Asbestos

By D. O. Kennedy [1] and James M. Foley [2]

THE UNITED STATES continued to be the leading consumer of asbestos in 1958 but ranked fifth in world production after Canada, U.S.S.R., Union of South Africa, and Southern Rhodesia. Domestic output was 2 percent of world production and supplied 6 percent of United States requirements.

TABLE 1.—Salient statistics of the asbestos industry

	1949-53 (average)	1954	1955	1956	1957	1958
United States:						
Production (sales)---short tons	49,157	47,621	44,568	41,312	43,653	43,979
Value (thousand dollars)	3,804	4,698	4,487	4,742	4,918	5,127
Imports (unmanufactured) short tons	675,682	678,390	740,423	689,910	682,732	644,331
Value (thousand dollars)	52,221	[1] 55,857	[1] 60,958	[1] 61,939	[1] [2] 60,104	[1] 58,314
Exports (unmanufactured) [3] short tons	14,252	1,894	2,787	2,950	2,893	3,026
Value (thousand dollars)	3,032	291	268	375	350	424
Apparent consumption short tons	710,587	724,117	782,204	728,272	723,492	685,284
Exports of asbestos products (thousand dollars) [3]	11,158	11,485	12,859	14,181	15,223	13,233
World: Production---short tons	1,445,000	1,670,000	1,950,000	1,980,000	2,070,000	2,020,000

[1] Owing to changes in tabulating procedures by the U.S. Department of Commerce, data known to be not strictly comparable with earlier years.
[2] Revised figure.
[3] Includes material that has been imported and subsequently exported without change.

LEGISLATION AND GOVERNMENT PROGRAMS

Government purchases of Arizona fiber, crudes Nos. 1, 2, and 3, under Public Law 733, continued until December 31, 1958, the termination date of Public Law 733. Funds were made available in the United States Department of Interior Appropriation Bill for 1959 for purchases from July 1, 1958, to the end of the year. Virtually all the longer fibers (crudes Nos. 1, 2, and 3) produced were sold to the Government.

DOMESTIC PRODUCTION

Asbestos production in the United States increased less than 1 percent in 1958 compared with 1957. Although no figures are available

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on quantity of ore mined, it has been estimated that the 44,000 tons of fiber sold was recovered from 1 million tons of rock mined.

The Vermont Asbestos Mines Division of the Ruberoid Co. at Belvedere Mountain near Hyde Park, Vt., was the one large asbestos producer in the United States. A small percentage of spinning fiber was produced, which was used in electrolytic cells rather than in textiles.

The following firms and individuals produced chrysotile in the Globe district of Arizona in 1958: American Fiber Corp., Arizona Asbestos, Inc., Jaquays Mining Corp., Kyle Asbestos Mines of Arizona, Metate Asbestos Corp., Moore and Phillips, Phillips Asbestos Mines, Reynolds Falls Asbestos, Inc., and Vesta Asbestos Corp.

The Jaquays Mining Corp. and the Metate Asbestos Corp. began constructing new asbestos mills at Globe—a 30-ton-per-day and a 15-ton-per-day crude ore capacity, respectively. Each mill was reported to have modern equipment of the type used in Canadian mills to separate the fibers of grades 4 through 7.

A small output of short-fiber chrysotile was reported by the Tabor Mining Co., from the Phoenix mine, Napa County, Calif. Amphibole asbestos was produced in small quantities by Huntley Industrial Minerals, Inc., at Lone Pine, Inyo County, Calif., and by Powhatan Mining Co., Transylvania County, N.C.

The Jefferson Lake Sulfur Co. began a diamond-drilling campaign to explore the asbestos deposits of the American Asbestos Mining Corp. in Calaveras County, Calif.[3]

The Bureau of Mines did some exploratory drilling in Northern California to encourage development by private enterprise.

