

Gypsum

By Avery H. Reed ¹

The gypsum industry operated at record levels in 1972. Output of crude and calcined gypsum set new annual records. Imports of crude gypsum were an alltime high. Sales of gypsum products were higher than for any other year.

Republic Gypsum Co. reopened the Rosario mine and plant in Santa Fe County, N. Mex., and Temple Gypsum Co. com-

pleted its new processing plant at West Memphis, Ark.

The gypsum resources of Oklahoma were described.²

Many companies were concerned about environmental problems at gypsum plants. Rigid air pollution standards could force extensive plant revisions. The disposal and possible use problems of waste gypsum at fertilizer plants were examined.

Table 1.—Salient gypsum statistics
(Thousand short tons and thousand dollars)

	1968	1969	1970	1971	1972
United States:					
Active mines and plants ¹	115	114	108	107	108
Crude: ²					
Mined.....	10,018	9,905	9,436	10,418	12,328
Value.....	36,775	38,354	35,132	39,057	48,504
Imports for consumption.....	5,474	5,858	6,128	6,094	7,713
Calcined: Produced.....	8,844	9,324	8,449	9,526	12,005
Value.....	133,239	143,466	132,047	151,991	195,862
Products sold (value).....	404,739	414,880	353,474	435,257	560,569
Exports (value).....	3,556	3,446	3,475	4,214	5,276
Imports for consumption (value).....	13,058	14,602	16,581	16,332	22,042
World: Production.....	54,486	57,581	56,868	58,552	63,545

¹ Each mine, calcining plant, or combination mine and plant is counted as 1 establishment.

² Excludes byproduct gypsum.

DOMESTIC PRODUCTION

Thirty-six companies mined crude gypsum at 65 mines in 21 States. Of these mines, 12 were underground and 53 were open pit. Output increased 18% to 12,328,000 tons, 13% above the 1959 record. Leading States were Michigan, Texas, California, Iowa, and Oklahoma. These five States, with 30 mines, accounted for 59% of the total crude gypsum. Leading companies were United States Gypsum Co. (13 mines), National Gypsum Co. (7 mines), Georgia-Pacific Corp. (7 mines), The Flintkote Co. (2 mines), and The

Celotex Co. (3 mines). These five companies, operating 32 mines, produced 75% of the total crude gypsum. Leading mines were U.S. Gypsum's Plaster City, Calif., mine, and Alabaster, Mich., mine; National's Tawas City, Mich., mine, and Shoals, Ind., underground mine; and U.S. Gypsum's Southard, Okla. mine.

Fourteen companies calcined gypsum at

¹ Physical scientist, Division of Nonmetallic Minerals.

² Johnson, Kenneth S. Gypsum and Salt Resources in Oklahoma. Industrial Minerals, v. 62, November 1972, pp. 33-39.

Table 2.—Gypsum production in the United States, 1880-1972
(Thousand short tons and thousand dollars)

