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DIVISION OF INFORMATION
WASHINGTON, D. C. 20240**

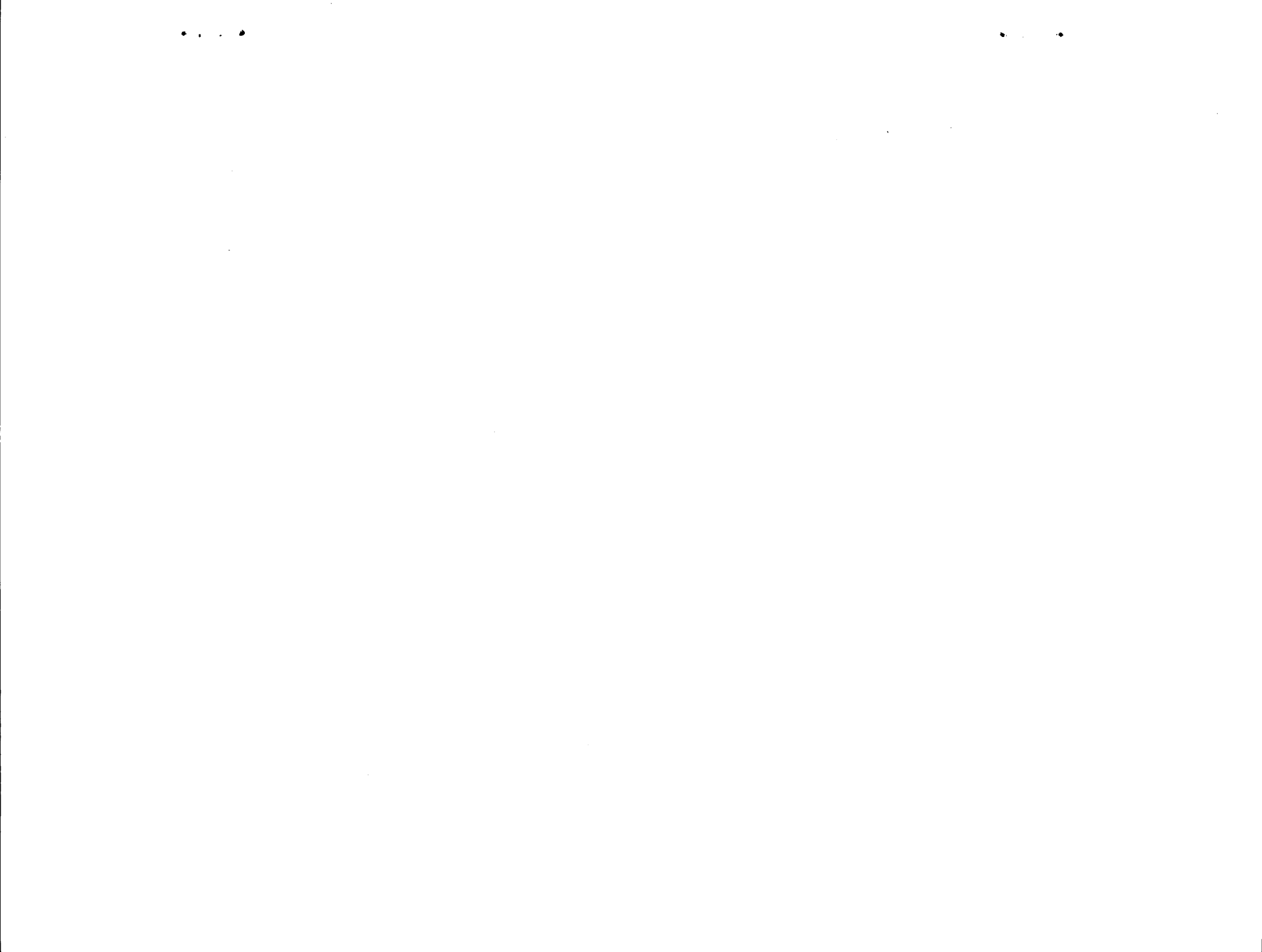
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MINERAL INDUSTRY SURVEYS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.