CONSUMPTION AND USES

Consumption of chrysotile asbestos in the United States decreased from 685,000 tons in 1957 to 643,000 tons in 1958. Over 96 percent of the chrysotile consumed was short fiber of less than spinning length and was used in large part by the construction industry. Increases in the number of operating mines in Canada, from which most of this fiber came, indicated that the decline in consumption was the result of decreased demand by the construction industry, not of a shortage in supply. Less than 7 percent of the chrysotile consumed was supplied by domestic mines, which were unaffected by the decrease in demand, as a large percentage of the domestic production came from captive mines.

Consumption of crocidolite, represented by imports, continued to increase through 1958. From 1953 to 1958 the consumption of crocidolite was as follows: 8,000, 11,000, 15,000, 19,000, 24,000, and 26,000 tons, respectively. Most of the crocidolite was used in making asbestos cement pipe, an industry that has expanded rapidly in recent years.

[3] Wall Street Journal, Jefferson Lake Sulphur to Develop Asbestos Deposits: Vol. 153, No. 31, Feb. 13, 1959, p. 15.

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PRICES

The 1957 prices of asbestos in Canada remained unchanged during 1958 and were as follows:

Grade:

	Price per ton
Crude No. 1	$1,520–$1,900
Crude No. 2—Crude run-of-mine and sundry	810– 1,230
No. 3—Spinning fiber	380– 670
No. 4—Shingle fiber	185– 250
No. 5—Paper fiber	125– 155
No. 6—Plaster fiber	89
No. 7—Shorts	40– 80

Prices of British Columbia chrysotile asbestos, quoted in the E&MJ Metal and Mineral Markets reports, were unchanged in 1958 as follows: Per short ton f.o.b. Vancouver, British Columbia, effective October 1, 1957, crude No. 1 $1,568, AAA $811, AA $703, A $509, AC $335, AK $227. The AAA fiber is said to be equivalent to Rhodesian C&G No. 1, AA to C&G No. 2, A to Canadian 3K, AC to Rhodesian C&G No. 3, and AK to Canadian 4K.

The prices of Vermont asbestos rose in December 1957 and remained there during the first 7 months of 1958. Prices were decreased in August 1958 per short ton, f.o.b. Hyde Park or Morrisville as follows:

Group 3 (spinning and filtering)	$370–$428
Group 4 (shingle)	181– 200
Group 5 (paper)	120– 152
Group 6 (plaster)	86
Group 7 (shorts)	41– 75

The 1957 Arizona prices remained unchanged during 1958 as follows:

	Per short ton f.o.b. Globe
No. 1 crude (soft)	$1,500–$2,000
No. 2 crude (soft)	1,000– 1,350
No. 3 crude (soft)	400– 675
Filter Fibre (soft)	250– 475
No. 1 crude (semisoft)	1,200– 1,500
No. 2 crude (semisoft)	900
No. 3 crude (semisoft)	400

The 1957 increases in prices were not paid by the Government during 1958 for stockpile grades, because prices were fixed by law at those of January 1956.

Market quotations are not available for African or Australian asbestos as sales are made by negotiation with individual purchasers. United States Department of Commerce reports show the following average values per short ton for imports in 1957 and 1958:

	1957	*1958*
Imports:		
Amosite	$145.56	$150.44
Crocidolite:		
Bolivia	75.61	70.00
Australia	230.59	213.57
Union of South Africa	197.12	192.45

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FOREIGN TRADE [4]

Imports.—During 1958 imports of amosite and crocidolite increased 18 and 5 percent, respectively, compared with 1957; however, imports of chrysotile decreased 7 percent resulting in a net decrease of 6 percent in total imports of asbestos in 1958. Almost the entire quantity of chrysotile fiber imported (94 percent) was short fiber of less than spinning length. Imports of low-iron chrysotile of spinning length from British Columbia decreased from 5,764 tons in 1957 to 4,779 tons in 1958.

