

# MAJOR NONFERROUS METALLIC ORES

## PRINCIPAL STATISTICS FOR 1939

The major nonferrous metal-mining industries in the United States produced ores, concentrates, and other materials in 1939 valued at \$338,092,000 at points of shipment; products of these industries accounted for 10 percent of the total value of products of all mineral industries. Recoverable metals contained in the materials produced included 3,868,000 fine ounces of gold, 62,737,000 fine ounces of silver, 1,434,481,000 pounds of copper, 800,011,000 pounds of lead, and 1,131,549,000 pounds of zinc. Reports were received from 1,585 companies (including 56 contractors) engaged in producing or preparing to produce these materials. These concerns operated 1,698 mines and 516 ore-dressing mills; producing operations were located in 186 counties in 27 States and provided employment for 73,634 persons.

The industries paid \$94,381,000 in wages—an average of 66 cents per man-hour worked by wage earners. Salaried employees were paid \$19,391,000. Other reported expenses were \$54,495,000 for supplies and materials, \$7,438,000 for fuel, \$13,861,000 for purchased electric energy, and more than \$2,165,000 for work done on contract by other concerns. These principal expenses totaled more than \$191,730,000. The cost of new buildings erected, major alterations to existing structures, and new and used machinery and equipment installed during the year amounted to \$17,452,000. About 76 percent of this amount was for machinery and equipment.

Of the total number of persons engaged at major nonferrous metal mines and mills, 65,154 were wage earners, 7,469 were salaried employees, and 1,011 were proprietors and firm members, including 723 performing manual labor. The number of wage earners at producing operations averaged 64,232 during the year; they worked a total of 17,843,000 man-shifts, or 141,489,000 man-hours—the length of shift averaging 7.9 hours. Mines and mills were actively engaged in production or development work for an average of 287 full days during the year.

The value of products of the copper-ore industry, amounting to \$141,635,000, was the largest of the group. The gold industry ranked second with \$114,090,000, of which \$86,063,000 was the value of products from lode-gold operations. The products of the lead-, zinc-, and silver-ore industries were valued at \$31,467,000, \$31,184,000, and \$19,716,000, respectively. The industries ranked in approximately the same order in numbers of persons engaged, except that the number in the zinc-ore industry was 21 percent larger than that in the lead-ore industry.

Output per man, in terms of value of all products per man-hour worked by wage earners at mines and mills, averaged \$2.39 for producing operations in all major nonferrous metal mining industries and ranged from \$3.47 per man-hour at placer-gold operations to \$1.71 per man-hour in the zinc-ore industry. The average was \$2.11 at lode-gold operations, \$2.76 in the copper-ore industry, \$2.23 in the lead-ore industry, and \$2.18 in the silver-ore industry. The mining of a ton of crude ore containing one or more of the major nonferrous metals required 1.4 man-hours of wage-earner labor; the concentration of a ton of ore or tailings at ore-dressing mills required an additional 0.3 man-hour—or a total of 1.7 man-hours to mine and mill a ton of ore. The man-hours required to mine and mill a

ton of ore varied greatly among the industries, ranging from an average of 0.97 man-hour in the copper-ore industry to 5.17 man-hours in the silver-ore industry. The average for lode-gold operations was 3.57 man-hours; for lead-ore operations, 1.92 man-hours; and for zinc-ore operations, 1.66 man-hours.

The average hourly earning of wage earners at all major nonferrous metal operations was 66 cents. The highest average, 70 cents, was paid wage earners at placer-gold and lead-ore operations. Wage earners at copper-ore operations received 67 cents per man-hour; those at lode-gold and silver-ore operations, 66 cents; and those at zinc-ore operations, 56 cents.

Power equipment in use or available for use at the end of 1939 at major nonferrous metal mines and mills had a total rating of 1,570,000 horsepower. Eighty percent of this was for driving stationary equipment such as mine hoists, electric generators, pumps, ventilating fans, compressors, mill equipment, and dredges; the remaining 20 percent was for driving mobile equipment such as power shovels, draglines, locomotives, and trucks. The horsepower rating of power equipment per wage earner at all producing nonferrous metal operations averaged 23.9 and ranged from 34.2 horsepower at placer-gold operations to 10.2 horsepower at silver-ore operations. The average for lode-gold operations was 16.6; for copper-ore, 31.6; lead-ore, 27.7; and for zinc-ore, 17.5. The nonferrous metal-mining industries consumed a total of 2,467,000,000 kilowatt-hours of electric energy. Of this, 1,879,000,000 kilowatt-hours, or 76 percent, was purchased; the remaining 24 percent was generated by the reporting companies.

## CHANGES IN THE NONFERROUS METAL-MINING INDUSTRIES

The group of mineral industries producing materials valued chiefly for gold, silver, copper, lead, or zinc have exhibited the same general trends over the past 60 years shown by the mineral industries as a whole—namely, rapid growth prior to World War I, followed by slower growth and subsequent decline. The value of products increased from approximately \$92,000,000 in 1880 to a peak of \$425,832,000 in 1929 and dropped to \$338,092,000 in 1939. The number of persons engaged increased from about 34,000 in 1880, reached a peak of 111,247 in 1909, decreased to 85,556 in 1929, and declined further to 72,544 in 1939. The number of persons engaged at major nonferrous metal mines and mills in 1939 was 35 percent below the 1909 figure although the value of products for that year was 40 percent greater than in 1909. These trends reflect an increase in output per man resulting from important technological advances in the mining and concentrating of nonferrous ores.

Although production and employment in the nonferrous metal-mining industries have had uneven growth, the use of power equipment, as indicated by the aggregate horsepower rating of equipment, has increased steadily. The total horsepower rating rose from 436,213 in 1902 (the first year comparable with subsequent years) to 715,267 horsepower in 1909, to 1,178,580 horsepower in 1929, and to 1,537,602 in 1939. The average horsepower rating per wage earner employed at mines and mills rose from 7.1 in 1909 to 14.9 in 1929, and to 23.9 in 1939. These trends indicate growth in mechanization of mining and milling operations that were an important factor in raising output per man.

## MINERAL INDUSTRIES

TABLE 2.—PRINCIPAL STATISTICS FOR THE MAJOR NONFERROUS METAL-ORE INDUSTRIES IN THE

(For producing

CENSUS YEAR AND INDUSTRY	Number of operating companies <sup>1</sup>	Number of mines	Value of all products <sup>2</sup>	NUMBER OF PERSONS ENGAGED					PRINCIPAL EXPENSES DESIGNATED BELOW				
				Total <sup>4</sup>	Wage earners (average for the year, including inactive periods) <sup>5</sup>	Salaried employees	Proprietors and firm members		Total <sup>6</sup>	Wages	Salaries	Supplies and materials	Fuel
							Total	Per-forming manual labor					
1939													
All industries, total--	1,487	1,640	\$338,091,918	72,544	54,232	7,337	975	705	\$189,479,249	\$93,198,838	\$19,187,488	\$58,968,749	\$7,290,037
Gold, placer--	306	339	28,026,824	3,965	3,228	477	260	167	12,887,079	5,631,362	1,161,732	3,780,200	699,345
Gold, lode--	820	841	86,068,020	19,433	17,279	1,612	542	419	50,224,029	26,931,219	4,003,971	13,588,836	1,401,895
Silver ore--	150	163	19,715,727	4,697	4,244	368	85	72	10,232,873	6,004,303	894,696	2,501,973	177,811
Copper ore--	35	51	141,634,842	26,752	23,844	2,908	998	33	75,703,459	34,485,789	8,077,638	23,562,345	4,187,613
Lead ore--	62	76	31,467,413	8,015	6,984	998	33	21	19,921,824	9,921,086	2,848,247	4,896,940	266,783
Zinc ore--	138	170	31,184,092	9,682	8,659	974	55	26	20,529,991	10,225,079	2,201,201	5,638,955	576,590
1935													
All industries, total--	( <sup>6</sup> )	12,198	206,000,864	72,206	57,457	7,479	( <sup>6</sup> )	( <sup>6</sup> )	7123,759,727	59,946,857	79,740,936	40,814,355	3,990,584
1929													
All industries, total--	( <sup>6</sup> )	850	425,831,855	85,556	78,933	6,337	286	( <sup>6</sup> )	8244,293,802	126,343,793	18,786,782	68,862,558	11,305,357
Gold, placer--	( <sup>6</sup> )	37	3,779,241	686	578	90	18	( <sup>6</sup> )	2,427,091	970,010	259,841	590,173	1,421
Gold, lode--	( <sup>6</sup> )	184	17,650,174	5,885	5,353	443	89	( <sup>6</sup> )	15,724,187	8,655,505	1,131,247	4,112,489	436,181
Silver ore--	( <sup>6</sup> )	74	8,457,263	2,838	2,593	220	25	( <sup>6</sup> )	7,499,442	4,325,719	607,428	1,820,829	121,698
Copper ore--	( <sup>6</sup> )	180	283,517,373	48,043	44,502	3,465	76	( <sup>6</sup> )	145,163,728	73,199,785	10,136,354	43,995,395	9,210,052
Lead ore--	( <sup>6</sup> )	171	67,561,778	15,004	14,007	944	53	( <sup>6</sup> )	41,287,387	22,917,435	2,546,150	10,377,787	680,700
Zinc ore--	( <sup>6</sup> )	204	44,866,026	12,799	11,900	874	25	( <sup>6</sup> )	30,593,469	16,274,339	2,507,264	7,965,385	855,305
1919													
All industries, total--	( <sup>6</sup> )	1,630	318,435,927	90,211	82,417	6,445	1,349	810	231,019,856	122,830,242	15,317,235	64,872,542	15,737,317
Gold, placer--	( <sup>6</sup> )	132	9,368,561	1,551	1,380	149	122	77	5,872,733	1,914,072	436,793	2,244,728	20,459
Gold, lode--	( <sup>6</sup> )	799	54,164,039	17,531	15,436	1,383	712	485	45,060,618	23,817,657	3,005,761	13,040,897	1,623,124
Silver ore--	( <sup>6</sup> )	226	179,730,031	46,999	43,717	3,179	103	62	123,993,072	66,390,194	8,039,741	34,275,369	11,310,485
Copper ore--	( <sup>6</sup> )	473	75,178,296	24,030	21,884	1,734	412	186	56,093,433	30,708,319	3,834,940	15,311,548	2,783,249
1909													
All industries, total--	3,420	5,235	241,107,623	111,247	100,952	5,297	4,988	2,637	173,333,908	93,398,581	9,034,747	44,849,457	21,505,736
Gold, placer--	678	880	10,237,252	4,321	3,084	286	951	673	6,069,975	2,669,574	480,773	2,194,444	675,602
Gold, lode--	1,604	2,845	77,434,301	33,567	29,428	2,128	2,011	951	57,475,605	30,868,371	3,797,380	14,100,617	5,105,253
Silver ore--	161	368	124,020,021	53,758	51,643	2,036	79	42	90,784,099	49,382,979	3,714,028	23,718,373	13,324,157
Copper ore--	977	1,142	29,416,047	19,601	16,807	847	1,947	1,171	19,004,229	10,477,657	1,092,566	4,836,023	2,400,724
1902													
All industries, total--	3,693	3,695	148,260,265	75,628	70,030	5,598	( <sup>6</sup> )	( <sup>6</sup> )	100,447,807	61,558,168	7,671,556	30,294,618	( <sup>6</sup> )
Gold, placer--	975	975	5,327,726	2,596	2,321	275	( <sup>6</sup> )	( <sup>6</sup> )	2,954,115	1,818,758	324,418	790,986	( <sup>6</sup> )
Gold, lode--	2,017	2,017	77,154,326	37,026	33,621	3,205	( <sup>6</sup> )	( <sup>6</sup> )	55,526,008	34,258,734	4,752,355	15,908,782	( <sup>6</sup> )
Silver ore--	144	144	51,178,036	27,215	26,007	1,208	( <sup>6</sup> )	( <sup>6</sup> )	34,191,804	21,151,405	1,768,456	11,083,175	( <sup>6</sup> )
Copper ore--	557	559	14,600,177	8,791	7,631	910	( <sup>6</sup> )	( <sup>6</sup> )	7,775,880	4,329,271	826,327	2,511,675	( <sup>6</sup> )
1889													
All industries, total--	( <sup>6</sup> )	4,374	122,857,905	68,953	54,781	4,172	( <sup>6</sup> )	( <sup>6</sup> )	68,684,584	44,390,664	4,511,254	17,992,411	( <sup>6</sup> )
Gold, placer--	( <sup>6</sup> )	3,724	98,367,164	56,917	53,136	3,781	( <sup>6</sup> )	( <sup>6</sup> )	56,381,002	37,421,560	4,021,638	13,516,503	( <sup>6</sup> )
Gold, lode--	( <sup>6</sup> )	( <sup>6</sup> )	19,686,562	8,791	8,523	268	( <sup>6</sup> )	( <sup>6</sup> )	10,619,334	5,809,749	407,172	4,067,970	( <sup>6</sup> )
Silver ore--	( <sup>6</sup> )	( <sup>6</sup> )	4,804,179	3,245	153,122	123	( <sup>6</sup> )	( <sup>6</sup> )	1,684,248	1,159,355	82,444	17,407,938	( <sup>6</sup> )
1880													
All industries, total--	( <sup>6</sup> )	4,941	91,667,826	33,966	31,980	4,206	( <sup>6</sup> )	( <sup>6</sup> )	25,147,705	18,742,641	( <sup>6</sup> )	4,255,833	2,149,231
Gold, placer--	( <sup>6</sup> )	( <sup>6</sup> )	12,103,170	1,078	1,078	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )	626,992	626,992	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )
Gold, lode--	( <sup>6</sup> )	693	67,070,626	19,147	17,780	1,367	( <sup>6</sup> )	( <sup>6</sup> )	16,942,621	12,261,353	( <sup>6</sup> )	202,898,266	201,783,002
Silver ore--	( <sup>6</sup> )	42	8,856,869	6,258	6,039	219	( <sup>6</sup> )	( <sup>6</sup> )	4,605,857	2,214,031	( <sup>6</sup> )	1,025,597	366,229
Copper ore--	( <sup>6</sup> )	206	3,637,161	7,483	7,063	420	( <sup>6</sup> )	( <sup>6</sup> )	2,972,235	2,640,265	( <sup>6</sup> )	331,970	( <sup>6</sup> )

<sup>1</sup>Figures cover those producing operations (mines, mills, or mines and mills operated together) engaged principally in producing ores or concentrates valued chiefly for their gold, silver, copper, lead, or zinc content. Figures for 1939 represent operations for which the value of products; reported principal expenses; or cost of buildings, machinery, and equipment erected or installed during the year amounted to \$2,500 or more. Statistics for 1929 refer to "enterprises" whose output was valued at \$2,500 or more or for which cost of development work amounted to at least \$2,500; the corresponding minimum for 1919 was \$500 for value of products and \$5,000 for cost of development work. No minimum was placed on the size of operations included for 1935, 1909, 1902, 1889, and 1880, except that for 1880 the canvass of gold and silver mines was limited to those which showed at least 200 feet of shafts and galleries or which produced 50 tons or more of remunerative ore. Statistics for 1909 include some operations. For further details of coverage see footnotes 13, 14, and 25. Statistics exclude Alaska.

<sup>2</sup>For 1939, companies that submitted more than one report are counted only once in the totals; for 1909, duplications within industries were, in general, eliminated but duplications between industries were not.

<sup>3</sup>Statistics for 1939, 1935, 1929, 1919, and 1909 represent value of ores, precipitates, concentrates, etc. as well as value added by milling purchased ore, receipts for custom milling, miscellaneous secondary products including sales of electric energy, and amounts received or due for services performed for others. Statistics for 1902, 1889, and 1880 exclude the value of secondary products and services rendered. For 1902, the figure for placer gold includes an estimated value of \$1,138,181 representing production of a number of small mines for which no reports were received; and the lead-ore and zinc-ore figure includes \$1,955,779 representing production of small operations not reporting. For 1889, the figure for gold and silver ore represents coining value; and the copper-ore figure represents refined copper. For 1880 the gold and silver-ore figures represent coining value; the figure for lode gold includes \$4,689,178 representing the value of copper and lead by-products produced in Colorado, Montana, and Utah; and for copper ore, the value figure excludes 5,410,546 pounds of copper produced in States west of the 100th meridian and 153,880 pounds produced in Tennessee.

<sup>4</sup>Excludes figures for items for which information was not available as indicated by footnotes.

<sup>5</sup>On schedules for the 1902 census, concerns were instructed that "The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of product reported." In editing the schedules...the figures for the average number of employees were reduced to average number for the longer period was allowed to stand." The 1889 census schedules called for "average number employed," presumably an average for active periods; and requested that figures for wage earners "include those employed by contractors and subcontractors."

<sup>6</sup>Not available.

<sup>7</sup>Excludes statistics for number and compensation of persons engaged at central administrative offices not connected with mine or plant.

<sup>8</sup>Includes statistics for employees at central administrative offices not classified by principal major nonferrous metal in ores of associated mines and mills.

## MAJOR NONFERROUS METALLIC ORES

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UNITED STATES, BY INDUSTRY: 1939, 1935, 1929, 1919, 1909, 1902, 1889, AND 1880<sup>1</sup>

operations only)

PRINCIPAL EXPENSES DESIGNATED BELOW--Con.			HORSEPOWER RATING OF PRIME MOVERS AND OF ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY					Horsepower rating of electric motors driven by energy generated by report- ing com- panies	FUELS CONSUMED					ELECTRIC ENERGY CON- SUMED (thousands of kw.-hrs.)	
Purchased electric energy	Contract work	Cost of ma- chinery and equipment erected or installed during year	Aggregate horsepower		Prime movers	Electric motors driven by purchased energy	Anthra- cite (tons of 2,000 pounds)		Bituminous coal (tons of 2,000 pounds)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Natural gas (thou- sands of cubic feet)	Purchased	Generated by re- porting companies	
			total	Per wage earner											
\$13,798,378	2,035,764	12,917,023	1,537,602	23.9	594,431	943,171	267,327	42,050	521,574	978,430	6,726,473	7,993,014	1,676,255	587,490	1
1,472,854	141,580	3,789,985	110,434	34.2	52,526	57,908	3,722	896	297	144,048	1,584,312	22,875	190,397	18,490	2
3,323,012	975,596	3,578,626	236,115	16.6	124,009	162,106	48,550	149	109,787	167,295	2,446,453	183,415	342,008	89,582	3
572,851	61,239	390,867	43,260	10.2	14,627	28,633	5,817	73	4,520	27,526	398,707	-----	104,988	13,552	4
4,898,798	511,278	4,083,867	752,707	31.6	324,327	428,380	184,507	29	359,493	537,051	1,339,191	7,067,198	788,979	416,526	5
1,851,399	137,369	470,384	193,248	27.7	20,195	173,053	2,630	88	26,497	25,443	232,870	125,675	245,815	4,690	6
1,679,464	208,702	603,294	151,838	17.5	58,747	93,091	22,101	40,815	20,980	77,067	724,940	593,851	204,068	44,450	7
9,267,055	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	8
14,051,015	4,944,297	18,703,191	1,178,580	14.9	502,550	676,030	328,733	72,463	1,309,081	2,244,592	1,048,669	922,806	1,565,654	904,233	9
603,938	1,708	359,497	20,280	35.1	589	19,691	25	-----	140	-----	4,250	-----	67,618	216	10
832,617	556,148	1,084,523	69,829	13.0	31,486	38,343	22,211	6	119,278	12,047	135,735	6,279	52,428	56,637	11
484,798	137,970	423,704	28,943	11.2	9,549	19,394	2,664	12	5,424	27,647	117,261	-----	42,838	7,302	12
6,027,234	2,594,908	13,083,523	701,791	15.8	366,863	334,928	270,205	150	1,006,321	2,133,662	421,317	-----	758,119	734,514	13
3,733,230	1,032,085	1,903,965	194,380	13.9	38,234	156,146	16,422	5,338	131,059	23,107	108,402	132,344	447,702	50,718	14
2,369,198	621,478	1,847,978	163,357	13.7	55,829	107,528	17,206	55,957	46,859	48,129	261,701	784,183	196,949	54,746	15
9,607,446	2,555,074	(6)	938,444	11.4	557,828	10,380,616	203,401	54,356	2,059,968	1,525,000	1,239,210	1,423,554	(6)	(6)	16
9,123,874	132,807	(6)	35,632	25.8	3,406	32,226	601	81	992	114	20,622	-----	(6)	(6)	17
2,336,136	1,237,043	(6)	149,680	9.7	50,437	10,99,243	18,892	50	191,526	130,969	564,482	-----	(6)	(6)	18
9,555,530	421,753	(6)	523,591	12.0	386,458	10,137,133	161,024	16,676	1,364,172	1,322,100	291,144	33,456	(6)	(6)	19
2,591,906	863,471	(6)	229,541	10.5	117,527	10,112,014	22,884	37,549	503,278	72,517	262,962	1,390,098	(6)	(6)	20
(10)	4,545,387	(6)	715,267	7.1	575,956	139,311	53,990	(6)	(6)	(6)	(6)	(6)	(6)	(6)	21
(9)	99,532	(6)	27,278	8.8	8,408	18,870	1,162	(6)	(6)	(6)	(6)	(6)	(6)	(6)	22
(9)	3,603,984	(6)	200,966	6.8	136,094	64,872	14,892	(6)	(6)	(6)	(6)	(6)	(6)	(6)	23
(9)	644,562	(6)	376,464	7.3	324,178	52,286	25,888	(6)	(6)	(6)	(6)	(6)	(6)	(6)	24
(9)	197,259	(6)	110,559	6.6	107,276	3,283	12,048	(6)	(6)	(6)	(6)	(6)	(6)	(6)	25
(9)	923,465	(6)	436,213	6.2	416,226	10,19,987	35,790	(6)	(6)	(6)	(6)	(6)	(6)	(6)	26
(10)	19,953	(6)	11,293	4.9	7,786	10,93,507	4,245	(6)	(6)	(6)	(6)	(6)	(6)	(6)	27
(9)	606,137	(6)	184,512	5.5	170,567	10,13,945	27,758	(6)	(6)	(6)	(6)	(6)	(6)	(6)	28
(9)	188,768	(6)	198,507	7.6	196,171	2,336	2,312	(6)	(6)	(6)	(6)	(6)	(6)	(6)	29
(9)	108,607	(6)	41,901	5.3	41,702	10,199	1,475	(6)	(6)	(6)	(6)	(6)	(6)	(6)	30
(9)	1,790,255	(6)	12,113,506	1.8	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	31
(10)	1,421,301	(6)	12,77,983	1.5	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	32
(9)	334,443	(6)	12,34,390	4.0	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	33
(9)	1,834,511	(6)	12,1,133	0.4	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	34
(6)	(6)	(6)	4,44,649	1.4	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	35
(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	36
(6)	(6)	(6)	2,24,369	1.4	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	37
(6)	(6)	(6)	2,18,541	2.2	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	38
(6)	(6)	(6)	2,46,739	1.0	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	39

<sup>9</sup>For 1919 statistics for cost of purchased power other than electric are included with those for cost of purchased electric energy. For 1909 statistics for "Rent of power" are included with cost of fuel. For 1902 statistics for cost of fuel are included with cost of supplies and materials. Statistics for cost of purchased power for 1902 and 1880 and cost of fuel and purchased power for 1889 were not explicitly requested but probably are included in part in the figures reported for supplies and materials.

<sup>10</sup>Statistics for 1919 and 1902 include horsepower for equipment operated by purchased power other than electric; for 1919: lode gold and silver ore, 580 horsepower; copper ore, 1,165, and lead ore and zinc ore, 140; and for 1902: placer gold, 20 horsepower; lode gold and silver ore, 2,963; and lead ore and zinc ore, 192.

<sup>11</sup>All mines principally producing argentiferous lead and zinc ores are included with gold and silver ore operations.

<sup>12</sup>Represents horsepower of steam boilers. The horsepower figure for lead ore and zinc ore represents zinc mines in New Jersey, Pennsylvania, Tennessee, and Virginia only.

<sup>13</sup>Statistics represent Arizona, Michigan, Montana, and New Mexico only.

<sup>14</sup>Statistics represent Arkansas, Illinois, Iowa, Kansas, Missouri, New Jersey, New Mexico, Pennsylvania, Tennessee, Virginia, and Wisconsin. Except for value of products, figures exclude statistics for lead mining in Arkansas, Illinois, Tennessee, and Virginia and for zinc mining in Arkansas, Iowa, Missouri, and New Mexico; value of products included for lead mining in designated States amounted to \$15,920 and for zinc mining, \$2,033,427. Employment statistics exclude lead-ore and zinc-ore operations in Kansas.

<sup>15</sup>Figures for wage earners and wage reported for Wisconsin include statistics for "operators."

<sup>16</sup>Figure for wages includes, and figure for salaries excludes, amounts paid to foremen at lead and zinc mines in Kansas.

<sup>17</sup>Excludes statistics for Wisconsin.

<sup>18</sup>Excludes statistics for New Jersey, Pennsylvania, Tennessee, and Virginia.

<sup>19</sup>Figure for salaries is not available; the figure for wages includes amounts paid to 635 foremen and represents 580 mines only.

<sup>20</sup>Represents statistics for 589 mines only.

<sup>21</sup>Excludes waterpower at arrastra mills and all power at stamp and amalgamating mills.

<sup>22</sup>Figure for wages includes salaries paid to "administrative force."

<sup>23</sup>Represents cost of wood used for fuel.

<sup>24</sup>Represents horsepower of steam engines.

<sup>25</sup>Represents statistics for mines east of the 100th meridian only.

<sup>26</sup>Figure for supplies and materials includes statistics for cost of fuel consumed.

## Gold

The 1939 output of the gold-mining industry in the United States was valued at more than \$114,000,000. Of this amount, \$86,000,000 represented the value of ores, concentrates, bullion, and other materials from lode mines and associated mills and \$28,000,000 the value of products of placer operations. Recoverable metals produced at lode mines included 2,456,000 fine ounces of gold, 6,986,000 fine ounces of silver, 5,978,000 pounds of copper, 20,926,000 pounds of lead, and 3,295,000 pounds of zinc. At placer mines the chief products in terms of recoverable metals were 825,000 fine ounces of gold and 97,000 fine ounces of silver. Small additional quantities of relatively unimportant byproducts were included in the output from both lode and placer mines.

Lode and placer operations engaged principally in producing ore, concentrates, bullion, and other materials valued chiefly for their gold content accounted for 82 percent of the total 1939 output of gold in the continental United States. Lode mines alone produced 61 percent of the total gold; placer mines supplied 21 percent. The chief source of gold other than the gold-mining industry was the copper-mining industry, which accounted for 11 percent of the total gold output. Other mineral industries produced 4 percent. The remaining 3 percent came from mines that were too small to come within the scope of the census canvass.<sup>1</sup>

There were 841 lode mines and 329 mills in the United States in 1939 producing ore, concentrates, bullion, and other materials valued chiefly for their gold content that were of sufficient size to come within the scope of the census canvass. These mines and mills, operated by 820 companies, provided 40,842,000 man-hours of work for an average of 17,279 wage earners. The census also covered 339 gold placer mines operated by 306 companies that afforded 8,088,000 man-hours of work for an average of 3,228 wage earners. The number of salaried workers employed at gold mines, mills, and central offices as of October 14 amounted to 1,612 for lode operations and 477 for placer mines.

### PRINCIPAL EXPENSES

Wages paid during the year at lode mines and at mills amounted to \$26,931,000—an average of 66 cents per man-hour. Salaried employees received a total of \$4,004,000. In addition to wages and salaries, about \$13,588,000 was spent for supplies and materials, \$1,402,000 for fuel, \$3,323,000 for electric energy purchased, and \$976,000 for work done on contract by other concerns. These reported expenditures aggregated \$50,224,000. The cost of new buildings erected, major alterations charged to capital-asset accounts, and new and used machinery and equipment installed during the year amounted to \$5,219,000. This figure includes installation costs which are partly duplicated in the above expenses. Expenditures at lode operations for machinery and equipment alone amounted to \$3,600,000 in 1939, compared with \$1,085,000 in 1929.

Placer gold mines paid \$5,631,000 in wages in 1939, an average of 70 cents per man-hour. Other expenditures amounted to \$1,162,000 for salaries, \$3,780,000 for supplies and materials, \$699,000 for fuel, \$1,473,000 for electric energy, and \$142,000 for contract work. These expenses totaled \$12,887,000. Capital expenditures at placer mines amounted to \$3,925,000. Virtually all of this (about \$3,800,000) was for machinery and equipment, compared with \$359,000 in 1929. Excluding capital outlays, the reported expenditures at placer mines amounted to

<sup>1</sup> The census canvass did not cover mines or mills for which neither the value of products, nor reported principal expenses, nor the cost of buildings, machinery, or equipment during the year amounted to as much as \$2,500. Thus virtually all of the small-scale hand placer operations are excluded.

46 percent of the total value of products compared with 58 percent at lode operations.

The indicated expenses reported in the census cannot be used for determining profits or losses in gold mining and milling, since they do not include such items as taxes, depletion, depreciation, interest, rent, insurance, marketing, and other costs; operators were not requested to supply information concerning these expenses.

### PRODUCTION

The value of all products of lode mines and mills in 1939 was nearly five times as great as in 1929; at placer mines the increase was over sevenfold. Similarly, the number of mines producing gold chiefly increased markedly over 1929. In 1939 there were 841 lode mines and 339 placer mines classified as gold producers compared with 184 and 37, respectively, in 1929.

The major factor in the upward trend of gold output has been the greatly increased price of gold. Prior to 1933 the price of gold had been \$20.67+ per fine ounce for nearly 100 years. On October 25, 1933, the Reconstruction Finance Corporation began to purchase newly mined gold at rising prices, fixed periodically above world prices. On January 31, 1934, as provided under the Gold Reserve Act of 1934, the President fixed the weight of the gold dollar at 15-5/21 grains, a reduction of 41 percent in gold content, and the price of gold immediately became \$35.00 per fine ounce, which is the present price. With the sharp rise in the price of gold, many ores formerly considered submarginal could be worked commercially. Consequently many new mines—both lode and placer—were opened, and producers of complex ores focused their attention on increased output of gold-rich ores. The total quantity of newly mined gold produced from all sources in the continental United States in 1939 was 137 percent greater than in 1929. The largest proportion of this gain took place after 1934 and after the gold price was increased.

Of the total value of all products of gold mines and mills in 1939 covered by the census, 48 percent represented the mill value of bullion, precipitates, amalgam, and sponge gold produced at amalgamation and cyanidation mills operated in conjunction with lode mines (exclusive of purchased or custom materials handled); 25 percent, the mine value of all products recovered from placer gravels; 12 percent, the mill value of concentrates produced at mills operated in conjunction with lode mines (excluding concentrates produced from ore and tailings purchased or treated on a custom basis); 6 percent, the mine value of ore and tailings sold to mill operators or sent to mills for treatment on a custom basis; 6 percent, the mine value of direct-smelting ore; and the remaining 3 percent, the value added by milling purchased ore, the amounts received for custom milling and other services performed for other concerns, and the mine or mill value of miscellaneous secondary products, including electric energy sold.

The reported net value of ore, concentrates, and other materials represents the aggregate mine or mill value of all the recoverable metals contained.<sup>2</sup> The approximate unit value of the recoverable gold contained in the materials in the various stages of production is as follows: In crude milling ore and tailings sold to mill operators or shipped for custom milling in 1939, \$23.04 per fine ounce; in direct-smelting ore, \$23.85 per ounce; in concentrates, \$28.60 per ounce; in placer

<sup>2</sup> The values of the various materials represent the net amounts actually received by producers after allowances for estimated metal losses in milling or smelting, treatment charges, penalties for the presence of undesirable material, cost of transportation to mills or smelters, and other expenses.

gravels, \$33.87; and in bullion, precipitates, amalgam, and sponge gold, \$34.84.

Operations in California produced more gold (both lode and placer) than those in any other State. Recoverable gold contained in ores from California lode mines amounted to 31 percent of the gold from all gold lode mines, while placer gold from California amounted to 75 percent of the total placer output. Next to California, the States producing the largest quantity of lode gold were South Dakota with 25 percent of the total; Colorado, 13 percent; Nevada, 9 percent; and Montana, 7 percent. The remaining 15 percent was produced in comparatively small quantities by gold mines in other States. Gold from placer mines outside of California was produced chiefly in Oregon and Montana; these States accounted for 7 and 6 percent, respectively, of the total placer output.

The rise in the price of gold has been accompanied by increased exploitation of low-grade deposits, and the average recoverable gold content of ore from gold lode mines in 1939 was 0.205 fine ounce per ton. The recoverable gold content of ore ranged from an average of 0.121 ounce per ton in the eastern States of Georgia, South Carolina, and Virginia to an average of 0.492 ounce per ton in Oregon. The average quantity of recoverable gold in lode ores produced in the four leading producing States was 0.168 ounce per ton in California, 0.379 ounce per ton in South Dakota, 0.222 ounce per ton in Colorado, and 0.138 ounce per ton in Nevada. In addition to gold, important quantities of recoverable silver, copper, lead, and zinc were present in varying proportions in most of the western ores.

Gold recovered from placer gravels ranged from 0.002 fine ounce per cubic yard of gravel in Washington to 0.008 ounce per cubic yard in Colorado. The averages for California, Montana, and Oregon were the same as that for the United States—0.004 ounce per cubic yard. Most of the gravels also contained relatively small quantities of silver and some of the gravels contained platinum.

Virtually all of the ore mined at gold lode mines in the United States in 1939 required milling, and was treated by such methods as amalgamation, cyanidation, flotation, and gravity concentration. Of the total of 11,342,000 tons of crude ore mined (excluding tailings), only 504,000 tons were direct-smelting ore, two-thirds of which came from mines in Utah, Washington, and Montana. The quantity of crude milling ore and tailings produced at gold operations during 1939 amounted to 11,454,000 short tons. Ninety percent of this ore was treated at mills operated in conjunction with the mines from which the ore was obtained. The balance, largely from small operations, was either sold to mill operators or shipped to mills for treatment on a custom basis. Ore and tailings treated at all gold mills (including custom material, part of which came from mines that were too small to come within the scope of the census canvass and from mines engaged principally in producing ore that was valued chiefly for metals other than gold) yielded 1,811,000 fine ounces of gold and 2,882,000 fine ounces of silver in bullion, precipitates, amalgam, and sponge gold, as well as 154,000 short tons of concentrates. Recoverable metals contained in these concentrates included 417,000 ounces of gold, 2,673,000 ounces of silver, 3,237,000 pounds of copper, 15,570,000 pounds of lead, and about 3,264,000 pounds of zinc.

#### EMPLOYMENT AND WORKING TIME

The average of 17,279 wage earners at lode mines and associated mills in 1939 represented an increase of 223 percent over 1929. The increase in employment at placer mines was even greater, amounting to 458 percent. Large increases also occurred in the numbers of salaried employees and of proprietors and firm members. At lode mines, mills, and central offices the 1,612 salaried employees and 542 proprietors and firm members in 1939 represented increases of 264 and 509 percent, respectively, over 1929. At placer mines and central offices the number of salaried employees increased 430 percent between 1929 and 1939 and the number of proprietors and firm members rose even more sharply during the period.

Lode mines and mills in California, Colorado, and South Dakota provided employment for nearly two-thirds of the wage earners at all lode operations. The distribution of wage earners among these and other States was as follows: California, 34 percent; Colorado, 17 percent; South Dakota, 13 percent; Nevada, 9 percent; Montana, 9 percent; Arizona, 8 percent; Idaho, 3 percent; Oregon, 2 percent; Utah, 2 percent; Washington, 1 percent; New Mexico, 1 percent; and Georgia, South Carolina, and Virginia, 1 percent.

Placer mines in California employed 70 percent of the wage earners at all placer mines. Of the remaining wage earners, 8 percent were employed in Oregon, 7 percent in Montana, 6 percent in Idaho, 4 percent in Nevada, 3 percent in Colorado, and the remaining 2 percent in other States.

There were moderate month-to-month fluctuations in the number of wage earners employed at both lode and placer operations. At lode mines and mills employment was lowest in January, with 16,414 wage earners reported, and highest in July, with 17,999 reported. Although employment in July was 10 percent higher than in January, the net increase between January and December was only 1-1/2 percent. At placer mines employment was lowest in February, with 2,729 wage earners reported, and highest in July, with 3,505 reported. The July figure is 28 percent higher than that for February, and the net increase between January and December was 15 percent.

Wage earners at lode mines and mills worked a total of 5,180,000 man-shifts, or 40,842,000 man-hours, and averaged 7.9 hours per shift. Of the total number of man-shifts worked, 83 percent were worked at mines and over 16 percent at mills during active days, and less than 1 percent at mines and mills during inactive days when only watchmen, inspectors, or maintenance men were employed. The average number of equivalent full days lode operations were active was 303 for all operations (303 for mines and 305 for mills).

At placer operations wage earners worked a total of 1,011,000 man-shifts, or 8,088,000 man-hours, and averaged 8.0 hours per shift. Ninety-nine percent of this time represented employment on days operations were actively engaged in production or development work, and only 1 percent represented employment during inactive days. The average number of equivalent full days placer operations were active was 271.

Seventeen percent of the gold lode mines, 54 percent of the mills, and 45 percent of the placer operations operated on a two- or three-shift basis for at least a part of the year. Of the 841 lode mines, 104 operated on a two-shift basis at least a part of the year and 39 on a three-shift basis. Of the 329 mills, 48 operated on a two-shift basis and 126 on a three-shift basis.

Continuous operation at placer mines is more common than at lode mines. This is particularly true of dredging operations where the large investment in equipment requires continuous operation for most economical use. In 1939, 34 of the 339 placer mines worked two shifts per day for at least a part of the year and 119 were active three shifts per day.

A smaller proportion of total man-shifts was worked on the second and third shifts at lode mines than at mills or at placer mines. Of the total number of man-shifts worked at lode mines on active days, 73 percent were worked on the first shift, 22 percent on the second shift, and 5 percent on the third shift. More continuous operation at mills is indicated by the fact that nearly half of all the working time was expended during the second and third shifts. Of the total, 54 percent represented employment on the first shift, 27 percent on the second shift, and 19 percent on the third. At placer mines 58 percent of the total number of man-shifts was worked during the first shift, 25 percent during the second shift, and 17 percent during the third shift.

Wages paid by the gold-mining industry in the United States averaged 66 cents per man-hour at lode mines and mills and 70 cents per man-hour at placer operations, but averages for the individual States varied considerably. Average hourly earnings of wage earners at lode mines ranged from 21 cents in Georgia, South Carolina, and Virginia to 82 cents in South Dakota. Variations in hourly earnings were not so marked at placer mines. The figures for hourly earnings are general

averages for all wage earners in the designated States and should not be interpreted as hourly wage rates. The latter apply to specific occupations and take account of special conditions, such as overtime work.

#### OUTPUT PER MAN

The value of all products per man-hour worked by wage earners at gold lode operations in the United States averaged \$2.11, and ranged from \$0.99 in Georgia, South Carolina, and Virginia to \$4.09 in South Dakota. Output per man in general was somewhat higher at placer mines than at lode mines.

The mining of a ton of crude ore at lode mines in 1939 required an average of 2.98 man-hours of labor. To mill a ton of ore or tailings at gold mills required an additional 0.59 man-hour. Labor requirements in mining varied from 1.89 man-hours per ton of ore in Utah to 10.48 in Oregon, depending upon mining methods employed, character of ore mined, extent of mechanization, and numerous other factors. Labor requirements in milling ranged from 0.35 man-hour per ton of ore or tailings milled in Washington to 1.66 in Oregon, depending chiefly upon the nature of the milling process and the complexity of ores milled.

Output per man at placer mines in the United States in terms of recoverable gold (excluding small quantities of by-products) averaged 0.103 fine ounce per man-hour worked on active days.

#### POWER EQUIPMENT

Power equipment (including idle equipment) available for use at lode gold operations at the end of 1939 had an aggregate rated capacity of 286,000 horsepower. This amounted to 17 horsepower per wage earner, compared with 13 horsepower in 1929. This trend reflects to a considerable extent the use of more powerful equipment and a wider utilization of mechanical power for tasks formerly performed with manual labor. Horsepower per wage earner in the various States ranged from 7 in Oregon to 26 in Washington.

Placer mines, for the most part, appeared to be more highly mechanized in 1939 than lode mines and mills. The aggregate rated capacity of all equipment available for use at the end of the year was 110,000 horsepower—an average of 34 per wage earner. In 1929 the aggregate horsepower was 20,000—an average of 35 per wage earner.

As in 1929, most of the equipment at gold operations was fixed or stationary, but a marked increase in the proportion of mobile equipment is evident. Of the total horsepower reported at lode mines and associated mills, 16 percent in 1939 and 2 percent in 1929 were for driving mobile equipment such as power shovels, draglines, locomotives, and trucks. The remaining horsepower was for driving stationary equipment such as mine hoists, electric generators, pumps, ventilating fans, compressors, and mill equipment. The increase in the utilization of mobile equipment at placer mines has also been notable.

Greater use of mechanical loading equipment, both underground and on the surface, has played an important part in gold mining in the last decade. Although the use of underground mechanical loaders requires favorable physical and economic conditions, 79 underground lode mines were equipped with shovel or scraper loaders at the end of 1939. Twenty-eight of these mines used shovel loaders exclusively, 36 used scraper loaders exclusively, and 15 had both types.

