451, 426	472, 934	[6] 398, 608	[2] 930, 038
South-West Africa	478, 075	541, 027	617, 411	683, 536	797, 207
Tanganyika	108, 625	143, 023	172, 304	326, 009	325, 525
Union of South Africa:					
Lode	1, 967, 272	2, 093, 138	2, 397, 755	[4] 2, 544, 305	[4] 2, 276, 894
Alluvial	[3] 289, 063	[3] 282, 681	[3] 300, 000	[3] 314, 000	[3] [2] 310, 000
South America:					
Brazil	[2] 200, 000	[2] 200, 000	[2] 200, 000	[2] 200, 000	[2] 200, 000
British Guiana	43, 260	38, 305	35, 306	30, 073	33, 298
Venezuela	63, 226	98, 291	84, 790	96, 983	141, 147
Other countries	[2] 3, 000	[2] 5, 000	[2] 5, 000	[2] 5, 000	[2] 5, 000
Grand total	16, 917, 000	18, 694, 000	[6] 20, 096, 000	20, 440, 000	21, 540, 000

[1] Source: Jewelers' Circular-Keystone, 31st Annual Report on the Diamond Industry: 1955, p. 7.
[2] Estimate.
[3] Includes an estimated production by African natives of about 500,000 carats.
[4] Pipe mines under De Beers control for 1954 included 75,225 carats and 58,787 carats in 1955 from De Beers alluvial diggings at Kleinzee.
[5] Includes an estimated 100,000 carats from the State mines of Namaqualand.
[6] Revised figure.

Burma.—Gem-stone production in Burma declined sharply in 1955 from 1954. Ruby production dropped from 21,628 carats to 17,053, sapphire production from 46,872 to 6,150, and spinel production from 31,163 to 5,400. All production for 1955 may not have been reported.[28]

Canada.—The most famous jade locality in Canada is in the Fraser River Valley of British Columbia. Some of the jade is light green and has excellent translucency.[29]

Ceylon.—The production of gem stones during 1955 was estimated by the Ceylon Department of Mineralogy to be from $315,000 to $420,000.[30] Ceylon's exports to the United States in 1955 were 17 percent more than in 1954. The principal stones were sapphire, ruby, cat's-eye, aquamarine, topaz, garnet, zircon, amethyst, and moonstone.

China.—It was reported that diamond-bearing deposits were discovered in northern Hunan Province in central China.[31]

TABLE 7.—Belgian Congo diamond production, 1913–55, in thousand carats

Year	Production	Year	Production	Year	Production	Year	Production
1913	16	1924	548	1935	3, 812	1946	6, 033
1914	24	1925	884	1936	4, 634	1947	5, 474
1915	49	1926	1, 141	1937	4, 925	1948	5, 825
1916	54	1927	1, 042	1938	7, 206	1949	9, 650
1917	100	1928	1, 649	1939	8, 360	1950	10, 147
1918	164	1929	1, 908	1940	9, 603	1951	10, 565
1919	215	1930	2, 519	1941	5, 866	1952	11, 609
1920	225	1931	3, 528	1942	6, 018	1953	12, 580
1921	174	1932	3, 990	1943	4, 882	1954	12, 619
1922	250	1933	2, 257	1944	7, 533	1955	13, 041
1923	415	1934	3, 331	1945	10, 386	Total	195, 250

[28] United States Embassy, Rangoon, Burma, State Department Dispatch 68: July 31, 1956, 24 pp.
[29] Bennett, John, A Gem Hunter in Canada: Mineralogist, vol. 23, No. 2, February 1955, pp. 60–62.
[30] United States Embassy, Colombo, Ceylon, State Department Dispatch 685: Mar. 1, 1956, 53 pp.
[31] Bureau of Mines, Mineral Trade Notes: Vol. 41, No. 3, September 1955, p. 42.

Colombia.—In 1955 the Ministry of Mines and Petroleum continued to review the laws and regulations governing the mining of emeralds. Certain temporary regulations were put into effect early in the year, so that mining would not be interrupted.[32]

Japan.—In 1954, 130,000 first-grade pearls were produced off the southern tip of Awagi Island. Plans in 1955 called for increased plantings until production of 1 million pearls per year is reached.[33]

Liberia.—New diamond deposits continued to be reported. Contrary to popular belief Liberian gem diamonds are of good quality. The business of cutting and polishing diamonds was started in Liberia in 1955, and equipment was installed for processing small stones for the export market.

The law governing the sale, purchase, and mining of diamonds, enacted by the 1954–55 session of the National Legislature was reported to be excellent. It did not impose too many restrictions and encouraged the large growth that the industry had during 1955.[34]

Rhodesia and Nyasaland, Federation of.—On August 19, 1955, an agreement was reached between De Beers Corp. and the Northern Rhodesian Legislative Council under which diamond-mining rights in the Territory will be relinquished to the Government in 1986.[35]

Sierra Leone.—It was reported that illicit diamond mining and trading increased during 1954 and 1955.[36]

Thailand.—The most important precious stones produced in Thailand in 1955 were black sapphires and Siamese rubies.[37]

Union of South Africa and South-West Africa.—Quotas on gem diamonds, released by the Central Selling Organization in 1955, for 1955–60, inclusive, were as follows: Government of Union of South Africa, 10 percent; Administration of South-West Africa, 26 percent; De Beers Consolidated Mines, Ltd., 25 percent; Diamond Corp., Ltd., 35 percent; and Premier (Transvaal) Diamond Mining Co., Ltd., 4 percent.[38]

Gem-stone production in South-West Africa in 1955 is shown in table 8.

TABLE 8.—Gem-stone production in South-West Africa, 1955 [1]

Gems		Production	Sales
Diamonds	carats	797,198	789,475
Tourmaline	grams	31,651	7,780
Amethyst	pounds	22,680	----------
Chalcedony	do	2,286	----------
Tiger's eye	tons	(2)	2

[1] United States Consulate, Johannesburg, South-West Africa, State Department Dispatch 244: May 1, 1956, 3 pp.
[2] Not available.

Venezuela.—It was estimated that the 1955 production of pearls from Venezuela was nearly US$1.5 million.[39]

[32] Bureau of Mines, Mineral Trade Notes: Vol. 40, No. 5, May 1955, p. 54.
[33] Bureau of Mines, Mineral Trade Notes: Vol. 40, No. 3, March 1955, p. 37.
[34] United States Embassy, Monrovia, Liberia, State Department Dispatch 330: May 3, 1956, 6 pp.
[35] Bureau of Mines, Mineral Trade Notes: Vol. 41, No. 5, November 1955, p. 43.
[36] Bureau of Mines, Mineral Trade Notes: Vol. 42, No. 3, March 1956, pp. 24–25.
[37] Bureau of Mines, Mineral Trade Notes: Vol. 42, No. 2, February 1956, p. 34.
[38] Bureau of Mines, Mineral Trade Notes: Vol. 42, No. 2, February 1956, p. 24.
[39] Bureau of Mines, Mineral Trade Notes: Vol. 40, No. 4, April 1955, p. 48.