Imports from Bolivia and Australia consisted solely of crocidolite. The Union of South Africa supplied crocidolite and chrysotile and was the only source of amosite. Only chrysotile asbestos was imported from all other countries.

[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.

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TABLE 2.—Asbestos (unmanufactured) imported for consumption in the United States, by countries and classes

[Bureau of the Census]

Country	Crude (including blue fiber)		Mill fibers		Short fibers		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1957								
North America: Canada	590	$239,627	136,505	$24,886,273	489,055	[1] $25,031,526	626,150	[1] $50,157,426
South America:								
Bolivia	28	2,117					28	2,117
Venezuela	17	5,672	2	475			19	6,147
Europe:								
Germany, West	3	4,278			6	458	9	4,736
Italy	496	21,839	9	10,351	4	3,290	509	35,480
Portugal	10	1,120					10	1,120
United Kingdom			[2] 69	[2] 25,472	261	62,954	330	88,426
Yugoslavia	1,920	50,742					1,920	50,742
Africa:								
Algeria					7	589	7	589
Rhodesia and Nyasaland, Federation of [3]	11,083	1,997,485	431	96,595	202	28,980	11,716	2,123,060
Union of South Africa [4]	34,721	5,998,997	315	60,233	406	54,723	35,442	6,113,953
Oceania: Australia	6,592	1,520,019					6,592	1,520,019
Total	55,460	[5] 9,841,896	137,331	[5] 25,079,399	489,941	[1 5] 25,182,520	682,732	[1 5] 60,103,815
1958								
North America: Canada	707	277,934	134,190	24,452,416	450,527	23,643,514	585,424	48,373,864
South America:								
Bolivia	11	770					11	770
Venezuela	6	824	17	2,160	25	3,870	48	6,854
Europe:								
Finland	7	313			55	1,500	62	1,813
Italy			2	2,940			2	2,940
Portugal	4	560			14	1,455	18	2,015
Yugoslavia	4,090	196,251					4,090	196,251
Asia: Japan					6	1,653	6	1,653
Africa:								
British East Africa			9	706	50	6,266	59	6,972
Rhodesia and Nyasaland, Federation of [3 6]	7,178	1,221,092	660	132,035	294	42,470	8,132	1,395,597
Union of South Africa [4]	38,837	6,760,670	491	86,630	1,074	180,572	40,402	7,027,872
Oceania: Australia	6,077	1,297,860					6,077	1,297,860
Total	56,917	9,756,274	135,369	24,676,887	452,045	23,881,300	644,331	58,314,461

[1] Revised figure.
[2] Believed to have originated in the Union of South Africa and processed in the United Kingdom.
[3] All believed to be from Southern Rhodesia.
[4] Includes 1957: 51 tons ($11,162) of blue crocidolite and 2 tons ($607) of mill fibers credited by the Bureau of the Census to Southern British Africa; 1 ton ($296) of short fibers credited by the Bureau of the Census to British East Africa; and 20 tons ($1,773) of short fibers credited by the Bureau of the Census to Mozambique. 1958: 51 tons ($10,800) blue crocidolite, and 39 tons ($5,312) amosite crude credited by the Bureau of the Census to Mozambique; 1 ton ($405) amosite crude credited by the Bureau of the Census to West Germany; 880 tons ($125,723) blue crocidolite and 314 tons ($46,365) amosite crude credited by the Bureau of the Census to the Federation of Rhodesia and Nyasaland; 259 tons ($55,950) short fibers credited by the Bureau of the Census to the United Kingdom, and 42 tons ($5,475) credited to Mozambique.
[5] Data known to be not comparable with 1958.
[6] Includes 2 tons ($787) crysotile crudes credited by the Bureau of the Census to the United Kingdom, and 4 tons ($589) credited to Mozambique; 206 tons ($47,167) mill fibers credited by the Bureau of the Census to the United Kingdom.