Small shovel loaders requiring a minimum working height of 8 feet or less were in much more general use than the larger types, since requirements are chiefly for small, compact loaders that can operate in the small stopes and headings characteristic of most underground gold mines. At the end of 1939 lode mines reported 84 of these shovel loaders and 6 of the larger types requiring working heights of more than 8 feet.

More than one-third of these loaders were at mines in California, which reported 35 of the smaller shovels (11 driven by electric power and 24 by compressed air) and 3 of the larger shovels.

Scraper loaders or slushers were used more widely than shovel loaders. At the end of 1939 there were 123 scraper units at underground gold lode mines; 50 of these were driven by electric hoists and 73 by compressed air. Of the scraper hoists, 105 were rated at less than 10 horsepower, and 18 were rated at 10 horsepower or more.

Surface loading equipment was reported at 68 gold lode mines and associated mills, and comprised 58 power shovels, 8 draglines, 17 scraper loaders, and 7 miscellaneous pieces of equipment. Most of the power shovels and draglines were operated by gasoline or Diesel engines and had bucket capacities of less than 3 cubic yards. Of the 17 scraper loaders, 4 were operated by gasoline or Diesel engines, 9 by electricity, and 4 by compressed air. The horsepower ratings of these hoists were, in general, greater than those of underground hoists. Five were rated at less than 10 horsepower, eight at 10 to 24 horsepower, three at 26 to 100 horsepower, and one at more than 100 horsepower.

Placer mines covered by the census are highly mechanized. Of the total of 339 placer mines, 272 reported at least one type of power loader. Of the mines equipped with power loaders, 144 reported draglines only, 54 had connected-bucket units only, 21 had power shovels only, 2 had scrapers only, 6 had some other type of equipment, and 45 had two or more of the above-named types of power loaders. At the end of 1939 placer mines were equipped with 184 draglines, of which 151 were operated by gasoline or Diesel engines and 33 by electric motors. All but 11 had bucket capacities of less than 3 cubic yards. Connected-bucket dredges used in placer mining were of major importance although their initial cost is great. Operators reported 67 such dredges available for use at the end of 1939, 62 of which were driven by electricity. Other loading equipment at placer mines at the end of 1939 comprised 38 power shovels, 14 surface scrapers, and 30 miscellaneous pieces of equipment. The latter were chiefly bulldozers, but included also five scrapers and two shovel loaders for underground use at drift operations.

Gold lode operations consumed a total of 431,690,000 kilowatt-hours of electricity in 1939, an increase of nearly 300 percent over the 109,065,000 kilowatt-hours consumed in 1929. Of the electric energy consumed at lode operations in 1939, 75 percent was purchased compared with 48 percent in 1929.

Placer mines in 1939 consumed a total of 208,887,000 kilowatt-hours of electricity, an increase of 208 percent over 1929; purchased energy in 1939 accounted for 91 percent of the total consumption compared with 99.7 percent in 1929.

#### NONPRODUCING OPERATIONS

The statistics summarized above are for operations that had some production and for which value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. No statistics were included for operations without products. Thirty-two mines (including one placer mine in California) and four mills, which had no products, were reported in 1939 for which reported principal expenses or cost of buildings, machinery, and equipment during the year amounted to \$2,500 or more. These mines and mills employed 312 wage earners who worked 680,000 man-hours and were paid \$373,000—an average of \$0.55 per man-hour—and 51 salaried employees who were paid \$67,000. Supplies and materials cost \$169,000; fuel, \$15,000; purchased electric energy, \$25,000; and work done on contract by others, \$44,000. Expenditures for buildings, machinery, and equipment during 1939 totaled \$312,000. Power equipment available for use at the end of the year was rated at 5,117 horsepower, 95 percent of which was for driving stationary equipment. Electric energy consumed during the year amounted to 1,794,000 kilowatt-hours, 78 percent of which was purchased.

TABLE 3.—PRINCIPAL STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES: 1939 AND 1929<sup>1</sup>

(For producing operations only)

ITEM	1939			1929		
	Total	Lode	Placer	Total	Lode	Placer
Number of mines-----	1,180	841	339	221	184	37
Number of persons engaged, total-----	23,398	19,438	3,965	6,571	5,885	686
Wage earners (average for the year)-----	20,507	17,279	3,228	5,931	5,353	578
Salaried employees-----	2,089	1,612	477	533	443	90
Proprietors and firm members-----	802	542	260	107	89	18
Value of all products <sup>2</sup> -----	\$114,089,844	\$88,063,020	\$28,026,824	\$21,429,415	\$17,650,174	\$3,779,241
Principal expenses designated below, total-----	\$63,111,102	\$50,224,029	\$12,887,073	\$18,151,278	\$15,724,187	\$2,427,091
Wages-----	\$32,582,581	\$26,931,219	\$5,651,362	\$9,625,515	\$8,655,505	\$970,010
Salaries-----	\$5,165,703	\$4,003,971	\$1,161,732	\$1,391,088	\$1,131,247	\$259,841
Supplies and materials-----	\$17,368,536	\$13,588,338	\$3,780,200	\$4,702,662	\$4,112,489	\$590,173
Fuel-----	\$2,101,240	\$1,401,895	\$699,345	\$437,602	\$436,181	\$1,421
Purchased electric energy-----	\$4,795,866	\$3,323,012	\$1,472,854	\$1,456,555	\$832,617	\$603,938
Contract work-----	\$1,117,176	\$975,598	\$141,580	\$557,856	\$556,149	\$1,708
Cost of buildings, machinery, and equipment erected or installed during year-----	\$9,143,533	\$5,218,807	\$3,924,726	\$1,444,020	\$1,084,523	\$359,497
Horsepower rating of power equipment, total-----	396,549	286,115	110,434	90,109	69,829	20,280
Stationary equipment <sup>3</sup> -----	311,610	241,743	69,867	88,693	68,413	20,280
Mobile equipment <sup>4</sup> -----	84,939	44,372	40,567	1,416	1,416	-----
Electric energy consumed (thousands of kw.-hrs.), total-----	840,577	431,690	208,887	176,899	109,065	67,834
Purchased-----	532,405	342,008	190,397	120,046	52,428	67,618
Generated by reporting companies-----	108,172	89,682	18,490	56,853	56,637	216

<sup>1</sup> Figures cover operations that were engaged principally in producing ores, concentrates, bullion, or other materials valued chiefly for their gold content. Figures for 1939 cover only those producing operations (mines, mills, or mines and mills operated together) for which the value of products; reported principal expenses; or cost of buildings, machinery, or equipment erected or installed during the year amounted to at least \$2,500. For 1929, figures represent "enterprises" for which the reported value of products or cost of development work amounted to \$2,500 or more, except that figures for placer operations in 1929 exclude statistics for itinerant individuals and miners who employed no help. Statistics for operations without products that were engaged in development, construction, or maintenance work are excluded from this table and from tables 4 to 18, inclusive, but are presented separately for 1939 in table 19. Statistics for Alaska and other possessions of the United States are excluded.

<sup>2</sup> Includes mine value of direct-smelting ore; mine value of milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis; mill value of concentrates, amalgam, sponge gold, bullion, and precipitates produced at mills operated in conjunction with mines (excluding material produced from ore and tailings purchased or treated on a custom basis); mine value of metals recovered from placer operations; value added by milling purchased ore and receipts for custom milling; mine or mill value of miscellaneous secondary products (including electric energy sold); and receipts for miscellaneous services performed for other concerns. For a breakdown of the value of all products in 1939 into the above components see table 5.

<sup>3</sup> Aggregate horsepower rating of engines, motors, etc. for driving stationary or fixed equipment such as mine hoists, pumps, ventilating fans, compressors, crushers, etc.

<sup>4</sup> Aggregate horsepower rating of engines, motors, etc. for driving mobile equipment such as power shovels, draglines, bulldozers, trucks, locomotives, etc.

## MINERAL INDUSTRIES

TABLE 4.—PRINCIPAL STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

ITEM	UNITED STATES			ARIZONA			CALIFORNIA
	Total	Lode	Placer	Total	Lode	Placer	Total
Number of operating companies <sup>4</sup> .....	1,124	820	308	94	90	4	376
Number of mines.....	1,180	841	339	97	95	2	405
Number of mills.....	329	329	(5)	20	20	(5)	119
Number of persons engaged, total.....	23,398	19,433	3,965	1,580	1,550	30	9,182
Wage earners (average for the year).....	20,507	17,279	3,228	1,382	1,354	28	8,094
Salaried employees.....	2,089	1,612	477	128	124	2	750
Proprietors and firm members.....	802	542	260	72	72	—	358
Performing manual labor.....	586	419	167	61	61	—	214
Production:							
Crude ore mined, excluding tailings (tons of 2,000 pounds).....	11,342,041	11,342,041	—	761,319	761,319	—	4,632,640
Direct-smelting ore (tons).....	503,728	503,728	—	53,722	53,722	—	3,682
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons).....	1,182,658	1,182,658	—	213,481	213,481	—	187,654
All other milling ore and tailings treated (tons) <sup>6</sup> .....	10,291,806	10,291,806	—	441,586	441,586	—	4,370,157
Placer gravels treated (cubic yards) <sup>7</sup> .....	205,792,453	—	205,792,453	587,127	—	587,127	162,880,383
Recoverable metal content of above direct-smelting ore, milling ore and tailings, and placer gravels <sup>8</sup> —							
Gold (fine ounces).....	3,280,279.85	2,455,725.02	824,554.81	141,382.08	137,005.08	4,359.00	1,379,995.93
Silver (fine ounces).....	7,082,810	6,985,914	96,896	716,084	715,633	451	1,657,438
Copper (pounds).....	5,978,207	5,978,207	—	1,194,986	1,194,986	—	172,041
Lead (pounds).....	20,925,993	20,925,993	—	6,200,904	6,200,904	—	836,897
Zinc (pounds).....	3,295,133	3,295,133	—	937,768	937,768	—	—
Value of all products.....	\$114,089,844	\$86,063,020	\$28,026,824	\$5,024,544	\$4,880,404	\$144,140	\$47,541,010
Principal expenses designated below, total.....	\$63,111,102	\$50,224,029	\$12,887,073	\$3,731,977	\$3,654,165	\$77,812	\$26,650,148
Wages.....	\$32,582,581	\$26,931,219	\$5,651,362	\$1,998,532	\$1,952,349	\$44,183	\$13,832,568
Salaries.....	\$5,165,703	\$4,003,971	\$1,161,732	\$289,923	\$285,123	\$4,800	\$2,038,266
Supplies and materials.....	\$17,338,536	\$15,588,356	\$3,780,200	\$984,176	\$966,892	\$17,284	\$7,405,362
Fuel.....	\$2,101,240	\$1,401,895	\$699,345	\$128,838	\$122,735	\$6,103	\$694,538
Purchased electric energy.....	\$4,795,866	\$3,323,012	\$1,472,854	\$286,126	\$280,684	\$5,442	\$2,549,332
Contract work.....	\$1,117,176	\$975,596	\$141,580	\$46,382	\$46,382	—	\$142,082
Cost of buildings, machinery, and equipment erected or installed during year.....	\$9,143,533	\$5,218,807	\$3,924,726	\$183,979	\$183,979	—	\$4,051,483
Man-shifts worked by wage earners, total.....	6,191,693	5,180,452	1,011,241	424,305	415,343	8,962	2,510,347
On active days, total.....	6,150,599	5,150,599	1,000,160	423,311	414,349	8,962	2,492,970
At lode operations:							
Mines.....	4,291,878	4,291,878	—	324,560	324,560	—	1,548,809
Mills.....	858,523	858,523	—	89,789	89,789	—	242,775
At placer operations.....	1,000,160	—	1,000,160	8,962	—	8,962	701,586
On inactive days.....	41,134	30,053	11,081	994	994	—	17,377
Man-hours worked by wage earners, total.....	46,929,785	40,842,142	8,087,643	3,307,877	3,236,177	71,700	20,006,355
On active days, total.....	46,601,514	40,602,427	7,999,087	3,299,925	3,228,225	71,700	19,887,184
At lode operations:							
Mines.....	33,829,309	33,829,309	—	2,533,356	2,533,356	—	12,317,477
Per ton of crude ore mined.....	2.98	2.98	—	3.33	3.33	—	2.66
Mills.....	6,773,118	6,773,118	—	694,869	694,869	—	1,933,047
Per ton of ore and tailings treated <sup>9</sup> .....	0.59	0.59	—	1.12	1.12	—	0.43
At placer operations.....	7,999,087	—	7,999,087	71,700	—	71,700	5,616,660
Per cubic yard of gravel treated.....	0.04	—	0.04	0.12	—	0.12	0.03
On inactive days.....	328,271	239,715	88,556	7,952	7,952	—	159,171
Value of all products per man-hour worked at mines and mills.....	\$2.33	\$2.11	\$3.47	\$1.52	\$1.51	\$2.01	\$2.38
Average number of equivalent full days mines and mills were active.....	297	303	271	302	302	299	303
At lode operations:							
Mines.....	303	303	—	297	297	—	310
Mills.....	305	305	—	320	320	—	308
At placer operations.....	271	—	271	299	—	299	287
Average number of hours worked per shift.....	7.9	7.9	8.0	7.8	7.8	8.0	8.0
Average hourly earning of wage earners.....	\$0.87	\$0.66	\$0.70	\$0.60	\$0.60	\$0.62	\$0.69
Horsepower rating of power equipment, total.....	396,549	286,115	110,434	18,929	18,250	679	177,702
Per wage earner.....	19.3	16.6	34.2	13.7	13.5	24.2	22.0
Stationary equipment.....	311,610	241,743	69,867	15,511	15,301	210	188,977
Mobile equipment.....	84,939	44,372	40,567	3,418	2,949	469	38,725
Electric energy consumed (thousands of kw.-hrs.), total.....	640,577	451,690	208,887	37,704	37,383	321	356,203
Purchased.....	532,405	342,008	190,397	31,529	31,208	321	337,069
Generated by reporting companies.....	108,172	89,682	18,490	6,175	6,175	—	19,134

See footnotes at end of table.

TABLE 4.—PRINCIPAL STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>--Continued

(For producing operations only)

ITEM	CALIFORNIA--Continued		COLORADO			IDAHO	
	Lode	Placer	Total	Lode	Placer	Total	Lode
Number of operating companies 4-----	205	171	174	153	21	58	36
Number of mines-----	206	199	187	166	521	62	35
Number of mills-----	119	(5)	43	43	(5)	23	23
Number of persons engaged, total-----	6,400	2,782	3,370	3,251	119	850	610
Wage earners (average for the year)-----	5,819	2,275	2,947	2,854	93	724	524
Salaried employees-----	419	331	331	315	16	95	68
Proprietors and firm members-----	162	176	92	82	10	31	18
Performing manual labor-----	111	103	77	71	6	22	16
Production:							
Crude ore mined, excluding tailings							
(tons of 2,000 pounds)-----	4,632,640		1,364,640	1,364,640		219,627	219,627
Direct-smelting ore (tons)-----	3,662		36,775	36,775		2,357	2,567
Milling ore and tailings sold to mill operators							
or sent to custom mills for treatment (tons)-----	187,664		539,715	539,715		12,711	12,711
All other milling ore and tailings treated (tons) <sup>6</sup> -----	4,370,157		825,911	825,911		258,407	258,407
Placer gravels treated (cubic yards) <sup>7</sup> -----		162,880,385	2,227,080		2,227,080	9,005,135	
Recoverable metal content of above direct-smelting							
ore, milling ore and tailings, and placer gravels:							
Gold (fine ounces)-----	765,399.15	614,596.78	328,894.87	311,446.69	17,246.18	97,034.89	50,369.83
Silver (fine ounces)-----	1,607,227	50,211	1,082,684	1,079,268	3,416	340,116	327,161
Copper (pounds)-----	172,041		2,209,779	2,209,779		312,913	312,913
Lead (pounds)-----	636,897		8,949,401	8,949,401		206,280	206,280
Zinc (pounds)-----			1,988,407	1,988,407			
Value of all products-----	\$26,662,707	\$20,876,303	\$12,200,665	\$11,659,914	\$580,751	\$3,401,149	\$1,804,198
Principal expenses designated below, total-----	\$17,254,526	\$9,595,822	\$8,380,130	\$8,103,584	\$276,746	\$1,974,084	\$1,308,144
Wages-----	\$9,789,896	\$4,042,672	\$4,135,141	\$3,998,319	\$159,622	\$1,025,523	\$691,755
Salaries-----	\$1,187,203	\$849,063	\$599,165	\$574,972	\$24,293	\$184,188	\$124,040
Supplies and materials-----	\$4,545,929	\$2,861,435	\$2,489,576	\$2,452,185	\$57,441	\$548,094	\$409,973
Fuel-----	\$251,256	\$431,282	\$261,302	\$229,308	\$51,994	\$122,489	\$69,827
Purchased electric energy-----	\$1,586,477	\$1,182,855	\$762,460	\$759,967	\$22,493	\$85,316	\$20,043
Contract work-----	\$95,765	\$46,517	\$131,486	\$180,785	\$703	\$12,474	\$2,506
Cost of buildings, machinery, and equipment							
erected or installed during year-----	\$1,004,176	\$5,047,507	\$728,265	\$668,458	\$59,827	\$507,461	\$268,510
Man-shifts worked by wage earners, total-----	1,801,784	708,563	873,797	844,642	29,155	222,446	155,027
On active days, total-----	1,791,584	701,586	865,877	836,082	27,785	216,152	150,538
At lode operations:							
Mines-----	1,548,609		675,530	675,330		116,455	116,455
Mills-----	242,775		160,762	160,762		54,085	54,085
At placer operations-----		701,586	27,785		27,785	65,614	
On inactive days-----	10,400	6,977	9,920	8,550	1,370	6,294	4,489
Man-hours worked by wage earners, total-----	14,333,728	5,672,627	6,828,658	6,591,210	237,648	1,759,470	1,232,064
On active days, total-----	14,250,524	5,616,680	6,750,038	6,523,350	226,688	1,709,114	1,196,188
At lode operations:							
Mines-----	12,517,477		5,265,571	5,265,571		924,703	924,703
Per ton of crude ore mined-----	2.66		3.86	3.86		4.21	4.21
Mills-----	1,935,047		1,257,779	1,257,779		271,465	271,465
Per ton of ore and tailings treated <sup>8</sup> -----	0.43		0.90	0.90		1.03	1.03
At placer operations-----		5,616,680	226,688		226,688	512,948	
Per cubic yard of gravel treated-----		0.03	0.10		0.10	0.08	
On inactive days-----	85,204	55,967	76,820	67,860	10,960	50,356	35,916
Value of all products per man-hour							
worked at mines and mills-----	\$1.86	\$3.68	\$1.79	\$1.77	\$2.36	\$1.93	\$1.46
Average number of equivalent full days							
mines and mills were active-----	310	287	293	296	197	253	280
At lode operations:							
Mines-----	310		296	296		283	283
Mills-----	308		301	301		270	270
At placer operations-----		287	197		197	208	
Average number of hours worked per shift-----	8.0	8.0	7.8	7.8	8.2	7.9	7.9
Average hourly earning of wage earners-----	\$0.68	\$0.71	\$0.61	\$0.61	\$0.59	\$0.58	\$0.55
Horsepower rating of power equipment, total-----	102,312	75,390	45,694	42,064	3,630	14,742	7,139
Per wage earner-----	17.6	33.1	15.5	14.7	39.0	20.4	13.6
Stationary equipment-----	85,847	53,130	38,775	37,465	1,310	9,840	5,856
Mobile equipment-----	16,465	22,260	6,919	4,599	2,320	4,902	1,283
Electric energy consumed (thousands of kw.-hrs.), total-----	178,919	177,284	67,805	65,300	1,505	13,960	8,357
Purchased-----	174,870	162,199	64,962	63,457	1,505	6,819	1,532
Generated by reporting companies-----	4,049	15,085	2,843	2,843		7,141	6,825

See footnotes at end of table.

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TABLE 4.—PRINCIPAL STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>--Continued

(For producing operations only)

ITEM	IDAHO-- Continued	MONTANA			NEVADA			OREGON
	Placer	Total	Lode	Placer	Total	Lode	Placer	Total
Number of operating companies <sup>4</sup> -----	23	138	109	29	158	143	15	50
Number of mines-----	<sup>5</sup> 27	136	106	<sup>5</sup> 30	158	142	<sup>5</sup> 16	46
Number of mills-----	( <sup>5</sup> )	42	42	( <sup>5</sup> )	46	46	( <sup>5</sup> )	12
Number of persons engaged, total-----	240	1,998	1,715	283	1,944	1,798	146	741
Wage earners (average for the year)-----	200	1,730	1,506	224	1,655	1,528	127	658
Salaried employees-----	27	163	124	39	197	184	13	57
Proprietors and firm members-----	13	105	85	20	92	86	6	28
Performing manual labor-----	6	76	61	15	74	68	6	20
Production:								
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----		761,235	761,235		1,063,618	1,063,618		63,214
Direct-smelting ore (tons)-----		88,228	88,228		51,264	51,264		7,652
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----		3,559	3,559		127,622	127,622		1,275
All other milling ore and tailings treated (tons) <sup>6</sup> -----		717,619	717,619		1,502,191	1,502,191		54,308
Placer gravels treated (cubic yards) <sup>7</sup> -----	9,005,135	11,881,389		11,881,389	4,902,890		4,902,890	12,879,734
Recoverable metal content of above direct-smelting ore, milling ore and tailings, and placer gravels <sup>8</sup> -----								
Gold (fine ounces)-----	46,665.06	229,324.43	175,979.88	53,344.55	260,061.51	231,286.81	28,774.70	85,409.91
Silver (fine ounces)-----	12,955	476,505	465,393	11,112	974,071	964,943	9,128	98,159
Copper (pounds)-----		173,935	173,935		163,618	163,618		91,732
Lead (pounds)-----		955,927	955,927		287,785	287,785		21,646
Zinc (pounds)-----					1,030	1,030		
Value of all products-----	\$1,596,951	\$7,382,788	\$5,562,576	\$1,820,212	\$9,131,526	\$8,135,826	\$995,700	\$2,859,371
Principal expenses designated below, total-----	\$665,940	\$4,593,287	\$3,707,934	\$685,333	\$5,965,673	\$5,511,293	\$454,380	\$1,793,866
Wages-----	\$341,768	\$2,490,024	\$2,079,223	\$410,801	\$2,648,871	\$2,458,720	\$190,151	\$849,857
Salaries-----	\$60,149	\$357,333	\$279,711	\$77,682	\$491,526	\$467,883	\$25,643	\$136,967
Supplies and materials-----	\$139,121	\$1,211,025	\$977,059	\$233,866	\$1,593,901	\$1,495,846	\$100,055	\$609,916
Fuel-----	\$52,662	\$165,424	\$117,269	\$45,155	\$215,686	\$194,112	\$21,574	\$117,863
Purchased electric energy-----	\$65,275	\$278,328	\$182,078	\$66,250	\$448,125	\$390,126	\$67,997	\$76,415
Contract work-----	\$9,868	\$94,073	\$62,594	\$31,479	\$567,556	\$516,606	\$50,950	\$2,628
Cost of buildings, machinery, and equipment erected or installed during year-----	\$238,951	\$878,873	\$453,402	\$445,471	\$1,454,796	\$1,390,560	\$44,236	\$184,861
Man-shifts worked by wage earners, total-----	87,419	507,868	434,732	72,956	503,513	466,928	36,587	185,066
On active days, total-----	65,614	504,695	432,544	72,151	502,004	465,417	36,587	184,942
At lode operations:								
Mines-----		355,184	355,184		341,760	341,760		95,654
Mills-----		77,360	77,360		123,657	123,657		11,322
At placer operations-----	65,614	72,151		72,151	36,587		36,587	77,966
On inactive days-----	1,805	2,893	2,188	805	1,509	1,509		124
Man-hours worked by wage earners, total-----	527,386	3,960,390	3,376,625	583,765	3,898,598	3,605,414	293,184	1,375,093
On active days, total-----	512,946	3,936,861	3,359,293	577,568	3,886,526	3,593,342	293,184	1,374,101
At lode operations:								
Mines-----		2,761,926	2,761,926		2,615,746	2,615,746		682,354
Per ton of crude ore mined-----		3.63	3.63		2.46	2.46		10.48
Mills-----		597,387	597,387		977,596	977,596		90,198
Per ton of ore and tailings treated <sup>9</sup> -----		0.83	0.83		0.61	0.61		1.66
At placer operations-----	512,946	577,568		577,568	293,184		293,184	621,549
Per cubic yard of gravel treated-----	0.06	0.05		0.05	0.06		0.06	0.05
On inactive days-----	14,440	23,529	17,332	6,197	12,072	12,072		992
Value of all products per man-hour worked at mines and mills-----	\$3.03	\$1.86	\$1.65	\$3.12	\$2.34	\$2.26	\$3.40	\$2.06
Average number of equivalent full days mines and mills were active-----	208	281	287	251	287	292	241	300
At lode operations:								
Mines-----		284	284		293	293		315
Mills-----		301	301		289	289		283
At placer operations-----	208	251		251	241		241	286
Average number of hours worked per shift-----	7.8	7.8		8.0	7.7	7.7	8.0	7.4
Average hourly earning of wage earners-----	\$0.65	\$0.63	\$0.62	\$0.70	\$0.68	\$0.68	\$0.65	\$0.62
Horsepower rating of power equipment, total-----	7,603	33,659	24,178	9,481	35,100	30,718	4,382	8,808
Per wage earner-----	38.0	19.5	16.1	42.3	21.2	20.1	34.5	19.4
Stationary equipment-----	3,984	23,339	19,305	4,034	26,093	23,473	2,620	5,832
Mobile equipment-----	3,619	10,320	4,873	5,447	9,007	7,245	1,762	2,976
Electric energy consumed (thousands of kw.-hrs.), total-----	5,603	30,559	21,557	9,002	40,963	33,169	7,794	9,917
Purchased-----	5,287	26,866	18,192	8,674	36,031	29,177	6,854	6,176
Generated by reporting companies-----	316	3,693	3,365	328	4,932	3,992	940	3,741

See footnotes at end of table.

TABLE 4.—PRINCIPAL STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>—Continued

(For producing operations only)

ITEM	OREGON—Continued			SOUTH DAKOTA		UTAH		
	Lode	Placer	Total	Lode	Placer	Total	Lode	Placer
Number of operating companies	20	30	9	9	—	27	27	—
Number of mines	18	28	8	8	—	30	30	—
Number of mills	12	(5)	9	9	—	2	2	—
Number of persons engaged, total	446	295	2,458	2,458	—	455	455	—
Wage earners (average for the year)	412	246	2,238	2,238	—	388	388	—
Salaried employees	21	36	217	217	—	61	61	—
Proprietors and firm members	13	13	3	3	—	6	6	—
Performing manual labor	11	9	3	3	—	6	6	—
Production:								
Crude ore mined, excluding tailings (tons of 2,000 pounds)	63,214	—	1,644,999	1,644,999	—	352,467	352,467	—
Direct-smelting ore (tons)	7,632	—	73	73	—	162,657	162,657	—
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)	1,275	—	—	—	—	37,810	37,810	—
All other milling ore and tailings treated (tons) <sup>2</sup>	54,308	—	1,630,870	1,630,870	—	155,688	155,688	—
Placer gravels treated (cubic yards) <sup>3</sup>	—	12,879,734	—	—	—	—	—	—
Recoverable metal content of above direct-smelting ore, milling ore and tailings, and placer gravel <sup>4</sup>								
Gold (fine ounces)	31,086.53	54,323.38	617,759.58	617,759.58	—	68,221.02	68,221.02	—
Silver (fine ounces)	88,912	9,247	167,469	167,469	—	747,149	747,149	—
Copper (pounds)	91,732	—	—	—	—	1,444,773	1,444,773	—
Lead (pounds)	21,849	—	—	—	—	3,113,689	3,113,689	—
Zinc (pounds)	—	—	—	—	—	284,900	284,900	—
Value of all products	\$983,234	\$1,858,137	\$21,676,033	\$21,676,033	—	\$2,286,984	\$2,286,984	—
Principal expenses designated below, total	\$787,006	\$1,008,860	\$7,064,568	\$7,064,568	—	\$1,193,095	\$1,193,095	—
Wages	\$432,632	\$417,225	\$4,366,333	\$4,366,333	—	\$465,191	\$465,191	—
Salaries	\$46,824	\$90,143	\$751,068	\$751,068	—	\$106,594	\$106,594	—
Supplies and materials	\$255,283	\$354,633	\$1,565,194	\$1,565,194	—	\$410,909	\$410,909	—
Fuel	\$39,731	\$78,152	\$248,705	\$248,705	—	\$26,732	\$26,732	—
Purchased electric energy	\$11,871	\$64,544	\$133,268	\$133,268	—	\$99,658	\$99,658	—
Contract work	\$665	\$2,163	—	—	—	\$84,011	\$84,011	—
Cost of buildings, machinery, and equipment erected or installed during year	\$105,967	\$78,914	\$992,691	\$992,691	—	\$74,226	\$74,226	—
Man-shifts worked by wage earners, total	106,976	78,090	658,562	658,562	—	100,868	100,868	—
On active days, total	106,976	77,966	658,562	658,562	—	99,889	99,889	—
At lode operations:								
Mines	95,654	—	579,702	579,702	—	85,299	85,299	—
Mills	11,322	—	78,860	78,860	—	14,590	14,590	—
At placer operations	—	77,966	—	—	—	—	—	—
On inactive days	—	124	—	—	—	979	979	—
Man-hours worked by wage earners, total	752,552	622,541	5,295,053	5,295,053	—	787,140	787,140	—
On active days, total	752,552	621,549	5,295,053	5,295,053	—	779,308	779,308	—
At lode operations:								
Mines	662,354	—	4,659,543	4,659,543	—	665,801	665,801	—
Per ton of crude ore mined	10.48	—	2.83	2.83	—	1.89	1.89	—
Mills	90,198	—	635,510	635,510	—	113,507	113,507	—
Per ton of ore and tailings treated <sup>5</sup>	1.66	—	0.39	0.39	—	0.52	0.52	—
At placer operations	—	621,549	—	—	—	—	—	—
Per cubic yard of gravel treated	—	0.05	—	—	—	—	—	—
On inactive days	—	992	—	—	—	7,832	7,832	—
Value of all products per man-hour	\$1.31	\$2.98	\$4.09	\$4.09	—	\$2.91	\$2.91	—
Average number of equivalent full days worked at mines and mills	311	286	331	331	—	283	283	—
Average number of equivalent full days mines and mills were active								
At lode operations:								
Mines	315	—	328	328	—	280	280	—
Mills	283	—	358	358	—	304	304	—
At placer operations	—	286	—	—	—	—	—	—
Average number of hours worked per shift	7.0	8.0	8.0	8.0	—	7.8	7.8	—
Average hourly earning of wage earners	\$0.57	\$0.67	\$0.82	\$0.82	—	\$0.59	\$0.59	—
Horsepower rating of power equipment, total	2,740	6,068	39,619	39,619	—	7,208	7,208	—
Per wage earner	6.7	24.7	17.7	17.7	—	18.6	18.6	—
Stationary equipment	2,430	3,402	38,659	38,659	—	5,848	5,848	—
Mobile equipment	310	2,666	960	960	—	1,360	1,360	—
Electric energy consumed (thousands of kw.-hrs.), total	2,971	6,946	64,069	64,069	—	7,952	7,952	—
Purchased	619	5,557	9,612	9,612	—	7,524	7,524	—
Generated by reporting companies	2,352	1,389	54,457	54,457	—	428	428	—

See footnotes at end of table.

## MINERAL INDUSTRIES

TABLE 4.—PRINCIPAL STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>—Concluded  
(For producing operations only)

ITEM	WASHINGTON			NEW MEXICO AND WYOMING <sup>2</sup>			GEORGIA, SOUTH CAROLINA, AND VIRGINIA <sup>3</sup>		
	Total	Lode	Placer	Total	Lode	Placer	Total	Lode	Placer
Number of operating companies <sup>4</sup> .....	23	17	6	19	14	5	8	5	3
Number of mines.....	24	18	6	19	14	5	8	5	3
Number of mills.....	6	6	(5)	3	3	(5)	4	4	(5)
Number of persons engaged, total.....	302	278	24	295	284	31	223	208	15
Wage earners (average for the year).....	245	236	9	287	246	21	179	174	5
Salaried employees.....	36	35	1	21	16	5	35	28	7
Proprietors and firm members.....	21	7	14	7	2	5	9	6	3
Performing manual labor.....	19	5	14	5	—	5	9	6	3
Production:									
Crude ore mined, excluding tailings (tons of 2,000 pounds).....	262,763	262,763	—	91,628	91,628	—	123,891	123,891	—
Direct-smelting ore (tons).....	90,839	90,839	—	6,509	6,509	—	—	—	—
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons).....	32,867	32,867	—	5,254	5,254	—	700	700	—
All other milling ore and tailings treated (tons).....	139,134	139,134	—	79,998	79,998	—	117,927	117,927	—
Placer gravels treated (cubic yards) <sup>5</sup> .....	899,045	—	899,045	473,170	—	473,170	56,500	—	56,500
Recoverable metal content of above direct-smelting ore, milling ore and tailings, and placer gravels <sup>6</sup> .....									
Gold (fine ounces).....	40,905.58	39,510.67	1,394.91	16,847.58	13,329.58	3,518.00	14,662.47	14,332.22	330.25
Silver (fine ounces).....	173,620	173,491	169	443,605	443,417	188	5,870	5,851	19
Copper (pounds).....	132,933	132,933	—	81,497	81,497	—	—	—	—
Lead (pounds).....	1,594	1,594	—	351,467	351,467	—	—	—	—
Zinc (pounds).....	28	28	—	103,000	103,000	—	—	—	—
Value of all products.....	\$1,297,204	\$1,250,198	\$47,006	\$798,238	\$679,963	\$118,275	\$512,332	\$500,983	\$11,349
Principal expenses designated below, total.....	\$804,461	\$789,368	\$55,073	\$555,125	\$486,848	\$68,276	\$404,708	\$383,677	\$21,031
Wages.....	\$360,446	\$348,484	\$11,962	\$281,559	\$251,770	\$29,789	\$111,536	\$108,547	\$2,989
Salaries.....	\$70,153	\$68,493	\$1,660	\$45,981	\$31,821	\$14,160	\$96,479	\$80,339	\$16,140
Supplies and materials.....	\$266,315	\$257,787	\$8,528	\$182,540	\$154,723	\$27,817	\$121,528	\$120,626	\$902
Fuel.....	\$53,717	\$40,814	\$12,903	\$57,532	\$41,072	\$16,510	\$21,334	\$20,334	\$1,000
Purchased electric energy.....	\$55,850	\$55,850	—	\$1,552	\$1,552	—	\$23,458	\$23,458	—
Contract work.....	—	—	—	\$5,911	\$5,911	—	\$30,373	\$30,373	—
Cost of buildings, machinery, and equipment erected or installed during year.....	\$42,347	\$36,462	\$5,885	\$23,070	\$19,775	\$3,295	\$41,461	\$40,621	\$840
Man-shifts worked by wage earners, total.....	73,682	71,423	2,259	77,789	71,523	6,266	53,630	52,846	784
On active days, total.....	72,958	70,699	2,259	77,569	71,303	6,266	53,630	52,846	784
At lode operations:									
Mines.....	63,186	63,186	—	59,989	59,989	—	46,148	46,148	—
Mills.....	7,513	7,513	—	11,314	11,314	—	6,498	6,498	—
At placer operations.....	2,259	—	2,259	6,266	—	6,266	984	—	984
On inactive days.....	724	724	—	220	220	—	—	—	—
Man-hours worked by wage earners, total.....	582,038	564,593	17,445	614,909	582,079	52,830	514,004	505,487	8,517
On active days, total.....	576,243	558,798	17,445	613,157	580,327	52,830	514,004	505,487	8,517
At lode operations:									
Mines.....	499,527	499,527	—	469,801	469,801	—	453,504	453,504	—
Per ton of crude ore mined.....	1.90	1.90	—	5.13	5.13	—	3.66	3.66	—
Mills.....	59,271	59,271	—	90,526	90,526	—	51,983	51,983	—
Per ton of ore and tailings treated <sup>7</sup> .....	0.35	0.35	—	1.05	1.05	—	0.44	0.44	—
At placer operations.....	17,445	—	17,445	52,830	—	52,830	8,517	—	8,517
Per cubic yard of gravel treated.....	0.02	—	0.02	0.11	—	0.11	0.15	—	0.15
On inactive days.....	5,795	5,795	—	1,752	1,752	—	—	—	—
Value of all products per man-hour worked at mines and mills.....	\$2.23	\$2.21	\$2.69	\$1.29	\$1.21	\$2.20	\$1.00	\$0.99	\$1.33
Average number of equivalent full days mines and mills were active.....	228	230	174	304	307	272	300	306	141
At lode operations:									
Mines.....	238	238	—	305	305	—	304	304	—
Mills.....	183	183	—	323	323	—	325	325	—
At placer operations.....	174	—	174	272	—	272	141	—	141
Average number of hours worked per shift.....	7.9	7.9	7.7	7.9	7.9	8.4	9.6	9.6	8.7
Average hourly earning of wage earners.....	\$0.62	\$0.62	\$0.69	\$0.46	\$0.45	\$0.56	\$0.22	\$0.21	\$0.33
Horsepower rating of power equipment, total.....	7,326	6,183	1,143	4,416	2,863	1,553	3,346	2,841	505
Per wage earner.....	29.9	26.2	127.0	16.5	11.6	74.0	18.7	16.3	161.2
Stationary equipment.....	3,925	3,819	106	3,049	2,378	671	1,762	1,362	400
Mobile equipment.....	3,401	2,364	1,037	1,367	485	882	1,584	1,479	125
Electric energy consumed (thousands of kw.-hrs.), total.....	4,224	4,224	—	5,371	4,939	432	1,850	1,850	—
Purchased.....	3,917	3,917	—	50	50	—	1,850	1,850	—
Generated by reporting companies.....	307	307	—	5,321	4,889	432	—	—	—

<sup>1</sup>For definition of the industry see tables 2 and 3, footnote 1.<sup>2</sup>New Mexico, 14 lode and 4 placer mines; Wyoming, 1 placer mine.<sup>3</sup>Georgia, 1 lode and 3 placer mines; South Carolina, 2 lode mines; Virginia, 2 lode mines. Figures for lode operations include 15 salaried employees, paid \$51,327, at central offices in New Jersey, New York, and Wisconsin; those for placer operations include statistics for the number and compensation of salaried employees at 1 central office in Missouri.<sup>4</sup>Companies engaged in mining or milling activities in more than one of the designated States or groups of States are counted separately for each State or group but only once for the United States. In some cases a single mine was operated by more than one company during the year.<sup>5</sup>The figure shown for number of mines represents the number of placer operations, including washing plants.<sup>6</sup>The milling ore included represents ore treated at mills operated in conjunction with the mines from which the ore was obtained, but excludes minor quantities of purchased and custom ores also treated at these mills; the tailings included represent only those reclaimed and treated by the same mills, and exclude tailings purchased or treated on a custom basis.<sup>7</sup>Bank measure, as measured in cubic yards in the ground before treatment.<sup>8</sup>The figures shown for each metal represent the recoverable quantities after deducting estimated milling and smelting losses.<sup>9</sup>Total tonnage of ore and tailings treated is not shown.