Stewart L. Udall, Secretary

Marling J. Ankeny, Director

Fluorspar, Annual

FLUORSPAR IN 1963

Shipments of finished fluorspar from domestic mines totaled 199,843 short tons in 1963 compared with 206,026 tons in 1962, according to reports to the Bureau of Mines, U.S. Department of the Interior. They comprised, by grade, as follows: Acid, 126,000 tons valued at \$6.5 million; ceramic, 42,000 tons, \$1.7 million; and metallurgical, 32,000 tons, \$819,000. Illinois, the leading producing State, supplied 66 percent of the domestic output.

Fluorspar consumption amounted to 736,350 tons compared with a record 687,940 tons in 1961. Crude fluorspar, marketed as mined, increased from 10,081 tons in 1962 to 12,445 tons in 1963.

Fluorspar imports for consumption totaled 555,123 tons valued at \$14,104,165, a decrease of 7 percent in quantity and 10 percent in value below those of 1962. Decreases were 7 percent in imports of acid grade and 6 percent in imports of metallurgical grade. Mexico, the leading foreign source, supplied 80 percent of the 1963 imports. Other sources of imports were: Spain, 12 percent; Italy, 6 percent; and France, 2 percent. Less than 500 tons was received from Canada and West Germany.

Exports of 1,202 tons were essentially the same as in 1962 when 1,308 tons was exported.

Hydrofluoric acid producers consumed 414,000 tons of the total 736,000 tons of fluorspar used in the United States in 1963. The second largest user was the steel industry that reported using 243,000 tons of fluorspar in making open-hearth-, basic-oxygen-, and electric-furnace steel.

Prepared July 10, 1964, by Paul M. Ambrose, Physical Scientist.

TABLE 1. - Salient fluorspar statistics

	1954-58 (average)	1959	1960	1961	1962	1963
United States:						
Production:						
Crude:						
Mine production						
short tons.....	775,020	404,900	575,700	615,075	623,750	586,158
Material milled or						
washed.....do.....	734,240	442,000	558,600	524,400	586,700	586,400
Beneficiated material						
recovered... short tons.....	291,160	195,100	225,900	185,200	192,000	188,200
Finished (shipments)...do.....	300,654	185,091	229,732	197,354	206,026	199,843
Value.....thousands.....	\$14,006	\$8,680	\$10,391	\$8,940	\$9,166	\$8,998
Imports for consumption						
short tons.....	433,165	555,750	534,020	505,759	595,695	555,123
Value.....thousands.....	\$10,907	\$13,368	\$14,393	\$13,644	\$15,596	\$14,104
Exports.....short tons.....	1,168	1,144	458	338	1,308	1,202
Value.....thousands.....	\$84	\$69	\$38	\$30	\$119	\$157
Consumption.....short tons.....	562,181	589,979	643,759	687,940	652,888	736,350
Stocks Dec. 31:						
Domestic mines:						
Crude ^{1/}short tons.....	186,877	155,534	137,723	221,961	277,876	299,197
Finished.....do.....	20,993	21,417	16,013	21,001	14,549	14,954
Consumer plants.....do.....	177,470	179,771	216,330	188,413	186,772	181,934
Importers.....do.....	44,893	46,422	61,578	75,811	75,303	68,038
World: Production.....do.....	1,790,000	1,915,000	2,230,000	2,275,000	2,410,000	2,340,000

^{1/} This crude (run-of-mine) fluorspar in most cases is subjected to some type of processing before it can be marketed.

TABLE 2-- Shipments of finished fluorspar, by States

State	1962			1963		
	Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per ton
Illinois.....	132,830	\$6,391,673	\$48.12	132,060	\$6,547,149	\$49.58
Kentucky.....	33,830	1,492,000	44.10	35,072	1,537,327	43.83
Utah.....	399	11,571	29.00	247	6,700	27.13
Other <u>1</u>	38,967	1,271,101	32.59	32,464	907,472	27.95
Total <u>2</u>	206,026	9,166,000	44.49	199,843	8,998,000	45.03

1 Includes Colorado, Montana, and Nevada to avoid disclosing individual company confidential data.

2 Total value rounded.

TABLE 3. - Fluorspar shipped from mines in the United States, by grades and industries