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TABLE 3.—Asbestos imported for consumption in the United States, from specified countries, by grades, in short tons

[Bureau of the Census]

Grade	1957			1958		
	Canada	Southern Rhodesia [1]	Union of South Africa	Canada	Southern Rhodesia [1]	Union of South Africa
Chrysotile, crudes:						
No. 1	44	[2] 255		56	[3] 418	20
No. 2	162	56		190	65	
Other	384	[2] 10,772	2,704	461	[3] 6,695	2,133
Blue crocidolite			[4] 17,820			[4] 19,690
Amosite			14,197			[4] 16,994
Spinning or textile	21,222	344	[4] 275	18,915	460	466
Shingle	67,833	87	40	68,890	200	25
Paper	47,450			46,385		
Short fibers	489,055	202	[4] 406	450,527	294	[4] 1,074
Total	626,150	11,716	35,442	585,424	8,132	40,402

[1] Reported by the Bureau of the Census as Federation of Rhodesia and Nyasaland. All believed to be from Southern Rhodesia.
[2] Revised figure.
[3] Includes countries adjusted by Bureau of Mines. See table 2, footnote 6, for explanation.
[4] Includes countries adjusted by Bureau of Mines. See table 2, footnote 4, for explanation.

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Exports.—Exports of unmanufactured asbestos increased slightly in 1958. Compared with imports they are insignificant.

TABLE 4.—Exports (domestic [1] and foreign [2]) of asbestos and asbestos products from the United States, by kinds

[Bureau of the Census]

Products	1957		1958	
	Quantity	Value	Quantity	Value
Domestic:				
Unmanufactured:				
Crude and spinning fibers—short tons	333	$90,826	278	$85,979
Nonspinning fibers—do	334	60,918	514	88,907
Waste and refuse—do	2,108	188,179	2,145	232,143
Total unmanufactured—do	2,775	339,923	2,937	407,029
Products:				
Brake lining and blocks—Molded, semimolded and woven	(3)	5,117,533	(3)	4,612,458
Clutch facing and lining—number	1,350,181	1,044,234	1,340,622	1,091,636
Construction materials, n.e.c.—short tons	17,489	4,034,530	[4] 13,961	[4] 2,758,785
Pipe covering and cement—do	3,522	1,091,419	3,054	1,032,879
Textiles, yarn, and packing—do	1,449	3,238,557	1,166	2,965,097
Manufactures, n.e.c.	(5)	682,170	(5)	764,740
Total products		15,208,443		13,225,595
Foreign:				
Unmanufactured:				
Crude and spinning fibers—short tons	69	7,024		
Nonspinning fibers—do			30	6,252
Waste and refuse—do	49	2,655	59	11,045
Total unmanufactured—do	118	9,679	89	17,297
Products:				
Brake lining and blocks—Molded, semimolded and woven	(3)	592	(3)	740
Construction materials, n.e.c.—short tons	57	9,235	[4] 56	[4] 7,101
Pipe covering and cement—do	7	4,389		
Total products		14,216		7,841

[1] Material of domestic origin, or foreign material that has been milled, blended, or otherwise processed in the United States.
[2] Material that has been imported and subsequently exported without change.
[3] Values have been summarized; quantities not shown.
[4] Not strictly comparable with earlier years.
[5] Quantity not recorded.

WORLD REVIEW

NORTH AMERICA

Canada.—Canadian output of asbestos decreased in 1958. During the year 22.4 million tons of rock was mined and 972,123 tons of fiber recovered from 13.1 million tons of ore milled.