TABLE 5.—PRINCIPAL PRODUCTS OF GOLD MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY STATE: 1939<sup>1</sup>

PRODUCT	United States	Arizona	California	Colorado	Idaho	Montana
Value of all products-----	\$114,089,844	\$5,024,544	\$47,541,010	\$12,200,865	\$3,401,149	\$7,382,788
Direct-smelting ore:						
Quantity (tons of 2,000 pounds)-----	503,728	53,722	3,662	36,775	2,367	88,228
Recoverable metal content--						
Gold (fine ounces)-----	220,279.08	18,261.50	3,126.85	13,753.67	3,995.84	72,384.37
Silver (fine ounces)-----	1,615,827	185,007	2,287	80,010	65,110	294,724
Copper (pounds)-----	2,640,710	858,545	300	20,158	12,032	59,146
Lead (pounds)-----	4,717,240	34,501	900	1,003,976	68,768	770,686
Zinc (pounds)-----	13,937			13,937		
Mine value, total-----	\$6,351,862	\$559,900	\$76,888	\$375,684	\$140,504	\$2,012,335
Per ton of ore-----	\$12.60	\$10.42	\$21.00	\$10.22	\$59.36	\$22.81
Per ounce of recoverable gold <sup>2</sup> -----	\$23.85	\$23.00	\$24.23	\$22.30	\$26.05	\$25.53
Milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis:						
Quantity (tons)-----	1,162,638	213,481	187,664	559,715	12,711	3,539
Recoverable metal content--						
Gold (fine ounces)-----	282,259.39	34,828.36	44,739.53	148,358.26	2,823.50	1,200.59
Silver (fine ounces)-----	696,457	77,875	244,432	63,120	2,355	784
Copper (pounds)-----	222,898	17,008	1,800	142,702	5,154	
Lead (pounds)-----	1,134,445	264,264	41,600	309,066	30,847	
Zinc (pounds)-----	294,207			28,277		
Mine value, total-----	\$6,879,376	\$808,255	\$1,240,766	\$3,539,805	\$48,787	\$29,135
Per ton of ore-----	\$5.92	\$3.79	\$6.61	\$6.56	\$3.84	\$6.23
Per ounce of recoverable gold <sup>2</sup> -----	\$23.04	\$21.98	\$25.05	\$23.52	\$16.66	\$23.96
Concentrates, bullion, and precipitates produced at mills operated in conjunction with mines (excluding material produced from ore and tailings purchased or treated on a custom basis):						
Concentrates--						
Quantity (tons)-----	151,293	35,848	38,826	51,149	6,139	14,707
Recoverable metal content--						
Gold (fine ounces)-----	408,827.40	46,487.00	178,475.31	97,605.88	25,626.78	25,200.32
Silver (fine ounces)-----	2,591,115	402,766	850,877	887,731	247,787	42,130
Copper (pounds)-----	3,114,599	339,435	170,141	2,046,919	285,727	114,789
Lead (pounds)-----	15,074,310	5,902,139	794,397	7,636,359	106,665	585,241
Zinc (pounds)-----	2,986,989	937,768		1,946,195		
Mill value, total-----	\$14,143,243	\$1,714,134	\$5,832,563	\$3,663,672	\$961,709	\$752,544
Per ton of concentrates-----	\$93.46	\$47.82	\$150.22	\$71.63	\$156.66	\$51.17
Per ounce of recoverable gold <sup>2</sup> -----	\$28.60	\$26.26	\$29.66	\$27.25	\$30.57	\$27.66
Bullion and precipitates <sup>3</sup> --						
Recoverable metal content--						
Gold (fine ounces)-----	1,544,146.17	37,426.22	538,846.46	51,728.90	17,923.71	77,192.60
Silver (fine ounces)-----	2,082,510	52,185	709,646	68,407	11,909	127,755
Mill value, total-----	\$55,205,823	\$1,319,493	\$19,289,377	\$1,853,590	\$634,034	\$2,748,084
Per ounce of recoverable gold <sup>2</sup> -----	\$34.84	\$34.33	\$34.91	\$34.94	\$34.92	\$34.49
Placer gravels treated:						
Quantity (cubic yards)-----	205,792,453	587,127	162,880,383	2,227,080	9,005,135	11,881,389
Recoverable metal content--						
Gold (fine ounces)-----	824,767.81	4,359.00	614,807.78	17,248.18	46,685.06	53,346.55
Silver (fine ounces)-----	96,901	451	50,216	3,416	12,955	11,112
Value, total-----	\$27,999,664	\$144,140	\$20,851,242	\$660,751	\$1,596,951	\$1,820,113
Per cubic yard of gravel-----	\$0.136	\$0.246	\$0.128	\$0.252	\$0.177	\$0.153
Per ounce of recoverable gold <sup>2</sup> -----	\$33.87	\$33.00	\$33.86	\$32.39	\$34.04	\$33.98
Concentrates, bullion, and precipitates produced from ore and tailings purchased or treated on a custom basis:						
Concentrates--						
Quantity (tons)-----	2,911	5		2,542	82	
Recoverable metal content--						
Gold (fine ounces)-----	8,309.15	72.71		5,541.91	435.00	
Silver (fine ounces)-----	82,136	28		74,598	2,774	
Copper (pounds)-----	122,333			122,333		
Lead (pounds)-----	495,773			491,973		
Zinc (pounds)-----	276,522			275,592		
Bullion and precipitates <sup>3</sup> --						
Recoverable metal content--						
Gold (fine ounces)-----	266,763.40	29,601.77	40,944.62	150,859.00		
Silver (fine ounces)-----	799,564	80,490	366,220	28,046		
Value added by milling purchased ore and receipts for custom milling-----	\$3,220,495	\$394,144	\$215,235	\$2,131,174	\$1,957	
Value of miscellaneous secondary products (including electric energy sold)-----	\$188,885	\$84,478	\$31,051	\$27,624	\$17,207	\$20,577
Receipts for miscellaneous services performed for other concerns-----	\$101,476		\$3,688	\$48,365		

See footnotes at end of table.

TABLE 5.—PRINCIPAL PRODUCTS OF GOLD MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY STATE: 1939<sup>1</sup>—Continued

PRODUCT	Nevada	Oregon	South Dakota	Utah	Washington	New Mexico and Wyoming	Georgia, South Carolina, and Virginia
Value of all products-----	\$9,131,526	\$2,839,371	\$21,876,033	\$2,286,984	\$1,297,204	\$796,238	\$512,332
Direct-smelting ore:							
Quantity (tons of 2,000 pounds)-----	51,264	7,632	73	162,657	90,839	6,509	-----
Recoverable metal content--							
Gold (fine ounces)-----	29,344.68	5,964.41	1,238.00	46,844.02	21,526.24	1,839.50	-----
Silver (fine ounces)-----	142,335	7,663	578	704,413	107,864	27,656	-----
Copper (pounds)-----	155,889	3,100	-----	1,413,848	114,776	23,136	-----
Lead (pounds)-----	254,586	6,200	-----	2,652,591	34	324,998	-----
Zinc (pounds)-----	-----	-----	-----	-----	-----	-----	-----
Mine value, total-----	\$821,189	\$130,605	\$40,283	\$1,553,512	\$580,241	\$60,741	-----
Per ton of ore-----	\$16.02	\$17.11	\$551.82	\$9.55	\$6.39	\$9.33	-----
Per ounce of recoverable gold <sup>2</sup> -----	\$24.93	\$21.30	\$32.25	\$22.02	\$24.22	\$20.79	-----
Milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis:							
Quantity (tons)-----	127,622	1,275	-----	37,810	32,867	5,254	700
Recoverable metal content--							
Gold (fine ounces)-----	36,116.48	157.00	-----	6,700.00	5,508.67	1,606.00	221.00
Silver (fine ounces)-----	212,187	10	-----	42,736	19,269	33,894	15
Copper (pounds)-----	-----	-----	-----	30,925	-----	25,511	-----
Lead (pounds)-----	27,199	-----	-----	461,298	-----	169	-----
Zinc (pounds)-----	1,030	-----	-----	264,900	-----	-----	-----
Mine value, total-----	\$862,536	\$3,144	-----	\$192,502	\$108,347	\$40,673	\$4,426
Per ton of ore-----	\$6.76	\$2.47	-----	\$5.09	\$3.30	\$7.74	\$6.32
Per ounce of recoverable gold <sup>2</sup> -----	\$21.42	\$20.00	-----	\$22.18	\$18.42	\$17.39	\$20.00
Concentrates, bullion, and precipitates produced at mills operated in conjunction with mines (excluding material produced from ore and tailings purchased or treated on a custom basis):							
Concentrates--							
Quantity (tons)-----	1,400	2,081	86	-----	401	585	71
Recoverable metal content--							
Gold (fine ounces)-----	10,639.82	0,975.23	328.90	-----	1,295.75	2,144.43	48.00
Silver (fine ounces)-----	94,359	80,991	56	-----	1,011	3,152	255
Copper (pounds)-----	7,949	88,632	-----	-----	18,157	32,650	-----
Lead (pounds)-----	6,000	15,649	-----	-----	1,560	26,500	-----
Zinc (pounds)-----	-----	-----	-----	-----	28	103,000	-----
Mill value, total-----	\$384,863	\$711,075	\$8,406	-----	\$38,600	\$74,877	\$900
Per ton of concentrates-----	\$274.90	\$341.70	\$97.74	-----	\$96.26	\$127.99	\$11.27
Per ounce of recoverable gold <sup>2</sup> -----	\$30.79	\$31.14	\$25.47	-----	\$28.14	\$30.05	\$15.11
Bullion and precipitates <sup>3</sup> -----							
Recoverable metal content--							
Gold (fine ounces)-----	155,185.85	3,969.89	616,192.66	12,677.00	11,180.01	7,739.65	14,063.22
Silver (fine ounces)-----	516,062	248	166,835	-----	45,347	378,515	5,581
Mill value, total-----	\$5,769,023	\$133,910	\$21,627,344	\$442,516	\$419,540	\$473,353	\$495,757
Per ounce of recoverable gold <sup>2</sup> -----	\$34.93	\$33.52	\$34.92	\$34.89	\$34.79	\$31.41	\$34.98
Placer gravels treated:							
Quantity (cubic yards)-----	4,902,890	12,879,734	-----	-----	899,045	473,170	56,500
Recoverable metal content--							
Gold (fine ounces)-----	26,774.70	54,323.38	-----	-----	1,394.91	3,518.00	330.25
Silver (fine ounces)-----	9,128	9,247	-----	-----	169	188	19
Value, total-----	\$995,700	\$1,866,137	-----	-----	\$47,006	\$116,275	\$11,349
Per cubic yard of gravel-----	\$0.203	\$0.144	-----	-----	\$0.052	\$0.246	\$0.201
Per ounce of recoverable gold <sup>2</sup> -----	\$34.39	\$34.06	-----	-----	\$33.62	\$33.02	\$34.33
Concentrates, bullion, and precipitates produced from ore and tailings purchased or treated on a custom basis:							
Concentrates--							
Quantity (tons)-----	282	-----	-----	-----	-----	-----	-----
Recoverable metal content--							
Gold (fine ounces)-----	2,259.53	-----	-----	-----	-----	-----	-----
Silver (fine ounces)-----	4,736	-----	-----	-----	-----	-----	-----
Copper (pounds)-----	-----	-----	-----	-----	-----	-----	-----
Lead (pounds)-----	3,800	-----	-----	-----	-----	-----	-----
Zinc (pounds)-----	1,030	-----	-----	-----	-----	-----	-----
Bullion and precipitates <sup>3</sup> -----							
Recoverable metal content--							
Gold (fine ounces)-----	32,731.55	-----	-----	6,776.00	4,796.01	1,055.45	-----
Silver (fine ounces)-----	268,807	-----	-----	-----	11,484	44,517	-----
Value added by milling purchased ore and receipts for custom milling-----	\$297,071	-----	-----	\$86,947	\$86,402	\$27,565	-----
Value of miscellaneous secondary products (including electric energy sold)-----	\$694	\$4,500	-----	-----	-----	\$2,754	-----
Receipts for miscellaneous services performed for other concerns-----	\$450	-----	-----	\$31,705	\$17,088	-----	-----

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1.<sup>2</sup> Figures are approximate and are computed by distributing the reported value of ores, concentrates, or bullion and precipitates among the metals contained in direct proportion to the respective recoverable quantities of these metals multiplied by their average market prices (mint prices for gold and silver) in 1939.<sup>3</sup> Includes amalgam and sponge gold.

TABLE 6. --NUMBER OF WAGE EARNERS IN THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE, BY TYPE OF OPERATION, AND BY MONTH: 1939<sup>1</sup>

(For producing operations only)

STATE AND TYPE OF OPERATION	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF THE MONTH											
		January	February	March	April	May	June	July	August	Septem- ber	October	November	December
LODE AND PLACER													
United States, total-----	20,507	19,176	19,359	19,712	20,439	20,897	21,377	21,504	21,140	21,198	21,016	20,412	19,659
Arizona-----	1,392	1,373	1,387	1,424	1,428	1,477	1,463	1,434	1,416	1,416	1,531	1,226	1,211
California-----	8,094	7,829	7,831	7,964	8,159	8,176	8,325	8,240	8,123	8,026	8,185	8,195	8,077
Colorado-----	2,947	2,776	2,824	2,881	2,914	3,067	3,059	3,122	2,892	3,049	3,006	2,932	2,841
Idaho-----	724	555	550	571	681	754	763	817	797	872	865	759	709
Montana-----	1,730	1,441	1,467	1,534	1,759	1,762	1,834	1,843	1,853	1,819	1,861	1,694	1,587
Nevada-----	1,655	1,425	1,462	1,536	1,591	1,684	1,734	1,733	1,836	1,784	1,791	1,661	1,564
Oregon-----	658	545	564	604	623	672	737	714	699	691	705	685	624
South Dakota-----	2,238	2,214	2,194	2,197	2,188	2,196	2,276	2,289	2,298	2,300	2,233	2,240	2,237
Utah-----	388	348	348	351	362	371	390	417	405	405	408	414	433
Washington-----	245	274	262	238	252	245	285	294	267	263	231	175	157
New Mexico and Wyoming-----	267	206	224	237	305	319	324	310	266	276	240	241	254
Georgia, South Carolina, and Virginia-----	179	187	186	175	177	174	187	191	188	187	160	166	165
LODE													
United States, total-----	17,279	16,414	16,630	16,774	17,165	17,521	17,900	17,999	17,791	17,840	17,578	17,063	16,674
Type of operation													
Mines only-----	2,851	2,557	2,631	2,746	2,919	3,045	3,067	3,018	3,024	2,992	2,874	2,719	2,623
Mines and mills operated together-----	13,934	13,460	13,577	13,593	13,811	13,592	14,290	14,381	14,194	14,281	14,151	13,653	13,601
Mills only-----	494	397	422	435	435	484	543	590	573	557	553	491	450
State													
Arizona-----	1,354	1,347	1,361	1,398	1,398	1,447	1,433	1,404	1,386	1,386	1,301	1,200	1,185
California-----	5,819	5,704	5,777	5,791	5,858	5,870	5,947	5,837	5,827	5,771	5,844	5,845	5,758
Colorado-----	2,854	2,766	2,804	2,846	2,819	2,932	2,904	2,961	2,773	2,930	2,890	2,837	2,785
Idaho-----	524	470	451	440	496	515	530	575	573	606	580	544	509
Montana-----	1,506	1,321	1,333	1,378	1,519	1,507	1,567	1,678	1,691	1,663	1,603	1,438	1,372
Nevada-----	1,528	1,304	1,370	1,413	1,455	1,568	1,618	1,615	1,701	1,649	1,649	1,537	1,458
New Mexico-----	246	185	205	219	286	296	300	287	243	252	218	222	235
Oregon-----	412	305	343	332	359	404	480	472	456	450	479	462	401
South Dakota-----	2,238	2,214	2,194	2,197	2,188	2,196	2,276	2,289	2,298	2,300	2,233	2,240	2,237
Utah-----	388	348	348	351	362	371	390	417	405	405	408	414	433
Washington-----	256	274	262	238	252	245	272	277	254	245	213	165	143
Georgia, South Carolina, and Virginia-----	174	176	182	171	173	170	183	187	184	183	160	159	158
PLACER													
United States, total-----	3,228	2,762	2,729	2,938	3,274	3,376	3,477	3,505	3,349	3,358	3,438	3,349	3,185
Type of operation													
Connected-bucket dredges-----	1,422	1,396	1,371	1,383	1,442	1,395	1,430	1,438	1,435	1,422	1,462	1,450	1,446
Dragline dredges with floating washing plants-----	1,053	824	836	940	1,031	1,073	1,107	1,163	1,111	1,092	1,144	1,188	1,124
Dry-land dredges <sup>2</sup> -----	438	287	268	326	447	529	579	563	489	518	497	413	344
Sluicing and hydraulic-----	123	106	116	137	158	181	142	125	103	101	115	101	88
Drift placers-----	116	114	103	107	105	107	128	124	118	132	128	117	110
Undistributed <sup>3</sup> -----	76	35	35	45	91	91	91	92	93	93	92	80	73
State													
Arizona-----	28	26	26	26	30	30	30	30	30	30	30	26	26
California-----	2,275	2,125	2,054	2,173	2,301	2,306	2,378	2,403	2,296	2,255	2,341	2,350	2,319
Colorado-----	93	13	20	35	95	135	155	161	119	119	116	95	56
Georgia-----	5	11	4	4	4	4	4	4	4	4	4	7	7
Idaho-----	200	85	99	151	185	239	233	242	224	266	285	215	200
Montana-----	224	120	134	156	240	255	267	265	262	256	258	256	215
Nevada-----	127	121	122	123	136	116	118	115	135	145	142	144	106
Oregon-----	246	240	251	272	264	268	257	242	243	241	226	223	223
Washington-----	9	-----	-----	-----	-----	-----	13	17	13	18	18	14	14
New Mexico and Wyoming-----	21	21	19	18	19	23	24	23	23	24	22	19	19

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1.<sup>2</sup> Dragline and power-shovel excavators used in conjunction with nonfloating washing plants.<sup>3</sup> Includes small-scale hand operations and combinations of two or more of the types of operation shown.

TABLE 7.—NUMBER OF MAN-SHIFTS WORKED AT GOLD MINES AND MILLS IN THE UNITED STATES, BY STATE AND BY SHIFT: 1939

TYPE OF OPERATION AND SHIFT	UNITED STATES		(For producing operations only)											
	Number	Percent of total	Arizona	California	Colorado	Idaho	Montana	Nevada	Oregon	South Dakota	Utah	Washington	New Mexico and Wyoming	Georgia, South Carolina, and Virginia
Lode and placer, total	6,150,559	100.0	423,311	2,492,970	863,877	216,152	504,695	502,004	184,942	658,562	99,889	72,958	77,569	53,830
First shift	4,190,453	68.1	288,304	1,581,499	662,832	149,334	349,059	361,451	114,351	441,230	85,880	61,979	54,994	39,550
Second shift	1,425,657	23.2	104,633	703,910	158,045	50,453	115,705	113,727	53,956	74,060	11,033	9,135	18,380	12,620
Third shift	534,449	8.7	30,374	207,561	43,000	16,365	39,931	26,826	16,635	143,272	2,976	1,844	4,205	1,660
Lode, total	5,150,597	100.0	414,349	1,791,384	836,092	150,558	432,544	465,417	106,976	658,562	99,889	70,699	71,303	52,646
First shift	3,613,922	70.2	283,542	1,185,217	642,823	114,547	309,151	338,159	86,369	441,230	85,880	59,720	48,718	38,566
Second shift	1,175,192	22.8	100,433	529,110	152,712	30,610	97,024	104,057	37,018	74,060	11,033	9,135	18,380	12,620
Third shift	361,285	7.0	30,374	78,057	40,557	5,361	26,369	23,201	3,589	143,272	2,976	1,844	4,205	1,460
Mines, total	4,291,876	100.0	324,560	1,548,609	675,330	116,455	355,184	341,760	95,654	579,702	85,299	63,186	59,989	46,148
First shift	3,146,720	73.3	234,340	1,051,568	566,598	94,592	265,782	266,838	59,804	397,873	76,935	55,970	41,442	34,988
Second shift	944,975	22.0	75,443	465,397	105,656	21,725	74,221	89,489	34,462	56,011	8,024	7,216	15,991	11,160
Third shift	200,181	4.7	14,777	51,644	2,906	138	15,181	5,433	1,388	125,818	340	—	2,556	—
Mills, total	858,523	100.0	89,789	242,775	160,762	34,083	77,360	123,657	11,322	78,860	14,590	7,513	11,314	6,498
First shift	467,202	54.4	49,202	133,649	78,235	19,955	43,369	71,321	6,565	45,567	8,945	3,750	7,276	3,578
Second shift	230,217	26.8	24,990	82,713	46,876	8,885	22,803	34,568	2,556	18,049	3,009	1,919	2,389	1,460
Third shift	161,104	18.8	15,597	46,413	37,651	5,243	11,188	17,768	2,201	17,454	2,636	1,844	1,649	1,460
Placer, total	1,000,160	100.0	8,962	701,586	27,785	65,614	72,151	36,587	77,966	—	—	2,259	6,266	984
First shift	576,531	57.7	4,762	396,282	20,009	34,797	39,908	23,292	47,982	—	—	2,259	6,266	984
Second shift	250,465	25.0	—	175,800	5,333	19,843	18,681	9,870	16,938	—	—	—	—	—
Third shift	173,164	17.3	—	129,504	2,443	10,984	13,562	3,625	13,046	—	—	—	—	—

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. Figures refer only to man-shifts worked by wage earners on active days; statistics for inactive days when only watchmen, inspectors, or maintenance men were employed are excluded. The reported total numbers of man-shifts for mines and mills were distributed among the three shifts in direct proportion to the computed numbers of man-shifts worked on each shift. The latter were computed for each department of individual operations by multiplying the reported number of full days each shift was active for production or development work by the average number of wage earners that were actually working on the respective shift on active days.

TABLE 8.—QUANTITY OF FUEL AND ELECTRIC ENERGY CONSUMED IN THE GOLD INDUSTRY IN THE UNITED STATES BY KIND, 1939 AND 1929, AND BY STATE, 1939

(For producing operations only)

STATE	FUEL					ELECTRIC ENERGY (thousands of kilowatt-hours)		
	Anthracite (short tons)	Bituminous coal (short tons)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Natural gas (thousands of cubic feet)	Total	Purchased	Generated by reporting companies
LODE AND PLACER								
United States, total-----1939-----	1,045	110,064	311,343	4,030,765	206,290	640,577	532,405	108,172
-----1929-----	5	119,418	12,047	139,988	6,279	176,899	120,046	56,853
Arizona-----	84	421	34,050	202,605	-----	37,704	31,529	6,175
California-----	915	134	144,431	1,806,883	-----	356,203	337,069	19,134
Colorado-----	-----	44,565	9,216	350,932	-----	67,805	64,982	2,843
Idaho-----	24	224	17,485	178,790	-----	13,960	6,819	7,141
Montana-----	8	1,927	23,506	315,842	22,875	30,559	26,866	3,693
Nevada-----	12	36	35,880	489,766	-----	40,963	36,051	4,932
Oregon-----	-----	-----	23,377	144,946	-----	9,917	6,176	3,741
South Dakota-----	-----	59,425	1,028	106,150	183,415	64,069	9,612	54,457
Utah-----	2	2,931	907	64,561	-----	7,952	7,524	428
Washington-----	-----	8	7,856	123,941	-----	4,224	3,917	307
New Mexico and Wyoming-----	-----	122	13,176	138,156	-----	5,371	50	5,321
Georgia, South Carolina, and Virginia-----	-----	291	451	110,193	-----	1,850	1,850	-----
LODE								
United States, total-----1939-----	149	109,787	167,295	2,446,453	183,415	431,690	342,008	99,682
-----1929-----	5	119,278	12,047	155,738	6,279	109,065	52,428	56,637
Arizona-----	84	421	32,657	191,105	-----	37,383	31,208	6,175
California-----	27	125	39,957	823,533	-----	178,919	174,870	4,049
Colorado-----	-----	44,298	5,899	251,653	-----	66,300	63,457	2,843
Idaho-----	24	211	11,199	64,502	-----	8,357	1,532	6,825
Montana-----	-----	1,920	16,295	242,347	-----	21,557	18,192	3,365
Nevada-----	12	35	31,822	442,598	-----	33,169	29,177	3,992
New Mexico-----	-----	122	11,720	40,361	-----	4,939	50	4,889
Oregon-----	-----	-----	10,070	14,310	-----	2,971	619	2,352
South Dakota-----	-----	59,425	1,028	106,150	183,415	64,069	9,612	54,457
Utah-----	2	2,931	907	64,561	-----	7,952	7,524	428
Washington-----	-----	8	5,317	100,676	-----	4,224	3,917	307
Georgia, South Carolina, and Virginia-----	-----	291	451	104,637	-----	1,850	1,850	-----
PLACER								
United States, total-----1939-----	896	297	144,048	1,584,312	22,875	208,887	190,397	18,490
-----1929-----	-----	140	-----	4,250	-----	67,854	67,618	216
Arizona-----	-----	-----	1,393	11,500	-----	321	321	-----
California-----	888	9	104,474	983,350	-----	177,284	162,199	15,065
Colorado-----	-----	267	3,347	99,279	-----	1,505	1,505	-----
Georgia-----	-----	-----	-----	5,556	-----	-----	-----	-----
Idaho-----	-----	13	6,286	112,288	-----	5,603	5,287	316
Montana-----	8	7	7,208	75,495	-----	9,002	8,674	328
Nevada-----	-----	1	4,038	47,168	22,875	7,794	6,854	940
Oregon-----	-----	-----	13,307	130,636	-----	6,946	5,557	1,389
Washington-----	-----	-----	2,539	23,265	-----	-----	-----	-----
New Mexico and Wyoming-----	-----	-----	1,456	97,775	-----	432	-----	432

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1.

TABLE 9.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE GOLD INDUSTRY IN THE UNITED STATES,  
BY TYPE AND BY STATE: 1939<sup>1</sup>  
(For producing operations only)

PRIME MOVERS AND ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY											
STATE	Aggregate horsepower rating	Prime movers				Electric motors driven by purchased energy					
		Total horsepower rating	Stationary equipment		Mobile equipment		Total horsepower rating	Stationary equipment		Mobile equipment	
			Number	Horsepower rating	Number	Horsepower rating		Number	Horsepower rating	Number	Horsepower rating
LODE AND PLACER											
United States-----	396,549	176,535	1,160	98,521	1,341	78,014	220,014	8,681	215,089	298	6,925
Arizona-----	18,929	7,887	94	4,815	72	3,072	11,042	660	10,696	18	346
California-----	177,702	50,861	346	15,805	571	35,056	126,841	4,225	123,172	136	3,689
Colorado-----	45,694	15,306	124	8,948	105	6,380	30,386	1,510	29,827	30	559
Idaho-----	14,742	11,884	89	7,125	76	4,759	2,858	207	2,715	8	143
Montana-----	33,659	17,369	165	8,407	152	8,962	16,290	717	14,932	52	1,358
Nevada-----	35,100	17,180	167	8,556	176	8,644	17,920	892	17,557	25	363
Oregon-----	8,808	6,599	39	3,754	44	2,845	2,209	69	2,078	6	131
South Dakota-----	39,619	35,097	34	34,137	17	960	4,522	250	4,522	4	40
Utah-----	7,208	1,850	11	510	21	1,320	5,378	197	5,338	13	256
Washington-----	7,326	5,656	37	2,491	47	3,145	1,690	88	1,454	6	60
New Mexico and Wyoming-----	4,416	4,316	34	3,009	30	1,307	100	4	40	6	60
Georgia, South Carolina, and Virginia-----	5,346	2,568	20	984	30	1,584	778	62	778	-----	-----
LODE											
United States-----	286,115	124,009	886	85,110	802	40,899	162,106	7,401	158,633	213	3,473
Arizona-----	18,250	7,368	91	4,765	63	2,603	10,882	652	10,536	18	346
California-----	102,512	22,506	204	7,456	283	15,050	79,806	3,297	78,391	89	1,415
Colorado-----	42,064	12,536	115	8,496	74	4,040	29,528	1,273	28,969	30	559
Idaho-----	7,139	6,433	63	5,210	27	1,223	706	82	645	4	60
Montana-----	24,178	12,243	143	7,735	84	4,508	11,935	600	11,570	23	365
Nevada-----	30,718	14,684	146	7,802	143	6,882	16,084	863	15,671	25	363
New Mexico-----	2,863	2,763	18	2,338	14	425	100	4	40	6	60
Oregon-----	2,740	1,993	14	1,692	14	301	747	35	738	1	9
South Dakota-----	39,619	35,097	34	34,137	17	960	4,522	250	4,522	4	40
Utah-----	7,208	1,830	11	510	21	1,320	5,378	197	5,338	13	256
Washington-----	6,183	4,493	32	2,385	34	2,108	1,690	88	1,454	6	60
Georgia, South Carolina, and Virginia-----	2,841	2,063	15	584	28	1,479	778	62	778	-----	-----
PLACER											
United States-----	110,434	52,526	274	15,411	539	37,115	57,908	1,280	54,456	85	3,452
Arizona-----	679	519	3	50	9	469	160	8	160	-----	-----
California-----	75,390	28,355	142	8,349	288	20,006	47,035	928	44,781	47	2,254
Colorado-----	3,630	2,772	9	452	31	2,320	858	37	858	-----	-----
Georgia-----	505	505	5	400	2	105	-----	-----	-----	-----	-----
Idaho-----	7,603	5,451	26	1,915	49	3,536	2,152	125	2,069	4	85
Montana-----	9,481	5,126	22	672	68	4,454	4,355	117	3,362	29	993
Nevada-----	4,382	2,496	21	734	33	1,762	1,886	29	1,886	-----	-----
Oregon-----	6,068	4,606	25	2,062	30	2,544	1,462	36	1,340	5	122
Washington-----	1,143	1,143	5	106	13	1,037	-----	-----	-----	-----	-----
New Mexico and Wyoming-----	1,553	1,553	16	671	16	882	-----	-----	-----	-----	-----

<sup>1</sup>For definition of industry see tables 2 and 3, footnote 1; for explanation of terms "Stationary equipment" and "Mobile equipment" see table 3, footnotes 3 and 4.

TABLE 9.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE GOLD INDUSTRY IN THE UNITED STATES, BY TYPE AND BY STATE: 1939<sup>1</sup>—Continued

(For producing operations only)

STATE	ELECTRIC MOTORS DRIVEN BY ENERGY GENERATED BY REPORTING COMPANIES <sup>3</sup>				
	Total horsepower rating	Stationary equipment		Mobile equipment	
		Number	Horsepower rating	Number	Horsepower rating
LODE AND PLACER					
United States-----	52,272	2,200	51,234	31	1,039
Arizona-----	2,495	220	2,495	-----	-----
California-----	4,348	219	3,971	14	377
Colorado-----	1,834	94	1,779	4	55
Idaho-----	2,983	197	2,723	2	260
Montana-----	2,586	148	2,586	-----	-----
Nevada-----	2,529	244	2,529	-----	-----
Oregon-----	2,749	108	2,683	3	66
South Dakota-----	29,538	763	29,388	4	150
Utah-----	761	22	761	-----	-----
Washington-----	904	82	774	4	150
New Mexico and Wyoming-----	1,545	103	1,545	-----	-----
Georgia, South Carolina, and Virginia-----	-----	-----	-----	-----	-----
LODE					
United States-----	48,550	2,092	48,149	15	461
Arizona-----	2,495	220	2,495	-----	-----
California-----	2,321	171	2,321	-----	-----
Colorado-----	1,834	94	1,779	4	55
Idaho-----	2,562	187	2,562	-----	-----
Montana-----	2,389	140	2,389	-----	-----
Nevada-----	2,526	243	2,526	-----	-----
New Mexico-----	1,245	98	1,245	-----	-----
Oregon-----	1,975	72	1,909	3	66
South Dakota-----	29,538	763	29,388	4	150
Utah-----	761	22	761	-----	-----
Washington-----	904	82	774	4	150
Georgia, South Carolina, and Virginia-----	-----	-----	-----	-----	-----
PLACER					
United States-----	3,722	108	3,085	10	637
Arizona-----	-----	-----	-----	-----	-----
California-----	2,027	48	1,650	14	377
Colorado-----	-----	-----	-----	-----	-----
Georgia-----	-----	-----	-----	-----	-----
Idaho-----	421	10	161	2	260
Montana-----	197	8	197	-----	-----
Nevada-----	3	1	3	-----	-----
Oregon-----	774	36	774	-----	-----
Washington-----	-----	-----	-----	-----	-----
New Mexico and Wyoming-----	300	5	300	-----	-----

<sup>1</sup> For definition of industry see tables 2 and 3, footnote 1; for explanation of terms "stationary equipment" and "mobile equipment" see table 3, footnotes 3 and 4.TABLE 10.—NUMBER OF UNDERGROUND POWER-LOADING MACHINES AT GOLD LODE MINES IN THE UNITED STATES, BY SIZE, BY KIND OF POWER USED, AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE <sup>2</sup>	SHOVEL LOADERS				SCRAPER LOADERS				
	Total	Minimum working height required			Total	Kind of power used		Horsepower rating of hoists	
		8 feet or less		More than 8 feet <sup>3</sup>		Compressed air	Electric	Less than 10	10 to 25
		Compressed air	Electric						
United States	90	73	11	6	123	73	50	105	18
Arizona	2	2			16	9	7	14	2
California	38	24	11	3	53	37	16	48	5
Colorado	17	17			6	4	2	4	2
Idaho					3	1	2	3	
Montana	2	2			15	5	10	11	4
Nevada	3	3			18	11	7	15	3
New Mexico	1	1							
Oregon	1	1							
South Dakota	19	18		1	1	1		1	
Utah	7	5		2	8	4	4	6	2

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. In addition to the equipment shown, 2 hoists for underground loading were reported at mines in Montana.<sup>2</sup> No underground equipment was reported at gold lode mines in States other than those designated.<sup>3</sup> All operated by compressed air.

TABLE 11.—NUMBER OF SURFACE POWER-LOADING MACHINES AT GOLD LODE MINES AND MILLS IN THE UNITED STATES, BY KIND OF POWER USED, BY SIZE, AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE <sup>a</sup>	POWER SHOVELS			DRAGLINES				SCRAPER LOADERS							
	Total	Kind of power used		Total	Kind of power used			Total	Kind of power used			Horsepower rating of hoists			
		Gasoline or Diesel	Electric		Gasoline or Diesel	Electric	Steam		Gasoline or Diesel	Electric	Com-pressed air	Less than 10	10 to 25	25 to 100	More than 100
United States	<sup>b</sup> 58	56	2	<sup>c</sup> 9	6	2	1	17	4	9	4	5	8	3	1
Arizona	3	3	—	1	—	1	—	3	1	2	—	1	1	1	—
California	22	20	2	1	—	1	—	5	3	1	1	1	2	1	1
Colorado	4	4	—	2	1	—	1	2	—	2	—	—	2	—	—
Idaho	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—
Montana	3	3	—	1	1	—	—	4	—	3	1	1	2	1	—
Nevada	12	12	—	1	1	—	—	—	—	—	—	—	—	—	—
New Mexico	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—
South Dakota	4	4	—	—	—	—	—	1	—	—	1	1	—	—	—
Utah	4	4	—	—	—	—	—	—	—	—	—	—	—	—	—
Washington	2	2	—	1	1	—	—	2	—	1	1	1	1	—	—
Georgia, South Carolina, and Virginia	2	2	—	1	1	—	—	—	—	—	—	—	—	—	—

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. In addition to the equipment shown, 7 miscellaneous pieces of surface loading equipment were reported as follows: Arizona, 1 unspecified; California, 1 bulldozer; Colorado, 1 unspecified; Idaho, 1 Sullivan mucking machine; Montana, 2 bulldozers; Washington, 1 carryall.

<sup>2</sup> No surface equipment was reported at gold lode mines in States other than those designated.

<sup>3</sup> Includes 57 shovels with a dipper capacity of less than 3 cubic yards and 1 with a dipper capacity of more than 5 cubic yards.

<sup>4</sup> Includes 8 draglines with a bucket capacity of less than 3 cubic yards and 1 with a bucket capacity of 3 to 5 cubic yards.

TABLE 12.—NUMBER OF POWER LOADING MACHINES AT GOLD PLACER MINES IN THE UNITED STATES, BY TYPE, BY SIZE, BY KIND OF POWER USED, AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE	POWER SHOVELS							DRAGLINES			
	Total	Bucket capacity (cubic yards)			Kind of power used			Total	Bucket capacity (cubic yards)		
		Less than 3	3 to 5	More than 5	Gasoline or Diesel	Electric	Steam		Less than 3	3 to 5	More than 5
United States-----	38	36	2	-----	34	2	2	184	173	9	2
Arizona-----	-----	-----	-----	-----	-----	-----	-----	4	4	-----	-----
California-----	14	12	2	-----	11	2	1	108	102	5	1
Colorado-----	9	9	-----	-----	8	-----	1	9	9	-----	-----
Georgia-----	-----	-----	-----	-----	-----	-----	-----	1	1	-----	-----
Idaho-----	4	4	-----	-----	4	-----	-----	12	11	1	-----
Montana-----	6	6	-----	-----	6	-----	-----	25	23	2	-----
Nevada-----	4	4	-----	-----	4	-----	-----	4	4	-----	-----
Oregon-----	1	1	-----	-----	1	-----	-----	13	12	1	-----
Washington-----	-----	-----	-----	-----	-----	-----	-----	4	3	-----	1
New Mexico and Wyoming-----	-----	-----	-----	-----	-----	-----	-----	4	4	-----	-----

STATE	DRAGLINES--Continued		CONNECTED-BUCKET DREDGES			SCRAPER LOADERS <sup>2</sup>				Other <sup>3</sup>
	Kind of power used		Total	Kind of power used		Total	Horsepower rating of hoists			
	Gasoline or Diesel	Electric		Gasoline or Diesel	Electric		Less than 10	10 to 25	26 to 100	
United States-----	151	33	67	5	62	14	11	2	1	30
Arizona-----	4	-----	-----	-----	-----	-----	-----	-----	-----	-----
California-----	88	20	46	2	44	5	2	2	1	21
Colorado-----	8	1	1	-----	1	-----	-----	-----	-----	2
Georgia-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Idaho-----	10	2	8	3	5	-----	-----	-----	-----	3
Montana-----	20	5	6	-----	6	1	1	-----	-----	-----
Nevada-----	3	1	1	-----	1	5	5	-----	-----	1
Oregon-----	9	4	5	-----	5	-----	-----	-----	-----	3
Washington-----	4	-----	-----	-----	-----	3	3	-----	-----	-----
New Mexico and Wyoming-----	4	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1.

<sup>2</sup> All hoists operated by gasoline or Diesel engines.

<sup>3</sup> Includes 20 bulldozers, 5 underground scraper loaders, 2 underground shovel loaders, and 3 unspecified. The underground loaders (used in drift mining) and the unspecified equipment were all reported at mines in California.

## MINERAL INDUSTRIES

TABLE 13.—SELECTED STATISTICS FOR INCORPORATED AND UNINCORPORATED CONCERNS IN THE GOLD INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND TYPE OF OWNERSHIP	Number of operating companies <sup>2</sup>	Number of mines	Number of mills	Mine production of recoverable gold (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
LODE AND PLACER											
United States, total	1,124	1,180	329	3,280,279.83	\$114,089,844	23,398	20,507	2,089	802	\$32,562,581	\$5,185,703
Incorporated	498	480	190	2,715,632.30	96,302,161	18,807	16,977	1,830	—	27,205,594	4,658,894
Unincorporated	626	700	139	564,647.53	17,787,683	4,591	3,530	259	802	5,356,987	506,809
Arizona, total	94	97	20	141,362.08	5,024,544	1,580	1,382	126	72	1,996,532	289,923
Incorporated	31	32	15	116,364.61	4,373,861	1,343	1,225	118	—	1,793,719	276,123
Unincorporated	63	65	5	24,997.47	650,683	237	157	8	72	202,813	13,800
California, total	376	405	119	1,379,995.93	47,541,010	9,182	8,094	750	338	13,832,568	2,036,266
Incorporated	143	152	54	1,061,137.69	38,287,396	7,054	6,433	621	—	11,066,775	1,794,416
Unincorporated	233	253	65	288,858.24	9,253,614	2,128	1,661	129	338	2,765,793	251,850
Colorado, total	174	187	43	328,694.87	12,200,665	3,370	2,947	331	92	4,138,141	599,165
Incorporated	102	90	29	283,601.69	10,972,607	2,949	2,636	313	—	3,711,448	578,375
Unincorporated	72	97	14	45,093.18	1,228,058	421	311	18	92	424,693	20,790
Idaho, total	58	62	23	97,034.89	3,401,149	850	724	95	31	1,023,523	184,188
Incorporated	32	28	16	57,016.78	2,016,316	589	510	79	—	714,785	147,632
Unincorporated	26	34	7	40,018.11	1,384,833	261	214	16	31	308,738	36,556
Montana, total	138	136	42	229,324.43	7,382,788	1,998	1,730	163	105	2,480,024	357,393
Incorporated	54	50	24	179,022.95	5,818,622	1,464	1,327	137	—	1,921,879	315,280
Unincorporated	84	86	18	50,301.48	1,564,166	534	403	26	105	568,145	42,113
Nevada, total	158	158	46	260,061.51	9,131,526	1,944	1,655	197	92	2,648,871	491,526
Incorporated	94	99	30	190,876.41	6,885,285	1,375	1,217	158	—	1,980,379	386,770
Unincorporated	64	59	16	69,185.10	2,246,241	569	438	39	92	668,492	94,756
Oregon, total	50	46	12	85,409.91	2,839,371	741	658	57	26	849,857	138,967
Incorporated	25	16	3	49,981.01	1,715,249	480	438	42	—	525,549	97,469
Unincorporated	25	30	9	35,428.90	1,124,122	261	220	15	26	324,308	39,478
South Dakota, total	9	8	9	617,759.56	21,676,033	2,458	2,238	217	3	4,368,333	751,068
Incorporated	7	7	7	617,759.56	21,676,033	2,458	2,238	217	3	4,368,333	751,068
Unincorporated	2	1	2								
Utah, total	27	30	2	68,221.02	2,286,984	455	388	61	6	465,191	106,594
Incorporated	21	23	2	64,685.62	2,162,939	418	358	60	—	428,514	105,094
Unincorporated	6	7		3,535.40	124,045	37	30	1	6	36,677	1,500
Washington, total	23	24	6	40,905.58	1,297,204	302	245	36	21	360,446	70,153
Incorporated	13	13	6	38,237.97	1,223,368	267	232	35	—	341,414	70,077
Unincorporated	10	11		2,667.61	73,836	35	13	1	21	19,032	76
New Mexico and Wyoming, total	19	19	3	16,847.58	796,238	295	267	21	7	281,559	45,981
Incorporated	6	6	2	13,129.78	686,168	229	212	17	—	231,878	41,091
Unincorporated	13	13	1	3,717.80	110,070	66	55	4	7	49,681	4,890
Georgia, South Carolina, and Virginia, total	8	8	4	14,662.47	512,332	223	179	35	9	111,556	96,479
Incorporated	4	4	2	13,863.25	487,892	193	158	35	—	100,430	96,479
Unincorporated	4	4	2	799.22	24,440	30	21	—	9	11,106	
LODE											
United States, total	820	841	329	2,455,725.02	86,063,020	19,433	17,279	1,612	542	26,931,219	4,003,971
Incorporated	353	331	190	2,143,785.19	76,585,013	16,567	14,907	1,480	—	23,597,816	3,726,009
Unincorporated	467	510	139	311,939.83	9,478,007	3,066	2,372	152	542	3,333,403	277,962
Arizona, total	90	93	20	137,003.08	4,880,404	1,550	1,354	124	72	1,952,349	285,123
Incorporated	29	30	15								
Unincorporated	61	63	5	137,003.08	4,880,404	1,550	1,354	124	72	1,952,349	285,123
California, total	205	206	119	765,399.15	26,662,707	6,400	5,819	419	162	9,789,896	1,187,203
Incorporated	65	61	54	641,571.59	22,748,494	5,267	4,911	356	—	8,402,771	1,073,209
Unincorporated	140	145	65	123,827.56	3,914,213	1,133	908	63	162	1,387,125	113,994
Colorado, total	153	166	43	311,446.69	11,639,914	3,251	2,854	315	82	3,996,319	574,872
Incorporated	92	82	29	273,964.53	10,648,018	2,891	2,591	300	—	3,644,374	556,482
Unincorporated	61	84	14	37,482.16	991,896	360	263	15	82	351,945	18,390
Idaho, total	36	35	23	50,589.83	1,804,198	610	524	68	18	681,755	124,040
Incorporated	23	21	16	43,601.06	1,558,206	484	421	63	—	562,986	113,971
Unincorporated	13	14	7	6,788.77	245,992	126	103	5	18	118,769	10,069
Montana, total	109	106	42	175,979.88	5,562,576	1,715	1,506	124	85	2,079,223	279,711
Incorporated	41	37	24	141,876.78	4,554,870	1,280	1,174	106	—	1,643,502	250,206
Unincorporated	68	69	18	34,103.10	1,007,706	435	332	18	85	435,721	29,505
Nevada, total	143	142	46	231,286.81	8,135,826	1,798	1,528	184	86	2,458,720	467,883
Incorporated	83	49	30	163,080.70	5,927,082	1,260	1,112	148	—	1,819,517	380,527
Unincorporated	60	93	16	68,206.11	2,208,744	538	416	36	86	639,203	87,356

See footnotes at end of table.