Year	Crude			Production			Products sold or used						Total						
	Quantity	Value	NA	Quantity	Value	NA	Unacquired			Calced			Prefabricated products		Value				
							Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value		Quantity	Value	Quantity	Value
Quantity	Value	NA	Quantity	Value	NA	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value				
1880	90	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1881	85	350	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1882	100	450	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1883	90	420	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1884	90	390	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1885	90	495	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1886	95	425	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1887	95	425	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1888	110	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
1889	268	794	NA	NA	NA	79	412	117	143	19	29	19	29	NA	574	574			
1890	183	518	NA	NA	NA	110	482	117	117	19	29	19	29	NA	628	628			
1891	208	625	NA	NA	NA	106	508	48	106	48	58	81	106	NA	695	695			
1892	256	695	NA	NA	NA	123	518	50	106	48	58	81	106	NA	696	696			
1893	254	697	NA	NA	NA	127	610	42	96	35	56	56	56	NA	762	762			
1894	239	762	NA	NA	NA	151	674	35	85	27	38	38	38	NA	797	797			
1895	265	797	NA	NA	NA	138	662	27	60	17	19	19	19	NA	573	573			
1896	224	573	NA	NA	NA	181	662	32	60	17	19	19	19	NA	756	756			
1897	239	799	NA	NA	NA	190	657	41	91	10	6	6	6	NA	755	755			
1898	252	755	NA	NA	NA	236	657	50	101	10	7	7	7	NA	1,288	1,288			
1899	466	1,287	NA	NA	NA	400	1,500	46	83	35	58	58	58	NA	1,627	1,627			
1900	594	1,627	NA	NA	NA	400	1,825	59	110	69	44	44	44	NA	1,507	1,507			
1901	694	1,807	NA	NA	NA	599	1,889	71	106	81	98	98	98	NA	2,088	2,088			
1902	816	2,089	NA	NA	NA	743	2,560	65	155	74	74	74	74	NA	3,783	3,783			
1903	1,042	3,793	NA	NA	NA	665	2,581	70	142	56	61	61	61	NA	2,784	2,784			
1904	941	3,784	NA	NA	NA	797	2,849	40	74	67	67	67	67	NA	3,029	3,029			
1905	1,043	3,029	NA	NA	NA	900	3,220	63	157	187	106	106	106	NA	3,838	3,838			
1906	1,541	3,838	NA	NA	NA	1,125	4,402	47	92	238	461	461	461	NA	4,942	4,942			
1907	1,752	4,942	NA	NA	NA	1,126	5,650	38	84	209	384	384	384	NA	4,976	4,976			
1908	2,258	6,507	NA	NA	NA	1,524	6,354	50	104	292	449	449	449	NA	5,907	5,907			
1909	2,379	6,507	NA	NA	NA	1,584	6,354	54	110	368	559	559	559	NA	6,523	6,523			
1910	2,379	6,523	NA	NA	NA	1,987	5,589	110	114	42	114	114	114	NA	6,462	6,462			
1911	2,354	6,462	NA	NA	NA	442	624	29	82	29	82	82	82	NA	6,565	6,565			
1912	2,501	6,564	NA	NA	NA	443	697	1,691	5,881	83	197	197	197	NA	6,775	6,775			
1913	2,589	6,773	NA	NA	NA	444	647	1,566	6,039	85	210	210	210	NA	6,896	6,896			
1914	2,476	6,896	NA	NA	NA	476	651	1,532	5,803	82	143	143	143	NA	6,597	6,597			
1915	2,448	6,597	NA	NA	NA	547	790	1,689	6,914	117	255	255	255	NA	7,959	7,959			
1916	2,768	7,959	NA	NA	NA	624	1,124	1,645	8,949	132	1,046	1,046	1,046	NA	11,117	11,117			
1917	2,696	11,116	NA	NA	NA	470	1,237	1,188	8,569	140	1,666	1,666	1,666	NA	11,472	11,472			
1918	2,057	11,471	NA	NA	NA	510	1,518	1,408	11,906	188	2,804	2,804	2,804	NA	15,728	15,728			
1919	2,420	15,728	NA	NA	NA	510	1,518	1,408	11,906	188	2,804	2,804	2,804	NA	15,728	15,728			

See footnote at end of table.