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TABLE 5.—World production of asbestos by countries,[1] in short tons[2]

[Compiled by Helen L. Hunt and Berenice B. Mitchell]

Country[1]	1949–53 (average)	1954	1955	1956	1957	1958
North America:						
Canada (sales)[3]	852,803	924,116	1,063,802	1,014,249	1,046,086	925,331
United States (sold or used by producers)	49,157	47,621	44,568	41,312	43,653	43,979
Total	901,960	971,737	1,108,370	1,055,561	1,089,739	969,310
South America:						
Argentina	254	168	1,380	238	319	[4] 330
Bolivia (exports)	411	33		62	121	
Brazil	1,348	2,816	3,124	3,739	2,654	1,703
Chile	235					
Venezuela	266	743	1,757	5,041	8,390	9,152
Total	2,514	3,760	6,261	9,080	11,484	11,185
Europe:						
Bulgaria	[4] 440	1,213	1,323	1,102	[4] 1,100	[4] 1,100
Finland [5]	12,041	7,853	18,674	8,282	10,031	7,977
France	5,115	14,449	10,913	9,370	11,298	20,503
Greece	22	2	3	6	9	
Italy	23,726	26,217	35,385	36,459	37,797	39,627
Portugal	206	30	56	35	64	[4] 70
Spain	33	176				
U.S.S.R.[4]	250,000	375,000	450,000	500,000	500,000	550,000
Yugoslavia	2,170	3,598	4,305	4,165	6,128	5,960
Total [4]	295,000	430,000	520,000	560,000	565,000	625,000
Asia:						
China [4]	5,500	15,000	23,000	26,000	33,000	39,000
Cyprus	16,687	15,309	15,306	15,375	15,028	[6] 14,693
India	550	435	1,564	1,378	1,910	[4] 1,650
Iran [7]	12		110	[4] 165	[4] 165	[4] 165
Japan	5,320	6,916	6,932	9,914	13,330	11,179
Korea, Republic of		233	66	54	96	22
Taiwan	151	161	403	118	268	47
Turkey	127	50	259	634	99	[4] 70
Total [4]	28,000	38,000	48,000	54,000	64,000	67,000
Africa:						
Bechuanaland	224	1,011	1,426	1,356	1,582	1,734
Egypt	416				22	
Eritrea		55			55	28
Kenya	403	224	152	170	109	120
Madagascar	7					
Morocco: Southern zone	581	597	631	379	132	
Mozambique		196	301	202	152	[4] 110
Rhodesia and Nyasaland, Federation of: Southern Rhodesia	80,280	79,962	105,261	118,973	132,124	127,115
Swaziland	33,294	30,142	32,613	29,875	30,727	25,261
Uganda		6	2	2		
Union of South Africa	98,871	109,151	119,699	136,520	157,474	175,366
Total	214,076	221,344	260,085	287,477	322,377	329,734
Oceania:						
Australia	3,326	5,279	5,993	10,874	16,430	[4] 16,000
New Zealand	344		172	368	230	[4] 220
Total	3,670	5,279	6,165	11,242	16,660	[4] 16,220
World total (estimate)[1 2]	1,445,000	1,670,000	1,950,000	1,980,000	2,070,000	2,020,000

[1] In addition to countries listed, asbestos is produced in Czechoslovakia, North Korea, and Rumania; no estimates are included in the total as production is believed to be negligible.
[2] This table incorporates a number of revisions of data published in previous Asbestos chapters. Data do not add exactly to totals shown because of rounding, where estimated figures are included in the detail.
[3] Exclusive of sand, gravel and stone (waste rock only), production of which is reported as follows: 1949–53 (average)—35,568 tons; 1954—26,429 tons; 1955—28,582 tons; 1956—45,427 tons; 1957—13,652 tons; 1958—18,450.
[4] Estimate.
[5] Includes asbestos flour.
[6] Exports.
[7] Year ended March 20 of year following that stated.