TABLE 13.—SELECTED STATISTICS FOR INCORPORATED AND UNINCORPORATED CONCERNS IN THE GOLD INDUSTRY IN THE UNITED STATES,  
BY STATE: 1939<sup>1</sup>—Continued

(For producing operations only)

STATE AND TYPE OF OWNERSHIP	Number of operating compa- nies <sup>2</sup>	Num- ber of mines	Num- ber of mills	Mine pro- duction of recoverable gold (fine ounces)	Value at all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
LODE—Continued											
New Mexico, total	14	14	3	13,329.58	\$679,965	264	246	16	2	\$251,770	\$81,821
Incorporated	4	4	2	13,329.58	679,965	264	246	16	2	251,770	81,821
Unincorporated	10	10	1								
Oregon, total	20	18	12	31,086.53	983,234	446	412	21	13	432,632	46,824
Incorporated	5	3	3	22,839.40	782,904	349	329	20	13	337,396	44,942
Unincorporated	15	15	9	8,247.13	200,330	97	83	1		95,236	1,882
South Dakota, total	9	8	9	617,759.56	21,676,033	2,458	2,238	217	3	4,366,333	751,068
Incorporated	7	7	7	617,759.56	21,676,033	2,458	2,238	217	3	4,366,333	751,068
Unincorporated	2	1	2								
Utah, total	27	30	2	68,221.02	2,286,984	455	388	61	6	465,191	106,594
Incorporated	21	23	2	64,885.62	2,162,939	418	358	60	6	428,314	105,084
Unincorporated	6	7	—	3,335.40	124,045	37	30	1		36,877	1,500
Washington, total	17	18	6	39,510.67	1,250,198	278	236	35	7	348,484	68,493
Incorporated	12	12	6	39,510.67	1,250,198	278	236	35	7	348,484	68,493
Unincorporated	5	6	—								
Georgia, South Carolina, and Virginia, total	5	5	4	14,332.22	500,983	208	174	28	6	108,547	80,339
Incorporated	2	2	2	14,332.22	500,983	208	174	28	6	108,547	80,339
Unincorporated	3	3	2								
PLACER											
United States, total	306	339	—	824,554.81	28,026,824	3,965	3,228	477	260	5,631,362	1,161,732
Incorporated	137	149	—	571,847.11	19,717,148	2,440	2,070	370	260	3,607,778	932,885
Unincorporated	169	190	—	252,707.70	8,309,676	1,525	1,158	107		2,023,584	228,847
Arizona, total	4	4	—	4,359.00	144,140	30	28	2	—	44,183	4,800
Incorporated	2	2	—	4,359.00	144,140	30	28	2	—	44,183	4,800
Unincorporated	2	2	—								
California, total	171	199	—	614,596.78	20,878,303	2,782	2,275	331	176	4,042,672	849,063
Incorporated	78	91	—	449,566.10	15,538,902	1,787	1,522	265	176	2,894,004	711,207
Unincorporated	93	108	—	165,030.68	5,339,401	995	753	66		1,348,668	137,856
Colorado, total	21	21	—	17,248.18	560,751	119	93	16	10	139,822	24,293
Incorporated	10	8	—	9,637.16	324,589	58	45	13	10	67,074	21,893
Unincorporated	11	13	—	7,611.02	236,162	61	48	3		72,748	2,400
Georgia, total	3	3	—	330.25	11,349	15	5	7	3	2,989	16,140
Incorporated	2	2	—	330.25	11,349	15	5	7	3	2,989	16,140
Unincorporated	1	1	—								
Idaho, total	23	27	—	46,665.06	1,596,951	240	200	27	13	341,768	60,148
Incorporated	10	7	—	13,415.72	458,110	106	89	16	13	151,799	33,661
Unincorporated	13	20	—	33,249.34	1,138,841	135	111	11		189,969	26,487
Montana, total	29	30	—	53,344.55	1,820,212	283	224	39	20	410,801	77,682
Incorporated	13	13	—	37,146.17	1,263,752	184	153	31	20	278,377	65,074
Unincorporated	16	17	—	16,198.38	556,460	99	71	8		132,424	12,608
Nevada, total	15	16	—	28,774.70	995,700	146	127	13	6	190,151	23,643
Incorporated	11	10	—	27,585.71	956,203	115	105	10	6	160,862	16,243
Unincorporated	4	6	—	1,178.99	39,497	31	22	3		29,289	7,400
Oregon, total	30	28	—	54,323.38	1,856,137	295	246	36	13	417,225	90,143
Incorporated	20	13	—	27,141.61	932,345	131	109	22	13	188,153	52,547
Unincorporated	10	15	—	27,181.77	923,792	164	137	14		229,072	37,596
Washington, total	6	6	—	1,394.91	47,006	24	9	1	14	11,962	1,660
Incorporated	1	1	—	1,394.91	47,006	24	9	1	14	11,962	1,660
Unincorporated	5	5	—								
New Mexico and Wyoming, total	5	5	—	3,518.00	116,275	31	21	5	5	29,789	14,160
Incorporated	2	2	—	3,518.00	116,275	31	21	5	5	29,789	14,160
Unincorporated	3	3	—								

<sup>1</sup>For definition of the industry see tables 2 and 3, footnote 1.<sup>2</sup>Ten companies operated mines and mills in more than one of the States designated and 2 companies operated both lode and placer mines; thus the figures shown for number of operating companies in each State and for lode and placer mines do not add to the total.

## MINERAL INDUSTRIES

TABLE 14.—SELECTED STATISTICS FOR OPERATIONS IN THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS	Number of mines	Number of mills	Mine production of recoverable gold (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED					Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members			
								Total	Performing manual labor		
LODE AND PLACER											
United States, total-----	1,180	329	3,280,279.83	\$114,089,844	23,398	20,507	2,089	802	586	\$32,582,581	\$5,165,703
\$1 - \$19,999-----	494	104	134,123.04	3,808,159	2,362	1,590	180	592	522	1,936,901	239,230
\$20,000 - \$49,999-----	139	40	153,295.20	4,557,469	1,640	1,409	150	81	38	1,941,910	237,380
\$50,000 - \$99,999-----	97	39	216,080.59	7,261,832	2,063	1,848	196	19	7	2,774,168	408,219
\$100,000 - \$249,999-----	100	56	522,403.70	17,834,425	3,816	3,412	325	79	13	5,498,589	913,059
\$250,000 - \$499,999-----	53	29	537,183.77	18,731,676	3,402	3,132	264	6	-----	4,804,718	693,942
\$500,000 - \$999,999-----	21	15	424,537.26	14,638,551	3,220	3,016	204	-----	-----	4,629,242	494,885
\$1,000,000 - \$2,499,999-----	6	6	237,370.32	10,791,081	1,374	1,261	113	-----	-----	2,134,105	292,560
\$2,500,000 - \$4,999,999-----	2	2	777,217.23	27,349,389	3,634	3,430	204	-----	-----	6,749,071	868,174
\$5,000,000 and over-----	1	1						-----	-----		
Unclassified-----	267	37	278,088.72	9,119,262	1,887	1,409	453	25	6	2,093,877	1,018,254
LODE											
United States, total-----	841	329	2,455,725.02	86,063,020	19,433	17,279	1,612	542	419	26,931,219	4,003,971
\$1 - \$19,999-----	366	104	101,721.35	2,746,288	1,784	1,207	130	427	381	1,479,095	177,755
\$20,000 - \$49,999-----	94	40	107,259.56	3,059,595	1,288	1,113	119	56	24	1,441,511	195,844
\$50,000 - \$99,999-----	54	39	121,072.93	4,111,963	1,441	1,313	119	9	1	1,847,456	253,637
\$100,000 - \$249,999-----	57	56	318,478.99	11,022,354	2,913	2,644	234	35	7	4,062,154	594,588
\$250,000 - \$499,999-----	34	29	352,613.35	12,310,397	2,872	2,673	197	2	-----	3,947,967	530,769
\$500,000 - \$999,999-----	18	15	527,842.89	20,783,851	4,181	3,887	294	-----	-----	6,043,673	722,420
\$1,000,000 - \$2,499,999-----	5	6						-----	-----		
\$2,500,000 - \$4,999,999-----	2	2	777,217.23	27,349,389	3,634	3,430	204	-----	-----	6,749,071	868,174
\$5,000,000 and over-----	1	1						-----	-----		
Unclassified-----	210	37	149,518.72	4,699,203	1,340	1,012	315	13	6	1,360,292	660,744
PLACER											
United States, total-----	339	-----	824,554.81	28,026,824	3,965	3,228	477	260	167	5,631,362	1,161,732
\$1 - \$19,999-----	128	-----	32,401.69	1,061,891	598	383	50	165	141	457,806	61,475
\$20,000 - \$49,999-----	45	-----	46,035.64	1,497,874	352	296	31	25	14	500,399	41,536
\$50,000 - \$99,999-----	43	-----	94,987.66	3,149,669	622	535	77	10	6	926,712	154,552
\$100,000 - \$249,999-----	43	-----	205,924.71	6,812,071	903	768	91	44	6	1,436,435	318,461
\$250,000 - \$499,999-----	19	-----	184,570.42	6,421,279	530	459	67	4	-----	856,751	163,173
\$500,000 - \$999,999-----	3	}	134,064.69	4,683,781	413	390	23	-----	-----	719,874	85,025
\$1,000,000 - \$2,499,999-----	1		128,570.00	4,420,059	547	397	138	12	-----	733,585	357,510
Unclassified-----	57										

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. Reports classified by value of products represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

TABLE 15.—SELECTED STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF WAGE EARNERS  
AND BY STATE: 1939<sup>1</sup>

STATE AND NUMBER OF WAGE EARNERS	Number of mines	Number of mills	Mine production of recoverable gold (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED					Wages	Salaries		
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members					
								Total	Performing manual labor				
<b>LODE AND PLACER</b>													
United States, total-----	1,180	329	3,280,279.83	\$114,089,844	23,398	20,507	2,089	802	586	\$32,562,581	\$5,165,703		
None-----	128	26	28,588.74	771,578	343	-----	1	342	341	-----	600		
1 - 5-----	265	48	90,191.98	2,581,850	1,084	751	119	214	173	934,949	132,429		
6 - 20-----	257	74	479,337.73	15,996,547	3,807	3,077	364	166	50	4,681,851	791,508		
21 - 50-----	97	62	570,184.53	19,250,263	3,706	3,356	338	32	6	5,134,042	833,295		
51 - 100-----	42	37	361,406.90	12,687,752	3,263	3,051	224	3	-----	4,781,365	588,157		
101 - 250-----	25	23	558,723.97	21,794,946	4,597	4,297	299	1	-----	6,616,723	753,489		
251 - 500-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----	-----		
501 - 1,000-----	2	1	819,211.11	28,957,156	4,214	3,978	236	-----	-----	7,411,395	936,617		
1,001 - 2,500-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----		
Unclassified-----	561	54	372,644.87	12,049,752	2,589	2,037	508	44	16	3,020,256	1,128,608		
<b>LODE</b>													
United States, total-----	841	329	2,455,725.02	86,063,020	19,433	17,279	1,612	542	419	26,931,219	4,003,971		
None-----	100	26	24,155.52	630,272	268	-----	1	267	266	-----	600		
1 - 5-----	190	48	85,193.88	1,776,076	780	552	89	159	114	686,187	105,599		
6 - 20-----	140	74	157,854.80	5,299,851	1,932	1,682	164	86	25	2,225,965	297,850		
21 - 50-----	72	62	353,997.77	11,705,114	2,883	2,605	260	16	4	3,820,741	532,354		
51 - 100-----	41	37	332,042.90	11,690,722	3,182	2,960	219	3	-----	4,627,285	570,552		
101 - 250-----	24	23	492,379.97	19,467,661	4,349	4,059	289	1	-----	6,187,672	724,674		
251 - 500-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----	-----		
501 - 1,000-----	2	2	819,211.11	28,957,156	4,214	3,978	236	-----	-----	7,411,395	936,617		
1,001 - 2,500-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----		
Unclassified-----	269	54	210,889.57	6,536,168	1,825	1,445	354	28	12	1,971,776	735,525		
Arizona, total-----	93	20	137,003.08	4,880,404	1,550	1,354	124	72	61	1,952,349	285,123		
None-----	12	-----	2,335.86	58,916	29	-----	-----	29	28	-----	-----		
1 - 5-----	30	1	7,703.33	208,699	103	61	8	54	31	76,229	6,750		
6 - 20-----	12	7	11,414.55	549,931	176	158	14	4	1	214,008	26,690		
21 - 50-----	5	4	30,074.62	1,070,260	292	261	31	-----	-----	446,491	83,839		
51 - 100-----	3	3	46,376.00	1,625,640	474	450	24	-----	-----	844,955	72,707		
101 - 250-----	1	1	-----	-----	476	424	47	5	1	570,666	95,137		
Unclassified-----	30	4	39,098.72	1,365,958	476	424	47	5	1	570,666	95,137		
California, total-----	206	119	765,399.15	26,662,707	6,400	5,819	419	162	111	9,789,896	1,187,205		
None-----	29	17	7,470.07	217,611	90	-----	-----	90	90	-----	-----		
1 - 5-----	26	14	8,414.47	246,901	112	80	6	26	17	106,146	7,000		
6 - 20-----	28	20	29,132.40	913,070	403	340	32	31	5	494,346	51,423		
21 - 50-----	21	18	101,218.04	3,485,538	789	702	59	8	1	1,063,182	139,692		
51 - 100-----	18	18	162,854.23	5,652,859	1,377	1,260	95	2	-----	2,104,887	252,938		
101 - 250-----	9	9	407,481.94	14,662,528	3,245	3,136	108	1	-----	5,595,621	453,269		
251 - 500-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----	-----		
Unclassified-----	73	21	48,848.00	1,484,200	404	281	119	4	-----	425,714	232,881		
Colorado, total-----	166	45	311,446.69	11,639,914	3,251	2,854	315	82	71	3,996,519	574,872		
None-----	16	3	4,343.08	100,304	42	-----	-----	42	42	-----	-----		
1 - 5-----	50	7	23,606.03	552,961	207	155	30	22	16	188,237	32,613		
6 - 20-----	37	8	41,674.21	1,061,317	415	378	28	9	6	477,742	47,480		
21 - 50-----	9	8	37,242.01	1,047,486	378	341	36	1	-----	434,940	70,971		
51 - 100-----	4	3	25,562.56	963,635	360	341	19	-----	-----	498,788	38,220		
101 - 250-----	6	5	142,496.22	6,811,832	1,619	1,490	129	-----	-----	2,228,773	261,141		
251 - 500-----	1	1	-----	-----	230	149	73	8	7	177,789	124,447		
Unclassified-----	43	8	36,522.58	1,102,379	230	149	73	8	7	177,789	124,447		
Idaho, total-----	35	23	50,369.83	1,804,198	610	524	66	18	16	681,755	124,040		
None-----	2	-----	2,966.78	102,137	40	23	6	11	11	32,344	6,123		
1 - 5-----	8	6	4,949.04	166,075	113	97	11	5	5	111,512	15,485		
6 - 20-----	10	6	-----	-----	-----	-----	-----	-----	-----	-----	-----		
21 - 50-----	5	6	35,852.01	1,366,577	390	347	41	2	-----	457,038	86,485		
51 - 100-----	1	1	-----	-----	67	57	10	-----	-----	81,061	15,947		
101 - 250-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----		
Unclassified-----	8	3	6,602.00	169,409	67	57	10	-----	-----	81,061	15,947		
Montana, total-----	106	42	175,979.88	5,562,576	1,715	1,506	124	85	61	2,079,223	279,711		
None-----	16	3	3,483.56	103,036	38	-----	-----	38	38	-----	-----		
1 - 5-----	30	6	9,675.31	236,645	106	81	8	19	17	104,555	10,300		
6 - 20-----	22	11	24,536.90	746,856	304	260	21	23	3	321,314	40,772		
21 - 50-----	13	11	72,193.42	2,223,594	523	475	44	4	3	694,644	93,043		
51 - 100-----	6	6	60,559.94	2,122,013	704	656	47	1	-----	908,730	126,269		
101 - 250-----	2	2	-----	-----	38	34	4	-----	-----	49,980	9,307		
Unclassified-----	17	3	5,530.75	130,452	38	34	4	-----	-----	49,980	9,307		
Nevada, total-----	142	46	251,286.81	8,135,826	1,798	1,528	184	86	68	2,458,720	467,883		
None-----	20	2	5,221.98	120,760	51	-----	1	50	50	-----	600		
1 - 5-----	22	6	7,244.96	261,026	104	75	16	15	13	99,128	27,313		
6 - 20-----	15	13	28,885.66	1,196,643	310	259	41	10	2	394,286	87,197		
21 - 50-----	10	10	46,744.55	1,790,352	384	342	40	2	-----	574,148	124,231		
51 - 100-----	5	4	105,389.66	3,696,047	647	587	60	-----	-----	1,007,991	165,362		
101 - 250-----	2	2	-----	-----	302	287	26	9	3	383,167	63,180		
Unclassified-----	68	9	37,800.00	1,070,978	302	287	26	9	3	383,167	63,180		

See footnotes at end of table.

## MINERAL INDUSTRIES

TABLE 15.—SELECTED STATISTICS FOR THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF WAGE EARNERS AND BY STATE: 1939<sup>1</sup>—Continued

STATE AND NUMBER OF WAGE EARNERS	Number of mines	Number of mills	Mine production of recoverable gold (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED					Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members			
								Total	Performing manual labor		
LODE—Continued											
Utah, total-----	30	2	68,221.02	\$2,286,984	455	398	61	6	6	\$465,191	\$106,594
None-----	2	-----	3,318.59	97,498	38	26	6	6	6	31,304	8,800
1 - 5-----	8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6 - 20-----	7	1	9,910.43	449,876	97	86	11	-----	-----	96,463	12,465
21 - 50-----	2	-----	27,291.00	778,235	122	110	12	-----	-----	136,585	36,142
51 - 100-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	10	1	27,701.00	961,375	198	166	32	-----	-----	198,839	49,187
Washington, total-----	18	6	39,510.67	1,250,198	278	236	35	7	5	348,484	68,493
None-----	1	-----	1,543.56	38,182	22	11	4	7	5	11,697	1,400
1 - 5-----	5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6 - 20-----	4	3	5,415.47	153,028	57	53	4	-----	-----	70,049	10,856
21 - 50-----	3	2	30,483.64	996,717	170	155	15	-----	-----	244,330	29,918
51 - 100-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	4	1	2,068.00	62,271	29	17	12	-----	-----	22,408	26,319
Georgia, New Mexico, Oregon, South Carolina, South Dakota, and Virginia, total-----	45	28	676,507.89	23,840,213	3,376	3,070	282	24	20	5,159,282	910,052
None-----	2	1	2,021.32	61,852	64	42	5	17	16	38,497	5,300
1 - 5-----	11	8	-----	-----	-----	-----	-----	-----	-----	-----	-----
6 - 20-----	5	5	1,936.14	63,075	57	51	2	4	3	46,443	5,482
21 - 50-----	4	3	-----	-----	-----	-----	-----	-----	-----	-----	-----
51 - 100-----	2	2	27,769.91	912,353	343	321	21	1	-----	416,016	43,125
101 - 250-----	3	3	-----	-----	-----	-----	-----	-----	-----	-----	-----
251 - 500-----	1	1	638,062.00	22,614,007	2,831	2,608	223	-----	-----	4,598,174	787,025
1,001 - 2,500-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified <sup>2</sup> -----	16	4	6,718.52	189,146	81	48	31	2	1	62,152	69,120
PLACER											
United States, total-----	339	-----	824,554.81	28,026,824	3,965	3,228	477	260	167	5,631,362	1,161,732
None-----	28	-----	4,413.22	141,306	75	-----	-----	75	75	-----	-----
1 - 5-----	75	-----	24,998.60	805,774	304	199	30	75	59	248,762	26,830
6 - 20-----	117	-----	321,482.93	10,696,696	1,675	1,395	200	80	27	2,455,868	493,658
21 - 50-----	25	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
51 - 100-----	1	-----	311,904.76	10,869,464	1,147	1,040	93	14	2	1,878,232	250,161
101 - 250-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	92	-----	161,755.30	5,513,584	764	594	154	16	4	1,048,480	391,063
California, total-----	199	-----	614,596.78	20,878,303	2,782	2,275	331	176	103	4,042,672	849,063
None-----	16	-----	2,732.65	87,326	42	-----	-----	42	42	-----	-----
1 - 5-----	37	-----	12,813.06	419,788	164	101	12	51	39	129,826	10,650
6 - 20-----	75	-----	212,129.97	6,956,246	1,085	886	137	62	19	1,593,425	364,038
21 - 50-----	18	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
51 - 100-----	1	-----	248,762.40	8,672,801	929	854	67	8	2	1,509,343	177,754
101 - 250-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	51	-----	138,159.68	4,742,142	562	434	115	13	1	810,078	296,621
Colorado, total-----	21	-----	17,248.18	560,751	119	93	16	10	6	139,822	24,293
1 - 5-----	8	-----	5,472.47	105,276	31	19	6	6	4	26,661	3,800
6 - 20-----	4	-----	9,435.09	330,794	56	51	2	3	1	78,320	5,043
Unclassified-----	9	-----	4,240.62	124,681	32	23	8	1	1	34,841	15,450
Idaho, total-----	27	-----	46,665.06	1,596,951	240	200	27	13	6	341,768	60,148
None-----	1	-----	3,205.42	102,936	27	19	2	6	6	24,644	975
1 - 5-----	8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6 - 20-----	14	-----	42,704.64	1,469,045	202	174	21	7	-----	309,229	47,612
Unclassified-----	4	-----	755.00	24,970	11	7	4	-----	-----	7,895	11,661
Montana, total-----	30	-----	53,344.55	1,820,212	283	224	39	20	15	410,801	77,682
None-----	5	-----	854.57	26,557	14	-----	-----	14	14	-----	-----
1 - 5-----	3	-----	2,025.13	63,858	13	11	-----	2	1	14,491	-----
6 - 20-----	10	-----	27,594.76	935,129	134	117	17	-----	-----	214,594	19,786
21 - 50-----	3	-----	18,986.09	668,077	89	72	13	4	-----	146,339	33,935
Unclassified-----	9	-----	3,684.00	128,591	33	24	9	-----	-----	55,377	23,961
Oregon, total-----	28	-----	54,323.38	1,856,137	295	246	36	13	9	417,225	90,143
1 - 5-----	10	-----	1,686.73	54,003	38	28	4	6	5	30,356	2,100
6 - 20-----	9	-----	25,114.07	854,472	145	124	16	5	4	209,354	44,060
21 - 50-----	3	-----	24,228.58	837,671	83	73	8	2	-----	143,640	26,633
Unclassified-----	6	-----	8,294.00	109,991	29	21	8	-----	-----	33,675	17,330
Arizona, Georgia, Nevada, New Mexico, Washington, and Wyoming, total-----	34	-----	38,376.86	1,314,470	246	190	28	28	28	279,074	60,403
None-----	6	-----	673.00	22,366	17	-----	-----	17	17	-----	-----
1 - 5-----	9	-----	1,948.77	64,970	33	21	6	6	6	22,784	9,305
6 - 20-----	5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
21 - 50-----	1	-----	24,432.09	843,925	99	84	12	3	3	129,676	25,038
Unclassified-----	13	-----	11,323.00	383,209	97	85	10	2	2	126,614	26,060

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. Reports classified by average number of wage earners employed during the year represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of wage earners, by month, was not adequately reported; and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Includes statistics for 15 salaried employees paid \$51,887 at central offices in New Jersey, New York, and Wisconsin.

TABLE 16.—SELECTED STATISTICS FOR OPERATIONS IN THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF HOURS PER WAGE EARNER IN THE FULL-TIME WORKWEEK, BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND NUMBER OF HOURS PER WEEK	Number of mines	Number of mills	Mine production of re-coverable gold (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
LODE AND PLACER										
United States, Total-----	1,180	329	3,280,279.83	\$114,089,844	23,398	20,507	2,089	802	\$32,562,581	\$5,165,703
1 - 35-----	1	2	25,491.23	777,579	336	309	20	7	427,843	34,722
36 - 39-----	10	16	58,481.53	2,070,755	565	487	38	40	698,904	65,017
40-----	49	60	532,858.73	18,676,460	4,229	3,826	331	72	5,646,792	776,745
41 - 42-----	146	83	214,751.28	7,737,978	1,812	1,637	140	35	2,519,499	333,356
43 - 44-----	83	38	21,897.93	640,061	170	148	17	5	220,070	38,098
45 - 47-----	10	71	1,748,859.46	62,229,657	10,473	9,518	811	144	16,018,026	2,302,725
48-----	237	12	139,760.67	4,697,803	990	902	81	7	1,567,336	220,849
49 - 53-----	18	29	217,096.94	7,503,236	1,647	1,409	153	85	2,344,607	343,936
54 - 59-----	89	1	18,717.39	632,643	201	178	17	6	141,700	30,252
60 and over-----	7	99	302,364.67	9,123,672	2,975	2,093	481	401	2,977,804	1,020,005
Unclassified-----	530									
LODE										
United States, total-----	841	329	2,455,725.02	\$6,063,020	19,433	17,279	1,612	542	26,931,219	4,003,971
36 - 39-----	8	2	20,680.17	631,390	290	269	14	7	365,755	23,515
40-----	42	16	39,363.41	1,442,304	498	434	31	31	596,337	50,092
41 - 42-----	117	60	321,188.47	11,385,011	3,449	3,113	275	61	4,363,389	636,238
43 - 44-----	66	38	179,524.41	6,562,014	1,634	1,484	126	24	2,234,951	291,982
45 - 47-----	7	1	15,040.93	399,534	124	107	13	4	155,554	27,896
48-----	143	71	1,409,820.15	50,592,714	9,017	8,326	629	62	13,980,089	1,822,742
49 - 53-----	14	12	133,896.58	4,522,027	947	869	74	4	1,505,979	211,114
54 - 59-----	43	29	125,691.57	4,433,491	1,265	1,110	116	39	1,653,103	261,284
60 and over-----	1	99	210,519.33	6,094,535	2,211	1,567	334	310	2,096,062	679,130
Unclassified-----	400									
Arizona, total-----	93	20	137,003.08	4,880,404	1,550	1,354	124	72	1,952,349	285,123
36 - 39-----	1	2	17,944.51	619,632	218	188	15	15	238,042	40,480
40-----	11	4	25,356.23	899,788	265	243	11	9	376,986	29,786
41 - 42-----	11	7	58,441.38	2,182,609	701	645	49	7	909,548	115,520
43 - 44-----	9	4	16,006.01	675,141	196	165	30	1	279,175	69,024
45 - 47-----	48	3	19,254.95	503,234	172	113	19	40	148,598	30,333
Unclassified-----										
California, total-----	206	119	765,399.15	26,662,707	6,400	5,819	419	162	9,799,896	1,187,203
40-----	9	5	4,752.00	162,986	63	55	1	7	75,694	1,500
41 - 42-----	9	8	20,158.77	741,196	235	213	14	8	333,149	26,428
43 - 44-----	6	6	68,424.08	2,382,931	541	488	50	3	850,705	135,486
45 - 47-----	2	37	471,166.03	16,972,158	3,858	3,661	172	25	6,278,947	573,774
48-----	10	9	84,849.38	2,800,088	588	552	34	2	927,883	101,304
49 - 53-----	15	12	59,461.09	1,983,459	546	497	35	14	810,968	89,845
54 - 59-----	107	41	56,587.80	1,619,889	569	533	113	103	512,550	259,866
Unclassified-----										
Colorado, total-----	166	43	311,446.69	11,639,914	3,251	2,854	315	82	3,996,319	574,872
36 - 39-----	5	2	9,809.17	308,632	206	189	11	6	250,203	19,295
40-----	9	3	7,400.80	257,957	128	119	8	1	183,780	13,660
41 - 42-----	28	9	76,338.12	2,991,635	882	788	62	12	1,200,851	139,043
43 - 44-----	9	2	5,657.19	122,462	61	54	4	3	57,285	7,937
45 - 47-----	3	5	2,310.74	54,817	28	26	1	1	38,007	3,000
48-----	41	5	149,238.44	6,068,750	1,308	1,171	130	7	1,573,187	217,210
49 - 53-----	1	1	17,546.37	668,070	190	166	21	3	295,270	33,340
54 - 59-----	4	4	43,145.86	1,167,591	468	341	78	49	417,736	141,187
Unclassified-----	66	17	50,369.83	1,804,198	610	524	68	18	661,755	124,040
Idaho, total-----	35	23	24,741.26	969,470	274	240	32	2	329,998	58,359
40-----	2	4	9,751.91	323,244	79	71	7	1	99,383	15,697
41 - 42-----	3	4	6,012.57	198,750	105	87	12	6	87,912	26,110
43 - 44-----	5	2	1,124.50	39,347	24	19	3	2	23,705	3,483
45 - 47-----	3	6	8,739.59	273,387	128	107	14	7	140,757	20,391
48-----	14	6	175,979.88	5,562,576	1,715	1,506	124	85	2,079,223	279,711
Unclassified-----	106									
Montana, total-----	106	42	2,348.00	72,349	52	46	2	4	56,897	2,400
36 - 39-----	5	13	68,299.56	2,278,956	735	668	55	12	908,075	123,744
40-----	24	9	31,933.89	1,056,994	247	221	21	5	321,493	47,204
41 - 42-----	14	8	52,658.22	1,614,850	499	444	34	21	605,541	85,956
43 - 44-----	1	2	20,740.21	559,427	182	127	12	43	187,217	20,407
45 - 47-----	16	8	231,286.81	8,135,826	1,798	1,528	184	86	2,458,720	487,883
48-----	2	4	10,227.55	414,693	110	89	8	13	132,902	10,960
49 - 53-----	26	13	47,615.40	1,787,720	557	498	53	6	811,353	146,154
54 - 59-----	8	5	7,553.59	241,011	76	64	10	2	87,799	19,525
60 and over-----	8	4	62,628.11	2,176,079	235	201	33	1	327,076	74,812
Unclassified-----	3	2	34,357.98	1,178,758	241	208	31	2	374,507	88,710
40-----	7	4	27,868.95	958,952	194	167	18	9	281,039	49,434
41 - 42-----	83	14	41,035.23	1,378,613	385	301	31	53	444,044	78,288
43 - 44-----	18	12	31,086.53	983,234	446	412	21	13	432,632	46,824
45 - 47-----	5	4	24,058.23	822,878	370	346	19	5	354,265	44,024
48-----	1	1	809.00	25,199	17	11	2	4	10,509	2,800
49 - 53-----	3	2	6,219.30	135,157	59	55		4	67,858	
Unclassified-----	9									

See footnotes at end of table.

## MINERAL INDUSTRIES

TABLE 16.—SELECTED STATISTICS FOR OPERATIONS IN THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF HOURS PER WAGE EARNER IN THE FULL-TIME WORKWEEK, BY STATE: 1939<sup>1</sup>—Continued

(For producing operations only)

STATE AND NUMBER OF HOURS PER WEEK	Number of mines	Number of mills	Mine production of recoverable gold (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
LODE--Continued										
Utah, total-----	30	2	68,221.02	\$2,286,884	455	388	61	6	\$465,191	\$106,594
36 - 39-----	1	}	4,378.00	175,001	74	68	4	2	72,467	7,789
40-----	6		30,843.00	803,479	132	114	18	-----	117,685	43,609
41 - 42-----	3		28,380.62	1,165,238	187	187	20	-----	227,244	32,758
43 - 44-----	8		921.00	28,862	19	15	4	-----	15,293	5,187
45 - 47-----	1		3,698.40	114,404	43	24	15	4	32,502	17,251
Unclassified <sup>2</sup> -----	3									
Georgia, New Mexico, South Carolina, South Dakota, Virginia, and Washington, total-----	45	22	684,932.03	24,107,177	3,208	2,894	296	18	5,075,134	931,721
36 - 39-----	1	}	10,725.56	303,159	75	67	4	4	99,425	4,520
40-----	3		21,873.56	758,893	152	135	14	3	184,294	27,698
41 - 42-----	8		14,915.65	725,332	270	252	15	3	328,004	28,465
43 - 44-----	4		809,409.34	21,385,044	2,317	2,120	197	-----	4,192,200	728,173
45 - 47-----	4		16,909.93	592,116	189	174	14	1	126,411	31,458
Unclassified <sup>2</sup> -----	21	5	11,097.99	342,833	205	146	52	7	144,800	111,407
PLACER										
United States, total-----	339	-----	824,554.81	28,026,824	3,965	3,228	477	280	5,631,362	1,161,732
1 - 34-----	1	}	23,929.18	774,840	115	93	13	9	164,655	26,132
36 - 39-----	2		211,670.26	7,291,449	780	713	56	11	1,283,403	140,509
40-----	7		35,226.87	1,175,964	178	153	14	11	284,548	41,394
41 - 42-----	29		6,857.00	240,527	46	41	4	1	64,516	10,200
43 - 44-----	17		338,039.31	11,636,943	1,456	1,192	182	82	2,057,937	479,883
45 - 47-----	3	5,864.09	175,776	43	33	7	3	61,357	9,735	
48-----	94	105,451.37	3,559,249	546	449	49	48	787,490	109,604	
49 - 53-----	4	4,671.59	143,139	37	29	5	4	45,714	3,300	
54 - 59-----	46	91,845.34	3,029,137	764	526	147	91	881,742	340,875	
60 and over-----	6									
Unclassified-----	130									
California, total-----	199	-----	614,596.78	20,878,303	2,782	2,275	331	176	4,042,672	849,063
36 - 39-----	1	}	8,005.75	246,040	47	37	5	5	66,541	9,007
40-----	4		151,998.10	5,232,049	521	484	30	7	875,175	88,127
41 - 42-----	11		32,273.56	1,079,588	153	136	8	9	253,875	23,669
43 - 44-----	12		297,481.92	10,181,435	1,220	1,002	150	68	1,739,053	420,917
45 - 47-----	1		69,783.24	2,331,522	374	303	34	37	556,252	66,130
48-----	67	55,054.21	1,807,689	467	313	104	50	551,976	241,213	
49 - 53-----	2	46,685.06	1,596,951	240	200	27	13	341,768	60,148	
54 - 59-----	29	1	31,866.59	1,090,509	144	125	14	5	228,447	29,000
60 and over-----	2	8	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	70	2	3,437.50	114,185	28	24	3	1	36,623	9,000
Idaho, total-----	27	4	10,452.97	362,230	55	44	6	5	68,803	10,487
36 - 39-----	1	5	908.00	30,027	13	7	4	2	7,895	11,661
40-----	1	55,344.55	1,620,212	283	224	39	20	410,601	77,682	
41 - 42-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
43 - 44-----	8	38,682.26	1,328,259	179	150	24	5	261,256	43,903	
45 - 47-----	3	3,883.72	129,754	27	23	3	1	44,366	4,618	
48-----	67	10,778.57	362,199	77	51	12	14	85,179	29,161	
49 - 53-----	1	54,323.38	1,856,137	295	246	36	13	417,225	90,143	
54 - 59-----	4	1	12,103.03	421,999	53	47	6	-----	94,385	14,608
60 and over-----	2	11,901.59	416,584	82	71	9	2	102,418	20,961	
Unclassified-----	5	22,880.91	786,582	100	84	9	7	151,957	28,744	
Montana, total-----	30	5	7,437.85	230,972	60	44	12	4	66,465	25,830
36 - 39-----	1	}	55,625.04	1,875,221	365	283	44	38	418,896	84,896
40-----	1		25,873.53	900,550	101	87	11	3	142,063	21,799
41 - 42-----	1		2,208.14	73,036	19	15	4	2	18,454	10,525
43 - 44-----	3		4,768.08	141,688	54	35	9	10	47,825	11,819
45 - 47-----	2		5,108.58	161,697	44	37	5	2	42,307	7,543
48-----	9	17,666.71	598,250	147	111	15	21	168,227	33,010	
49 - 53-----	1									
54 - 59-----	4									
60 and over-----	2									
Unclassified-----	30									
Arizona, Colorado, Georgia, Nevada, New Mexico, Washington, and Wyoming, total-----										
41 - 42-----	6	}	25,873.53	900,550	101	87	11	3	142,063	21,799
43 - 44-----	3		2,208.14	73,036	19	15	4	2	18,454	10,525
45 - 47-----	9		4,768.08	141,688	54	35	9	10	47,825	11,819
48-----	1		5,108.58	161,697	44	37	5	2	42,307	7,543
49 - 53-----	4		17,666.71	598,250	147	111	15	21	168,227	33,010
54 - 59-----	1									
60 and over-----	2									
Unclassified-----	30									

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. Reports were classified by number of hours in the full-time workweek reported for wage earners in that department of the operation for which the largest number of man-hours worked was reported. Statistics shown for "Unclassified" represent: Reports on which number of hours was not reported; reports on which no wage earners were reported; and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Includes statistics for 15 salaried employees paid \$51,887 at central offices in New Jersey, New York and Wisconsin.

TABLE 17.—SELECTED STATISTICS FOR OPERATIONS IN THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF DAYS ACTIVE DURING THE YEAR: 1939<sup>1</sup>

(For producing operations only)

NUMBER OF DAYS ACTIVE	Number of mines	Number of mills	Value of all products	NUMBER OF PERSONS ENGAGED					Wages	Salaries
				Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members			
							Total	Performing manual labor		
LODE AND PLACER										
United States, total-----	1,180	329	\$114,089,844	23,398	20,507	2,089	802	586	\$32,562,581	\$5,165,703
1 - 49-----	9	-----	65,754	30	13	6	11	9	15,325	1,700
50 - 99-----	41	5	465,031	161	108	27	26	22	155,582	29,839
100 - 149-----	78	14	897,120	312	239	34	39	35	285,822	41,208
150 - 199-----	95	23	1,511,175	553	411	56	86	87	579,260	84,992
200 - 224-----	101	25	1,135,633	387	303	32	52	34	421,499	54,192
225 - 249-----	53	13	1,596,999	457	371	42	44	28	535,223	71,444
250 - 274-----	68	16	2,469,220	765	652	58	55	34	872,517	119,215
275 - 299-----	63	15	2,652,635	694	597	52	45	28	877,486	117,995
300 - 324-----	216	87	49,805,260	9,170	8,459	620	111	86	14,272,837	1,899,971
325 and over-----	189	94	41,732,531	8,203	7,439	662	102	43	11,680,302	1,689,113
Unclassified-----	267	37	11,866,486	2,666	1,935	500	231	200	2,868,730	1,076,034
LODE										
United States, total-----	841	329	86,063,020	19,433	17,279	1,612	542	419	26,931,219	4,003,971
1 - 49-----	3	-----	31,451	11	4	2	5	5	5,245	350
50 - 99-----	19	5	187,025	58	44	7	7	5	58,571	8,596
100 - 149-----	47	14	436,070	174	127	20	27	27	140,378	27,822
150 - 199-----	59	23	746,091	370	284	34	52	36	380,193	54,150
200 - 224-----	71	25	740,160	274	212	25	37	24	285,427	39,789
225 - 249-----	34	13	567,774	300	244	30	28	16	327,048	51,765
250 - 274-----	50	16	1,399,800	559	481	45	35	24	604,362	76,996
275 - 299-----	46	15	1,812,973	569	492	42	35	22	694,785	95,121
300 - 324-----	185	87	48,552,384	8,860	8,181	588	91	75	13,848,512	1,824,726
325 and over-----	117	94	25,490,801	6,446	5,906	484	56	35	8,807,086	1,168,725
Unclassified-----	210	37	6,198,611	1,812	1,304	337	171	152	1,781,612	675,951
PLACER										
United States, total-----	539	-----	28,026,824	3,965	3,228	477	260	167	5,651,362	1,161,732
1 - 49-----	6	-----	32,323	19	9	4	6	4	10,078	1,350
50 - 99-----	22	-----	276,006	103	84	20	19	17	97,011	21,243
100 - 149-----	31	-----	481,050	138	112	14	12	8	145,444	13,386
150 - 199-----	36	-----	765,084	183	127	22	34	31	189,067	30,862
200 - 224-----	30	-----	393,473	113	91	7	15	10	138,072	14,403
225 - 249-----	19	-----	829,225	157	127	12	18	12	206,175	19,679
250 - 274-----	18	-----	1,069,620	206	171	15	20	10	268,155	42,219
275 - 299-----	17	-----	739,662	125	105	10	10	6	182,701	22,674
300 - 324-----	31	-----	1,550,876	310	258	32	20	13	424,325	75,245
325 and over-----	72	-----	16,241,650	1,757	1,533	178	46	8	2,873,216	520,388
Unclassified-----	57	-----	5,667,875	854	651	163	60	48	1,087,118	400,083

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. Reports classified by number of days active represent a single mine or mill, or a mine and mill reported as a single unit. Reports for a single mine or mill were classified by number of days the mine or mill was in operation for production or development purposes during the year; reports for a mine or mill reported as a single unit were classified by number of days the mine was in operation during the year. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of days active was not reported; and reports for central offices reported separately from their associated mines and mills.