1920	3 129	24 533	NA	NA	689	2 565	1 594	15 849	310	6 119	NA	24 534
1921	3 780	23 700	NA	NA	720	2 266	46	505	1 751	20 930	NA	23 713
1922	3 861	29 861	NA	NA	771	2 443	126	1 199	2 365	25 719	NA	29 868
1923	4 753	34 888	NA	NA	877	2 577	177	1 749	2 925	30 562	NA	34 881
1924	5 043	43 724	NA	NA	944	2 674	203	2 037	3 356	38 133	NA	42 721
1925	5 678	47 577	NA	NA	1 014	2 823	217	2 937	3 890	42 717	NA	47 577
1926	5 635	46 721	NA	NA	961	2 510	221	2 350	3 795	42 082	NA	46 722
1927	5 347	42 174	NA	NA	865	2 359	233	2 350	3 679	37 436	NA	42 175
1928	5 102	32 036	NA	NA	939	1 902	194	1 151	3 447	28 984	NA	32 037
1929	5 016	31 293	NA	NA	1 066	2 087	237	1 612	3 125	27 584	NA	31 294
1930	5 471	20 801	NA	NA	1	1 886	167	1 242	2 025	23 924	NA	20 802
1931	5 559	20 906	NA	NA	376	2 020	179	633	1 457	13 176	NA	20 907
1932	1 416	11 927	NA	NA	516	1 216	61	573	827	7 907	NA	11 928
1933	1 395	13 752	NA	NA	491	1 069	65	585	720	7 031	NA	13 753
1934	1 896	13 569	NA	NA	579	1 287	77	770	766	7 878	NA	13 570
1935	1 904	13 880	8 000	10 000	595	1 329	104	979	1 043	10 902	8 085	18 000
1936	2 713	26 922	1 900	11 000	831	1 866	119	1 141	1 431	14 360	16 958	24 625
1937	3 058	4 752	2 311	11 076	861	1 921	126	1 363	1 669	16 010	19 506	34 325
1938	3 884	4 272	2 553	10 890	757	1 681	94	1 155	1 485	13 910	19 510	36 256
1939	3 927	4 493	3 383	14 821	863	1 927	110	1 374	1 780	17 090	25 537	45 928
1940	3 690	4 531	3 881	17 255	929	2 251	124	1 583	1 863	17 329	32 380	53 493
1941	4 789	6 723	3 981	19 747	1 321	3 139	162	1 885	1 939	18 053	46 681	69 758
1942	4 698	6 374	3 881	13 747	1 515	3 534	143	1 841	1 841	11 084	46 713	63 172
1943	3 761	6 340	2 558	16 403	1 234	3 115	163	2 259	1 769	7 316	46 407	59 097
1944	3 761	6 340	2 558	13 841	1 066	2 954	168	2 326	2 551	754	42 857	55 701
1945	3 912	6 431	3 363	14 532	1 143	3 433	188	2 826	2 826	9 087	45 808	60 149
1946	5 629	12 442	4 175	26 373	1 641	5 106	200	3 161	1 938	22 049	66 879	97 195
1947	6 208	16 530	5 010	38 773	1 590	7 012	207	3 430	2 203	26 096	91 877	128 415
1948	7 255	19 113	6 243	48 145	2 226	7 927	219	3 731	2 541	31 984	133 191	176 833
1949	6 193	19 319	5 767	45 455	1 990	7 127	212	3 562	2 324	29 949	118 108	158 746
1950	8 456	24 025	7 831	60 480	2 218	7 912	266	4 530	2 942	39 576	154 158	206 176
1951	8 915	23 924	6 374	59 696	2 706	9 413	289	5 468	2 838	43 531	177 423	235 835
1952	8 456	24 025	7 831	60 480	2 530	9 413	252	5 000	2 551	39 016	188 163	245 053
1953	8 393	23 596	6 374	59 696	2 656	9 617	252	5 261	2 682	53 923	311 211	338 335
1954	8 296	23 155	7 166	66 669	2 746	10 592	250	5 384	2 694	45 355	210 822	272 153
1955	10 884	33 338	7 618	76 171	2 938	11 436	299	6 337	3 038	52 846	248 705	319 324
1956	10 316	34 099	8 848	88 576	2 938	11 436	334	7 309	2 894	54 078	247 091	321 651
1957	9 195	32 571	7 801	83 455	3 259	13 173	334	6 998	2 718	51 349	229 623	301 095
1958	9 600	32 495	8 122	91 402	3 471	13 108	319	6 998	2 518	49 584	259 618	339 070
1959	10 900	39 231	9 268	111 740	3 959	16 109	311	7 087	2 682	53 923	311 211	338 335
1960	9 525	35 690	8 591	120 984	3 716	15 486	284	6 362	2 079	42 123	294 199	353 811
1961	9 600	34 996	8 246	118 145	3 899	16 161	258	6 328	2 393	48 574	290 768	361 190
1962	9 969	36 343	8 819	127 436	4 049	17 097	269	7 745	2 055	41 054	327 404	393 300
1963	10 388	38 138	9 181	131 668	4 209	17 865	279	7 094	2 026	41 104	348 027	414 090
1964	10 684	38 874	9 440	135 877	4 562	19 138	292	7 508	1 965	41 187	363 884	431 717
1965	10 033	37 375	9 320	133 028	4 577	20 313	319	8 231	1 805	37 784	353 242	419 620
1966	9 647	35 681	8 434	119 747	4 693	21 444	322	8 939	1 579	33 985	312 503	376 871
1967	9 393	34 388	7 879	115 467	4 511	20 882	293	8 238	1 579	30 468	302 630	362 268
1968	10 018	36 775	8 844	133 239	4 935	22 145	301	8 914	1 314	30 007	372 680	404 739
1969	9 905	38 354	9 324	143 466	4 631	23 048	316	8 769	1 176	28 685	385 068	414 880
1970	9 436	36 132	8 449	132 047	4 258	21 294	284	9 058	1 068	25 470	323 122	353 474
1971	10 418	39 057	9 525	151 991	4 624	22 888	263	8 843	916	24 488	379 088	435 257
1972	12 328	48 504	12 005	195 862	5 195	26 911	299	10 657	841	25 268	497 744	560 560

NA Not available.