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TABLE 6.—Sales of asbestos in Canada, by grades

[Dominion Bureau of Statistics]

Grades	1957			1958		
	Short tons	Value		Short tons	Value	
		Total (thousands)	Average per ton		Total (thousands)	Average per ton
Crude No. 1, 2, and other	622	$615	$988	605	$617	$1,020
Milled group:						
3	34,320	14,820	432	24,900	10,852	436
4	259,268	47,815	184	215,670	40,717	189
5	110,428	13,726	124	101,992	13,025	128
6	159,098	12,747	80	138,747	11,325	82
7	460,539	18,816	41	427,665	18,208	43
8	21,811	434	20	15,752	324	21
Total, all grades	1,046,086	108,973	104	925,331	95,068	103
Waste rock	13,652	19	1	18,450	24	1

The formal dedication of the $36 million, Black Lake 100,000-ton-per-year operation of Lake Asbestos of Quebec, Ltd., a subsidiary of the American Smelting and Refining Co., took place in October. The 4-year project included diverting the Becancour River, building four dams, draining a 2½-mile lake, and constructing a $9.2-million, 14-story mill, operating on 11 floors.[5] It was expected that the plant would increase the free world production of asbestos 7 percent.[6] Several articles were written describing its development, mining, and milling facilities.[7]

Advocate Mines, Ltd., of Quebec, Johns-Manville, Patino, Ltd., of Canada, and two European firms signed an agreement to develop an asbestos prospect to which Advocate Mines, Ltd., held the mineral rights in northern Newfoundland. The estimated reserve of the chrysotile deposit was set at 23 million tons of asbestos rock, valued at $10 a ton.[8]

The Carey-Canadian Mines[9] and the National Gypsum Co. were reported to have started production at their new asbestos mills near Thetford Mines in the Eastern Township. A large part of the National Gypsum production from this mill was shipped to its materials plants in St. Louis, Mo., New Orleans, La., and Millington, N.J., for processing of shingles, corrugated panels and wallboard.[10]

Exploration was being conducted by Derogan Asbestos Corp. at Melbourne Township,[11] by Golden Age Mines in the Beauceville area

[5] Engineering and Mining Journal, ASARCO-Lake Asbestos Dedicate Black Lake Mine: Vol. 159, No. 11, November 1958, pp. 18, 19, 186.
Mining World, ASARCO Opens New Mine and Plant in Quebec: Vol. 20, No. 13, December 1958, pp. 32–34.
[6] Chemical Age, Metal Traders Become U. K. Sales Agents for Canadian Asbestos Producer: Vol. 79, No. 2015, Feb. 22, 1958, p. 362.
[7] Chemical and Engineering News, Asbestos From the Lake: Vol. 36, No. 43, Oct. 27, 1958, pp. 22–24.
Pit and Quarry, Lake Asbestos of Quebec Operations: Vol. 51, No. 6, December 1958, pp. 78–84.
[8] Northern Miner (Toronto), Johns-Manville, European Group Take Over Advocate Asbestos: Vol. 44, No. 28, Oct. 2, 1958, pp. 1, 16.
[9] Canadian Mining Journal, Carey-Canadian Mines: Vol. 79, No. 9, September 1958, p. 186.
[10] Northern Miner (Toronto), National Asbestos Starts Production at Thetford Mines: Vol. 44, No. 17, July 17, 1958, p. 17.
[11] Northern Miner (Toronto), Derogan Asbestos Resumes: Vol. 44, No. 22, Aug. 21, 1958, p. 2.

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of Quebec,[12] and by Asbestos Crude and Fibre Mines in the Thetford Mines district.[13]

Development at Cassiar Asbestos in British Columbia extended the southern limit of the ore body. Three asbestos prospects were explored, but most work was concentrated in the Clinton Creek property, northwest of Dawson.[14]

EUROPE

Greece.—Kennecott Copper Corp. continued to explore and began to construct a small pilot plant at an asbestos deposit in Koganic Province, Western Macedonia.[15]

Ireland.—Emerald Isle Mining Co. was reported to have reopened the Mountain Mine at Allihies, where an asbestos vein was examined.[16]

United Kingdom.—Turner Brothers Asbestos Co., Ltd., began to produce asbestos textiles from the new south block at its Hindley Green Factory near Wigan.[17]