## MINERAL INDUSTRIES

TABLE 18.—SELECTED STATISTICS FOR OPERATIONS IN THE GOLD INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS  
PER MAN-HOUR: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS PER MAN-HOUR	Number of mines	Number of mills	Mine production of recoverable gold (fine ounces)	Value of all products	Number of wage earners (average for the year)	Number of salaried employees	Wages	Salaries
<b>LODE AND PLACER</b>								
United States, total-----	1,180	329	3,280,279.83	\$114,089,844	20,507	2,089	\$32,562,581	\$5,165,703
Less than \$0.50-----	66	24	11,890.14	382,823	633	76	842,023	116,112
\$0.50 - \$0.74-----	44	17	19,365.67	604,676	433	44	579,597	63,717
\$0.75 - \$0.99-----	54	24	69,410.55	2,230,706	1,085	96	1,577,619	189,489
\$1.00 - \$1.24-----	60	38	133,038.72	4,572,757	1,705	123	2,430,915	251,578
\$1.25 - \$1.49-----	70	50	275,518.96	8,873,112	2,805	204	3,797,318	461,290
\$1.50 - \$1.74-----	50	25	325,617.81	11,246,742	2,820	174	4,572,445	450,805
\$1.75 - \$1.99-----	29	14	91,878.83	3,078,559	668	58	1,054,989	119,231
\$2.00 - \$2.49-----	61	20	358,776.93	12,276,586	2,520	133	3,866,160	392,480
\$2.50 - \$2.99-----	40	13	215,164.92	7,563,208	1,167	117	2,055,858	351,455
\$3.00 - \$3.99-----	54	16	230,606.45	8,911,691	1,044	139	1,833,194	387,881
\$4.00 and over-----	69	9	1,140,182.29	41,580,432	3,563	415	6,725,699	1,278,721
Unclassified-----	583	99	410,828.56	12,788,552	2,264	510	3,246,764	1,100,946
<b>LODE</b>								
United States, total-----	841	329	2,455,725.02	86,063,020	17,279	1,612	26,931,219	4,003,971
Less than \$0.50-----	56	24	10,374.14	331,304	552	64	732,274	99,492
\$0.50 - \$0.74-----	35	17	15,720.37	489,240	358	38	473,964	53,992
\$0.75 - \$0.99-----	44	24	65,945.22	2,114,751	1,032	89	1,493,909	185,024
\$1.00 - \$1.24-----	55	38	130,942.90	4,502,268	1,684	117	2,389,586	246,598
\$1.25 - \$1.49-----	59	30	285,062.11	8,527,018	2,693	191	3,660,479	435,701
\$1.50 - \$1.74-----	42	25	314,475.39	10,871,591	2,738	164	4,429,739	433,211
\$1.75 - \$1.99-----	25	14	88,760.85	2,986,308	644	57	998,550	118,781
\$2.00 - \$2.49-----	28	20	291,138.91	10,123,300	1,950	84	3,242,789	301,085
\$2.50 - \$2.99-----	18	13	146,642.13	5,280,655	850	80	1,458,964	254,343
\$3.00 - \$3.99-----	29	16	143,376.71	5,984,219	719	94	1,253,109	253,631
\$4.00 and over-----	23	9	688,954.18	25,922,569	2,352	278	4,487,325	867,525
Unclassified-----	427	99	294,431.63	8,929,797	1,707	356	2,310,552	756,590
<b>PLACER</b>								
United States, total-----	339	-----	824,554.81	28,026,824	3,228	477	5,631,562	1,161,732
Less than \$0.50-----	10	-----	1,516.00	51,519	81	12	109,749	18,620
\$0.50 - \$0.74-----	9	-----	3,644.80	115,456	75	6	105,633	9,725
\$0.75 - \$0.99-----	10	-----	3,565.33	115,955	53	7	83,710	6,465
\$1.00 - \$1.24-----	5	-----	2,095.82	70,489	21	6	41,349	4,980
\$1.25 - \$1.49-----	11	-----	10,456.85	346,094	112	13	136,839	25,589
\$1.50 - \$1.74-----	8	-----	11,142.42	375,151	82	10	142,706	17,594
\$1.75 - \$1.99-----	4	-----	3,118.00	92,251	24	1	36,459	450
\$2.00 - \$2.49-----	33	-----	65,638.02	2,153,286	570	49	623,371	91,397
\$2.50 - \$2.99-----	22	-----	68,522.79	2,282,553	317	37	596,894	97,110
\$3.00 - \$3.99-----	25	-----	87,229.74	2,927,472	525	45	580,085	134,250
\$4.00 and over-----	46	-----	451,228.11	15,637,663	1,211	137	2,238,374	411,196
Unclassified-----	156	-----	116,396.93	3,859,755	557	154	936,213	344,356

<sup>1</sup> For definition of the industry see tables 2 and 3, footnote 1. Reports classified by value of products per man-hour represent a single mine or mill or a mine and mill, reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill, reports in which data adequate for classification were not reported, and reports for central offices reported separately from their associated mines and mills.

TABLE 19.—PRINCIPAL STATISTICS FOR NONPRODUCING GOLD MINES AND MILLS IN THE UNITED STATES: 1939<sup>1</sup>

ITEM	United States	Arizona	California	Colorado	Idaho	Montana	Nevada, New Mexico, Oregon, and Washington <sup>2</sup>
Number of operating companies-----	32	3	4	11	3	6	5
Number of mines-----	32	3	4	11	3	6	5
Number of mills-----	4	-----	1	1	1	-----	1
Number of persons engaged, total-----	367	30	33	143	47	53	61
Wage earners (average for the year)-----	312	24	25	120	42	44	57
Salaried employees-----	51	6	4	23	5	9	4
Proprietors and firm members-----	4	-----	4	-----	-----	-----	-----
Principal expenses designated below, total-----	\$693,070	\$44,218	\$61,981	\$340,307	\$93,462	\$75,024	\$78,078
Wages-----	\$373,323	\$26,050	\$33,215	\$154,918	\$58,784	\$47,901	\$52,475
Salaries-----	\$67,270	\$7,950	\$7,829	\$29,472	\$6,000	\$9,900	\$6,119
Supplies and materials-----	\$168,972	\$7,729	\$9,489	\$99,505	\$22,774	\$15,105	\$14,370
Fuel-----	\$15,022	\$1,696	\$1,109	\$2,335	\$2,665	\$2,103	\$5,114
Purchased electric energy-----	\$24,780	\$613	\$1,279	\$20,514	\$2,139	\$15	-----
Contract work-----	\$43,723	-----	\$9,060	\$35,563	\$1,100	-----	-----
Cost of buildings, machinery, and equipment erected or installed during year-----	\$311,755	\$65,021	\$57,158	\$95,280	\$44,495	\$39,465	\$10,336
Number of man-shifts worked by wage earners-----	87,245	5,310	6,695	33,373	13,349	11,078	17,442
Number of man-hours worked by wage earners-----	680,323	42,475	51,064	266,884	106,792	88,152	124,958
Average hourly earning of wage earners-----	\$0.55	\$0.61	\$0.65	\$0.58	\$0.55	\$0.54	\$0.42
Horsepower rating of power equipment, total-----	5,117	205	430	2,351	698	873	560
Stationary equipment-----	4,266	205	250	2,005	613	853	540
Mobile equipment-----	851	-----	180	346	85	20	220
Electric energy consumed (thousands of kw.-hrs.), total-----	1,794	19	58	1,128	200	369	-----
Purchased-----	1,405	19	58	1,128	200	-----	-----
Generated by reporting companies-----	389	-----	-----	-----	-----	369	-----

<sup>1</sup> Figures cover mines and mills ordinarily engaged principally in mining or treating ore or tailings valued chiefly for their gold content but whose activities during 1939 were confined to development, construction, or maintenance work, and for which the reported principal expenses, or cost of buildings, machinery, and equipment erected or installed during the year amounted to \$2,500 or more. Except for 1 placer mine in California, the statistics shown cover only lode mines and mills. These figures have not been included in tables 3 through 18.

<sup>2</sup> Nevada, 1 mine; New Mexico, 2 mines; Oregon, 1 mine; Washington, 1 mine and 1 mill.

## Silver Ore

Silver mines and mills in the United States in 1939 produced ores, concentrates, and other materials containing 31,000,000 fine ounces of recoverable silver. Including the value of the gold, copper, lead, and zinc contained in the ores, and miscellaneous other products and services performed for other concerns, the total value of all products for the industry was nearly \$20,000,000. The quantities of other nonferrous metals recovered from the ore mined at silver mines included 96,000 fine ounces of gold, 31,072,000 pounds of copper, 40,245,000 pounds of lead, and 9,215,000 pounds of zinc.

The 31,000,000 ounces of silver produced by silver mines and mills amounted only to 48 percent of the total recoverable silver contained in all ores and concentrates produced in the continental United States during the year. About half of the total production of primary silver was contained in ores and concentrates produced by copper, lead, gold, and zinc mines and mills, which accounted for 21, 15, 11, and 3 percent, respectively, of the total silver output. The remaining 2 percent came from mines for which neither the value of products nor the cost of development work amounted to as much as \$2,500; such mines were excluded from the census canvass.

Although a substantial quantity of silver is used annually for coinage, the metal is used chiefly for industrial purposes, principally in the manufacture of photographic materials, mirrors, pharmaceuticals, sterling and plated ware, jewelry and novelties, silver solder, and dental supplies. Under favorable conditions silver may replace some of the other metals in bearings, solders, and corrosion-resistant coatings. It may also find greater use in electrical equipment. The properties of silver as a conductor of electricity are well known but its high price in relation to that of the more common conductors has precluded its wide use for this purpose.

There were 163 mines and 32 ore-dressing mills in the United States in 1939 producing ores and concentrates valued chiefly for their silver content that were of sufficient size to come within the scope of the census canvass. These mines and mills were operated by 150 companies and provided work for an average of 4,244 wage earners.

### PRINCIPAL EXPENSES REPORTED

The total amount paid to wage earners during the year was \$6,004,000—an average of 60 cents per man-hour. Salaried employees were paid a total of \$895,000. In addition to wages and salaries, the industry expended \$2,502,000 for supplies and materials, \$178,000 for fuel, \$573,000 for purchased electric energy, and \$61,000 for work done on contract by other concerns. These expenses totaled \$10,213,000. The cost of new buildings erected, major repairs to old structures, and new and used machinery and equipment installed during the year amounted to \$552,000. This figure includes installation costs, which are partly duplicated in the above expenses. Of the \$552,000, about \$390,000 was for machinery and equipment.

The above expenses cannot be used for calculating profits or losses since they do not include such expense items as taxes, depletion, depreciation, interest, rent, insurance, marketing, and other costs; operators were not requested to supply information concerning these items.

### PRODUCTION

Production at silver mines and mills in 1939 increased greatly in comparison with 1929. Over this period there was a major increase in the price of newly mined silver that stimulated the production of more metal and resulted in the classification of a larger number of mines and mills as silver

operations. In 1929 the price of silver was set in the open market, and the average New York price was \$0.533 per fine ounce. The price received from the Federal Government for domestic newly mined silver, which has been a controlling factor in the industry since 1934, was \$0.646+ per fine ounce from January 1 to July 1, 1939, after which it was \$0.711+ per fine ounce for the remainder of the year. Thus the value of silver in ore and concentrates in 1939 was substantially higher than in 1929.

Of the total value of products of the silver-ore industry in 1939, 43 percent represented the mine value of 735,000 tons of direct-smelting ore; 41 percent, the mill value of 45,000 tons of concentrates produced at mills operated in conjunction with mines (excluding concentrates produced from ore and tailings purchased or treated on a custom basis); 8 percent, the mine value of 200,000 tons of milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis; 7 percent, the mill value of bullion and precipitates recovered at cyanidation mills; and 1 percent, the value added in milling purchased ore, the amount received for custom milling and other services performed for other concerns, and the mine or mill value of miscellaneous secondary products.

The reported net value of ore, concentrates, and other materials represents the aggregate mine or mill value of all the recoverable metals contained.<sup>1</sup> The approximate unit value of the recoverable silver contained in the materials in the various stages of production is as follows: In crude milling ore and tailings sold to mill operators or sent to custom mills in 1939, \$0.35 per fine ounce; in direct-smelting ore, \$0.38 per ounce; in concentrates, \$0.51 per ounce; and in bullion and precipitates, \$0.66.

Idaho accounted for 36 percent of the recoverable silver produced by the industry in 1939. Colorado was the second largest producer, accounting for 24 percent. Utah produced 12 percent of the industry's output; Nevada, 9 percent; Montana, 8 percent; Arizona, 4 percent; California, 2 percent; and New Mexico, Texas, and Washington, the remaining 5 percent.

The average recoverable silver content of ore mined (including tailings) in 1939 ranged from 7.89 ounces per ton in Montana to 27.12 ounces in Idaho. The silver content of ore mined in other States, with the possible exception of Arizona (9.18 ounces per ton), did not vary materially from the average of 15.78 ounces per ton for the United States. In all States the grade of ore was enhanced by the presence of varying quantities of recoverable gold, copper, lead, and, less commonly, zinc.

More than half of the ore mined during the year was processed before smelting or refining. Crude ore and tailings treated at silver mills during the year totaled 1,102,000 tons. Concentrates recovered amounted to 51,000 tons, of which 6,000 tons were recovered from purchased and custom ore. In addition, cyanidation operations yielded 1,961,000 ounces of silver and 4,215 ounces of gold in bullion and precipitates. In Nevada and Texas part of the milling ore was treated by cyanidation, but the quantity of ore cyanided was not reported separately. Excluding cyanidation mills in these States, the ratio of materials treated to concentrates recovered averaged 17.6, ranging from 11.1 in Montana to 50.2 in California. The average recoverable silver content of concentrates produced by all silver mills was 280 fine ounces per ton—299 ounces per ton for concentrates from noncustom ores and tailings and 131 ounces per ton for concentrates from custom material.

<sup>1</sup>The values of the various materials represent the net amounts actually received by producers after allowances for estimated metal losses in milling or smelting, treatment charges, penalties for the presence of undesirable material, cost of transportation to mills or smelters, and other expenses.

## EMPLOYMENT AND WORKING TIME

Silver mines and mills in 1939 employed an average of 4,244 wage earners. In addition there were 368 salaried employees and 85 proprietors and firm members reported for October; of the latter, 72 regularly performed manual labor in or about the mines and mills. Operations in Utah, Idaho, and Colorado accounted for 59 percent of the average number of wage earners and the same percentage of the salaried workers. Nevada employed 12 percent of the wage earners; Montana, 10 percent; Arizona, 7 percent; California, 2 percent; and New Mexico, Texas, and Washington, the remaining 10 percent. Monthly fluctuations in employment in the silver-ore industry during the year were small. The largest number of wage earners, 4,465, was reported for September and October, and was only 14 percent above the smallest number, 3,921, reported for January.

Wage earners worked a total of 9,036,000 man-hours during 1,154,000 man-shifts—an average of 7.8 hours per shift. Of the total number of man-shifts worked, 91.6 percent was worked at mines on days during which the mines were active for production or systematic development work, 7.7 percent at mills on active days, and the remaining 0.7 percent at mines and mills on inactive days when only watchmen, inspectors, or maintenance men were employed.

The average number of equivalent full days operations were active, which indicates approximately the number of days worked per wage earner, was 291 for all mines and mills. For mines only, the average was 290; for mills only, 302. The highest State average of number of full days worked at mines was 331 in Idaho; at mills, 364 days in New Mexico and Texas.

Information on multiple shifting indicates that 20 percent of all silver mines and 66 percent of the mills operated on a two- or three-shift basis for at least part of the year. Of the 163 mines, 13 operated on a three-shift basis for at least part of the year, 19 on a two-shift basis, and the remaining 131 on a one-shift basis. Of the 32 mills, 17 operated on a three-shift basis, 4 on a two-shift basis, and 11 on a one-shift basis. Of the total number of man-shifts worked by wage earners at mines during active days, 69.0 percent was worked on the first shift, 25.1 percent on the second, and 5.9 percent on the third. Corresponding percentages for the first, second, and third shifts at mills were 59.6, 25.8, and 14.6.

Wages paid by the silver-ore industry in the United States averaged 66 cents per man-hour, but averages for individual States varied considerably, ranging from 45 cents in Arizona to 84 cents in Idaho. However, since these figures are general averages for all wage earners in all occupations, and since the proportions of wage earners within various wage classifications differ among the individual operations, accurate conclusions cannot be drawn regarding the relative rates of pay for particular types of work.

## OUTPUT PER MAN

The value of all products per man-hour worked by wage earners at silver-ore operations in the United States in 1939

averaged \$2.18. In Idaho, the leading silver-producing State in the industry, the average was \$3.40; the highest average was \$3.45 in Colorado, the second largest silver producer. In Utah, the third largest producer, output amounted to \$1.40 per man-hour. The value of all products per man-hour in other States ranged from \$0.99 in Washington to \$2.09 in California.

To mine a ton of crude ore at silver mines in 1939 required an average of 4.5 man-hours of labor, and to concentrate a ton of crude ore or tailings required an additional 0.7 man-hour. Labor requirements in mining ranged from 3.3 man-hours per ton of ore mined in Colorado to 7.2 in Washington. Man-hour requirements in milling showed wider variations, ranging from 0.3 man-hour per ton of ore treated in California and in Idaho to 1.1 in Arizona and Nevada.

## POWER EQUIPMENT

Power equipment available for use at silver mines and mills at the end of 1939, including idle equipment, had an aggregate rated capacity of 43,000 horsepower. Most of the power equipment in the industry at the end of 1939, as at the end of 1929, was stationary or fixed, but the proportion of mobile equipment had increased from 4 percent of the total horsepower reported in 1929 to 12 percent of the total in 1939. This indicates a definite increase in the use of power for driving mobile equipment such as power shovels, locomotives, and trucks as distinguished from stationary equipment such as mine hoists, electric generators, air compressors, ventilating fans, pumps, and crushers.

The utilization of underground mechanical loading equipment at silver mines has received increased consideration in recent years, but the practicable application of such equipment depends largely on favorable physical and economic conditions. At the end of 1939 only 15 silver mines were reported equipped with either shovel or scraper loaders for mechanical loading underground. Ten of these mines had shovel loaders exclusively, one had only scraper loaders, and four had both types. There were 27 shovel loaders at all silver mines, of which 25, mostly in Idaho and Utah, were smaller units requiring a headroom of 8 feet or less.

Scraper loaders have proved adaptable to many of the physical conditions encountered in metal mining, but only 25 underground units were reported at silver mines in 1939. Of these, 19 were in Colorado and 4 in Utah. Most of the scrapers were driven by compressed-air hoists each having a rated capacity between 10 and 25 horsepower.

Surface power loading equipment, consisting of 6 power shovels, 2 draglines, and 3 scrapers, was reported at 10 silver mines and mills. The power shovels and draglines each had a bucket capacity of less than 3 cubic yards; the scrapers were driven by electric hoists each rated at less than 25 horsepower.

Electric energy consumed at silver mines and mills in 1939 amounted to 118,540,000 kilowatt-hours. Of this total, 69 percent was purchased; the remainder was generated by reporting companies for their own use.

## SILVER ORE

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TABLE 20.—PRINCIPAL STATISTICS FOR THE SILVER-ORE INDUSTRY IN THE UNITED STATES: 1939 AND 1929<sup>1</sup>

(For producing operations only)

ITEM	1939	1929
Number of mines-----	163	74
Number of persons engaged, total-----	4,697	2,938
Wage earners (average for the year)-----	4,244	2,593
Salaried employees-----	368	220
Proprietors and firm members-----	85	25
Value of all products <sup>2</sup> -----	\$19,715,727	\$8,457,265
Principal expenses designated below, total-----	\$10,212,873	\$7,499,442
Wages-----	\$6,004,303	\$4,526,719
Salaries-----	\$894,696	\$607,428
Supplies and materials-----	\$2,501,973	\$1,820,829
Fuel-----	\$177,811	\$121,698
Purchased electric energy-----	\$572,851	\$484,798
Contract work-----	\$61,239	\$137,970
Cost of buildings, machinery, and equipment erected or installed during year-----	\$551,976	\$423,704
Horsepower rating of power equipment, total-----	45,260	28,943
Stationary equipment <sup>3</sup> -----	38,127	27,848
Mobile equipment <sup>4</sup> -----	5,133	1,095
Electric energy consumed (thousands of kw.-hrs.), total-----	118,540	50,140
Purchased-----	104,988	42,838
Generated by reporting companies-----	13,552	7,302

<sup>1</sup>The statistics presented cover operations that were engaged principally in producing ores or concentrates valued chiefly for their silver content, and cover only those producing operations (mines, mills, or mines and mills operated together) for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment erected or installed during the year amounted to \$2,500 or more. Figures for 1929 represent "enterprises" for which the value of products or cost of development work amounted to \$2,500 or more. Statistics for Alaska and other possessions of the United States are not included. In 1939 the operations covered produced 31,008,891 fine ounces of recoverable silver. In addition, 31,823,219 fine ounces of recoverable silver were produced at operations whose principal products were minerals other than silver; these operations were classified by the Bureau of the Census in other mineral industries.

<sup>2</sup>Includes the following: Mine value of direct-smelting ore, mine value of milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis, mill value of concentrates and silver and gold bullion and precipitates produced at mills operated in conjunction with mines (excluding the value of concentrates produced from ore and tailings purchased or treated on a custom basis), value added by milling purchased ore and receipts for custom milling, mine value of miscellaneous secondary products (including electric energy sold), and receipts for miscellaneous services performed for other concerns. For a breakdown of the value of all products in 1939 into the above components, see table 3.

<sup>3</sup>Aggregate horsepower rating of engines, motors, etc. for driving stationary or fixed equipment such as mine hoists, pumps, ventilating fans, compressors, crushers, etc.

<sup>4</sup>Aggregate horsepower rating of engines, motors, etc. for driving mobile equipment such as locomotives, trucks, tractors, churn drills, power shovels, etc.

TABLE 21.—SUMMARY STATISTICS FOR THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939 AND 1929<sup>1</sup>

(For producing operations only)

STATE	Census year	Number of mines	Number of wage earners (average for the year)	Number of salaried employees	Mine production of recoverable silver (fine ounces)	Value of all products	PRINCIPAL EXPENSES							Aggregate horse-power rating of power equipment
							Total	Wages	Salaries	Supplies and materials	Fuel	Purchased electric energy	Contract work	
United States----	1939	163	4,244	368	31,008,891	\$19,715,727	\$10,212,873	\$6,004,303	\$894,696	\$2,501,973	\$177,811	\$572,851	\$61,239	45,260
	1929	74	2,593	220	(2)	8,457,265	7,499,442	4,326,719	607,428	1,820,829	121,698	484,798	137,970	28,943
California-----	1939	6	74	10	488,793	335,231	191,151	104,508	9,071	55,321	4,073	17,570	808	1,049
	1929	5	64	14	(2)	214,684	197,095	100,550	27,960	45,450	4,665	15,822	2,650	1,275
Colorado-----	1939	27	713	55	7,439,925	5,009,082	1,712,244	1,021,174	123,098	458,204	26,648	81,499	1,821	6,313
	1929	16	152	12	(2)	505,251	344,832	200,011	30,434	72,557	3,266	28,680	10,084	1,879
Montana-----	1939	28	406	32	2,474,025	1,685,709	1,006,219	574,457	84,690	232,618	20,266	62,037	32,151	4,905
	1929	14	292	34	(2)	1,030,622	832,263	509,840	68,623	170,969	8,965	48,884	24,982	5,611
Nevada-----	1939	47	515	55	2,660,578	1,973,317	1,334,730	787,078	132,337	283,369	29,656	85,899	16,391	7,544
	1929	14	610	67	(2)	1,865,346	2,351,969	1,124,830	239,802	554,864	58,510	279,144	95,019	14,826
Utah-----	1939	22	937	94	3,869,295	2,608,257	2,041,834	1,218,776	234,454	422,763	8,766	155,960	1,115	7,866
	1929	11	939	46	(2)	3,505,749	2,418,280	1,628,964	128,374	556,430	12,061	87,216	5,235	2,511
Other States <sup>3</sup> -----	1939	33	1,599	122	14,076,275	8,106,151	3,926,695	2,298,310	311,046	1,049,698	88,402	169,886	9,355	15,583
	1929	16	536	47	(2)	1,739,611	1,555,003	762,524	112,435	420,759	54,233	25,052	-----	4,841

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1.

<sup>2</sup>Not available.

<sup>3</sup>Distributed as follows: For 1939—Arizona, 18 mines; Idaho, 8; New Mexico, 2; Texas, 2; and Washington, 3. For 1929—Arizona, 11 mines; Idaho, 1; New Mexico, 1; Texas, 1; and Washington, 2.

## MINERAL INDUSTRIES

TABLE 22.—PRINCIPAL STATISTICS FOR THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

ITEM	United States	Arizona	California	Colorado	Idaho	Montana	Nevada	Utah	Washington	New Mexico and Texas*
Number of operating companies-----	150	20	6	21	9	29	42	16	3	4
Number of mines-----	163	18	6	27	8	28	47	22	3	4
Number of mills-----	32	5	1	4	5	8	6	2	2	1
Number of persons engaged, total-----	4,697	330	90	780	939	457	599	1,032	32	438
Wage earners (average for the year)-----	4,244	301	74	713	872	406	515	937	18	408
Salaried employees-----	388	15	10	55	64	32	55	94	14	29
Proprietors and firm members-----	85	14	6	12	3	19	29	1	1	1
Performing manual labor-----	72	12	6	11	5	13	26	1	1	1
Production:										
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----	1,826,285	137,671	40,082	427,601	412,484	181,499	196,256	274,416	4,085	152,191
Direct-smelting ore (tons)-----	734,849	33,694	4,658	545,059	4,402	71,106	89,346	176,233	161	10,210
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----	200,426	1,240	3,456	52,521	17,502	15,205	9,272	98,183	-----	3,047
Milling ore and tailings treated (tons), total-----	1,102,240	102,737	31,948	66,058	426,825	228,020	103,814	-----	3,924	138,934
Purchased and custom-----	71,954	-----	-----	34,748	36,448	759	-----	-----	-----	-----
All other-----	1,030,286	102,737	31,948	31,290	390,377	227,262	103,814	-----	3,924	138,934
Concentrates produced (tons), total-----	199,859	5,448	636	9,052	17,866	113,222	21,618	-----	31,381	656
From purchased and custom material-----	5,789	-----	-----	1,322	4,295	152	-----	-----	-----	-----
From all other material-----	194,090	5,448	636	7,730	13,571	113,070	21,618	-----	31,381	656
Recoverable metal content of above direct-smelting ore, milling ore, and tailings sold or sent to custom mills, and concentrates produced from other than purchased or custom material:										
Silver (fine ounces)-----	51,008,891	1,265,327	488,793	7,439,925	11,179,006	2,474,025	2,680,578	3,869,295	56,957	1,576,965
Gold (fine ounces)-----	96,296.67	8,673.49	4,380.57	24,952.00	515.98	15,185.55	19,758.55	18,698.48	44.28	4,087.77
Copper (pounds)-----	51,071,853	270,386	24,900	24,180,455	3,279,175	680,328	824,545	1,775,717	24,939	13,408
Lead (pounds)-----	40,245,076	1,166,928	12,200	5,448,653	1,389,200	10,845,275	1,795,587	19,301,913	32,742	452,600
Zinc (pounds)-----	9,215,058	-----	-----	305,974	-----	3,087,024	208,473	5,633,587	-----	-----
Value of all products-----	\$19,715,727	\$883,862	\$335,231	\$5,009,062	\$6,104,451	\$1,683,709	\$1,975,317	\$2,608,257	\$32,539	\$1,085,299
Principal expenses designated below, total-----	\$10,212,878	\$563,395	\$191,151	\$1,712,244	\$2,582,043	\$1,006,219	\$1,334,750	\$2,041,834	\$45,698	\$757,559
Wages-----	\$6,004,303	\$334,830	\$104,508	\$1,021,174	\$1,515,881	\$574,457	\$787,078	\$1,218,776	\$16,785	\$450,814
Salaries-----	\$894,696	\$28,044	\$9,071	\$123,098	\$194,162	\$84,690	\$132,357	\$234,454	\$18,195	\$70,645
Supplies and materials-----	\$2,501,975	\$143,842	\$55,321	\$458,204	\$711,483	\$232,618	\$285,369	\$422,763	\$5,343	\$191,030
Fuel-----	\$177,811	\$24,265	\$4,073	\$26,648	\$15,518	\$20,266	\$29,656	\$8,766	\$5,375	\$43,244
Purchased electric energy-----	\$572,851	\$26,059	\$17,570	\$81,499	\$143,827	\$62,037	\$85,899	\$155,980	-----	-----
Contract work-----	\$61,239	\$6,355	\$808	\$1,621	\$1,172	\$32,151	\$16,391	\$1,115	-----	\$1,826
Cost of buildings, machinery, and equipment erected or installed during year-----	\$551,976	\$18,960	\$8,224	\$107,318	\$52,925	\$78,306	\$169,420	\$74,377	\$750	\$41,696
Man-shifts worked by wage earners, total-----	1,154,312	92,299	20,049	183,349	238,411	111,146	157,200	234,211	4,125	115,522
On active days, total-----	1,146,150	92,299	20,049	183,349	237,902	110,168	157,062	227,654	4,125	115,522
At mines-----	1,056,764	78,251	18,969	175,805	223,300	89,977	142,739	227,654	3,660	96,409
At mills-----	89,386	14,048	1,080	7,544	14,602	20,191	14,343	465	465	17,113
On inactive days-----	8,162	-----	-----	-----	509	778	118	6,557	-----	-----
Man-hours worked by wage earners, total-----	9,035,932	737,791	160,396	1,452,957	1,794,192	884,361	1,191,695	1,857,372	33,000	924,168
On active days, total-----	8,970,656	737,791	160,396	1,452,957	1,790,120	876,537	1,190,751	1,804,916	33,000	924,168
At mines-----	8,287,314	625,407	151,756	1,399,550	1,679,493	715,009	1,080,634	1,804,916	29,280	797,269
Per ton of crude ore mined-----	4.53	4.54	3.79	3.26	4.07	3.94	5.51	6.58	7.17	5.17
At mills-----	703,522	112,384	8,640	59,407	110,627	161,528	110,117	-----	3,720	136,899
Per ton of ore and tailings treated-----	0.64	1.09	0.27	0.90	0.26	0.71	1.06	-----	0.95	0.99
On inactive days-----	65,296	-----	-----	-----	4,072	7,824	944	52,456	-----	-----
Value of all products per man-hour-----	\$2.18	\$1.20	\$2.09	\$3.45	\$3.40	\$1.90	\$1.66	\$1.40	\$0.99	\$1.17
Average number of equivalent full days operations were active-----	291	327	286	263	326	278	300	266	142	322
Mines-----	290	327	311	263	331	276	295	266	146	315
Mills-----	302	327	120	269	265	288	559	-----	116	364
Average number of hours worked per shift-----	7.8	8.0	8.0	7.9	7.5	8.0	7.6	7.9	8.0	8.1
Average hourly earning of wage earners-----	\$0.66	\$0.45	\$0.65	\$0.70	\$0.84	\$0.65	\$0.66	\$0.66	\$0.51	\$0.47
Horsepower rating of power equipment, total-----	45,260	2,663	1,049	6,313	9,221	4,906	7,544	7,866	660	3,069
Per wage earner-----	10.2	8.8	14.2	8.9	10.6	12.1	14.6	8.4	36.7	7.4
Stationary equipment-----	38,127	1,758	920	6,124	8,759	5,929	6,525	7,078	450	2,584
Mobile equipment-----	5,133	905	129	189	462	976	1,019	788	210	455
Electric energy consumed (thousands of kw.-hrs.), total-----	118,540	1,711	1,597	58,765	22,337	6,087	6,760	15,350	7	5,926
Purchased-----	104,988	1,711	1,597	51,505	22,146	6,087	6,592	15,350	-----	-----
Generated by reporting companies-----	13,552	-----	-----	7,260	191	-----	168	-----	7	5,926

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.<sup>2</sup> New Mexico, 2 mines; Texas, 2 mines and 1 mill.<sup>3</sup> Includes statistics for employees at central offices in Pennsylvania.

TABLE 23.—SELECTED STATISTICS FOR THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY STATE AND BY TYPE OF OPERATION: 1939<sup>1</sup>

(For producing operations only)

STATE AND TYPE OF OPERATION	Number of operations	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Man-hours worked by wage earners	Wages	Salaries <sup>2</sup>
				Total <sup>2</sup>	Wage earners (average for the year)	Salaried employees <sup>2</sup>	Proprietors and firm members			
United States, total-----	167	31,008,891	\$19,715,727	4,697	4,244	368	85	9,035,932	\$6,004,303	\$894,696
Mines only-----	133	15,181,971	9,881,925	2,503	2,239	183	81	4,700,082	3,065,528	396,770
Mines and mills operated together <sup>3</sup> -----	30	15,578,438	9,382,880	2,063	1,942	119	2	4,201,794	2,839,919	332,060
Mills only-----	4	448,482	470,922	72	63	7	2	134,056	98,856	22,278
Arizona, total-----	18	1,263,327	883,882	330	301	15	14	737,791	334,830	28,044
Mines only-----	13	546,724	318,687	120	103	4	13	247,863	95,592	5,900
Mines and mills operated together-----	5	716,603	565,195	210	198	11	1	489,928	239,238	22,144
Colorado, total-----	28	7,439,925	5,009,062	780	713	55	12	1,452,957	1,021,174	123,098
Mines only-----	24	7,152,829	4,769,500	662	609	41	12	1,220,022	879,399	103,731
Mines and mills operated together-----	3	287,096	239,562	112	104	8	-----	232,935	141,775	15,818
Mills only-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Idaho, total-----	9	11,179,006	6,104,451	939	872	64	3	1,794,182	1,515,881	194,162
Mines only-----	4	335,917	189,658	76	64	9	3	145,456	96,921	13,900
Mines and mills operated together-----	4	10,843,089	5,914,793	852	808	44	-----	1,648,726	1,418,960	152,212
Mills only-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Montana, total-----	30	2,474,025	1,683,709	457	406	32	19	884,361	574,457	84,690
Mines only-----	21	1,226,324	573,992	175	147	12	16	309,569	195,579	27,236
Mines and mills operated together-----	7	799,219	745,789	246	230	15	1	514,272	329,840	40,894
Mills only-----	2	448,482	363,928	36	29	5	2	60,520	49,038	16,460
Nevada, total-----	47	2,860,578	1,973,317	599	515	55	29	1,191,695	787,078	132,337
Mines only-----	40	1,575,377	1,073,688	358	295	34	29	702,284	451,797	71,504
Mines and mills operated together <sup>3</sup> -----	7	1,085,201	899,629	238	220	18	-----	489,411	335,281	55,193
Utah (mines only)-----	22	3,869,295	2,608,257	1,032	937	94	1	1,857,372	1,218,776	234,454
California, New Mexico, Texas, and Washington, total <sup>4</sup> -----	13	2,122,735	1,453,089	580	500	53	7	1,117,564	552,107	97,911
Mines only-----	9	475,505	328,163	101	84	10	7	217,516	127,464	14,358
Mines and mills operated together-----	4	1,647,230	1,124,906	441	416	25	-----	900,048	424,643	51,517

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.<sup>2</sup> Statistics for number and compensation of central-office employees are included in totals for the United States and separate States, but excluded from data shown by type of operation.<sup>3</sup> Includes one mine for which statistics were reported combined with those for 2 mines and mills operated together.<sup>4</sup> Includes statistics covering central-office personnel in Pennsylvania.

TABLE 24.—PRINCIPAL PRODUCTS OF SILVER MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY STATE: 1939

PRODUCT	United States	Arizona	California	Colorado	Idaho	Montana	Nevada	Utah	Washington	New Mexico and Texas
Value of all products-----	\$19,715,727	\$885,862	\$335,231	\$5,009,082	\$6,104,451	\$1,883,709	\$1,973,317	\$2,608,257	\$32,559	\$1,085,299
Direct-smelting ore:										
Quantity (tons of 2,000 pounds)-----	754,849	55,894	4,658	345,039	4,402	71,106	89,346	176,233	161	10,210
Recoverable metal content--										
Silver (fine ounces)-----	12,714,031	521,898	168,393	6,567,374	229,217	1,053,209	1,542,987	2,600,200	6,154	224,819
Gold (fine ounces)-----	65,075.04	3,431.45	1,022.00	22,514.57	17.14	5,041.69	13,477.43	14,080.48	9.28	3,481.00
Copper (pounds)-----	26,592,227	128,433	13,800	24,087,530	53,176	240,803	700,045	1,379,403	11,237	-----
Lead (pounds)-----	25,904,472	346,757	12,200	2,792,697	470,084	6,173,377	1,571,202	12,536,794	1,561	-----
Zinc (pounds)-----	119,237	-----	-----	1,220	-----	-----	4,400	113,617	-----	-----
Mine value, total-----	\$8,414,723	\$310,945	\$96,018	\$4,440,541	\$124,378	\$549,692	\$1,067,108	\$1,628,331	\$4,077	\$195,835
Per ton of ore-----	\$11.45	\$5.23	\$20.81	\$12.87	\$28.25	\$7.73	\$11.94	\$9.23	\$25.32	\$19.18
Per ounce of recoverable silver <sup>1</sup> -----	\$0.38	\$0.42	\$0.45	\$0.39	\$0.45	\$0.30	\$0.43	\$0.36	\$0.48	\$0.48
Milling ore and tailings sold to mill operators or sent to custom mills for treatment:										
Quantity (tons)-----	200,426	1,240	3,456	52,521	17,502	15,205	9,272	98,183	-----	3,047
Recoverable metal content--										
Silver (fine ounces)-----	2,777,110	37,005	29,152	799,167	241,700	241,989	110,575	1,269,095	-----	48,418
Gold (fine ounces)-----	7,682.77	124.02	52.57	1,534.60	24.00	399.00	848.68	4,618.00	-----	285.90
Copper (pounds)-----	943,434	435	1,500	25,485	473,000	35,492	-----	394,314	-----	13,408
Lead (pounds)-----	9,157,326	8,078	-----	1,806,661	12,000	456,182	66,066	6,785,119	-----	-----
Zinc (pounds)-----	7,341,746	-----	-----	129,754	-----	1,615,204	77,818	5,519,970	-----	-----
Mine value, total-----	\$1,575,716	\$16,552	\$10,713	\$556,380	\$125,640	\$118,566	\$50,001	\$895,741	-----	\$22,323
Per ton of ore-----	\$7.96	\$13.35	\$5.10	\$6.40	\$7.18	\$7.78	\$5.39	\$9.12	-----	\$7.35
Per ounce of recoverable silver <sup>1</sup> -----	\$0.55	\$0.38	\$0.53	\$0.53	\$0.40	\$0.28	\$0.30	\$0.36	-----	\$0.34
Concentrates produced at mills operated in conjunction with mines (excluding concentrates produced from purchased and custom ore and tailings):										
Quantity (tons)-----	45,366	5,448	656	2,988	13,571	20,310	1,431	-----	346	636
Recoverable metal content--										
Silver (fine ounces)-----	13,556,526	704,624	291,248	273,384	10,708,089	1,176,818	145,073	-----	50,803	204,487
Gold (fine ounces)-----	21,324.33	5,118.02	3,306.00	1,102.83	474.84	9,744.66	1,518.27	-----	35.00	24.51
Copper (pounds)-----	3,536,192	145,518	10,000	87,440	2,752,999	404,033	124,500	-----	13,702	-----
Lead (pounds)-----	7,183,278	812,091	-----	849,075	907,116	3,975,718	155,299	-----	31,381	452,800
Zinc (pounds)-----	1,754,075	-----	-----	176,000	-----	1,451,820	128,255	-----	-----	-----
Mill value, total-----	\$8,083,038	\$556,195	\$228,500	\$212,294	\$5,787,486	\$1,008,680	\$147,245	-----	\$28,482	\$134,176
Per ton of concentrates-----	\$178.17	\$102.09	\$359.28	\$71.05	\$424.99	\$49.66	\$102.90	-----	\$82.26	\$210.97
Per ounce of recoverable silver <sup>1</sup> -----	\$0.51	\$0.55	\$0.49	\$0.50	\$0.51	\$0.47	\$0.56	-----	\$0.50	\$0.56
Concentrates produced from ore and tailings purchased or treated on a custom basis:										
Quantity (tons)-----	5,769	-----	-----	1,322	4,295	152	-----	-----	-----	-----
Recoverable metal content--										
Silver (fine ounces)-----	757,011	-----	-----	408,311	342,391	6,309	-----	-----	-----	-----
Gold (fine ounces)-----	695.48	-----	-----	633.00	62.00	0.48	-----	-----	-----	-----
Copper (pounds)-----	506,050	-----	-----	-----	506,050	-----	-----	-----	-----	-----
Lead (pounds)-----	3,133,733	-----	-----	444,270	2,635,669	54,483	-----	-----	-----	-----
Zinc (pounds)-----	1,352,978	-----	-----	-----	1,292,000	60,978	-----	-----	-----	-----
Value added by milling purchased ore and receipts for custom milling-----	\$108,077	-----	-----	\$20,047	\$86,947	\$1,083	-----	-----	-----	-----
Recoverable metal content of other materials: <sup>2</sup>										
Silver (fine ounces)-----	1,961,224	-----	-----	-----	-----	-----	861,963	-----	-----	1,099,281
Gold (fine ounces)-----	4,214.53	-----	-----	-----	-----	-----	3,916.17	-----	-----	298.56
Mill value, total-----	\$1,441,930	-----	-----	-----	-----	-----	\$708,963	-----	-----	\$732,987
Per ounce of recoverable silver <sup>1</sup> -----	\$0.66	-----	-----	-----	-----	-----	\$0.67	-----	-----	\$0.66
Value of miscellaneous secondary products and receipts for services performed for other concerns (excluding custom milling)-----	\$92,243	\$170	-----	-----	-----	\$5,888	-----	\$86,185	-----	-----

<sup>1</sup> Computed by distributing the reported value of ores or concentrates among the metals contained in direct proportion to the respective recoverable quantities of these metals multiplied by their market price (mint price for gold and silver).