Grade and industry	1962				1963			
	Quantity		Value		Quantity		Value	
	Short tons	Per- cent of total	Total	Average per ton	Short tons	Per- cent of total	Total	Average per ton
Ground and flotation concentrates:								
Hydrofluoric acid.....	134,796	76.4	\$6,687,677	\$49.61	113,953	67.6	\$5,924,092	\$51.99
Glass.....	23,747	13.4	999,156	42.08	30,453	18.1	1,283,895	42.16
Ceramic and enamel.....	3,978	2.3	171,126	43.02	4,496	2.7	186,989	41.59
Nonferrous.....	2,684	1.5	115,548	43.05	2,687	1.6	114,589	42.65
Ferrous.....	2,401	1.4	98,208	40.90	11,650	6.9	469,265	40.28
Miscellaneous <u>1/</u>	8,817	5.0	363,758	41.26	5,256	3.1	213,891	40.69
⁷ Total <u>2/</u>	176,423	100.0	8,436,000	47.82	168,495	100.0	8,192,000	48.62
Fluxing gravel and foundry lump:								
Nonferrous.....	38	---	1,426	37.53	12	---	480	40.00
Ferrous.....	19,533	66.0	607,060	31.08	21,518	68.7	667,165	31.00
Miscellaneous.....	10,032	34.0	121,386	12.10	9,818	31.3	138,282	14.08
Total <u>2/</u>	29,603	100.0	730,000	24.66	31,348	100.0	806,000	25.71
All grades:								
Hydrofluoric acid.....	134,796	65.4	6,687,677	49.61	113,953	57.0	5,924,092	51.99
Glass.....	23,747	11.5	999,156	42.08	30,453	15.2	1,283,895	42.16
Ceramic and enamel.....	3,978	1.9	171,126	43.02	4,496	2.2	186,989	41.59
Nonferrous.....	2,722	1.3	116,974	42.97	2,699	1.4	115,069	42.63
Ferrous.....	21,934	10.7	705,268	32.15	33,168	16.6	1,136,430	34.26
Miscellaneous <u>1/</u>	18,849	9.2	485,144	25.74	15,074	7.6	352,173	23.36
Total <u>2/</u>	206,026	100.0	9,166,000	44.49	199,843	100.0	8,998,000	45.03

1/ Includes exports.

2/ Total value rounded.

TABLE 4 - Fluorspar (domestic and foreign) consumed and in stock in the United States,
by grades and industries
(short tons)

Grade and industry	1962		1963	
	Consumption	Stocks at consumer plants Dec. 31	Consumption	Stocks at consumer plants Dec. 31
Acid grade:				
Hydrofluoric acid.....	366,298	39,778	414,500	46,066
Glass.....	3,113	510	6,728	695
Enamel.....	359	22	399	63
Welding rod coatings.....	1,350	83	1,193	95
Nonferrous.....	(1/)	---	(1/)	(1/)
Special flux.....	2,182	822	2,448	823
Ferroalloys.....				
Primary aluminum.....				
Total.....	373,302	41,215	425,268	47,742
Ceramic grade:				
Glass.....	24,703	3,307	24,334	3,221
Enamel.....	4,807	599	5,117	642
Welding rod coatings.....	1,761	169	2,550	268
Nonferrous.....	302	78	280	81
Special flux.....	6,870	970	6,429	1,656
Ferroalloys.....				
Total.....	38,443	5,123	38,710	5,868
Metallurgical grade:				
Glass.....	1,059	97	403	49
Enamel.....	3	1	---	---
Welding rod coatings.....	455	68	(2/)	(2/)
Nonferrous.....	10,005	2,159	10,292	2,540
Special flux.....	1,728	6,343	1,728	3,303
Ferroalloys.....				
Primary magnesium.....	13,454	3,538	17,125	4,776
Iron foundry.....	133,721	128,228	135,832	117,656
Basic open-hearth steel.....	45,922		64,822	
Basic oxygen steel.....	34,627		42,170	
Electric-furnace steel.....	169		---	
Bessemer steel.....				
Total.....	241,143	140,434	272,372	128,324
All grades:				
Hydrofluoric acid.....	366,298	39,778	414,500	46,066
Glass.....	28,875	3,914	31,465	3,965
Enamel.....	5,169	622	5,516	705
Welding rod coatings.....	3,566	320	3,743	363
Nonferrous.....	10,307	2,237	10,572	2,621
Special flux.....	5,543	899	5,088	1,494
Ferroalloys.....	2,172	594	2,010	503
Primary aluminum.....	3,065	6,642	3,507	3,785
Primary magnesium.....	13,454	3,538	17,125	4,776
Iron foundry.....				
Basic open-hearth steel.....	133,721	128,228	135,832	117,656
Basic oxygen steel.....	45,922		64,822	
Electric furnace steel.....	34,627		42,170	
Bessemer steel.....	169		---	
Total.....	652,888	186,772	736,350	181,934