Five British companies with 13 factories were reported to be manufacturing asbestos-cement products in Britain.[18]

ASIA

China.—Szechwan Bureau of Geology was reported to have found a 20-million-ton deposit of asbestos in the Szechwan Province.[19] The growth of the asbestos industry in China was described. It was reported that in addition to chrysotile, crocidolite was produced in Honan Province and amosite in Shensi Province. Occurrences, mining, and milling methods and production statistics were included.[20]

India.—Asbestos deposits were reported in the Singbhum district.[21]

AFRICA

Rhodesia and Nyasaland, Federation of.—Increased production was reported following the waiver of royalties on grades 6 and 7 asbestos fiber by the Southern Rhodesia Government.[22]

Union of South Africa.—Increased reserves and the sinking of a vertical shaft in the amosite deposits were reported at the annual general meeting of the Cape Asbestos Co. New deposits of crocidolite were being explored.[23]

Two asbestos mines were reported to have been opened in the Pietersburg District of Northern Transvaal by W. & B. Asbestos Co., (Pty.) Ltd., and by Consolidated Asbestos.[24]

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[12] Northern Miner (Toronto), Golden Age to Build Asbestos Test Mill: Vol. 44, No. 19, July 31, 1958, p. 22.
[13] Northern Miner (Toronto), Asbestos Crude and Fibre to Resume Exploration: Vol. 44, No. 7, May 8, 1958, p. 20; vol. 44, No. 37, Dec. 4, 1958, p. 13.
[14] Northern Miner (Toronto), Cassiar's Year Shaping Into the Best Yet: Vol. 44, No. 18, July 24, 1958, pp. 1, 13.
[15] Mining World, Greece: Vol. 20, No. 5, May 1958, p. 88.
[16] Mining World, Eire: Vol. 20, No. 8, July 1958, p. 8.
[17] Quarry Managers' Journal (London), Asbestos Factory at Work: Vol. 41, No. 10, April 1958, p. 384.
[18] Bureau of Mines, Mineral Trade Notes: Vol. 45, No. 5, May 1958, p. 21.
[19] Mining World, China: Vol. 20, No. 10, September 1958, p. 118.
[20] Yi-ming, Sun, Characteristics of Chinese Asbestos and Its Production: Canadian Min. Jour., vol. 79, No. 12, December 1958, pp. 62–64.
[21] Indian Mining Journal (Calcutta), Asbestos: Vol. 5, No. 10, October 1957, p. 50.
[22] South African Mining and Engineering Journal, Asbestos: Vol. 69, No. 3394, Feb. 28, 1958, pp. 359, 361.
[23] Mining Journal (London), Asbestos in South Africa: Vol. 250, No. 6406, May 30, 1958, p. 638.
[24] Engineering and Mining Journal, vol. 159, No. 10, October 1958, p. 198.

TABLE 7.—Asbestos produced in Southern Rhodesia

Year	Short tons	Value (thousands)	Year	Short tons	Value (thousands)
1954	79,962	$16,635	1957	132,124	$25,185
1955	105,261	19,684	1958	127,115	24,147
1956	118,973	23,832			

TABLE 8.—Asbestos produced in the Union of South Africa, by varieties and sources, in short tons

Variety and source	1954	1955	1956	1957	1958
Amosite (Transvaal)	45,922	50,137	50,097	56,798	69,773
Chrysotile (Transvaal)	19,373	20,535	24,336	25,646	27,403
Blue (Transvaal)	15,610	13,964	14,399	15,303	16,670
Blue (Cape)	28,136	34,878	47,688	59,549	61,520
Anthophyllite (Transvaal)	110	185			
Tremolite (Transvaal)				178	278
Total	109,151	119,699	136,520	157,474	175,644