<sup>2</sup> Represents bullion and precipitates recovered at cyanide mills.

TABLE 25.—RECOVERABLE METAL CONTENT OF CONCENTRATES PRODUCED FROM CRUDE ORE AND TAILINGS CONCENTRATED AT SILVER MILLS IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

ITEM	United States	Arizona	California	Colorado	Idaho	Montana	Nevada <sup>2</sup>	Texas	Washington
All ore and tailings concentrated:									
Ore and tailings treated (tons of 2,000 pounds) <sup>2</sup> -----	1,102,240	102,737	31,948	86,038	426,825	228,020	103,814	138,934	3,924
Concentrates produced (tons)-----	51,135	5,448	836	4,310	17,866	20,462	1,431	636	346
Ratio of material treated to concentrates recovered-----	17.6	18.9	50.2	15.3	23.9	11.1	22.1	(3)	11.3
Recoverable metal content of concentrates-----									
Silver (fine ounces)-----	14,313,537	704,624	291,248	681,895	11,050,480	1,185,127	145,073	204,487	50,803
Gold (fine ounces)-----	22,019.81	5,118.02	3,306.00	1,735.83	536.84	9,745.34	1,518.27	24.51	35.00
Copper (pounds)-----	4,042,242	143,518	10,000	87,440	3,259,049	404,033	124,500	-----	13,702
Lead (pounds)-----	10,317,011	812,091	-----	1,293,345	3,542,116	4,030,179	155,299	452,600	31,381
Zinc (pounds)-----	3,107,053	-----	-----	176,000	1,292,000	1,512,798	126,255	-----	-----
Non-custom ore and tailings concentrated: <sup>4</sup>									
Ore and tailings treated (tons)-----	1,030,286	102,737	31,948	31,290	390,377	227,262	103,814	138,934	3,924
Concentrates produced (tons)-----	45,368	5,448	836	2,988	13,571	20,310	1,431	636	346
Ratio of material treated to concentrates recovered-----	18.3	18.9	50.2	10.5	28.8	11.2	22.1	(3)	11.3
Recoverable metal content of concentrates-----									
Silver (fine ounces)-----	13,556,526	704,624	291,248	273,384	10,708,089	1,178,818	145,073	204,487	50,803
Gold (fine ounces)-----	21,324.33	5,118.02	3,306.00	1,102.83	474.84	9,744.86	1,518.27	24.51	35.00
Copper (pounds)-----	3,536,192	143,518	10,000	87,440	2,752,999	404,033	124,500	-----	13,702
Lead (pounds)-----	7,183,278	812,091	-----	849,075	907,116	3,975,716	155,299	452,600	31,381
Zinc (pounds)-----	1,754,075	-----	-----	176,000	-----	1,451,820	126,255	-----	-----
Custom ore and tailings concentrated:									
Ore and tailings treated (tons)-----	71,954	-----	-----	34,748	36,448	758	-----	-----	-----
Concentrates produced (tons)-----	5,769	-----	-----	1,322	4,295	152	-----	-----	-----
Ratio of material treated to concentrates recovered-----	12.5	-----	-----	26.3	8.5	5.0	-----	-----	-----
Recoverable metal content of concentrates-----									
Silver (fine ounces)-----	757,011	-----	-----	406,311	342,391	6,309	-----	-----	-----
Gold (fine ounces)-----	695.48	-----	-----	833.00	62.00	0.48	-----	-----	-----
Copper (pounds)-----	506,050	-----	-----	-----	506,050	-----	-----	-----	-----
Lead (pounds)-----	3,133,733	-----	-----	444,270	2,635,000	54,463	-----	-----	-----
Zinc (pounds)-----	1,552,978	-----	-----	-----	1,292,000	60,978	-----	-----	-----

<sup>1</sup> No silver mills were active in States other than those designated.<sup>2</sup> Figures for ore and tailings treated include some ore treated by cyanidation in Nevada and Texas. However, statistics for silver and gold recovered from this ore are excluded. (See table 24, "Recoverable metal content of other materials.")<sup>3</sup> Excludes statistics for cyanidation mills in Nevada and Texas for which separate figures for ore concentrated and ore cyanided were not reported.<sup>4</sup> Represents milling ore treated at mills operated in conjunction with the mines from which the ore was obtained and tailings reclaimed and treated at the same millsTABLE 26.—NUMBER OF WAGE EARNERS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION, BY STATE, AND BY MONTH: 1939<sup>1</sup>

(For producing operations only)

TYPE OF OPERATION AND STATE	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF THE MONTH											
		January	February	March	April	May	June	July	August	September	October	November	December
United States, total-----	4,244	3,921	4,057	4,103	4,205	4,131	4,173	4,193	4,411	4,465	4,465	4,456	4,366
TYPE OF OPERATION													
Mines only-----	2,238	2,078	2,116	2,139	2,247	2,210	2,234	2,213	2,345	2,313	2,346	2,300	2,313
Mines and mills operated together-----	1,944	1,788	1,884	1,912	1,904	1,868	1,882	1,916	1,993	2,077	2,049	2,069	1,982
Mills only-----	62	55	57	52	54	53	57	64	73	75	70	67	71
STATE													
Arizona-----	301	242	313	310	315	313	322	307	327	320	312	294	240
California-----	74	68	70	73	63	54	62	58	72	81	99	100	88
Colorado-----	713	641	671	656	671	680	695	740	766	765	775	754	745
Idaho-----	872	856	868	863	866	858	845	825	847	858	901	936	944
Montana-----	406	340	349	380	419	405	388	421	449	460	428	435	394
Nevada-----	515	508	523	541	532	496	516	498	524	509	513	496	528
Utah-----	937	890	860	864	926	917	928	914	984	984	989	984	998
Washington-----	18	9	16	22	13	19	20	20	20	20	20	18	15
New Mexico and Texas-----	408	367	387	394	400	389	397	410	422	470	428	419	414

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.

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TABLE 27.—EMPLOYMENT AND WORKING TIME IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY DEPARTMENT AND BY STATE: 1939<sup>1</sup>  
(For producing operations only)

DEPARTMENT	United States	Arizona	California	Colorado	Idaho	Montana	Nevada	Utah	Washington	New Mexico and Texas
Average number of wage earners on active days, total	3,938	282	70	697	750	396	524	857	29	353
At mines, total	3,642	239	61	689	675	326	484	857	25	306
Underground	3,024	185	46	553	571	274	390	729	16	260
Open cut	25	1	1	5	—	3	10	—	5	—
Surface shops and yards	593	53	14	111	104	49	84	128	4	46
At mills	296	43	9	28	55	70	40	—	4	47
Average number of equivalent full days operations were active	291	327	286	263	326	278	300	266	142	322
At mines	290	327	311	263	331	276	295	266	146	315
Underground	291	334	355	264	328	273	294	267	163	315
Open cut	199	165	213	255	—	109	248	—	102	—
Surface shops and yards	289	308	173	258	347	303	303	256	137	317
At mills	302	327	120	269	265	288	359	—	116	364
Number of man-shifts worked by wage earners, total	1,154,512	92,299	20,049	183,349	238,411	111,146	157,200	234,211	4,125	113,522
On active days, total	1,146,150	92,299	20,049	183,349	237,902	110,168	157,082	227,654	4,125	113,522
At mines, total	1,058,784	78,251	18,989	175,805	223,300	89,977	142,739	227,654	3,680	96,409
Underground	880,268	61,740	16,331	145,934	187,235	74,815	114,845	194,952	2,801	81,855
Open cut	4,968	165	213	1,275	—	326	2,479	—	510	—
Surface shops and yards	171,528	16,346	2,425	28,596	36,065	14,836	25,415	32,722	549	14,574
At mills	89,386	14,048	1,080	7,544	14,602	20,191	14,343	—	485	17,113
On inactive days	8,162	—	—	—	509	978	118	6,557	—	—
Number of man-hours worked by wage earners, total	9,035,932	737,791	160,396	1,452,957	1,794,192	884,361	1,191,695	1,857,372	53,000	924,168
On active days, total	8,970,636	737,791	160,396	1,452,957	1,790,120	876,537	1,180,751	1,804,916	53,000	924,168
At mines, total	8,267,514	625,407	151,756	1,393,550	1,679,493	715,009	1,080,634	1,804,916	29,280	787,259
Underground	6,888,336	493,424	130,646	1,157,217	1,411,516	594,457	862,653	1,546,931	20,806	670,684
Open cut	39,249	1,326	1,707	10,200	—	2,101	19,835	—	4,080	—
Surface shops and yards	1,339,729	130,657	19,403	226,133	267,977	118,451	198,146	257,985	4,392	116,585
At mills	703,322	112,384	8,640	59,407	110,627	161,528	110,117	—	3,720	136,899
On inactive days	65,296	—	—	—	4,072	7,824	944	52,456	—	—

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.

TABLE 28.—NUMBER OF MINES AND MILLS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES WORKING ONE, TWO, OR THREE SHIFTS  
AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

SHIFT	UNITED STATES		Arizona	California	Colorado	Idaho	Montana	Nevada	Utah	Washington	New Mexico and Texas
	Number	Percent of total									
Number of mines, total	163	100.0	18	6	27	8	28	47	22	3	4
Working 1 shift per day	131	80.4	13	5	20	5	23	43	16	3	3
Working 2 shifts per day	19	11.6	5	1	1	1	5	5	4	—	—
Working 3 shifts per day	13	8.0	—	1	6	2	—	1	2	—	1
Number of mills, total	32	100.0	5	1	4	5	8	6	—	2	1
Working 1 shift per day	11	34.4	2	—	2	2	1	2	—	2	—
Working 2 shifts per day	4	12.5	—	—	2	—	—	2	—	—	—
Working 3 shifts per day	17	53.1	3	1	—	3	7	2	—	—	1
Number of man-shifts worked by wage earners on active days, total	1,146,150	100.0	92,299	20,049	183,349	257,902	110,168	157,082	227,654	4,125	113,522
During first shift	781,884	68.2	63,877	11,035	108,447	152,538	79,969	125,324	152,729	4,125	83,840
During second shift	288,711	25.2	26,565	4,507	44,974	60,147	25,410	29,215	70,585	—	27,308
During third shift	75,555	6.6	1,857	4,507	29,928	25,217	4,789	2,543	4,340	—	2,374
At mines, total	1,056,764	100.0	78,251	18,969	175,805	225,300	89,977	142,739	227,654	3,660	96,409
During first shift	728,653	69.0	54,727	10,875	103,911	144,724	70,345	116,422	152,729	3,660	71,460
During second shift	265,822	25.1	23,524	4,147	41,966	56,473	19,632	25,264	70,585	—	24,031
During third shift	62,489	5.9	—	4,147	29,928	22,103	—	1,053	4,340	—	918
At mills, total	89,386	100.0	14,048	1,080	7,544	14,602	20,191	14,343	—	465	17,113
During first shift	53,231	59.6	9,150	360	4,536	7,814	9,624	8,902	—	465	12,380
During second shift	23,089	25.8	3,041	360	3,008	3,674	5,778	3,951	—	—	3,277
During third shift	13,066	14.6	1,857	360	—	3,114	4,789	1,490	—	—	1,456

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.

TABLE 29.—QUANTITY OF FUEL AND ELECTRIC ENERGY CONSUMED IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY KIND, 1939 AND 1929, AND BY STATE, 1939<sup>1</sup>

(For producing operations only)

STATE	FUEL				ELECTRIC ENERGY (THOUSANDS OF KILOWATT-HOURS)			
	Anthracite (short tons)	Bituminous coal (short tons)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Total	Purchased	Generated by reporting companies	
United States, total	1952	75	4,520	27,526	398,707	118,540	104,988	13,552
	1929	11	5,424	27,647	117,261	50,140	42,838	7,302
1939								
Arizona			5,249	47,234	1,711	1,711		
California	25	4	1,034	11,331	1,597	1,597		
Colorado		1,046	1,468	95,134	58,765	51,305		7,260
Idaho	8	1,437	348	19,845	22,537	22,146		191
Montana	30	863	60	76,367	6,087	6,087		
Nevada		388	2,354	103,841	6,760	6,592		168
Utah		782	491	15,927	15,350	15,350		
Washington			873	12,415	7			7
New Mexico and Texas	10		15,649	16,615	5,926			5,926

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.

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TABLE 30.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, 1939 AND 1929, AND BY TYPE OF OPERATION AND BY STATE, 1939 <sup>1</sup>

(For producing operations only)

PRIME MOVERS AND ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY												ELECTRIC MOTORS DRIVEN BY ENERGY GENERATED BY REPORTING COMPANIES	
TYPE OF EQUIPMENT, TYPE OF OPERATION, AND STATE	Aggregate horsepower	Prime movers								Electric motors driven by purchased energy		Number	Horsepower
		Total		Driving generators		Not driving generators		Ordinarily idle (included in preceding columns)		Number	Horsepower		
		Number	Horsepower	Number	Horsepower	Number	Horsepower	Number	Horsepower				
United States, total-----1939	43,260	203	14,627	25	4,870	178	9,757	3	465	1,173	28,633	299	5,817
-----1929	28,943	64	9,549	(a)	(a)	(a)	(a)	(a)	4,106	627	19,394	138	2,664
Stationary-----1939	38,127	110	10,521	25	4,870	85	5,651	3	465	1,138	27,606	297	5,787
-----1929	27,848	59	9,324	(a)	(a)	(a)	(a)	(a)	4,006	616	18,524	138	2,664
Mobile-----1939	5,133	93	4,106	-----	-----	93	4,106	-----	-----	35	1,027	2	30
-----1929	1,095	5	225	(a)	(a)	(a)	(a)	(a)	100	11	870	-----	-----
TYPE OF OPERATION: 1939													
Mines only, total-----	23,215	137	8,397	7	1,470	130	6,927	2	425	409	14,818	36	1,027
Stationary-----	20,698	82	6,877	7	1,470	75	5,207	2	425	391	14,021	34	997
Mobile-----	2,517	55	1,720	-----	-----	55	1,720	-----	-----	18	797	2	30
Mines and mills operated together, total-----	18,237	59	5,306	16	2,950	43	2,356	1	40	728	12,931	151	1,997
Stationary-----	16,095	26	3,394	16	2,950	10	444	1	40	711	12,701	151	1,997
Mobile-----	2,142	33	1,912	-----	-----	33	1,912	-----	-----	17	230	-----	-----
Mills only, total-----	1,808	7	924	2	450	5	474	-----	-----	36	884	112	2,793
Stationary-----	1,334	2	450	2	450	-----	-----	-----	-----	36	884	112	2,793
Mobile-----	474	5	474	-----	-----	5	474	-----	-----	-----	-----	-----	-----
STATE: 1939													
Arizona, total-----	2,683	33	1,835	3	420	30	1,415	-----	-----	47	828	14	304
Stationary-----	1,758	13	950	3	420	10	530	-----	-----	45	806	14	304
Mobile-----	905	20	885	-----	-----	20	885	-----	-----	2	20	-----	-----
California, total-----	1,049	11	224	-----	-----	11	224	-----	-----	20	825	-----	-----
Stationary-----	920	4	95	-----	-----	4	95	-----	-----	20	825	-----	-----
Mobile-----	129	7	129	-----	-----	7	129	-----	-----	-----	-----	-----	-----
Colorado, total-----	6,313	28	2,536	5	980	23	1,558	1	65	176	3,775	68	902
Stationary-----	6,124	23	2,389	5	980	18	1,409	1	65	175	3,735	66	872
Mobile-----	189	5	149	-----	-----	5	149	-----	-----	1	40	2	30
Idaho, total-----	9,221	9	649	1	100	8	549	-----	-----	433	8,572	76	2,558
Stationary-----	8,759	3	397	1	100	2	297	-----	-----	418	8,362	76	2,558
Mobile-----	462	6	252	-----	-----	6	252	-----	-----	15	210	-----	-----
Montana, total-----	4,905	27	1,458	-----	-----	27	1,458	-----	-----	191	3,447	-----	-----
Stationary-----	3,929	13	617	-----	-----	13	617	-----	-----	187	3,312	-----	-----
Mobile-----	976	14	841	-----	-----	14	841	-----	-----	4	135	-----	-----
Nevada, total-----	7,544	60	3,973	3	600	57	3,373	2	400	105	3,571	24	210
Stationary-----	6,525	33	2,954	3	600	30	2,354	2	400	105	3,571	24	210
Mobile-----	1,019	27	1,019	-----	-----	27	1,019	-----	-----	-----	-----	-----	-----
Utah, total-----	7,866	5	251	-----	-----	5	251	-----	-----	201	7,615	-----	-----
Stationary-----	7,078	3	85	-----	-----	3	85	-----	-----	188	6,993	-----	-----
Mobile-----	788	2	166	-----	-----	2	166	-----	-----	13	622	-----	-----
Washington, total-----	660	9	660	4	340	5	320	-----	-----	-----	-----	8	125
Stationary-----	450	6	450	4	340	2	110	-----	-----	-----	-----	8	125
Mobile-----	210	3	210	-----	-----	3	210	-----	-----	-----	-----	-----	-----
New Mexico and Texas, total-----	3,039	21	3,039	9	2,430	12	609	-----	-----	-----	-----	109	1,718
Stationary-----	2,584	12	2,584	9	2,430	3	154	-----	-----	-----	-----	109	1,718
Mobile-----	455	9	455	-----	-----	9	455	-----	-----	-----	-----	-----	-----

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1.<sup>2</sup> Not available.

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TABLE 31.—NUMBER OF POWER-LOADING MACHINES IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY TYPE, BY SIZE, AND BY STATE: 1939 <sup>1</sup>

(For producing operations only)

STATE <sup>2</sup>	UNDERGROUND EQUIPMENT							SURFACE EQUIPMENT	
	Shovel loaders			Scraper loaders and slushers				Power shovels and draglines	Scraper loaders
	Total	Minimum working height required		Total	Horsepower rating of hoists				
		8 feet or less	More than 8 feet		Less than 10	10-25	26-100		
United States, total-----	27	<sup>3</sup> 25	<sup>4</sup> 2	<sup>5</sup> 25	6	17	2	<sup>6</sup> 8	<sup>7</sup> 3
Colorado-----	4	4	-----	19	2	15	2	-----	-----
Idaho-----	11	11	-----	1	-----	1	-----	1	-----
Montana-----	-----	-----	-----	-----	-----	-----	-----	4	3
Utah-----	10	8	2	4	4	-----	-----	2	-----
Arizona, Nevada, and Texas-----	2	2	-----	1	-----	1	-----	1	-----

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1.<sup>2</sup>No equipment was reported at silver mines in States other than those indicated.<sup>3</sup>All operated by compressed air.<sup>4</sup>Both operated by electricity.<sup>5</sup>Includes 3 scrapers operated by electric hoists and 22 operated by compressed-air hoists.<sup>6</sup>Includes 1 electric and 5 gasoline or Diesel power shovels and 1 electric and 1 gasoline or Diesel dragline; each had a bucket capacity of less than 3 cubic yards.<sup>7</sup>All operated by electric hoists rated at 25 horsepower or less.TABLE 32.—SELECTED STATISTICS FOR INCORPORATED AND UNINCORPORATED CONCERNS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939 <sup>1</sup>

(For producing operations only)

STATE AND CHARACTER OF OWNERSHIP	Number of operating companies	Number of mines	Number of mills	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	150	163	32	31,008,891	\$19,715,727	4,697	4,244	368	85	\$6,004,303	894,896
Incorporated-----	70	81	24	28,554,542	18,180,239	4,181	3,843	338	-----	5,487,839	848,693
Unincorporated-----	80	82	8	2,454,349	1,555,488	516	401	30	85	516,464	46,003
Arizona, total-----	20	18	5	1,263,327	683,862	330	301	15	14	334,830	26,044
Incorporated-----	8	5	4	681,541	551,900	204	195	9	-----	227,422	16,944
Unincorporated-----	14	13	1	581,786	331,962	126	106	6	14	107,408	11,100
California, total-----	6	6	1	488,793	335,231	90	74	10	6	104,508	9,071
Incorporated-----	1	1	1	488,793	335,231	90	74	10	6	104,508	9,071
Unincorporated-----	5	5	-----	-----	-----	-----	-----	-----	-----	-----	-----
Colorado, total-----	21	27	4	7,439,925	5,009,062	780	713	55	12	1,021,174	123,098
Incorporated-----	11	17	4	7,207,655	4,897,861	724	672	52	-----	980,101	118,218
Unincorporated-----	10	10	-----	232,270	111,201	56	41	3	12	41,073	4,880
Idaho, total-----	9	8	5	11,179,006	6,104,451	939	872	64	3	1,515,881	194,162
Incorporated-----	6	5	5	11,084,789	6,040,433	914	854	60	-----	1,488,584	189,782
Unincorporated-----	3	3	-----	94,217	64,018	25	18	4	3	27,297	4,380
Montana, total-----	29	28	8	2,474,025	1,683,709	457	408	32	19	574,457	84,890
Incorporated-----	12	11	5	1,995,216	1,372,542	368	337	31	-----	478,797	82,005
Unincorporated-----	17	17	3	478,809	311,167	89	69	1	19	95,660	2,685
Nevada, total-----	42	47	6	2,680,578	1,973,317	599	515	55	29	787,078	132,337
Incorporated-----	17	19	3	2,103,151	1,583,500	490	440	50	-----	672,041	122,437
Unincorporated-----	25	28	3	557,427	389,817	109	75	5	29	115,037	9,900
Utah, total-----	16	22	-----	3,889,295	2,608,257	1,032	937	94	1	1,218,776	234,454
Incorporated-----	14	20	-----	3,654,877	2,599,354	1,023	931	92	-----	1,214,235	234,354
Unincorporated-----	2	2	-----	14,418	8,923	9	6	2	1	4,541	100
Washington, total-----	3	3	2	56,957	32,539	32	18	14	-----	16,785	18,195
Incorporated-----	2	2	1	56,957	32,539	32	18	14	-----	16,785	18,195
Unincorporated-----	1	1	1	-----	-----	-----	-----	-----	-----	-----	-----
New Mexico and Texas, total-----	4	4	1	1,576,985	1,085,299	438	408	29	1	430,814	70,645
Incorporated-----	1	1	1	1,576,985	1,085,299	438	408	29	1	430,814	70,645
Unincorporated-----	3	3	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1.

## MINERAL INDUSTRIES

TABLE 33.—SELECTED STATISTICS FOR OPERATIONS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS	Number of mines	Number of mills	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total—	163	32	31,008,891	\$19,715,727	4,697	4,244	368	85	\$6,004,303	\$894,696
\$1 - \$19,999—	72	6	1,099,399	560,760	386	298	27	61	361,123	52,168
\$20,000 - \$49,999—	16	5	806,822	517,052	212	192	17	3	257,747	31,263
\$50,000 - \$99,999—	12	5	1,528,955	1,114,850	336	308	20	8	415,052	40,207
\$100,000 - \$249,999—	15	8	3,365,894	2,290,236	806	745	61	—	1,020,488	125,328
\$250,000 - \$499,999—	2	2	1,105,205	1,004,536	223	209	14	—	332,358	44,951
\$500,000 - \$999,999—	4	3	3,976,331	2,752,670	806	764	42	—	975,219	128,557
\$1,000,000 - \$2,499,999—	1	—	—	—	—	—	—	—	—	—
\$2,500,000 - \$4,999,999—	2	1	17,319,157	10,268,609	1,423	1,321	102	—	2,127,211	279,886
Unclassified—	39	2	1,817,188	1,207,014	505	407	85	13	515,107	192,336

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1. Reports classified by value of products represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

TABLE 34.—SELECTED STATISTICS FOR OPERATIONS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF WAGE EARNERS AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND NUMBER OF WAGE EARNERS	Number of mines	Number of mills	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total—	163	32	31,008,891	\$19,715,727	4,697	4,244	368	85	\$6,004,303	\$894,696
None—	8	—	204,576	125,419	20	—	—	20	—	—
1 - 5—	36	3	658,605	407,361	135	93	14	28	117,736	22,977
6 - 20—	29	7	1,685,977	1,171,841	418	378	34	6	498,080	73,063
21 - 50—	13	6	1,783,756	1,198,028	463	424	37	2	593,532	74,853
51 - 100—	10	5	2,612,541	1,733,057	658	617	41	—	859,455	92,178
101 - 250—	5	3	3,128,632	2,395,886	584	549	35	—	837,752	109,099
251 - 500—	3	1	—	—	—	—	—	—	—	—
501 - 1,000—	1	1	18,622,905	11,135,752	1,791	1,674	117	—	2,472,868	320,490
Unclassified—	58	4	2,313,999	1,548,383	628	509	90	29	635,880	202,036
Montana, total—	28	8	2,474,025	1,683,709	457	406	32	19	574,457	84,690
None—	2	—	137,147	79,250	4	—	—	4	—	—
1 - 5—	7	—	97,040	55,300	17	11	—	6	12,726	—
6 - 20—	8	4	746,924	524,837	113	101	9	3	140,760	23,705
21 - 50—	2	1	—	—	—	—	—	—	—	—
51 - 100—	2	1	1,418,779	978,679	303	280	23	—	396,889	60,985
101 - 250—	1	1	—	—	—	—	—	—	—	—
Unclassified—	6	—	76,135	45,643	20	14	—	6	22,082	—
Nevada, total—	47	6	2,660,578	1,973,317	599	515	55	29	787,078	132,337
None—	4	—	46,037	32,973	12	—	—	12	—	—
1 - 5—	10	—	144,294	74,243	32	23	4	5	34,049	12,689
6 - 20—	4	—	275,052	196,911	63	53	7	3	82,746	17,400
21 - 50—	3	2	324,904	246,998	95	85	10	—	133,334	21,359
51 - 100—	2	—	—	—	—	—	—	—	—	—
101 - 250—	2	1	1,420,667	1,101,043	313	290	23	—	457,994	62,349
Unclassified—	22	3	449,624	321,149	84	64	11	9	78,955	18,540
Utah, total—	22	—	3,869,295	2,608,257	1,032	937	94	1	1,218,776	234,454
1 - 5—	2	—	—	—	—	—	—	—	—	—
6 - 20—	7	—	223,300	136,789	86	80	5	1	91,593	9,560
51 - 100—	2	—	—	—	—	—	—	—	—	—
101 - 250—	1	—	2,912,111	1,857,020	620	569	51	—	780,011	114,808
251 - 500—	1	—	—	—	—	—	—	—	—	—
Unclassified—	9	—	733,884	614,448	328	288	38	—	347,172	110,088
Other States, total <sup>2</sup> —	66	18	22,004,993	13,450,444	2,609	2,386	187	36	3,423,992	443,215
None—	2	—	21,392	13,196	4	—	—	4	—	—
1 - 5—	17	2	399,521	256,803	79	53	10	16	65,950	10,288
6 - 20—	10	3	456,351	324,319	165	150	13	—	187,992	22,399
21 - 50—	8	5	1,138,508	769,739	311	287	22	2	384,838	44,684
51 - 100—	4	4	1,061,327	765,370	280	265	15	—	344,158	26,516
101 - 250—	1	1	—	—	—	—	—	—	—	—
251 - 500—	2	1	17,873,738	10,745,824	1,574	1,488	86	—	2,253,383	265,919
501 - 1,000—	1	1	—	—	—	—	—	—	—	—
Unclassified—	21	1	1,054,356	567,143	198	143	41	14	187,671	73,410

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1. Reports classified by average number of wage earners employed during the year represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill; reports on which number of wage earners, by month, was not adequately reported; and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup>Arizona, 18 mines and 5 mills; California, 6 mines and 1 mill; Colorado, 27 mines and 4 mills; Idaho, 8 mines and 5 mills; New Mexico, 2 mines; Texas, 2 mines and 1 mill; and Washington, 3 mines and 2 mills.

TABLE 35.—SELECTED STATISTICS FOR OPERATIONS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF HOURS PER WAGE EARNER IN THE FULL-TIME WORKWEEK AND BY STATE: 1939 <sup>1</sup>

(For producing operations only)

STATE AND HOURS PER WEEK	Number of mines	Number of mills	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	183	32	31,008,891	\$19,715,727	4,697	4,244	368	85	\$8,004,303	\$894,696
36 - 39-----	1	-----	11,426,704	7,539,762	1,527	1,413	107	7	1,959,710	254,464
40-----	23	3								
41 - 42-----	32	8								
43 - 44-----	15	6								
45-----	18	6	1,095,749	811,885	313	287	17	9	388,904	38,724
49 - 53-----	1	-----	643,939	454,934	200	179	20	1	263,183	40,526
54 - 59-----	5	2								
Unclassified-----	68	7								
Colorado, total-----	27	4	7,439,925	5,009,062	790	713	55	12	1,021,174	123,098
40-----	2	-----	6,087,300	4,280,397	489	455	32	2	680,192	88,428
41 - 42-----	11	2	866,060	457,652	128	117	7	4	189,097	13,093
43 - 44-----	1	-----	86,062	35,490	56	47	8	1	58,190	9,800
45-----	5	1								
54 - 59-----	1	-----								
Unclassified-----	7	1	400,513	235,523	107	94	8	5	113,695	11,779
Idaho, total-----	8	5	11,179,006	6,104,451	939	872	64	3	1,515,881	194,162
40-----	2	2	1,471,755	1,036,280	261	251	10	-----	395,686	27,861
41 - 42-----	2	2								
43 - 44-----	2	1								
Unclassified-----	2	-----	9,707,251	5,068,171	678	621	54	3	1,120,195	166,261
Montana, total-----	28	8	2,474,025	1,683,709	457	406	32	19	574,457	84,890
36 - 39-----	1	-----	669,600	274,999	99	85	10	4	104,910	23,826
40-----	7	-----								
41 - 42-----	4	-----								
43 - 44-----	3	1								
45-----	3	1	439,707	341,030	48	43	5	-----	67,457	16,460
48-----	4	5	892,359	613,533	248	231	15	2	338,358	40,994
54 - 59-----	2	-----								
Unclassified-----	7	-----								
Nevada, total-----	47	6	2,660,578	1,973,317	599	515	55	29	787,078	132,337
41 - 42-----	9	2	1,194,040	998,968	230	200	27	3	297,619	71,618
43 - 44-----	3	1	60,469	36,025	38	35	3	-----	54,756	5,564
48-----	5	-----	456,104	300,875	138	122	11	5	202,414	20,056
49 - 53-----	1	-----								
54 - 59-----	1	-----								
Unclassified-----	28	3	947,965	637,449	193	158	14	21	232,289	35,099
Utah, total-----	22	-----	3,869,295	2,608,257	1,032	937	94	1	1,218,776	234,454
40-----	10	-----	3,223,175	2,056,765	719	661	58	-----	855,901	122,067
41 - 42-----	3	-----	321,848	289,798	186	178	8	-----	237,641	19,600
43 - 44-----	1	-----	45,304	30,162	20	18	1	1	15,601	3,600
45-----	1	-----								
54 - 59-----	1	-----								
Unclassified-----	6	-----	278,966	231,532	107	80	27	-----	109,633	89,187
Other States, total <sup>2</sup> -----	31	9	3,366,062	2,336,931	890	801	68	21	886,937	125,955
40-----	2	1	1,481,673	1,004,307	392	372	19	1	366,333	45,104
41 - 42-----	3	2								
43 - 44-----	5	3								
45-----	3	-----								
48-----	3	-----	269,776	99,608	62	58	3	1	50,556	5,600
Unclassified-----	18	3	1,092,527	761,946	273	221	34	18	267,872	51,563

<sup>1</sup> For definition of the industry see tables 2 and 20, footnote 1. Reports were classified by number of hours in the full-time workweek reported for wage earners in that department of the mine or mill for which the largest number of man-hours worked was reported. Statistics shown for "Unclassified" represent: Reports on which number of hours was not reported; reports on which no wage earners were reported; and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Arizona, 18 mines and 5 mills; California, 6 mines and 1 mill; New Mexico, 2 mines; Texas, 2 mines and 1 mill; and Washington, 3 mines and 2 mills.

## MINERAL INDUSTRIES

TABLE 36.—SELECTED STATISTICS FOR OPERATIONS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF DAYS ACTIVE DURING THE YEAR: 1939<sup>1</sup>

(For producing operations only)

NUMBER OF DAYS ACTIVE DURING YEAR	Number of mines	Number of mills	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	163	32	31,008,891	\$19,715,727	4,697	4,244	368	85	\$6,004,303	\$894,696
1 - 49-----	1	1	94,413	78,196	21	11	2	8	13,217	3,130
50 - 99-----	7	1	155,641	73,824	31	21	6	4	28,434	7,000
100 - 149-----	8	3	78,225	50,594	49	37	4	8	43,598	14,600
150 - 199-----	8	-----	55,230	32,634	25	17	3	5	21,256	2,558
200 - 249-----	5	-----	332,094	195,659	58	53	2	3	54,177	2,100
250 - 299-----	7	-----	9,779,554	6,686,488	1,200	1,108	90	2	1,592,994	224,684
300 - 324-----	11	3	474,224	301,406	152	143	9	-----	181,424	14,558
275 - 299-----	9	2	4,265,232	3,007,703	1,014	924	69	21	1,187,270	180,707
325 and over-----	25	6	13,258,211	7,820,858	1,486	1,368	94	4	2,195,990	245,745
Unclassified-----	21	13	2,515,027	1,670,165	661	542	89	30	685,603	199,636
Unclassified-----	61	4	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1. Reports classified by number of days active represent a single mine or mill or a mine and mill reported as a single unit. Reports for a single mine or mill were classified by number of days the mine or mill was in operation for production or development purposes during the year; reports for mines and mills reported as single units were classified by number of days the mine was in operation during the year. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of days active was not reported; and reports for central offices reported separately from their associated mines and mills.

TABLE 37.—SELECTED STATISTICS FOR OPERATIONS IN THE SILVER-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS PER MAN-HOUR: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS PER MAN-HOUR	Number of mines	Number of mills	Mine production of recoverable silver (fine ounces)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	163	32	31,008,891	\$19,715,727	4,697	4,244	368	85	\$6,004,303	\$894,696
Less than \$0.50-----	12	3	153,639	92,804	162	148	14	-----	208,868	28,896
\$0.50 - \$0.74-----	8	2	185,571	98,127	82	75	7	-----	91,698	8,100
\$0.75 - \$0.99-----	7	1	787,252	490,722	295	282	12	1	363,574	29,529
\$1.00 - \$1.24-----	16	6	3,028,550	2,098,750	898	847	50	1	964,855	106,046
\$1.25 - \$1.49-----	8	2	1,840,981	1,255,044	420	394	26	-----	576,319	75,921
\$1.50 - \$1.74-----	9	2	1,345,911	807,537	242	221	18	3	327,177	44,804
\$1.75 - \$1.99-----	7	1	2,446,750	1,686,399	518	468	48	-----	651,262	98,615
\$2.00 - \$2.49-----	5	3	921,713	847,030	195	178	17	-----	269,450	46,690
\$2.50 - \$2.99-----	7	1	911,005	485,001	100	89	11	-----	126,420	20,453
\$3.00 - \$3.99-----	3	2	1,279,478	825,491	140	133	5	2	213,215	12,858
\$4.00 and over-----	7	2	16,086,512	9,651,992	1,137	1,055	77	5	1,773,597	243,207
Unclassified-----	74	7	2,023,529	1,378,830	510	354	83	73	437,840	130,175

<sup>1</sup>For definition of the industry see tables 2 and 20, footnote 1. Reports classified by value of products per man-hour represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine, reports on which statistics adequate for classification were not reported, and reports for central offices reported separately from their associated operations.

## Copper Ore

Mines and mills in the United States producing ores and concentrates valued chiefly for their copper content had an output valued at \$142,000,000 at the points of production and the products contained about 1,386 million pounds of recoverable copper. It is estimated that these mines and mills accounted for 95 percent of the recoverable copper contained in all ores and concentrates produced in the United States. The remaining 5 percent represents largely byproduct copper from operations engaged in producing ores valued chiefly for metals other than copper.

The ores and concentrates produced by copper mines and mills in 1939 contained, in addition to copper, the following quantities of recoverable metals: 429,518 ounces of gold, 13,138,000 ounces of silver, 7,425,000 pounds of molybdenum, 52,841,000 pounds of zinc, and 14,432,000 pounds of lead.

Copper mines and mills provided 51,241,000 man-hours of work during 1939 for an average of 23,844 wage earners. In addition, 2,908 salaried workers were reported employed at copper mines, mills, and central offices in October.

### PRINCIPAL EXPENSES REPORTED

The total amount paid to wage earners during the year was \$34,486,000—an average of 67 cents per man-hour. Salaried employees were paid a total of \$8,078,000. In addition to salaries and wages, the copper-mining industry in 1939 spent \$23,562,000 for supplies and materials, \$4,168,000 for fuel, \$4,899,000 for purchased electric energy, and \$511,000 for work done on contract by other concerns. These principal expenses totaled \$75,703,000. The cost of new buildings, major repairs to old structures, and new and used machinery and equipment erected or installed during the year amounted to \$5,906,000. This figure includes installation costs, which are partly duplicated in the above expenses. The expenditures by the copper-mining industry charged to capital-asset accounts during 1939 were much lower than such expenditures in 1929. Of the \$5,906,000 expended in 1939, \$4,084,000 was for machinery and equipment compared with \$13,084,000 in 1929.

### PRODUCTION

The total value of all products at copper mines and mills in 1939 was 50 percent below that of 1929. Arizona was the leading copper-mining State, accounting for 36 percent of the copper mine and mill output of recoverable copper. California, Colorado, and Utah produced 24 percent; Idaho, Montana, and Washington, 15 percent; Nevada, about 10 percent; New Mexico, 7 percent; Michigan, over 6 percent; and all other States, 2 percent.

Census figures reveal that since 1929 there has been a further reduction in the number of producing copper mines. Fifty-one producing mines were reported in 1939 compared with 180 in 1929 and 226 in 1919. The four largest mines, each of which produced over 80 million pounds of recoverable copper, accounted for 44 percent of the total copper mined by copper mines in 1939; the 10 largest mines, each of which produced over 40 million pounds of recoverable copper, accounted for 67 percent. Although the 51 copper mines and 27 mills were operated by 35 operating companies, the three major copper companies and their three subsidiaries, operating 19 mines and 11 mills, produced 74 percent of the total output.

About 80 percent of the total recoverable copper produced by copper mines and mills in 1939 was contained in concentrates produced, 12 percent in direct-smelting ores, and the remainder chiefly in milling ores sent to other than copper mills and in leached ores and mine-water precipitates. Milling ores were

concentrated at 27 copper mills, which treated 51,571,000 short tons of ore (including a small quantity of tailings) and produced 2,106,000 short tons of concentrate. Thus it required an average of about 25 tons of crude ore to produce 1 ton of concentrate. The average recoverable copper content of ore concentrated was 21.5 pounds per ton, or 1.07 percent compared with the 1.22 percent for 1929 reported by the United States Bureau of Mines. It is interesting to note that some of the large porphyry operations, which are known to be low-cost producers, treated ore yielding as little as 15 pounds of copper per ton of ore.

### EMPLOYMENT AND WORKING TIME

The average of 23,844 wage earners employed by the copper-mining industry in 1939 represented a drop of 46 percent from the number employed in 1929. This decline, together with the fact that the 1939 copper output was only 28 percent below that of 1929 despite the lower yield of copper per ton of ore mined, indicates that output per man had risen substantially during the decade—an observation discussed in more detail in a later section of this report. The wage earners in 1939 worked a total of 6,415,000 man-shifts and 51,241,000 man-hours, averaging 8 hours per shift. Of the total number of man-hours worked on active days, about 79 percent was devoted to mining and mine development, and 21 percent to milling ores. Statistics on man-shifts and man-hours worked by wage earners in the copper-mining industry were reported to the Bureau of the Census for the first time in the 1939 survey.