76 plants in 30 States. Output increased 26% to 12,005,000 tons and set a new annual record. Leading States were Texas, California, New York, Iowa, and Georgia. These five States, with 29 plants, accounted for 43% of the total calcined gypsum. Leading companies were United States Gypsum Co. (23 plants), National Gypsum Co. (19 plants), Georgia-Pacific Corp. (10 plants), The Flintkote Co. (5 plants), and Kaiser Gypsum Co. Inc. (5 plants). These

five companies operated 62 plants, and produced 85% of the total calcined gypsum.

Valley Nitrogen Producers Inc., Occidental Petroleum Corp., and Collier Carbon & Chemical Corp. sold 278,600 tons of by-product gypsum for agricultural use in California.

The United States is the world's leading producer of gypsum, accounting for 19% of the total output.

Table 3.—Crude gypsum mined in the United States, by State
(Thousand short tons and thousand dollars)

State	1971			1972		
	Active Mines	Quantity	Value	Active Mines	Quantity	Value
California.....	7	1,352	3,884	5	1,525	4,965
Iowa.....	5	1,154	4,460	5	1,380	5,714
Michigan.....	5	1,433	5,585	5	1,650	7,267
Nevada.....	3	695	2,372	3	860	2,871
New York.....	3	415	2,376	3	486	3,079
Oklahoma.....	8	1,022	3,073	8	1,196	3,888
South Dakota.....	1	21	83	1	24	43
Texas.....	7	1,303	4,806	7	1,542	5,284
Washington.....	1	W	W	1	5	13
Wyoming.....	4	232	918	3	W	W
Other States ¹	23	2,791	11,500	24	3,660	15,380
Total.....	67	10,418	39,057	65	12,328	48,504

W Withheld to avoid disclosing individual company confidential data; included with "Other States."

¹ Includes Louisiana, Montana, and Virginia, 1 mine each; Arkansas, Indiana, Kansas, Ohio, and Utah, 2 mines each; New Mexico, (1972) 3 mines; Arizona and Colorado, 4 mines each.

Table 4.—Calcined gypsum produced in the United States, by State
(Thousand short tons and thousand dollars)

State	1971				1972					
	Active plants	Quantity	Value	Calcining equipment		Active plants	Quantity	Value	Calcining equipment	
				Kettles	Other ¹				Kettles	Other ¹
California.....	6	881	10,838	18	5	7	1,154	12,036	16	9
Florida.....	3	518	5,769	9	2	3	594	7,014	9	2
Georgia.....	3	616	11,058	15	--	3	702	12,984	15	--
Iowa.....	5	796	13,704	22	4	5	913	15,396	22	4
Michigan.....	4	373	7,263	9	1	4	536	10,640	9	1
Nevada.....	3	330	4,851	12	6	3	562	8,336	12	6
New Jersey.....	4	452	7,369	9	4	4	529	9,798	9	4
New York.....	7	922	15,688	21	8	7	1,138	21,214	21	6
Ohio.....	3	358	5,790	9	1	3	433	6,796	9	1
Texas.....	7	1,035	17,074	30	1	7	1,294	21,538	30	3
Other States ²	29	3,245	52,587	77	37	30	4,150	70,060	78	52
Total.....	74	9,526	151,991	231	69	76	12,005	195,862	230	88

¹ Includes rotary and beehive kilns, Holoflites, grinding-calcining units, and Hydrocal cylinders.

² Includes Arizona, Arkansas, Colorado, Connecticut, Delaware, Illinois, Massachusetts, Montana, New Hampshire, New Mexico (1971), Pennsylvania, and Washington, 1 plant each; Kansas, Louisiana, Maryland, New Mexico (1972), Oklahoma, Utah, Virginia, and Wyoming, 2 plants each; and Indiana, 3 plants.

CONSUMPTION AND USES

Apparent consumption of gypsum, as measured by production plus imports minus exports, was 20.0 million tons, an

increase of 21% and a new annual record. Imports were 39% of the total.

Of the total gypsum supply, 5.2 million

tons, or 26%, was sold or used uncalcined. Of the total uncalcined gypsum, 3.9 million tons, or 76%, was sold or used in portland cement, and 1.1 million tons, or 22%, was used in agriculture. In addition, 279,000 tons of byproduct gypsum was sold for agricultural uses.