1/ A small amount of acid grade is included with metallurgical grade in order not to reveal individual company operations.

2/ Included with ceramic grade in order not to reveal individual company data.

TABLE 5. - Fluorspar (domestic and foreign) consumed in the United States, by States
(Short tons)

State	1962	1963	State	1962	1963
Alabama, Georgia, North Carolina, and South Carolina.....	19,919	11,604	Kentucky.....	50,941	41,183
Arkansas, Kansas, Louisiana, Mississippi, and Oklahoma.....	62,463	84,592	Maryland.....	5,648	8,257
California, and Hawaii.....	44,055	30,195	Massachusetts.....	180	163
Colorado and Utah.....	19,260	21,221	Michigan.....	24,500	40,328
Connecticut.....	1,617	1,414	Missouri.....	2,476	2,313
Delaware and New Jersey.....	114,781	133,695	New York.....	14,612	14,114
Florida, Rhode Island, and Virginia.....	892	1,131	Ohio.....	55,008	65,198
Illinois.....	46,718	47,597	Oregon and Washington.....	904	1,477
Indiana.....	22,684	27,573	Pennsylvania.....	60,260	64,898
Iowa, Minnesota, Nebraska South Dakota, and Wisconsin.....	3,618	3,857	Tennessee.....	2,069	2,600
			Texas.....	69,953	89,529
			West Virginia.....	30,320	43,411
			Total.....	652,888	736,350

TABLE 6.--Fluorspar imported for consumption in the United States,
by countries

Bureau of the Census

Country	Containing more than 97 percent calcium fluoride		Containing not more than 97 percent calcium fluoride		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
	1962					
Canada-----	-----	-----	-----	-----	-----	-----
France-----	7,951	\$231,420	-----	-----	7,951	\$231,420
Germany, West-----	3,472	160,452	-----	-----	3,472	160,452
Italy-----	47,803	1,434,882	-----	-----	47,803	1,434,882
Mexico-----	248,260	7,358,397	199,104	\$3,998,432	447,364	11,356,829
Spain-----	82,869	2,310,232	-----	-----	82,869	2,310,232
South Africa, Republic of-----	-----	-----	6,135	98,241	6,135	98,241
South America-----	-----	-----	-----	-----	-----	-----
United Kingdom-----	101	4,280	-----	-----	101	4,280
Total-----	390,456	11,499,663	205,239	4,096,673	595,695	15,596,336
	1963					
Canada-----	4	140	69	1,389	73	1,529
France-----	9,548	207,248	-----	-----	9,548	207,248
Germany, West-----	399	25,075	-----	-----	399	25,075
Italy-----	33,074	1,078,700	-----	-----	33,074	1,078,700
Mexico-----	251,672	7,201,017	191,862	3,680,241	443,534	10,881,258
Spain-----	68,323	1,906,259	-----	-----	68,323	1,906,259
South Africa, Republic of-----	-----	-----	-----	-----	-----	-----
South America-----	9	228	-----	-----	9	228
United Kingdom-----	129	3,207	34	661	163	3,868
Total-----	363,158	10,421,874	191,965	3,682,291	555,123	14,104,165

TABLE 7 . - Imported fluorspar delivered to consumers in the United States,
by uses