Arizona employed the largest number of wage earners at copper mines and mills—over 29 percent; Idaho, Montana, and Washington ranked next, together accounting for 25 percent; California, Colorado, and Utah employed 16 percent; Michigan, over 13 percent; Nevada, almost 9 percent; New Mexico, over 6 percent; and all other States, nearly 2 percent.

The principal monthly changes in the number of wage earners at copper mines and mills followed, with a lag of about a month, the changes in the market price of copper which reflected the demand for copper. This is particularly apparent during the second half of the year when, in response to a rapidly growing demand for copper, both the price of copper and employment in copper mining exhibited a steadily upward trend. The number of wage earners declined to a low point of 22,428 in July after the price had reached the year's low of 9.775 cents per pound in June. The peak employment of 26,392 wage earners was attained in December, after the maximum price for the year of 12.275 cents per pound was reached in November. The monthly changes in employment at copper mines and mills were apparently not due to seasonal factors.

The average number of equivalent full days operations were active, which indicates approximately the number of days worked per wage earner, was 312 for the industry as a whole. The average for all copper mines was 308 days; for all copper mills, 328 days.

Data on multiple shifting, collected for the first time in the 1939 census, indicated that most of the copper mines and mills operated on a two- or three-shift basis for at least a part of the year. Of the 51 mines, 25 operated on a three-shift basis, 14 on a two-shift basis, and 12 on a single-shift basis. Virtually all copper concentrating mills operated three shifts. However, most of the employment in mining and milling was during the first shift. Of the total number of man-shifts worked at mines by wage earners, 65.6 percent were worked during the first shift, 29.5 percent during the second, and 4.9 percent during the third. The corresponding percentages for the first, second, and third shifts at copper mills were 66.7, 17.6, and 15.7, respectively.

Although wages paid by the copper-mining industry as a whole averaged 67 cents per man-hour, the hourly earning of wage earners ranged from an average of 49 cents in Michigan to an average of 76 cents in the States of North Carolina, Pennsylvania, and Tennessee combined. In Arizona the average hourly earning was 69 cents; in Nevada, 74 cents; New Mexico, 59 cents; California, Colorado, and Utah, 67 cents; and Idaho, Montana, and Washington, 75 cents.<sup>1</sup>

#### OUTPUT PER MAN

Output per man for the copper-mining industry as a whole increased substantially since 1929. In 1939, 1.3 tons of crude copper ore were mined per man-hour worked by wage earners at mines compared with 0.7 ton in 1929 as reported by the WPA National Research Project and the United States Bureau of Mines on the basis of statistics collected by the latter agency.<sup>2</sup> The recoverable copper content of the ore mined per man-hour worked at copper mines in 1939 was 34.9 pounds, 70 percent higher than the 1929 figure of 20.5 pounds.

Combined figures for mining and milling on active days indicate that output per man-hour in 1939 averaged 27.5 pounds of recoverable copper. The highest man-hour output, about 42 pounds, was attained in California, Colorado, and Utah. This reflects the high productivity of the open-cut mining method employed in Utah.

About 19 percent of the mine value of the ore mined and milled during the year was derived from its content of recoverable metals other than copper. The proportions of other metals varied widely in the different regions and this factor should be taken into account in comparisons of output per man. Expressed in terms of the mine or mill value of all products, output per man-hour worked on active and inactive days averaged \$2.76, ranging from \$1.40 in Michigan to \$4.75 in California, Colorado, and Utah.

#### POWER EQUIPMENT

Power equipment available for use at copper mines and mills at the end of the year had an aggregate rated capacity of 753,000 horsepower. The available horsepower per wage earner, including idle and used equipment, was 32 in 1939 compared

with 16 in 1929 and 12 in 1919. To a considerable extent this trend reflects a larger use of more efficient power equipment and a wider utilization of mechanical power for tasks formerly performed with manual labor, and it partly accounts for the rise in output per man previously observed. However, a larger proportion of the equipment may have been idle in 1939 than in 1929 and the rise in the available horsepower per wage earner does not necessarily indicate a corresponding increase in horsepower actually used per wage earner.

Of the total available horsepower reported in 1939, 22 percent represented that used for driving mobile equipment such as power shovels, locomotives, trucks, tractors, and churn drills. The remaining horsepower was used to drive fixed or stationary equipment such as mine hoists, electric generators, pumps, crushers, ventilating fans, and compressors. In 1929 mobile equipment accounted for only 8 percent of the aggregate available horsepower. This increase over the past decade reflects an expansion in the use of open-cut methods of mining, which employ a larger proportion of mobile equipment than underground methods.

The figures for electric-energy consumption indicate a shift to the use of purchased electric power and a decline in the proportion generated at the point of use. Although the consumption of electricity generated at copper mines and mills declined 43 percent between 1929 and 1939, the consumption of purchased electric energy increased by 4 percent. Purchased energy comprised 65 percent of the total electric energy consumed in 1939 compared with 51 percent in 1929.

Statistics on the number of principal types of power loading machines available for use at the end of the year are summarized in table 49. Underground mines were equipped with a total of 147 shovel loaders and 420 scraper loaders. All of the shovel loaders and half of the scraper loaders were driven by compressed air; the remaining scraper loaders were driven by electricity. Fewer than half of the shovel loaders required head room of over 8 feet. Two-thirds of the scraper loaders were equipped with hoists having a rated horsepower of less than 10, and only eight scraper hoists were reported with a rated horsepower of over 25. Surface loading equipment comprised 81 power shovels, 22 cranes, 3 draglines, 2 clam-shell loaders, and 3 scraper loaders. Of the power shovels 68 were electric and 13 were gasoline or Diesel. Nearly three-fourths of the power shovels had a bucket capacity of 3 to 5 cubic yards.

The statistics summarized in this report are for mines and mills engaged in producing ores or concentrates valued chiefly for their copper content. Statistics for recoverable copper contained in ores or concentrates produced by other mines and mills are covered in reports for the gold, silver-, lead-, zinc-, and molybdenum- ore industries.

<sup>1</sup> These average hourly earnings were computed for each area by dividing the reported amount paid in wages by the reported number of man-hours worked by all wage earners regardless of the nature of their tasks, the amount of overtime worked, or other conditions of employment. These average hourly earnings should not be confused with hourly wage rates. The latter apply to specific occupations and usually take account of special conditions such as overtime work and the copper price level.  
<sup>2</sup> See Y. S. Leong, Emil Erdreich, J. C. Burritt, O. E. Kiessling, C. E. Nighman, and George C. Heikes, *Technology, Employment, and Output per Man in Copper Mining* (WPA National Research Project in cooperation with U. S. Dept. Int., Bur. Mines, Report No. E-12, Feb. 1940), p. 214.

## COPPER ORE

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TABLE 38.—PRINCIPAL STATISTICS FOR THE COPPER-ORE INDUSTRY IN THE UNITED STATES: 1939, 1929, and 1919<sup>1</sup>

(For producing operations only)

ITEM	1939	1929	1919
Number of mines-----	51	180	226
Number of persons engaged, total-----	26,752	48,043	46,999
Wage earners (average for the year, including inactive periods)-----	23,844	44,502	43,717
Salaried employees-----	2,908	3,465	3,179
Proprietors and firm members-----		76	103
Value of all products <sup>2</sup> -----	\$141,654,842	\$283,517,373	\$179,730,031
Principal expenses designated below, total-----	\$75,703,459	\$145,163,728	\$123,993,072
Wages-----	\$34,485,789	\$73,199,785	\$66,890,194
Salaries-----	\$8,077,636	\$10,136,354	\$8,089,741
Supplies and materials-----	\$23,562,345	\$43,995,395	\$54,275,369
Fuel-----	\$4,167,613	\$9,210,052	\$11,810,485
Purchased electric energy-----	\$4,898,798	\$6,027,234	\$3,555,530
Contract work-----	\$511,278	\$2,594,908	\$421,753
Cost of machinery and equipment erected or installed during year-----	\$4,083,867	\$13,083,523	( <sup>3</sup> )
Horsepower rating of power equipment, total-----	752,707	701,791	523,591
Per wage earner-----	31.6	15.8	12.0
Stationary equipment <sup>4</sup> -----	588,845	642,406	( <sup>3</sup> )
Mobile equipment <sup>5</sup> -----	163,862	59,385	( <sup>3</sup> )
Electric energy consumed (thousands of kw.-hrs.), total-----	1,205,605	1,492,733	( <sup>3</sup> )
Purchased-----	788,979	758,119	( <sup>3</sup> )
Generated by reporting companies-----	416,626	734,614	( <sup>3</sup> )

<sup>1</sup> For explanations regarding operations included, terms used, and extent of comparability of statistics for 1939, 1929, and 1919 see table 2, footnote 1. The statistics presented cover mines and mills that mined or treated ores valued chiefly for their copper content. The 1939 figures include statistics for 27 copper mills.

<sup>2</sup> Includes mine value of direct-smelting ore, mine value of milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis, mine value of metals recovered from ores leached in place and from mine-water precipitates, mill value of concentrates produced (excluding concentrates produced from ore and tailings purchased or treated on a custom basis), value added by milling purchased ore, mine or mill value of miscellaneous secondary products (including electric energy sold), and receipts for miscellaneous services performed for other concerns.

<sup>3</sup> Not available.

<sup>4</sup> Aggregate horsepower rating of engines, motors, etc., for driving stationary or fixed equipment such as mine hoists, pumps, crushers, ventilating fans, compressors, etc.

<sup>5</sup> Aggregate horsepower rating of engines and motors for driving mobile equipment such as power shovels, locomotives, trucks, tractors, churn drills, etc.

TABLE 39.—SUMMARY FOR THE COPPER-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939, 1929, and 1919<sup>1</sup>

(For producing operations only)

STATE AND CENSUS YEAR	Number of mines	Value of all products	Number of wage earners (average for the year)	Number of salaried employees	PRINCIPAL EXPENSES					Aggregate horsepower rating of power equipment
					Total	Wages	Salaries	Supplies and materials, fuel, and purchased electric energy	Contract work	
United States:										
1939-----	51	\$141,654,842	23,844	2,908	\$75,703,459	\$34,485,789	\$8,077,636	\$52,628,756	\$511,278	752,707
1929-----	180	283,517,373	44,502	3,465	145,163,728	73,199,785	10,136,354	59,232,681	2,594,908	701,791
1919-----	226	179,730,031	43,717	3,179	123,993,072	66,890,194	8,039,741	49,141,384	421,753	523,591
Arizona:										
1939-----	15	46,383,492	6,953	784	24,767,362	11,221,778	2,039,813	11,443,910	61,861	249,946
1929-----	68	113,980,541	15,584	1,405	54,562,716	26,947,217	3,823,026	22,462,925	1,129,548	192,753
1919-----	89	82,689,085	14,237	1,360	47,357,626	24,855,574	3,539,381	18,650,748	292,123	157,599
Michigan:										
1939-----	6	9,411,300	3,166	259	6,609,273	3,267,794	519,560	2,755,935	65,984	91,545
1929-----	18	29,683,859	7,834	479	18,360,369	9,636,442	1,230,101	7,258,864	32,962	131,593
1919-----	28	34,476,336	12,235	682	25,921,709	14,608,804	1,440,005	9,872,900		169,589
Nevada:										
1939-----	5	11,323,056	2,102	214	6,507,800	3,256,940	559,338	2,435,079	256,443	40,084
1929-----	13	19,984,910	2,698	288	10,429,058	4,885,398	763,467	4,595,384	196,809	45,600
1919-----	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
New Mexico:										
1939-----	4	8,562,730	1,541	156	4,893,562	2,036,142	374,063	2,475,257	10,100	49,665
1929-----	14	13,293,420	2,258	218	7,656,530	3,409,479	528,419	3,702,358	18,274	53,687
1919-----	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
California, Colorado, and Utah:										
1939-----	4	38,968,215	3,803	419	13,727,367	5,497,535	1,142,068	7,011,014	76,750	172,449
1929-----	25	52,674,034	4,667	440	22,860,735	7,987,107	1,221,632	12,492,447	1,158,549	125,842
1919-----	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Other States: <sup>4</sup>										
1939-----	17	26,986,049	6,279	1,086	19,198,095	9,205,600	3,442,794	6,509,561	40,140	149,016
1929-----	42	53,900,609	11,481	637	31,492,300	20,132,142	2,589,709	8,722,623	67,766	154,816
1919-----	109	62,564,610	17,245	1,137	50,735,537	26,925,816	3,060,355	20,617,766	129,650	196,405

<sup>1</sup> For explanations of extent of comparability of statistics for 1939, 1929, and 1919 see table 2, footnote 1.

<sup>2</sup> Not available.

<sup>3</sup> Not shown separately; included with "Other States."

<sup>4</sup> Distributed as follows: For 1939—Idaho, 1 mine; Montana, 10; North Carolina, 1; Tennessee, 2; and Washington, 3. For 1929 and 1919, separate figures for number of "mines" in all of the States included in the groups are not available. The number of "enterprises" represented are distributed as follows: For 1929—Idaho, 4 enterprises; Montana, 7; North Carolina, 2; Oregon, 2; Tennessee, 2; Texas, 2; Vermont, 1; Washington, 1; and Wyoming, 1. For 1919—California, 15 enterprises; Colorado, 5; Idaho, 6; Montana, Oregon, and Washington, 30; Nevada, New Mexico, and Utah, 35; and Missouri, Tennessee, and Vermont, 5.

## MINERAL INDUSTRIES

TABLE 40.—PRINCIPAL STATISTICS FOR THE COPPER-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

ITEM	United States	Arizona	Michigan	Nevada	New Mexico	California, Colorado, and Utah <sup>2</sup>	Idaho, Montana, and Washington <sup>3</sup>	North Carolina, Pennsylvania, and Tennessee <sup>4</sup>
Number of operating companies-----	5 35	12	4	4	4	4	6	3
Number of mines-----	51	15	5	5	4	4	14	3
Number of mills-----	27	9	5	2	2	4	2	2
Number of persons engaged, total-----	28,752	7,737	3,405	2,315	1,697	4,222	6,671	704
Wage earners (average for the year)-----	23,844	6,953	3,166	2,102	1,541	3,803	5,380	399
Salaried employees-----	2,908	784	239	624	156	419	791	7305
Production:								
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----	52,117,853	17,106,860	1,944,251	4,952,240	4,566,108	19,908,618	3,050,866	528,710
Direct-smelting ore (tons)-----	1,657,770	1,396,201	736	45,629	59,909	577	30,658	94,680
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----	2,359,731			2,311,817	47,914			
Milling ore and tailings treated, excluding purchased ores (tons)-----	49,280,125	13,604,174	4,803,357	2,592,635	4,458,285	19,877,241	3,036,395	1,288,038
Concentrates produced, excluding concentrates from purchased ores (tons)-----	2,012,506	599,882	67,361	136,801	145,577	532,388	483,364	47,133
Recoverable metal content of above direct-smelting ore, milling ore and tailings sold or sent to custom mills, and concentrates produced from other than purchased ores <sup>5</sup> -----								
Copper (pounds) <sup>6</sup> -----	1,385,965,075	499,323,693	87,989,153	132,085,900	91,484,747	339,361,486	214,465,096	21,295,000
Gold (fine ounces)-----	429,517.90	114,957.28		70,774.49	9,435.60	172,127.00	60,171.00	2,052.55
Silver (fine ounces)-----	13,138,381	4,261,796	97,328	513,220	529,408	1,687,626	6,200,371	46,632
Molybdenum (pounds) <sup>10</sup> -----	7,425,386	(11)			(11)	(11)		
Zinc (pounds)-----	52,840,656	4,014,231		72,000	6,025,000		40,413,425	2,316,000
Lead (pounds)-----	14,431,555	240,128		30,900	5,223,612		8,936,915	
Value of all products-----	\$141,634,842	\$46,383,492	\$9,411,300	\$11,323,056	\$8,562,730	\$38,968,215	\$24,821,722	\$2,164,327
Principal expenses designated below, total-----	\$75,703,469	\$24,767,362	\$6,809,273	\$6,507,800	\$4,893,562	\$13,727,367	\$16,719,838	\$2,478,257
Wages-----	\$34,485,789	\$11,221,778	\$3,267,794	\$3,256,940	\$2,036,142	\$5,497,535	\$8,624,578	\$531,022
Salaries-----	\$8,077,636	\$2,039,813	\$519,560	\$559,338	\$374,063	\$1,142,068	\$2,068,458	\$1,344,338
Supplies and materials-----	\$23,562,345	\$8,981,036	\$1,459,521	\$1,668,560	\$1,837,265	\$4,704,658	\$4,516,939	\$391,366
Fuel-----	\$4,187,613	\$1,739,654	\$1,125,905	\$274,328	\$549,445	\$341,373	\$135,461	\$947
Purchased electric energy-----	\$4,898,798	\$723,220	\$170,509	\$491,691	\$86,547	\$1,964,983	\$1,301,264	\$160,584
Contract work-----	\$511,278	\$61,861	\$65,984	\$256,443	\$10,100	\$76,750	\$40,140	
Cost of buildings, machinery, and equipment erected or installed during year-----	\$5,905,699	\$3,480,266	\$288,216	\$482,380	\$590,209	\$555,517	\$480,294	\$28,316
Buildings-----	\$1,821,831	\$646,578	\$116,289	\$356,491	\$252,467	\$262,397	\$177,548	\$10,061
Machinery and equipment-----	\$4,083,867	\$2,833,688	\$171,927	\$126,369	\$337,742	\$293,120	\$302,746	\$18,255
Purchased in new condition-----	\$2,576,697	\$1,470,186	\$137,727	\$125,133	\$267,716	\$255,025	\$302,605	\$18,255
Purchased in used condition-----	\$1,507,170	\$1,363,502	\$34,200	\$1,206	\$70,028	\$38,095	\$141	
Man-shifts worked by wage earners, total-----	6,415,138	2,032,800	833,350	553,612	445,074	1,025,357	1,429,609	95,336
On active days, total <sup>12</sup> -----	3,306,168	2,000,694	804,930	549,400	443,922	1,014,289	1,399,650	95,233
At mines-----	4,973,515	1,737,113	625,968	460,907	285,856	554,498	1,247,165	62,008
At mills-----	1,334,353	283,581	178,982	88,493	158,066	459,791	152,445	33,275
On inactive days <sup>12</sup> -----	108,970	32,106	28,420	4,212	1,152	11,068	29,958	53
Man-hours worked by wage earners, total-----	51,240,626	16,263,344	6,724,521	4,428,886	3,427,324	6,202,232	11,431,616	762,703
On active days, total <sup>12</sup> -----	50,388,205	16,006,496	6,496,193	4,395,193	3,420,412	6,113,688	11,161,944	762,279
At mines-----	39,708,990	13,897,848	5,064,525	3,687,250	2,155,284	4,435,380	9,972,084	496,059
Per ton of crude ore mined-----	0.76	0.81	2.60	0.74	0.47	0.22	3.27	0.94
At mills-----	10,677,215	2,108,548	1,431,688	707,943	1,264,528	3,678,326	1,219,880	206,220
Per ton of ore and tailings treated <sup>13</sup> -----	0.21	0.16	0.51	0.14	0.28	0.19	0.40	0.21
On inactive days <sup>12</sup> -----	854,421	256,848	228,328	33,693	6,912	68,544	239,672	424
Value of all products per man-hour worked at mines and mills-----	\$2.76	\$2.85	\$1.40	\$2.56	\$2.50	\$4.75	\$2.17	\$2.84
Average number of full days mines and mills were active-----	312	305	306	316	299	349	310	249
Mines-----	308	305	304	321	298	337	305	223
Mills-----	328	303	312	292	300	366	355	300
Average number of hours worked per shift-----	8.0	8.0	8.1	8.0	7.7	8.0	8.0	8.0
Average hourly earning of wage earners-----	\$0.67	\$0.69	\$0.49	\$0.74	\$0.59	\$0.67	\$0.75	\$0.76
Horse power rating of power equipment, total-----	752,707	249,946	91,545	40,084	49,665	172,449	136,029	12,989
Per wage earner-----	31.6	35.9	28.9	19.1	32.2	45.3	23.1	32.6
Stationary equipment-----	588,845	211,913	79,054	33,867	28,694	93,782	128,470	12,865
Mobile equipment-----	163,862	38,033	12,491	6,217	20,771	78,667	7,559	124
Electric energy consumed (thousands of kw.-hrs.), total-----	1,205,605	344,332	127,323	67,589	76,374	340,478	223,786	25,723
Purchased-----	788,979	104,635	21,794	67,585	7,189	340,437	223,786	23,553
Generated by reporting companies-----	416,626	239,697	105,529	4	69,185	41		2,170

<sup>1</sup>For definition of the industry and explanations of terms used see footnote 1 to tables 2 and 38.<sup>2</sup>California, 1 operator, 1 mine, and 1 mill; Colorado, 1 operator, 1 mine, and 1 mill; and Utah, 2 operators, 2 mines, and 2 mills.<sup>3</sup>Idaho, 1 operator and 1 mine; Montana, 2 operators, 10 mines, and 1 mill; Washington, 3 operators, 3 mines, and 1 mill.<sup>4</sup>North Carolina, 1 operator and 1 mine; Pennsylvania, 1 operator and 1 mill; and Tennessee, 1 operator, 2 mines, and 1 mill.<sup>5</sup>Of this number, 1 operator operated mines in 2 of the designated areas.<sup>6</sup>Includes 15 wage earners at central offices who were paid a total of \$22,067.<sup>7</sup>Includes 267 salaried employees at central offices in New York and Massachusetts who were paid \$1,245,159 in salaries.<sup>8</sup>The figures shown for each metal represent the recoverable quantities after deducting estimated milling and smelting losses.<sup>9</sup>Does not include recoverable copper produced as a byproduct at other than copper mines or mills.<sup>10</sup>Produced as a byproduct from ores mined at copper mines.<sup>11</sup>Not shown separately.<sup>12</sup>Active days are those on which the respective operations were actively engaged in production or development work; inactive days are those on which the respective operations employed only watchmen or maintenance men.<sup>13</sup>Calculation based on total ore treated, including purchased material.

TABLE 41.—PRINCIPAL PRODUCTS OF COPPER MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY STATE: 1939 <sup>1</sup>

PRODUCT	United States	Arizona	Michigan	Nevada	New Mexico	California, Colorado, and Utah	Idaho, Montana, and Washington	North Carolina, Pennsylvania, and Tennessee
Value of all products-----	\$141,634,842	\$46,383,492	\$9,411,300	\$11,323,056	\$8,562,730	\$36,968,215	\$24,821,722	\$2,184,327
Direct-smelting ore:								
Quantity (tons of 2,000 pounds)-----	1,657,770	1,396,201	736	45,629	59,909	577	80,659	94,080
Recoverable metal content-----								
Copper (pounds)-----	171,441,196	145,641,350	892,878	12,530,500	4,090,069	12,879	4,878,520	3,595,000
Gold (fine ounces)-----	75,456.47	68,289.26	-----	4,208.79	844.87	91.00	1,920.00	102.55
Silver (fine ounces)-----	3,504,827	3,084,305	-----	87,869	210,154	836	122,793	8,870
Zinc (pounds)-----	86,231	14,231	-----	72,000	-----	-----	-----	-----
Lead (pounds)-----	1,967,169	240,128	-----	30,900	1,696,141	-----	-----	-----
Mine value, total-----	\$17,848,158	\$15,729,892	\$86,787	\$973,129	\$371,768	\$2,532	\$450,967	\$233,453
Per ton of ore-----	\$10.77	\$11.27	\$117.92	\$21.33	\$6.21	\$4.09	\$7.43	\$2.48
Per pound of recoverable copper <sup>2</sup> -----	\$0.061	\$0.083	\$0.097	\$0.087	\$0.057	\$0.048	\$0.074	\$0.063
Milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis:								
Quantity (tons)-----	2,359,731	-----	-----	2,311,817	47,914	-----	-----	-----
Recoverable metal content-----								
Copper (pounds)-----	48,884,233	-----	-----	47,692,900	1,191,333	-----	-----	-----
Gold (fine ounces)-----	42,269.27	-----	-----	42,164.00	105.27	-----	-----	-----
Silver (fine ounces)-----	235,754	-----	-----	95,838	139,886	-----	-----	-----
Zinc (pounds)-----	6,025,000	-----	-----	-----	6,025,000	-----	-----	-----
Lead (pounds)-----	3,527,471	-----	-----	-----	3,527,471	-----	-----	-----
Mine value, total-----	\$3,956,418	-----	-----	\$3,743,201	\$213,217	-----	-----	-----
Per ton of ore-----	\$1.68	-----	-----	\$1.82	\$4.45	-----	-----	-----
Per pound of recoverable copper <sup>2</sup> -----	\$0.057	-----	-----	\$0.060	\$0.031	-----	-----	-----
Ore and tailings treated and concentrates produced (excluding purchased ore):								
Ore and tailings treated (tons)-----	49,260,125	13,604,174	4,603,357	2,592,635	4,458,285	19,877,241	3,036,395	1,288,038
Concentrates produced (tons)-----	2,012,506	599,882	67,361	136,801	145,577	532,388	483,364	47,133
Recoverable metal content of concentrates-----								
Copper (pounds)-----	1,063,516,146	266,748,380	87,076,275	71,862,500	82,969,345	331,377,431	205,782,215	17,700,000
Gold (fine ounces)-----	311,742.16	46,643.00	-----	24,376.70	8,485.46	172,036.00	58,251.00	1,950.00
Silver (fine ounces)-----	9,396,829	1,166,545	97,328	149,483	179,368	1,686,765	6,077,578	39,762
Zinc (pounds)-----	46,729,425	4,000,000	-----	-----	-----	-----	40,413,425	2,316,000
Lead (pounds)-----	8,936,915	-----	-----	-----	-----	-----	8,936,915	-----
Mill value, total-----	\$106,102,457	\$24,261,322	\$9,296,569	\$5,895,621	\$7,127,128	\$33,977,163	\$23,947,248	\$1,595,406
Per ton of concentrate-----	\$52.72	\$40.44	\$138.04	\$43.10	\$46.96	\$63.32	\$49.54	\$33.85
Per pound of recoverable copper <sup>2</sup> -----	\$0.084	\$0.083	\$0.106	\$0.073	\$0.082	\$0.085	\$0.083	\$0.081
Ore leached in place:								
Recoverable metal content-----								
Copper (pounds)-----	72,375,832	72,375,832	-----	-----	-----	-----	-----	-----
Mine value, total-----	\$4,798,407	\$4,798,407	-----	-----	-----	-----	-----	-----
Per pound of recoverable copper-----	\$0.066	\$0.066	-----	-----	-----	-----	-----	-----
Mine-water precipitates:								
Recoverable metal content-----								
Copper (pounds)-----	26,300,942	11,091,405	-----	-----	3,234,000	7,971,176	4,004,361	-----
Silver (fine ounces)-----	25	-----	-----	-----	-----	25	-----	-----
Mine value, total-----	\$2,302,597	\$977,503	-----	-----	\$281,357	\$684,215	\$359,512	-----
Per pound of recoverable copper-----	\$0.088	\$0.088	-----	-----	\$0.087	\$0.088	\$0.090	-----
Other material:								
Recoverable metal or other mineral content-----								
Copper (pounds)-----	3,466,726	3,466,726	-----	-----	-----	-----	-----	-----
Gold (fine ounces)-----	25.00	-----	-----	25.00	-----	-----	-----	-----
Silver (fine ounces)-----	946	946	-----	-----	-----	-----	-----	-----
Molybdenum (pounds)-----	7,425,366	258,991	-----	-----	977,606	6,186,769	-----	-----
Pyrites (tons of 2,240 pounds)-----	237,286	-----	-----	-----	-----	-----	44,737	192,549
Limestone (tons of 2,000 pounds)-----	31,000	31,000	-----	-----	-----	-----	-----	-----
Mine or mill value-----	\$5,618,119	\$400,486	-----	\$625	\$542,948	\$4,274,597	\$63,995	\$335,468
Value added by milling purchased ores-----	\$709,293	-----	-----	\$709,293	-----	-----	-----	-----
Electric energy sold:								
Quantity (thousands of kw.-hrs.)-----	21,464	16,886	3,784	-----	794	-----	-----	-----
Value-----	\$239,913	\$194,259	\$19,343	-----	\$28,312	-----	-----	-----
Per kw.-hr.-----	\$0.011	\$0.012	\$0.005	-----	\$0.033	-----	-----	-----
Receipts for miscellaneous services performed for other concerns-----	\$59,490	\$21,824	\$5,601	\$1,187	-----	\$29,878	-----	-----

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38.<sup>2</sup>Figures are computed by distributing the reported value of ores or concentrates among the metals contained in direct proportion to the respective recoverable quantities of these metals multiplied by their average market prices in 1939.TABLE 42.—RECOVERABLE METAL CONTENT OF CONCENTRATES PRODUCED FROM CRUDE ORE AND TAILINGS TREATED AT COPPER MILLS  
IN THE UNITED STATES, BY STATE: 1939 <sup>1</sup>

ITEM	United States	Arizona	Michigan	Nevada	New Mexico	California, Colorado, and Utah	Idaho, Montana, and Washington	North Carolina, Pennsylvania, and Tennessee
Ore and tailings treated (tons of 2,000 pounds)-----	51,571,088	13,604,174	4,603,357	4,903,598	4,458,285	19,877,241	3,036,395	1,288,038
Concentrates produced (tons)-----	2,105,686	599,882	67,361	229,981	145,577	532,388	483,364	47,133
Ratio of material treated to concentrates recovered-----	24.5	22.7	68.3	21.3	30.6	37.0	6.3	27.3
Recoverable metal content of concentrates:								
Copper (pounds)-----	1,111,209,046	266,748,380	87,076,275	119,555,400	82,969,345	331,377,431	205,782,215	17,700,000
Lead (pounds)-----	8,936,915	-----	-----	-----	-----	-----	8,936,915	-----
Zinc (pounds)-----	46,729,425	4,000,000	-----	-----	-----	-----	40,413,425	2,316,000
Gold (fine ounces)-----	353,906.16	46,643.00	-----	66,540.70	8,485.46	172,036.00	58,251.00	1,950.00
Silver (fine ounces)-----	9,492,697	1,166,545	97,328	245,351	179,368	1,686,765	6,077,578	39,762
Percent copper content-----	26.4	22.2	64.6	26.0	28.5	31.1	21.3	18.8

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38.

TABLE 43.—AMOUNT PAID CONTRACTORS BY THE COPPER-ORE INDUSTRY FOR WORK DONE DURING 1939, BY STATE AND BY TYPE OF WORK PERFORMED<sup>1</sup>  
(For producing operations only)

STATE	Total	Loading and hauling	Drilling and exploration	Other <sup>2</sup>
United States-----	\$511,278	\$277,747	\$216,711	\$16,820
Arizona-----	61,861	-----	46,795	13,066
Nevada-----	256,443	237,262	19,181	-----
Michigan and New Mexico-----	76,084	-----	76,084	-----
California, Utah, and Washington-----	116,890	40,485	72,651	3,754

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.

<sup>2</sup> Includes grading, diking of tailing pond, drifting, and unspecified work.

TABLE 44.—NUMBER OF WAGE EARNERS IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES, BY STATE AND BY MONTH: 1939<sup>1</sup>  
(For producing operations only)

STATE	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF THE MONTH											
		January	February	March	April	May	June	July	August	September	October	November	December
United States-----	23,844	24,195	22,982	22,901	23,149	25,264	22,745	22,428	22,763	23,903	25,172	26,239	26,392
Arizona-----	6,953	6,714	6,686	6,524	6,478	6,460	6,519	6,257	6,868	7,436	7,723	7,870	7,896
Michigan-----	3,166	3,200	3,205	3,246	3,238	3,230	3,210	3,198	3,235	3,156	3,106	3,024	2,944
Nevada-----	2,102	2,158	2,107	1,983	1,991	2,010	2,026	2,092	2,120	2,136	2,207	2,200	2,188
New Mexico-----	1,541	1,285	1,310	1,377	1,416	1,445	1,484	1,563	1,642	1,570	1,734	1,787	1,885
California, Colorado, and Utah-----	3,803	3,657	3,567	3,621	3,720	3,692	3,826	3,869	3,906	4,031	3,915	3,912	3,923
Idaho, Montana, and Washington-----	5,880	6,732	5,674	5,713	5,906	6,006	5,257	4,985	4,876	5,190	6,069	7,014	7,143
North Carolina, Pennsylvania, and Tennessee-----	399	449	433	437	400	421	423	464	116	384	418	432	413

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.

TABLE 45.—EMPLOYMENT AND WORKING TIME IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES, BY DEPARTMENT AND BY STATE: 1939<sup>1</sup>  
(For producing operations only)

DEPARTMENT	United States	Arizona	Michigan	Nevada	New Mexico	California, Colorado, and Utah	Idaho, Montana, and Washington	North Carolina, Pennsylvania, and Tennessee
Average number of wage earners on active days, total-----	20,228	6,568	2,631	1,737	1,486	2,903	4,520	383
At mines, total-----	16,158	5,697	2,058	1,434	959	1,647	4,091	272
Underground-----	9,028	2,988	1,383	581	303	300	3,229	244
Open-cut-----	3,175	1,174	-----	468	602	931	-----	-----
Surface shops and yards-----	3,955	1,535	675	385	54	416	862	28
At mills-----	4,070	871	573	303	527	1,256	429	111
Average number of equivalent full days operations were active-----	312	305	306	316	299	349	310	249
At mines-----	308	305	304	321	298	337	305	228
Underground-----	304	307	304	328	311	291	305	228
Open-cut-----	309	288	-----	285	289	347	-----	-----
Surface shops and yards-----	315	307	305	356	322	347	305	225
At mills-----	328	303	312	292	300	366	355	300
Number of man-shifts worked by wage earners, total-----	6,415,138	2,052,800	833,350	553,612	445,074	1,025,357	1,429,609	95,336
On active days, total-----	6,308,168	2,000,694	804,930	549,400	443,922	1,014,289	1,399,650	95,283
At mines, total-----	4,973,515	1,737,113	625,968	460,907	285,856	554,498	1,247,165	62,009
Underground-----	2,747,941	915,978	420,301	190,358	94,317	87,395	983,885	55,707
Open-cut-----	349,398	-----	-----	133,458	174,142	322,801	-----	-----
Surface shops and yards-----	1,245,775	471,737	205,667	137,091	17,397	144,302	263,280	6,301
At mills-----	1,334,653	263,581	178,962	88,493	158,066	459,791	152,485	33,275
On inactive days-----	106,970	32,106	28,420	4,212	1,152	11,068	29,959	53
Number of man-hours worked by wage earners, total-----	51,240,626	16,263,544	6,724,521	4,428,886	3,427,324	8,202,232	11,431,618	762,703
On active days, total-----	50,386,205	16,008,496	6,496,193	4,395,193	3,420,412	8,113,688	11,191,944	762,279
At mines, total-----	39,706,990	13,897,848	5,064,525	3,687,250	2,155,884	4,435,360	9,972,064	496,039
Underground-----	21,922,277	7,327,826	3,419,179	1,522,861	641,342	699,160	7,866,255	445,654
Open-cut-----	7,838,392	2,795,184	-----	1,067,664	1,393,136	2,582,408	-----	-----
Surface shops and yards-----	9,948,321	3,774,638	1,645,346	1,096,725	121,406	1,153,782	2,105,809	50,405
At mills-----	10,677,215	2,108,648	1,431,688	707,943	1,264,528	3,678,328	1,219,880	266,220
On inactive days-----	854,421	256,848	228,328	33,693	6,912	88,544	239,672	424

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.

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TABLE 46.—NUMBER OF COPPER MINES AND MILLS WORKING ONE, TWO, OR THREE SHIFTS, AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT AND BY STATE: 1939 <sup>1</sup>

(For producing operations only)

SHIFT	UNITED STATES		Arizona	Michigan	Nevada	New Mexico	California, Colorado, and Utah	Idaho, Montana, and Washington	North Carolina, Pennsylvania, and Tennessee
	Number	Percent of total							
Number of mines, total-----	51	100.0	15	6	5	4	4	14	3
Working 1 shift per day-----	12	23.5	5	-----	1	-----	1	4	1
Working 2 shifts per day-----	14	27.5	5	4	-----	1	2	-----	2
Working 3 shifts per day-----	25	49.0	5	2	4	5	1	10	-----
Number of mills, total-----	27	100.0	9	6	2	2	4	2	2
Working 1 shift per day-----	1	3.7	-----	-----	-----	-----	1	-----	-----
Working 2 shifts per day-----	1	3.7	1	-----	-----	-----	-----	-----	-----
Working 3 shifts per day-----	25	92.6	8	6	2	2	3	2	2
Number of man-shifts worked by wage earners on active days, total-----	6,308,168	100.0	2,000,694	804,930	549,400	443,922	1,014,289	1,399,650	95,283
During first shift-----	4,152,093	65.8	1,284,965	450,138	361,872	308,193	842,801	841,223	62,801
During second shift-----	1,704,543	27.0	621,002	239,636	140,148	99,419	121,639	457,639	25,080
During third shift-----	451,532	7.2	94,727	115,156	47,380	36,310	49,749	100,788	7,422
At mines, total-----	4,973,515	100.0	1,737,113	625,968	460,907	285,856	554,498	1,247,165	62,008
During first shift-----	3,262,518	65.6	1,118,698	376,209	313,105	183,163	466,762	759,978	44,605
During second shift-----	1,469,417	29.5	566,151	187,361	120,286	78,712	79,659	418,645	17,405
During third shift-----	241,580	4.9	52,264	62,398	27,518	23,981	8,077	67,842	-----
At mills, total-----	1,334,653	100.0	265,581	178,962	88,493	158,066	459,791	152,485	33,275
During first shift-----	889,575	66.7	166,267	73,929	48,789	125,030	376,139	81,245	18,196
During second shift-----	235,126	17.6	54,851	52,275	19,862	20,707	41,980	37,784	7,657
During third shift-----	209,952	15.7	42,463	52,758	19,862	12,329	41,672	33,446	7,422

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.TABLE 47.—QUANTITY OF FUEL AND ELECTRIC ENERGY CONSUMED IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939 <sup>1</sup>

(For producing operations only)

STATE	Bituminous coal (tons of 2,000 pounds)	Anthracite (tons of 2,000 pounds)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Natural gas (thousands of cubic feet)	ELECTRIC ENERGY (thousands of kw.-hrs.)		
						Total	Purchased	Generated by reporting companies
United States-----	359,493	29	537,051	1,339,191	7,067,198	1,205,605	786,979	416,626
Arizona-----	387	20	500,309	885,640	3,878,827	344,332	104,655	239,697
Michigan-----	246,999	-----	1,528	58,298	-----	127,323	21,794	105,529
Nevada-----	25,500	-----	2,698	105,869	-----	67,589	67,585	4
New Mexico-----	40,514	-----	5,860	90,089	1,591,315	76,374	7,189	69,185
California, Colorado, and Utah-----	45,477	9	21,742	138,518	804,073	340,478	340,437	41
Idaho, Montana, and Washington-----	413	-----	4,914	60,777	792,983	223,766	223,766	-----
North Carolina, Pennsylvania, and Tennessee-----	203	-----	-----	-----	-----	25,723	25,553	2,170

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.