The leading consuming sales regions for gypsum in portland cement were the Middle Atlantic and the West South Central, which accounted for 51% of the total. For agricultural gypsum, the Pacific sales region accounted for 96% of the total. It has been estimated that the alkali soils of the

Western States could benefit by as much as 12 tons of gypsum per acre.

Of the total calcined gypsum, 92% was used for prefabricated products and 8% was used for plasters. Of the prefabricated products, 76% was regular wallboard, 15% was type-X wallboard, and 3% was lath.

The leading consuming sales regions for prefabricated products were the South Atlantic and the East North Central, which together accounted for 35% of the total. For plaster, the East North Central and the South Atlantic accounted for 45% of the total.

PRICES

The value of crude gypsum increased from \$3.75 per ton in 1971 to \$3.93. The value of calcined gypsum increased from \$15.96 in 1971 to \$16.32 per ton. The average value of byproduct gypsum sold was \$5.11 per ton.

The average value of gypsum products increased from \$25.73 in 1971 to \$28.88 per ton. Prefabricated products were valued at \$38.06, plasters at \$31.53, and uncalcined

products at \$5.18 per ton.

Quoted prices for gypsum are published monthly in the Engineering News-Record. Prices quoted December 21, 1972, showed a wide range, based on delivered prices. Regular 1/2-inch wallboard prices ranged from \$42 per thousand square feet at Dallas to \$85 at Chicago. Prices for plaster ranged from \$31 per ton at Dallas to \$58 per ton at Minneapolis.

Table 5.—Gypsum products (made from domestic, imported and byproduct gypsum) sold or used in the United States, by use

(Thousand short tons and thousand dollars)

Use	1971		1972	
	Quantity	Value	Quantity	Value
Uncalcined:				
Portland cement.....	3,386	16,173	3,924	19,405
Agriculture.....	1,124	5,386	1,146	5,970
Other.....	113	1,328	124	1,535
Total ¹	4,624	22,888	5,195	26,911
Calcined:				
Industrial plaster.....	263	8,843	299	10,657
Building plaster:				
Regular base coat.....	381	8,086	329	7,910
Mill-mixed base coat.....	188	5,639	178	5,707
Veneer plaster.....	90	5,034	98	5,713
Other ²	257	5,679	235	5,928
Total ¹	916	24,438	841	25,258
Prefabricated products ³	11,112	379,088	13,078	497,744
Total calcined.....	12,291	412,369	14,217	533,658
Grand total.....	16,915	435,257	19,412	560,569

¹ Data may not add to totals shown because of independent rounding.

² Includes gauging, molding, and Keene's cement, roof deck concrete, and other uses.

³ Includes weight of paper, metal, or other materials.

Table 6.—Prefabricated products sold or used in the United States, by product

Product	1971			1972		
	Quantity (thousand square feet)	Quantity (thousand short tons) ¹	Value (thousands)	Quantity (thousand square feet)	Quantity (thousand short tons) ¹	Value (thousands)
Lath:						
$\frac{3}{8}$ inch	361,812	279	\$9,286	430,536	335	\$12,792
$\frac{1}{2}$ inch ²	111,918	102	3,314	18,004	17	596
Total³	473,231	381	12,600	448,540	352	13,388
Veneer base	291,754	278	8,858	357,443	316	13,521
Sheathing	274,212	260	8,215	337,084	319	12,024
Regular gypsumboard:						
$\frac{1}{2}$ inch	105,698	59	2,708	104,444	66	2,860
$\frac{3}{8}$ inch	1,200,682	851	35,659	1,196,096	913	36,982
$\frac{1}{2}$ inch	6,858,222	6,207	189,692	9,083,662	8,291	291,961
$\frac{5}{8}$ inch	916,469	1,078	34,342	612,518	608	26,847
1 inch ⁴	27,336	48	2,016	50,977	80	3,778
Total³	9,108,408	8,244	264,417	11,047,698	9,958	362,428
Type-X gypsumboard	1,616,790	1,826	67,226	1,783,677	1,939	75,466
Predecorated wallboard	123,048	120	17,660	195,360	178	19,274
Other	2,480	3	112	14,254	14	1,641
Grand total³	11,889,927	11,112	379,088	14,184,059	13,078	497,744

¹ Includes weight of paper, metal, or other material.