TABLE 9.—Asbestos produced in and exported from the Union of South Africa

Year	Production (short tons)			Exports	
	Transvaal	Cape Province	Total	Short tons	Value (thousands)
1954	81,015	28,136	109,151	94,322	$15,259
1955	84,821	34,878	119,699	114,056	18,625
1956	88,832	47,688	136,520	122,867	20,432
1957	97,925	59,549	157,474	142,799	25,278
1958	114,124	61,520	175,644	145,796	25,420

OCEANIA

Australia.—Australian Blue Asbestos, a subsidiary of Colonial Sugar Refinery Co., opened an $800,000 treatment plant in the Hamersley Ranges of Western Australia, with a capacity of 25,000 tons of fiber a year.[25]

TECHNOLOGY

Complex marketing problems faced the asbestos producers throughout the world as the supply of spinning fiber began to outstrip the demand for these long fibers. The demand for shorter fibers caused the industry to improve mining and milling techniques to such an extent that the extraction of short fibers was increased by over 40 percent. Canadian productive capacity has increased more rapidly than the demand for asbestos fibers.[26] Even in Southern Rhodesia the market for the lower grades was so great that the Southern Rhodesia Government waived royalties on the lower grades as an incentive to potential producers to meet competition in world markets.[27]

[25] Mining Journal (London), Asbestos in Australia: Vol. 251, No. 6414, July 25, 1958, p. 106.
[26] Mining Journal (London), The Canadian Asbestos Industry: Vol. 251, No. 6424, Oct. 3, 1958, pp. 360–362.
[27] The Annual Report of the Chief Government Mining Engineer and Chief Inspector of Mines for 1957, Mar. 6, 1958, p. 5.

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The use of roof bolts as a means of preventing contamination of asbestos ore by wood splinters from mine timbers was discussed, and methods used in Canadian mines were described.[28]

A symposium of articles on asbestos presented over the last 10 years at annual meetings of the Canadian Institute of Mining and Metallurgy was published.[29] One article discussed the filterability of asbestos fibers used in wet processes. The manufacture of some products involves the use of asbestos in combination with water, cement, and granular fillers. Tests showed that fibers from different types of asbestos and from different deposits had considerable diversity in filtration characteristics. Soft, silky fibers were difficult to filter; semiharsh to harsh fibers filtered easily. Knowledge of the filtration characteristics of different fibers made it possible to obtain filtration results by blending fibers to fit the manufacturing process concerned. The role of asbestos in plastics was studied, and the author stressed the use of fiber of constant texture and quality so that the molder can set up a working plastic formula and not be forced to make repeated changes.

Asbestos in thermal insulation was discussed and compared with other insulating materials.[30] A master table summarizing the significant properties of each major type of insulation helped in evaluating each material.

The search for insulating materials for jet engines and missiles has led to the study of asbestiform minerals and synthetic fibrous materials. Fundamental research by one company led to the synthesis of a crystalline fibrous potasium titanate that showed promise as a versatile high temperature insulating material.

Unofficial reports from another research laboratory indicated other synthetic asbestiform materials were being investigated, and high hopes were expressed for successful results.

A laminate of an asbestos mat base impregnated with a special phenolic resin and of nylon fabric was reported to have withstood tests at 2,000° F. This material had promise of usefulness in missiles.

The use of woven asbestos, special bonding compounds, and wire reinforcement as bridge bearing pads was described.[31]

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[28] Sinclair, W. E., Roof Bolting in Asbestos Mines: South African Min. and Eng. Jour., vol. 69, Part 2, No. 3435, Dec. 12, 1959, pp. 1197, 1199, 1201, 1203.
[29] Badollet, M. S., Asbestos, A Symposium of Articles: The Quebec Asbestos Min. Assoc., 1958, 49 pp.
[30] Fabian, Robert J., Thermal Insulation Materials: Materials in Design Eng., vol. 47, No. 3, March 1958, pp. 119–138.
[31] Engineering News Record, Asbestos Bearing Pads Withstand High Loading: Vol. 161, No. 24, Dec. 11, 1958, p. 72.

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