Use	1962			1963		
	Short tons	Selling prices at tide-water, border, or f.o.b. mill in the United States including duty		Short tons	Selling prices at tide-water, border, or f.o.b. mill in the United States including duty	
		Total	Average per ton		Total	Average per ton
Hydrofluoric acid.....	164,904	\$5,944,998	\$36.05	77,865	\$2,288,709	\$29.39
Glass, ceramic and enamel....	14,427	665,825	46.15	4,252	138,510	32.58
Ferrous.....	105,270	2,867,167	27.24	85,400	2,103,251	24.63
Nonferrous.....	---	---	---	232	7,097	30.59
Other.....	34,605	1,228,642	35.50	54,587	1,517,279	27.80
Total.....	319,206	10,706,632	33.54	222,336	6,054,846	27.23

TABLE 8.--World production of fluorspar by countries 1/ 2/
(Short tons)

Country 1/	1954-58 (average)	1959	1960	1961	1962	1963
North America:						
Canada-----	103,020	3/74,000	3/77,000	3/80,000	3/75,000	3/67,000
Mexico-----	338,128	362,456	404,487	439,286	553,642	530,893
United States (shipments)-----	300,654	185,091	229,782	197,354	206,026	199,843
Total-----	741,802	621,547	711,269	716,640	834,668	797,736
South America:						
Argentina-----	13,224	17,989	13,748	11,105	9,976	3/10,000
Bolivia (exports)-----	216	---	---	---	---	---
Total-----	13,440	17,989	13,748	11,105	9,976	3/10,000
Europe:						
France-----	99,490	110,425	149,345	214,936	237,200	248,000
Germany:						
East 3/-----	80,000	70,000	80,000	80,000	80,000	80,000
West (marketable)-----	161,880	135,956	143,474	133,515	116,592	95,942
Italy-----	131,379	174,091	178,957	172,582	171,474	137,232
Norway-----	267	---	---	---	---	---
Spain (marketable)-----	86,629	98,318	122,377	161,954	165,356	168,441
Sweden (sales)-----	2,546	2,995	3,212	3,560	3,900	3/3,900
United Kingdom 4/-----	96,508	93,078	109,249	99,868	79,525	75,121
Total 1/ 3/-----	665,000	690,000	790,000	870,000	860,000	820,000
Asia:						
China 3/-----	120,000	220,000	275,000	220,000	220,000	220,000
Japan-----	7,206	5,684	10,108	16,326	17,120	22,993
Korea:						
North 3/-----	(5/)	33,000	33,000	33,000	33,000	33,000
Republic of-----	6,349	6,748	20,834	30,790	36,343	43,855
Mongolia, Outer-----	3/25,900	3/37,000	44,400	42,000	3/44,000	3/58,000
Thailand-----	---	---	3,814	5,241	11,806	32,221
Turkey-----	22	75	359	42	640	719
U.S.S.R. 3/ 6/-----	147,000	190,000	210,000	230,000	230,000	235,000
Total 3/-----	335,000	495,000	600,000	580,000	595,000	645,000
Africa:						
Morocco-----	273	---	---	869	546	7,000
Rhodesia and Nyasaland, Federation of:						
Southern Rhodesia-----	328	10	19	---	20	343
South Africa, Republic of-----	33,651	70,317	113,550	95,862	111,683	57,761
South-West Africa-----	753	141	---	---	240	480
Total-----	35,005	70,468	113,569	96,731	112,489	65,584
Oceania: Australia-----	600	528	8	---	---	---
World total (estimate) 1/ 2/-	1,790,000	1,900,000	2,230,000	2,275,000	2,410,000	2,340,000

1/ Fluorspar is also produced in Bulgaria, data not available; estimate included in total.

2/ This table incorporates some revisions. Data do not add exactly to totals shown because of rounding where estimated figures are included in the detail.

3/ Estimate.

4/ Includes fluorspar recovered from old lead and zinc mine dumps, production of which is reported as follows: 1954-58 (average), 12,790 tons; 1959, 10,064 tons; 1960, 13,552 tons; 1961-63, data not available.

5/ Data not available; estimate by author of chapter included in total.

6/ U.S.S.R. in Europe included with U.S.S.R. in Asia, as the deposits are predominantly in Asiatic U.S.S.R.