² Includes a small quantity of other unspecified lath.

³ Data may not add to totals shown because of independent rounding.

⁴ Includes a small quantity of $\frac{5}{8}$ -inch, $\frac{3}{8}$ -inch fireboard, and $\frac{3}{4}$ -inch gypsumboard.

FOREIGN TRADE

Imports of crude gypsum were 7.7 million tons, of which 77% came from Canada, 16% from Mexico, and 6% from Jamaica. Exports of crude gypsum totaled 51,000 tons.

Although there are vast deposits of gypsum in the United States, there are no known deposits along the coastlines. There are large tidewater deposits in Canada and Mexico from which shipments may be made to coastal cities at a lower delivered price than domestic gypsum.

Table 7.—U.S. exports of gypsum and gypsum products

(Thousand short tons and thousand dollars)

Year	Crude, crushed or calcined		Other manufactures n.e.c., value	Total value
	Quantity	Value		
1970	41	1,915	1,560	3,475
1971	49	2,318	1,896	4,214
1972	51	2,582	2,694	5,276

¹ Revised.

Table 8.—U.S. imports for consumption and gypsum and gypsum products

(Thousand short tons and thousand dollars)

Year	Crude (including anhydrite)		Ground or calcined		Alabaster manufactures ¹ value	Other manufactures n.e.c., value	Total value
	Quantity	Value	Quantity	Value			
1970	6,123	13,791	2	106	1,559	1,125	16,581
1971	6,094	13,447	2	105	1,545	1,235	16,332
1972	7,718	18,342	2	152	1,950	1,598	22,042

¹ Includes imports of jet manufactures, which are believed to be negligible.

Table 9.—U.S. imports for consumption of crude gypsum (including anhydrite), by country
(Thousand short tons and thousand dollars)

Country	1971		1972	
	Quantity	Value	Quantity	Value
Canada.....	4,681	10,155	5,912	13,946
Dominican Republic.....	161	476	116	371
Italy.....	(¹)	6	15	6
Jamaica.....	309	913	439	1,292
Mexico.....	943	1,897	1,236	2,727
Other.....	(¹)	(¹)	--	--
Total.....	6,094	13,447	7,718	18,342

¹ Less than ½ unit.

WORLD REVIEW

Canada.—Canada was the second leading producer of crude gypsum. Output in 1972 was 7.9 million tons of which 5.9 million tons was exported to the United States.

U.S. Gypsum Co., National Gypsum Co., Georgia-Pacific Corp., B. S. Parsons, and D. McDonald mined gypsum in Nova Scotia. U.S. Gypsum Co. and Canada Cement Lafarge Ltd. mined gypsum in New Brunswick. The Flintkote Co. mined gypsum in Newfoundland.

In the western provinces, Domtar Construction Materials Ltd. and Westroc Industries Ltd. mined gypsum in Manitoba. Westroc Industries Ltd. also mined gypsum in British Columbia.

Westroc Industries Ltd. announced plans to construct a \$7.2 million gypsum wallboard plant near Montreal.

France.—France was the third leading gypsum producer, with shipments of over 6 million tons. Most of the gypsum was exported.

India.—Deposits of gypsum covering 700

square miles and estimated at 469 million tons have been discovered in the Kohat area. Gypsum reserves in Jammu and Kashmir are estimated at 79 million tons.

Netherlands.—Plans were announced for a new plant at Born for making plasterboard from byproduct gypsum. Annual capacity is estimated at 400,000 tons of gypsum.

South Africa, Republic of.—A new plant went on stream at Palabora, treating the byproduct gypsum from the phosphoric acid plant. Products of the new plant are sulfuric acid and a clinker that can be ground for portland cement.

Spain.—Spain was the sixth leading gypsum producer, with shipments of nearly 5 million tons. Most of the material was exported.

U.S.S.R.—The U.S.S.R. ranked fourth in gypsum production, with shipments of more than 5 million tons. Most of the gypsum was consumed in the Soviet Union.

TECHNOLOGY

Interest continued in the use of byproduct gypsum for producing wallboard and plaster. Sabina Industries holds the United States and Canadian rights to the patented Giulini process for the recovery of high-quality gypsum from waste gypsum. There are very large quantities of waste gypsum

that must be used or disposed of.

American Cyanamid Co. announced that a new gypsum board plant would be built at Savannah, Ga. The gypsum would be recovered by a Japanese process from the waste water of the company's titanium dioxide plant.

Table 10.—Gypsum: World production, by country
(Short tons)

Country ¹	1970	1971	1972 ^p
North America:			
Canada (shipments) ²	6,318,523	6,702,100	7,942,000
Dominican Republic ^e	r 143,300	143,300	143,300
El Salvador	6,120	e 6,600	e 6,600
Guatemala	8,499	e 8,800	e 8,800
Honduras	10,146	e 11,000	17,423
Jamaica	311,781	340,888	e 340,000
Mexico	1,422,927	1,431,071	1,650,946
Nicaragua ²	e 33,000	27,789	e 23,000
Trinidad and Tobago	r 2,200	2,200	2,200
United States	9,436,000	10,418,000	12,323,000
South America:			
Argentina	464,693	650,650	e 660,000
Bolivia	r 551	e 2,204	e 2,544
Brazil ^e	320,000	320,000	320,000
Chile	140,288	168,019	192,028
Colombia	188,495	200,620	221,886
Paraguay	6,614	13,228	12,125
Peru	99,142	e 100,000	e 100,000
Venezuela ^e	r 110,000	110,000	110,000
Europe:			
Austria ²	694,270	654,462	949,372
Belgium	96,962	106,296	115,940
Bulgaria	r 187,400	198,400	e 200,000
Czechoslovakia	536,800	528,000	e 525,000
France ²	r 6,320,243	5,634,458	6,451,380
Germany, East ⁵	318,570	347,230	e 347,000
Germany, West (marketable)	r 1,619,293	1,756,354	1,970,930
Greece	340,121	363,800	e 365,000
Ireland	324,801	e 330,000	e 330,000
Italy	r 3,693,242	e 3,860,000	e 3,860,000
Luxembourg	5,580	5,898	5,390
Poland ^e	937,000	937,000	937,000
Portugal	r 214,388	259,449	e 265,000
Spain	r 4,548,839	4,442,328	4,520,000
Switzerland ^e	110,000	110,000	110,000
U.S.S.R. ^e	5,200,000	5,200,000	5,200,000
United Kingdom ²	4,712,968	4,599,848	4,589,769
Yugoslavia	276,260	275,843	e 276,000
Africa:			
Algeria ^e	193,000	193,000	193,000
Angola	20,062	21,818	16,103
Egypt, Arab Republic of	r 481,213	530,909	584,000
Ethiopia	5,126	3,948	5,126
Kenya ²	66,223	101,271	e 110,000
Libya	4,189	e 4,400	e 4,400
Niger	r 1,653	441	1,653
South Africa, Republic of	452,058	450,003	462,300
Sudan ²	1,804	e 2,200	e 2,200
Tanzania	22,838	19,501	e 2,794
Asia:			
Burma	5,880	13,440	15,160
China, People's Republic of ^e	606,300	606,300	661,400
Cyprus	r 49,267	19,032	30,800
India	1,014,716	1,199,313	1,188,290
Indonesia ^e	8,800	8,800	8,800
Iran ⁶	2,314,851	2,430,197	e 2,500,000
Israel ⁷	77,162	88,185	e 88,000
Japan	593,895	582,802	512,537
Jordan	28,660	26,455	33,069
Lebanon	38,581	40,785	e 44,000
Mongolia ^e	27,600	27,600	27,600
Pakistan	184,661	147,173	169,908
Philippines	19,244	47,174	93,636
Saudi Arabia ⁸	18,994	39,602	e 40,000
Syrian Arab Republic ^e	16,500	16,500	16,500
Taiwan	12,484	18,010	6,515
Thailand	159,008	185,081	98,993
Turkey ^e	352,700	374,800	e 375,000
Oceania:			
Australia	931,941	986,847	e 1,150,000
Total	r 56,868,431	58,552,022	63,545,417

^e Estimate. ^p Preliminary. ^r Revised.

¹ Gypsum is also produced in Cuba and Romania, but production data are not available.

² Includes anhydrite.

³ Exports.

⁴ Net exports.

⁵ Crude production estimates based on calcined figures.

⁶ Year ended March 20 of year following that stated.

⁷ Year ended March 31 of year following that stated.

⁸ Data presented are for Hejira calendar years as follows: 1970—Hejira year 1390 (March 9, 1970—February 26, 1971); 1971—Hejira year 1391 (February 27, 1971—February 15, 1972); 1972—Hejira year 1392 (February 16, 1972—February 3, 1973).