TABLE 48.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES, 1939, 1929, AND 1919, AND BY TYPE OF OPERATION AND BY STATE, 1939<sup>1</sup>

(For producing operations only)

PRIME MOVERS AND ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY												ELECTRIC MOTORS DRIVEN BY ENERGY GENERATED BY REPORTING COMPANIES	
TYPE OF OPERATION, STATE, AND TYPE OF EQUIPMENT	Aggregate horsepower	Prime movers								Electric motors driven by purchased energy		Number	Horsepower
		Total		Driving generators		Not driving generators		Ordinarily idle (included in preceding columns)		Number	Horsepower		
		Number	Horsepower	Number	Horsepower	Number	Horsepower	Number	Horsepower				
United States, total-----1939	752,707	532	324,327	69	203,211	463	121,116	44	45,454	10,362	428,380	4,192	184,507
-----1929	701,791	570	366,865	(2)	(2)	(2)	(2)	(2)	32,288	8,038	334,928	4,726	270,205
-----1919	522,426	1,060	386,458	(2)	(2)	(2)	(2)	(2)	(2)	3,647	135,968	3,252	161,024
Stationary-----1939	586,845	175	253,904	68	203,179	107	50,725	37	45,164	9,015	334,941	3,884	169,522
-----1929	642,408	429	334,581	(2)	(2)	(2)	(2)	(2)	32,192	6,578	307,825	4,418	249,934
Mobile-----1939	165,862	357	70,423	1	32	356	70,391	7	290	1,347	95,439	308	14,885
-----1929	59,585	141	32,282	(2)	(2)	(2)	(2)	(2)	106	1,460	27,103	308	20,271
TYPE OF OPERATION: 1939													
Mines only, total-----	66,192	65	28,502	17	16,037	48	12,265	5	1,925	856	37,890	123	6,547
Stationary-----	60,825	44	25,008	17	16,037	27	8,971	5	1,925	751	35,817	123	6,547
Mobile-----	5,567	21	3,294	-----	-----	21	3,294	-----	-----	105	2,073	-----	-----
Mines and mills operated together, total-----	686,515	467	296,025	52	187,174	415	108,851	39	43,529	9,506	390,490	4,069	177,960
Stationary-----	528,020	131	228,896	51	187,142	80	41,754	32	43,239	8,264	299,124	3,761	163,075
Mobile-----	158,495	336	67,129	1	32	335	67,097	7	290	1,242	91,566	308	14,885
STATE: 1939													
Arizona, total-----	249,946	191	191,750	42	146,902	149	44,848	11	34,669	1,320	58,196	2,738	119,964
Stationary-----	211,913	55	157,739	42	146,902	13	10,837	11	34,669	1,189	54,174	2,561	110,085
Mobile-----	38,033	136	34,011	-----	-----	136	34,011	-----	-----	131	4,022	177	9,881
Michigan, total-----	91,545	111	71,629	11	32,900	100	38,729	9	3,395	732	19,916	619	28,443
Stationary-----	79,054	67	60,689	11	32,900	56	27,789	9	3,395	635	18,365	585	27,913
Mobile-----	12,491	44	10,940	-----	-----	44	10,940	-----	-----	97	1,551	34	530
Nevada, total-----	40,084	22	2,927	6	1,812	16	1,115	7	2,195	1,234	37,157	-----	-----
Stationary-----	33,867	12	2,372	6	1,812	6	560	7	2,195	1,063	31,495	-----	-----
Mobile-----	6,217	10	555	-----	-----	10	555	-----	-----	171	5,662	-----	-----
New Mexico, total-----	49,665	86	46,441	6	21,137	80	25,504	5	218	102	3,224	806	35,259
Stationary-----	28,894	11	25,715	5	21,105	6	4,610	-----	-----	95	3,179	709	30,785
Mobile-----	20,771	75	20,726	1	32	74	20,694	5	218	7	45	97	4,474
California, Colorado, and Utah, total-----	172,449	12	573	1	60	11	513	-----	-----	3,978	171,876	6	22
Stationary-----	93,782	3	130	1	60	2	70	-----	-----	3,322	93,652	6	22
Mobile-----	78,667	9	443	-----	-----	9	443	-----	-----	656	78,224	-----	-----
Idaho, Montana, and Washington, total-----	136,029	109	10,933	3	400	106	10,533	12	4,977	2,528	125,096	-----	-----
Stationary-----	128,470	27	7,259	3	400	24	6,859	10	4,905	2,245	121,211	-----	-----
Mobile-----	7,559	82	3,674	-----	-----	82	3,674	2	72	283	3,885	-----	-----
North Carolina, Pennsylvania, and Tennessee, total-----	12,989	1	74	-----	-----	1	74	-----	-----	468	12,915	23	819
Stationary-----	12,865	-----	-----	-----	-----	-----	-----	-----	-----	466	12,865	23	819
Mobile-----	124	1	74	-----	-----	1	74	-----	-----	2	50	-----	-----

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.<sup>2</sup> Not available.

TABLE 49.—NUMBER OF POWER-LOADING MACHINES IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES, BY TYPE, KIND OF POWER USED, SIZE, AND STATE: 1939<sup>1</sup>

(For producing operations only)

TYPE OF EQUIPMENT	United States	Arizona	Michigan	Nevada	New Mexico	California, Colorado, and Utah	Idaho, Montana, and Washington	North Carolina, Pennsylvania, and Tennessee
<b>SURFACE</b>								
Power shovels, total-----	81	29	-----	7	15	29	1	-----
Kind of power used:								
Gasoline or Diesel-----	13	9	-----	1	2	-----	1	-----
Electric-----	68	20	-----	6	13	29	-----	-----
Bucket capacity (cu. yards):								
Less than 3-----	21	15	-----	2	3	-----	1	-----
3 to 5-----	59	14	-----	5	11	29	-----	-----
More than 5-----	1	-----	-----	-----	1	-----	-----	-----
Draglines and clamshell loaders, total <sup>2</sup> -----	5	2	-----	-----	2	-----	-----	1
Kind of power used:								
Gasoline or Diesel-----	2	2	-----	-----	-----	-----	-----	-----
Electric-----	2	-----	-----	-----	1	-----	-----	1
Steam-----	1	-----	-----	-----	1	-----	-----	-----
Cranes, total-----	22	1	4	-----	-----	-----	17	-----
Kind of power used:								
Compressed air-----	12	-----	-----	-----	-----	-----	12	-----
Electric-----	6	-----	1	-----	-----	-----	5	-----
Steam-----	4	1	3	-----	-----	-----	-----	-----
Scraper loaders, total <sup>3</sup> -----	3	1	-----	2	-----	-----	-----	-----
Horsepower rating of hoists:								
10 to 25-----	2	-----	-----	2	-----	-----	-----	-----
26 to 100-----	1	1	-----	-----	-----	-----	-----	-----
<b>UNDERGROUND <sup>4</sup></b>								
Shovel loaders, total <sup>5</sup> -----	147	52	-----	10	4	5	76	-----
Minimum working height required:								
8 feet or less-----	78	52	-----	10	4	5	7	-----
More than 8 feet-----	69	-----	-----	-----	-----	-----	69	-----
Scraper loaders, total-----	420	203	22	58	2	6	126	3
Kind of power used:								
Compressed air-----	211	102	-----	6	-----	2	101	-----
Electric-----	209	101	22	52	2	4	25	3
Horsepower rating of hoists:								
Less than 10-----	274	153	-----	15	1	-----	105	-----
10 to 25-----	159	48	19	42	1	5	21	2
26 to 100-----	8	2	3	1	-----	1	-----	1

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.<sup>2</sup> Represents 3 draglines and 2 clamshell loaders, all with bucket capacities of less than 3 cubic yards.<sup>3</sup> All operated by electricity.<sup>4</sup> In addition to the equipment shown, 1 elevator conveyor was reported at a mine in Michigan.<sup>5</sup> All operated by compressed air.TABLE 50.—SELECTED STATISTICS FOR INCORPORATED AND UNINCORPORATED CONCERNS IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES: 1939<sup>1</sup>

(For producing operations only)

ITEM	Total	Incorporated	Unincorporated
Number of operating companies-----	35	32	3
Number of mines-----	51	48	3
Number of mills-----	27	27	-----
Recoverable copper produced (pounds)-----	1,385,985,075	1,384,715,969	1,239,106
Value of all products-----	\$141,634,842	\$141,546,189	\$88,655
Number of persons engaged, total-----	26,752	26,726	26
Wage earners-----	23,844	23,821	23
Salaried employees-----	2,908	2,905	3
Wages and salaries paid, total-----	\$42,563,425	\$42,530,031	\$35,394
Wages-----	\$34,485,789	\$34,457,995	\$27,794
Salaries-----	\$8,077,636	\$8,072,036	\$5,800

<sup>1</sup> For definition of the industry see footnote 1 to tables 2 and 38.

## MINERAL INDUSTRIES

TABLE 51.—SELECTED STATISTICS FOR OPERATIONS AND OPERATING COMPANIES IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES,  
CLASSIFIED BY VALUE OF PRODUCTS: 1939<sup>1</sup>  
(For producing operations only)

VALUE OF PRODUCTS	Number of operating companies	Number of mines	Number of mills	Mine pro- duction of recoverable copper (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED			Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees		
United States, total-----	35	51	27	1,385,985,075	\$141,634,842	26,752	23,844	2,908	\$34,485,789	\$8,077,636
BY OPERATION										
\$1 - \$19,999-----	8	8	2	798,958	70,217	88	73	15	65,472	12,147
\$20,000 - \$49,999-----	1	1	1	1,950,952	169,768	64	53	11	59,451	15,850
\$50,000 - \$99,999-----	2	2	1	5,409,280	496,472	134	112	22	147,980	38,849
\$100,000 - \$249,999-----	4	4	1	27,581,635	2,791,725	811	768	43	924,191	95,886
\$250,000 - \$499,999-----	1	1	3	77,186,351	6,980,299	2,485	2,330	155	2,793,815	330,126
\$500,000 - \$999,999-----	3	2	5	227,595,444	19,184,020	3,877	3,470	407	5,624,719	1,146,660
\$1,000,000 - \$2,499,999-----	5	6	5	730,250,278	77,094,197	9,408	8,567	841	12,957,270	2,023,746
\$2,500,000 - \$4,999,999-----	6	6	5	315,212,177	34,848,144	9,885	8,471	1,414	11,912,911	4,414,372
\$5,000,000 and over-----	4	6	6							
Unclassified-----	4	16	6							
BY OPERATING COMPANY										
\$1 - \$19,999-----	8	8	2	798,958	70,217	88	73	15	65,472	12,147
\$20,000 - \$49,999-----	1	1	1	1,950,952	169,768	64	53	11	59,451	15,850
\$50,000 - \$99,999-----	2	2	1	5,409,280	496,472	134	112	22	147,980	38,849
\$100,000 - \$249,999-----	5	5	1	27,581,635	2,791,725	811	768	43	924,191	95,886
\$250,000 - \$499,999-----	3	2	3	77,186,351	6,980,299	2,485	2,330	155	2,793,815	330,126
\$500,000 - \$999,999-----	3	2	5	227,595,444	19,184,020	3,877	3,470	407	5,624,719	1,146,660
\$1,000,000 - \$2,499,999-----	10	11	8	730,250,278	77,094,197	9,408	8,567	841	12,957,270	2,023,746
\$2,500,000 - \$4,999,999-----	3	9	7	315,212,177	34,848,144	9,885	8,471	1,414	11,912,911	4,414,372
\$5,000,000 and over-----	3	14	5							
\$20,000,000 and over-----	3	14	5							

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38. Statistics classified by value of products per operation represent a single mine, a single mill, or a mine and mill reported as a single unit. Reports classified by value of products per company represent all operations of a company, regardless of the number of mines or mills operated. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

TABLE 52.—SELECTED STATISTICS FOR OPERATIONS AND OPERATING COMPANIES IN THE COPPER-ORE INDUSTRY IN THE UNITED STATES,  
CLASSIFIED BY NUMBER OF WAGE EARNERS EMPLOYED: 1939<sup>1</sup>  
(For producing operations only)

NUMBER OF WAGE EARNERS	Number of operating companies	Number of mines	Number of mills	Mine pro- duction of recoverable copper (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED			Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees		
United States, total-----	35	51	27	1,385,985,075	\$141,634,842	26,752	23,844	2,908	\$34,485,789	\$8,077,636
BY OPERATION										
1 - 5-----	4	4	1	334,462	28,085	19	14	5	16,386	6,147
6 - 20-----	5	5	2	2,308,738	219,748	67	53	14	69,939	14,592
21 - 50-----	6	6	1	5,517,990	486,624	199	170	29	186,558	46,107
51 - 100-----	1	1	1	33,479,747	3,547,184	690	642	48	988,005	122,662
101 - 250-----	3	3	1	113,592,068	9,105,100	2,001	1,801	200	2,592,432	572,254
251 - 500-----	5	5	5	207,093,813	19,226,324	3,942	3,844	298	5,193,946	787,554
501 - 1,000-----	6	6	5	708,448,080	74,371,633	9,948	9,048	900	13,545,612	2,113,948
1,001 - 2,500-----	1	1	1	315,212,177	34,848,144	9,886	8,472	1,414	11,912,911	4,414,372
2,501 and over-----	4	16	6							
Unclassified-----	4	16	6							
BY OPERATING COMPANY										
1 - 5-----	4	4	1	334,462	28,085	19	14	5	16,386	6,147
6 - 20-----	5	5	2	2,308,738	219,748	67	53	14	69,939	14,592
21 - 50-----	6	6	1	5,517,990	486,624	203	170	33	186,558	56,847
51 - 100-----	1	1	1	33,479,747	3,547,184	694	642	52	988,005	145,132
101 - 250-----	3	3	1	113,592,068	9,105,100	2,001	1,801	200	2,592,432	572,254
251 - 500-----	6	7	6	207,093,813	19,226,324	3,942	3,844	298	5,193,946	787,554
501 - 1,000-----	4	4	3	708,448,080	74,371,633	9,948	9,048	900	13,545,612	2,113,948
1,001 - 2,500-----	2	4	4	315,212,177	34,848,144	9,886	8,472	1,414	11,912,911	4,414,372
2,501 and over-----	4	18	8							

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38. Reports classified by average number of wage earners employed during the year at each operation represent a single mine, a single mill, or a mine and mill reported as a single unit. Reports classified by average number of wage earners per company represent the entire operations of a company, regardless of the number of mines or mills operated. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

## COPPER ORE

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TABLE 53.—SELECTED STATISTICS FOR COPPER-ORE OPERATIONS IN THE UNITED STATES, CLASSIFIED BY NUMBER OF HOURS PER WAGE EARNER IN THE FULL-TIME WORKWEEK: 1939<sup>1</sup>

(For producing operations only)

HOURS PER WEEK	Number of mines	Number of mills	Mine production of recoverable copper (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED			Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees		
United States, total-----	51	27	1,385,985,075	\$141,634,842	26,752	23,844	2,908	\$34,485,789	\$8,077,636
Less than 40-----	1	-----	-----	-----	-----	-----	-----	-----	-----
40-----	16	5	220,573,383	24,575,532	6,526	5,974	552	8,689,647	1,361,676
41 - 42-----	12	7	157,866,720	15,361,062	4,402	4,074	328	5,195,601	741,526
43 - 44-----	11	6	593,749,042	60,844,829	8,472	7,747	725	11,178,768	1,851,432
45-----	9	7	-----	-----	-----	-----	-----	-----	-----
46 - 53-----	1	1	413,795,930	40,853,419	6,719	6,049	670	9,423,773	1,705,342
54 and over-----	1	1	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	-----	-----	-----	-----	633	-----	633	-----	2,437,660

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38. Reports were classified by number of hours in the full-time workweek reported for wage earners in that department of the operation for which the largest number of man-hours worked was reported. Statistics shown for "Unclassified" represent reports for central offices reported separately from their associated mines and mills.

TABLE 54.—SELECTED STATISTICS FOR COPPER-ORE OPERATIONS IN THE UNITED STATES, CLASSIFIED BY NUMBER OF DAYS ACTIVE DURING THE YEAR: 1939<sup>1</sup>

(For producing operations only)

NUMBER OF DAYS ACTIVE DURING YEAR	Number of mines	Number of mills	Mine production of recoverable copper (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED			Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees		
United States, total-----	51	27	1,385,985,075	\$141,634,842	26,752	23,844	2,908	\$34,485,789	\$8,077,636
1 - 49-----	1	-----	-----	-----	-----	-----	-----	-----	-----
50 - 99-----	2	2	481,450	43,062	34	24	10	26,213	6,597
100 - 149-----	1	1	-----	-----	-----	-----	-----	-----	-----
150 - 199-----	3	-----	1,084,402	115,649	68	57	11	48,679	16,100
200 - 249-----	1	-----	-----	-----	-----	-----	-----	-----	-----
250 - 299-----	3	2	47,715,752	3,810,472	796	723	73	979,496	221,223
300 - 349-----	6	4	126,245,278	11,265,969	2,649	2,426	223	2,980,076	512,666
350 - 399-----	11	8	425,551,406	41,606,141	7,338	6,645	693	10,189,681	1,755,673
400 - 449-----	6	4	489,694,610	49,945,405	5,982	5,498	484	8,348,733	1,151,005
450 and over-----	16	6	315,212,177	34,848,144	9,865	8,471	1,414	11,912,911	4,414,372
Unclassified-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38. Reports classified by number of days active represent a single mine, a single mill, or a mine and mill reported as a single unit; such reports for a single mine or mill were classified by number of days the mine or mill was in operation for production or development purposes during the year; such reports for a mine or mill reported as a single unit were classified by number of days the mine was in operation during the year. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of days active was not reported; and reports for central offices reported separately from their associated mines and mills.

TABLE 55.—SELECTED STATISTICS FOR COPPER-ORE OPERATIONS IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS PER MAN-HOUR: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS PER MAN-HOUR	Number of mines	Number of mills	Mine production of recoverable copper (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED			Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees		
United States, total-----	51	27	1,385,985,075	\$141,634,842	26,752	23,844	2,908	\$34,485,789	\$8,077,636
Less than \$0.50-----	1	-----	372,046	35,485	58	53	5	44,084	5,000
\$0.50 - \$0.74-----	2	-----	26,338,055	2,489,673	1,308	1,245	63	1,356,245	112,784
\$0.75 - \$0.99-----	4	3	40,819,586	4,029,810	1,630	1,472	158	2,108,977	320,159
\$1.00 - \$1.24-----	4	3	-----	-----	-----	-----	-----	-----	-----
\$1.25 - \$1.49-----	2	1	16,036,638	1,743,114	842	792	50	736,915	82,935
\$1.50 - \$1.74-----	2	-----	-----	-----	-----	-----	-----	-----	-----
\$1.75 - \$1.99-----	5	4	59,467,499	6,716,428	1,706	1,536	170	1,736,011	405,595
\$2.00 - \$2.24-----	4	1	98,454,445	8,860,673	1,819	1,689	130	2,843,559	337,911
\$2.25 - \$2.49-----	4	4	212,471,763	17,235,535	3,136	2,811	325	4,283,363	992,248
\$2.50 - \$2.99-----	7	6	286,173,668	28,877,869	3,867	3,468	399	5,602,778	962,433
\$3.00 - \$3.99-----	6	3	392,033,198	44,144,003	4,350	3,975	375	5,805,679	883,356
\$4.00 and over-----	12	5	251,818,177	27,682,252	8,036	6,803	1,233	9,968,178	3,975,215
Unclassified-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup>For definition of the industry see footnote 1 to tables 2 and 38. Reports classified by value of products per man-hour represent a single mine, a single mill, or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

## LEAD AND ZINC ORES<sup>1</sup>

Mines and mills in the United States producing ores and concentrates valued chiefly for their lead or zinc content had an output in 1939 valued at \$62,652,000 at the points of production, and the products contained 724,408,000 pounds of recoverable lead and 1,066,198,000 pounds of recoverable zinc. Other recoverable metals contained in the ores and concentrates produced at lead and zinc mines and mills covered by the 1939 census included 11,507,000 ounces of silver, 62,000 ounces of gold, and 11,446,000 pounds of copper.

It is estimated that these mines and mills accounted for 88 and 91 percent, respectively, of the recoverable lead and zinc contained in all ores and concentrates produced in the United States. Most of the remaining lead and zinc was produced at operations engaged in producing ores or concentrates valued chiefly for silver, gold, copper, fluor spar, manganese, and tungsten; statistics covering this output are summarized in other sections of this volume. Relatively small quantities of recoverable lead and zinc were also produced at mines that were too small to come within the scope of the census canvass.

There were 246 mines and 120 ore-dressing mills in the United States in 1939 producing ores or concentrates valued chiefly for their lead or zinc content that were of sufficient size to come within the scope of the census canvass. These mines and mills were operated by 193 companies and provided 32,283,000 man-hours of work for an average of 16,637 wage earners. In addition, 1,972 salaried workers were reported employed at lead and zinc mines, mills, and central offices in October of the year.

### PRINCIPAL EXPENSES REPORTED

The total amount paid to wage earners during the year was \$20,146,000—an average of 82 cents per man-hour. Salaried employees were paid a total of \$5,049,000. In addition to salaries and wages, the industry in 1939 spent \$10,536,000 for supplies and materials, \$843,000 for fuel, \$3,531,000 for purchased electric energy, and \$346,000 for work done on contract by other concerns. These expenses totaled \$40,452,000. The cost of new buildings erected, major repairs to old structures, and new and used machinery and equipment installed during the year amounted to \$1,452,000. The expenditures by the lead- and zinc-ore industries charged to capital-asset accounts during 1939 were much lower than such expenditures in 1929. Of the \$1,452,000 expended in 1939, \$1,074,000 was for machinery and equipment, compared with \$3,752,000 in 1929. Profits or losses cannot be calculated from these census figures because they do not include certain other important expense items such as taxes, depletion, depreciation, interest, rent, insurance, and marketing costs; information concerning these items was not requested.

### PRODUCTION

The value of all products of lead and zinc mines and mills in 1939 was 44 percent less than in 1929 and 17 percent less than in 1919. Of the total value of products in 1939, 67 percent represents the mill value of 1,394,000 tons of concentrates produced at mills operated in conjunction with mines (excluding concentrates from ore and tailings purchased or treated on a custom basis); 16 percent, the mine value of

4,187,000 tons of milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis; 4 percent, the mine value of 203,000 tons of direct-smelting ore; 12 percent, value added in milling purchased ores and amounts received for custom milling in the production of 567,000 tons of concentrates; and the remaining 1 percent, the value of miscellaneous secondary products (including electric energy sold) and receipts for miscellaneous services performed for other concerns.<sup>2</sup> The five largest companies operating lead and zinc mines and mills accounted for 56 percent of the value of all products.

The mill value of concentrates produced in 1939 by non-custom lead and zinc mills, prorated approximately among the recoverable metals contained on the basis of the market values of these metals after refining, indicated that the average mill value of lead and zinc was \$0.030 per pound compared with the average market price during the year of \$0.051 for refined lead (at New York) and zinc (at St. Louis).

Census figures reveal that the number of producing lead and zinc mines declined from 473 in 1919 to 375 in 1929 and to 246 in 1939. This reduction was the result largely of the consolidation of individual properties into larger operating units, mine inactivity due to exhaustion of ore at some of the properties, and temporary suspension of some operations because of less favorable economic conditions. Of the 246 mines and 120 mills in the United States engaged in producing ores or concentrates valued chiefly for their lead or zinc content, 76 mines and 29 mills produced ores or concentrates valued chiefly for their lead content and were classified as lead mines or mills. The remaining 170 mines and 91 mills produced materials valued chiefly for their zinc content and were classified as zinc operations. The lead mines and mills accounted for 83 percent of the total recoverable lead output of both lead and zinc operations and half of the value of all products; the zinc mines and mills accounted for 88 percent of the total recoverable zinc and the other half of the value of all products. Virtually all of the ore mined by lead and zinc mines in the United States came from underground operations.

The 1939 mine output of both lead and zinc came largely from the Mississippi Valley region, where ore from 145 mines and substantial quantities of old tailings were treated at 79 mills. This ore and tailings contained 52 and 42 percent, respectively, of the recoverable lead and zinc produced at all lead and zinc mines and mills in the United States, and, unlike the ore from western mines, did not contain other metals. The bulk of the lead-bearing ore in the Mississippi Valley came from seven mines in southeast Missouri. The zinc was contained in low-grade zinc-lead ore produced chiefly at 133 mines, mostly small operations, in the Tri-State district (Kansas, southwest Missouri, and Oklahoma).

Recoverable quantities of lead and zinc contained in the complex ores and concentrates produced at 92 mines and 33 mills in the Western region represented 46 and 24 percent,

<sup>2</sup>The values of ore and concentrates reported are "net" rather than "gross" values. Gross value is determined by multiplying the quantities of the assayed metals contained by the currently quoted market prices of the metals after refining. Net value is computed by deducting from the gross value allowances for metal losses, treatment charges, penalties for the presence of undesirable materials, shipping charges, etc. In determining the amount to be paid for lead concentrates, for example, the smelters usually pay a premium for the presence of recoverable quantities of gold, silver, and copper and charge a penalty for excessive quantities of zinc, insoluble materials, sulfur, arsenic, antimony, and bismuth.

In order to meet lead or zinc smelter requirements, modern milling methods are designed, as nearly as possible, to separate the individual metals contained in the crude ores into concentrates containing only one of the two metals—lead or zinc. Zinc contained in lead concentrates is usually lost, and the presence of excessive quantities of it is penalized because it creates difficulties in smelting. Ordinarily, small quantities of lead in zinc ores or concentrates are lost, and no payment is made for them. The kind and amount of premiums paid or penalties charged by various mill operators or smelters differ according to the facilities available for treating the particular type of ore or concentrates presented.

<sup>1</sup>Lead and zinc are frequently found together in ore deposits and under certain conditions are mined by the same general mining methods. For this reason, combined statistics for lead and zinc mines and mills are presented in this report, as well as separate statistics for mines and mills producing ores and concentrates valued chiefly for either their lead or zinc content.

respectively, of the total recoverable quantities of these metals contained in ores and concentrates produced at all lead and zinc mines and mills. Idaho (principally the Coeur d'Alene region in Shoshone County) and Utah were the most important sources of lead outside of southeast Missouri. The operations in the Western region produced in addition to lead and zinc, substantial quantities of recoverable silver, gold, and copper.

The remaining 2 percent of the recoverable lead and 34 percent of the recoverable zinc came from nine mines and eight mills in the Eastern region, where the ore contained principally zinc, a small quantity of lead, and negligible quantities of silver.

#### GRADE OF ORE MINED

The grade of ore produced at lead and zinc mines in the different regions varied widely. For the United States as a whole, the average recoverable metal content per ton of ore produced at lead mines and treated at ore-dressing mills and smelters (including a small quantity of old tailings) was 83 pounds of lead and 18 pounds of zinc in addition to substantial quantities of silver, gold, and copper. The recoverable metal (all lead) contained in a ton of ore produced at lead mines in Missouri, the most important lead-mining State, averaged 62 pounds. A ton of ore produced in the lead mines of Idaho, the next important lead-mining State, contained 141 pounds of recoverable lead and 58 pounds of recoverable zinc. In other States, the recoverable metal ranged from 47 pounds of recoverable lead and 20 pounds of zinc per ton of ore mined at lead mines in Oklahoma to 443 pounds of lead and 24 pounds of zinc in the small quantity of high-grade direct-smelting ore mined in Nevada, New Mexico, and Washington.

The average recoverable metal content per ton of ore produced at zinc mines and sold or sent to mills or smelters (including about 7 million tons of tailings reclaimed at zinc mills) was 56 pounds of zinc, 7 pounds of lead, and some gold, silver, and copper. The recoverable metal contained per ton of ore produced by zinc mines in Oklahoma, the leading zinc-mining State, was 32 pounds of zinc and 4 pounds of lead. The ore produced by zinc mines in the Eastern region averaged 135 pounds of zinc and 5 pounds of lead. In other States the average per-ton content of recoverable metal ranged from 34 pounds of zinc and 6 pounds of lead in Kansas to 173 pounds of zinc and 17 pounds of lead in New Mexico.

#### ORE CONCENTRATION

Almost all of the ore mined at lead and zinc mines in the United States in 1939 required concentration before smelting. Of the total of 16,317,000 tons of ore mined (excluding tailings), only 203,000 was direct-smelting ore—chiefly from mines in Utah and Idaho. Crude ore and tailings concentrated during 1939 at lead and zinc mills (including custom mills that treated some ore from mines that were too small to come within the scope of the census canvass and from mines that produced ores valued chiefly for metals other than lead or zinc) amounted to 24,023,000 short tons, of which about 7 million tons were tailings treated at zinc mills in the Tri-State district. Of the ore and tailings treated, 1,961,000 tons, or 8 percent, was recovered as concentrates. The ratio of material treated to concentrates recovered in the Mississippi Valley region was considerably higher than that for other regions, averaging about 26 to 1 compared with 5 to 1 in the Western and Eastern regions where the ore mined was of higher grade. In each of the regions the ratio of material treated in relation to concentrates produced was slightly higher for zinc mills than for lead mills. The average ratio of material treated to concentrates recovered at custom lead and zinc mills was about 8 tons of ore to 1 ton of concentrate compared with 14 tons of ore to 1 ton of concentrate produced at other lead and zinc mills.

#### EMPLOYMENT AND WORKING TIME

The average of 15,637 wage earners at lead and zinc mines and mills in 1939 was 40 percent less than the number employed in 1929 and 29 percent below the number in 1919. Of the total number of wage earners, 8,984 were employed at lead operations and 8,653 at zinc operations. In addition to the wage earners, there were 1,972 salaried employees and 88 proprietors and firm members, the latter including 47 who performed manual labor.

Lead mines and mills in Idaho, Missouri, and Utah accounted for 95 percent of the total number of wage earners in the lead-ore industry. The remaining 5 percent was scattered over seven States, of which Arizona was the most important.

Of all wage earners in the zinc-ore industry, 50 percent were employed in the Tri-State district, and operations in the Eastern region accounted for 28 percent. Seven percent of the remaining wage earners were employed in New Mexico, 5 percent in Idaho, 5 percent in Arizona, Utah, and Washington, 2 percent in Nevada, 1 percent in Colorado, and 2 percent in Kentucky and Wisconsin.

The total number of wage earners in 1939 at all lead- and zinc-ore operations was lowest in April (14,683) and highest in November (17,382). The number of wage earners fluctuated from month to month in the first half of the year and then rose gradually in the latter part of the year reflecting a growing demand for lead and zinc after the outbreak of war in Europe.

Wage earners in the lead- and zinc-ore industries in 1939 worked a total of 4,081,000 man-shifts or 32,283,000 man-hours, averaging 7.9 hours per shift. Of the total number of man-shifts worked, 1,766,000 were worked by wage earners at lead mines and mills and 2,316,000 by wage earners at zinc-ore operations. Of the total number of man-shifts at all mines and mills, 97 percent was worked during active days when mines and mills were engaged in production or systematic development work and the remaining 3 percent during inactive days when only watchmen, inspectors, or maintenance men were employed. Of the total of 3,944,000 man-shifts worked during active days, 79 percent was devoted to mining, mine development, and maintenance work and 21 percent to the milling of ores and tailings. Statistics on man-shifts and man-hours worked by wage earners in the mining industries were reported to the Bureau of the Census for the first time in the 1939 survey.

The average number of equivalent full days operations were active, which indicates approximately the number of days worked per wage earner, was 242 for all lead and zinc mines and mills, 260 for lead mines, 263 for lead mills, 224 for zinc mines, and 247 for zinc mills.

Information on multiple shifting, also collected for the first time in the 1939 census, indicates that 28 percent of the lead and zinc mines and 66 percent of the lead and zinc mills operated on a two- or three-shift basis for at least a part of the year. Of the 246 mines, 17 lead and 8 zinc operated on a three-shift basis and 13 lead and 32 zinc on a two-shift basis; of the 120 mills, 18 lead and 48 zinc operated on a three-shift basis and 2 lead and 13 zinc on a two-shift basis. Multiple-shift operation was more common among lead mines and mills than among zinc-ore operations. Of the total number of man-shifts worked at all mines by wage earners during active days, 77 percent were worked during the first shift, 21 percent during the second, and 2 percent during the third. Corresponding percentages for the first, second, and third shifts at mills were 54, 27, and 19, respectively.

Wages paid by the lead- and zinc-ore industries in the United States as a whole averaged 62 cents per man-hour, but averages for the individual States varied widely. Average hourly earnings of wage earners ranged from 38 cents at zinc mines and mills in Missouri to 74 cents at lead-ore operations in Idaho and Montana. The average for all operations in the lead-ore industry (70 cents) was considerably higher than that for the zinc-ore industry (56 cents). As these figures are general averages for all wage earners in the designated States, no accurate conclusions may be drawn regarding the relative

rates of pay for particular occupations, for the proportions of wage earners in the various occupations differ among the individual operations.

#### OUTPUT PER MAN

The value of all products per man-hour worked by wage earners at lead- and zinc-ore operations in the United States in 1939 averaged \$1.94. Although the average output per man-hour for the Mississippi Valley region as a whole was \$1.96, about the same as for the United States, it was \$2.73 in southeast Missouri, \$1.63 in the Tri-State district, and \$1.52 in Kentucky and Wisconsin. The average for the Western region was \$1.95; for the Eastern region, \$1.86. The average of \$2.23 per man-hour for lead mines and mills in the United States was about 30 percent higher than the average of \$1.71 for zinc mines and mills.

The mining of a ton of crude ore at lead and zinc mines in the United States in 1939 required an average of 1.5 man-hours of wage-earner labor. The concentration of a ton of ore or tailings at lead or zinc mills required an additional 0.3 man-hour.<sup>3</sup> The man-hours required to mine and mill a ton of ore at lead and zinc mines varied from 0.94 in mining and 0.19 in milling in the Mississippi Valley region to 4.11 and 0.48, respectively, in the Western region. The higher labor requirements for handling the complex ores in the Western region were compensated for, however, by the higher grade of ore produced in the latter region. Thus the value of the output per man-hour in mining and milling was virtually the same in the two regions. In the Eastern region the average amount of labor required for mining a ton of ore was 1.06 man-hours, and for milling it, 0.66 man-hour per ton.

#### POWER EQUIPMENT

Power equipment available for use at lead and zinc mines and mills at the end of 1939, including idle equipment, had an aggregate rated capacity of 345,000 horsepower. This amounted to 22 horsepower per wage earner compared with 14 in 1929 and 10 in 1919. To a considerable extent this trend reflects a larger use of more efficient power equipment and a wider utilization of mechanical power for tasks formerly performed with manual labor. Mechanization of lead mines in southeast Missouri has progressed to such an extent that the horsepower rating of power equipment per wage earner was 50 compared with an average of 28 for all lead-ore operations in the United States.

As in 1929, most of the equipment at lead- and zinc-ore operations was fixed or stationary, but an increase in the proportion of mobile equipment is evident. Of the total horsepower reported in 1939, 13 percent represented that used for driving mobile equipment such as shovel loaders, scraper loaders, locomotives, and trucks compared with 7 percent used for this purpose in 1929. The remaining horsepower was used

<sup>3</sup>The average of 1.5 man-hours per ton of ore mined represents 0.667 ton per man-hour. This is about 40 percent higher than the average for 1929 as derived from statistics for that year on production and man-hours collected by the United States Bureau of Mines and summarized in an unpublished report by George R. Powell and O. E. Kiessling, *Production, Employment, and Output per Man in Lead and Zinc Mining, 1915-37* (WPA National Research Project in cooperation with U. S. Dept. Int., Bur. Mines).

to drive stationary equipment such as mine hoists, electric generators, pumps, crushers, ventilating fans, and compressors.

Greater use of underground mechanical loading equipment has played an important part in the increased mechanization of lead and zinc mines in the past decade. Although the use of underground mechanical loaders is practicable only under certain favorable physical and economic conditions, 57 mines (25 lead and 32 zinc mines) were equipped with underground shovel or scraper loaders at the end of 1939. Ten of these mines used shovel loaders exclusively, 30 used scraper loaders exclusively, and 17 had both types.

Small shovel loaders requiring a minimum working height of 8 feet or less were in more general use than the larger types, since they can operate in the small stopes and headings characteristic of many underground lead and zinc mines. At the end of 1939 lead and zinc mines were equipped with 132 of these shovel loaders. Operators of lead mines in the Mississippi Valley region reported 84 units, all driven by electricity, but in other areas small loaders driven by compressed air were more common. Only four shovel loaders requiring a minimum working height of more than 8 feet were reported for 1939.

Scraper loaders or slushers are more adaptable to many of the physical conditions encountered at lead and zinc mines and were used more widely than shovel loaders. In 1939 there were 286 scraper units at lead and zinc mines; 203 of these were driven by electric hoists and the others by compressed air. The greatest concentration of scraper loaders was in the Eastern region, where eight mines employed 118 scrapers in addition to 10 shovel loaders.

Lead- and zinc-ore operations consumed a total of 499,023,000 kilowatt-hours of electricity in 1939. Although this was 33 percent below the quantity consumed in 1929, the decline was not so great as the 44-percent decrease in the value of all products, indicating that more electricity was consumed per dollar's worth of products in 1939 than in 1929. Ninety percent of the electricity consumed in 1939, compared with 86 percent of that consumed in 1929, was purchased; the remainders were generated by the reporting companies.

#### NONPRODUCING OPERATIONS

The statistics summarized above are for operations which had some production and for which the reported value of products, cost of development work, or capital expenditures during the year amounted to at least \$2,500. No statistics were included for nonproducing operations, regardless of the amount of such expenditures. Fourteen mines and four mills were reported in 1939 for which the cost of development work or capital expenditures amounted to \$2,500 or more but which had no products. These nonproducing mines and mills employed 94 wage earners, who worked 198,000 man-hours and were paid \$107,000, and 22 salaried employees, who were paid \$35,000. Supplies and materials cost \$45,000; fuel, \$5,000; purchased electric energy, \$19,000; and work done on contract by others, \$17,000. Expenditures for major alterations and building construction and for machinery and equipment installed during 1939 totaled \$56,000. Power equipment available for use at the end of the year had a rated horsepower of 8,000, nearly all of which was for driving stationary equipment. Electric energy consumed during the year (all purchased) amounted to 1,517,000 kilowatt-hours.

TABLE 56.—PRINCIPAL STATISTICS FOR THE LEAD- AND ZINC-ORE INDUSTRIES IN THE UNITED STATES: 1939, 1929, AND 1919<sup>1</sup>

(For producing operations only)

ITEM	1939 <sup>2</sup>			1929			1919
	Total	Lead	Zinc	Total	Lead	Zinc	Lead and zinc
Number of mines-----	246	76	170	375	171	204	473
Number of persons engaged, total-----	17,697	8,015	9,682	27,803	15,004	12,799	24,030
Wage earners (average for the year)-----	15,637	6,984	8,653	25,907	14,007	11,900	21,884
Salaried employees-----	1,972	998	974	1,818	944	874	1,734
Proprietors and firm members-----	88	33	55	78	53	25	412
Value of all products <sup>3</sup> -----	\$82,651,505	\$31,467,413	\$31,184,092	\$112,427,804	\$67,561,778	\$44,866,026	\$75,173,296
Principal expenses designated below, total-----	\$40,451,815	\$19,921,824	\$20,529,991	\$71,880,856	\$41,287,387	\$30,593,469	\$56,093,433
Wages-----	\$20,146,165	\$9,921,086	\$10,225,079	\$39,191,774	\$22,917,435	\$16,274,339	\$30,708,319
Salaries-----	\$5,049,448	\$2,848,247	\$2,201,201	\$5,053,414	\$2,546,150	\$2,507,264	\$3,634,940
Supplies and materials-----	\$10,535,995	\$4,896,940	\$5,638,955	\$18,343,672	\$10,377,787	\$7,965,885	\$15,311,548
Fuel-----	\$843,373	\$286,783	\$576,590	\$1,536,005	\$680,700	\$855,305	\$2,783,249
Purchased electric energy-----	\$3,530,865	\$1,651,399	\$1,679,464	\$8,102,428	\$3,733,230	\$2,369,198	\$2,591,606
Contract work-----	\$546,071	\$137,568	\$208,702	\$1,653,563	\$1,032,085	\$621,478	\$863,471
Cost of machinery and equipment erected or installed during year-----	\$1,073,678	\$470,384	\$603,294	\$3,751,944	\$1,903,966	\$1,847,978	( <sup>4</sup> )
Horsepower rating of power equipment, total-----	345,086	193,248	151,838	357,737	194,380	163,357	229,401
Per wage earner-----	22.1	27.7	17.5	13.8	13.9	13.7	10.5
Stationary equipment <sup>5</sup> -----	300,318	166,679	133,639	334,379	176,941	157,438	( <sup>4</sup> )
Mobile equipment <sup>6</sup> -----	44,768	26,569	18,199	23,358	17,439	5,919	( <sup>4</sup> )
Electric energy consumed (thousands of kw.-hrs.), total-----	499,023	250,505	248,518	750,115	498,420	251,695	( <sup>4</sup> )
Purchased-----	449,883	245,815	204,068	644,651	447,702	196,949	( <sup>4</sup> )
Generated by reporting companies-----	49,140	4,690	44,450	105,464	50,718	54,746	( <sup>4</sup> )

<sup>1</sup>For explanations regarding operations included, terms used, and extent of comparability of statistics for 1939, 1929, and 1919 see table 2, footnote 1. Figures cover operations engaged principally in producing ores or concentrates valued chiefly for their lead or zinc content. Statistics for nonproducing operations engaged solely in development, construction, or maintenance work are excluded but are presented separately for 1939 in tables 1 and 84. Statistics for milling included in the 1939 figures cover 120 mills—84 operated in conjunction with mines, 17 tailing mills, and 19 central or custom mills.

<sup>2</sup>To avoid disclosure of data for a single operation, statistics for 1 lead operation (mine and mill) in eastern Tennessee have been excluded from all figures for the lead-ore industry and included with those for the zinc-ore industry in all tables showing separate statistics for the two industries. The ore mined at this operation contained both lead and zinc, but the value of the recoverable lead exceeded that of the zinc.

<sup>3</sup>Includes mine value of direct-smelting ore, mine value of milling ore and tailings sold to mill operators or sent to mills for treatment on a custom basis, mill value of concentrates produced at mills operated in conjunction with mines (excluding concentrates produced from ore and tailings purchased or treated on a custom basis), value added by milling purchased ore and receipts for custom milling, mine value of miscellaneous secondary products (including electric energy sold), and receipts for miscellaneous services performed for other concerns. For a breakdown of the value of all products in 1939 into the above components see tables 59, 67, and 82.

<sup>4</sup>Not available

<sup>5</sup>Aggregate horsepower rating of engines, motors, etc. for driving stationary or fixed equipment such as mine hoists, pumps, ventilating fans, compressors, crushers, etc.

<sup>6</sup>Aggregate horsepower rating of engines, motors, etc. for driving mobile equipment such as locomotives, trucks, tractors, churn drills, power shovels, etc.

## MINERAL INDUSTRIES

TABLE 57.—SUMMARY STATISTICS FOR THE LEAD- AND ZINC-ORE INDUSTRIES IN THE UNITED STATES, 1939, 1929, AND 1919,  
AND BY STATE, 1939 AND 1929<sup>1</sup>  
(For producing operations only)

STATE	Census year	Number of mines	Number of wage earners (average for the year)	Number of salaried employees	Value of all products	PRINCIPAL EXPENSES							Aggregate horsepower rating of power equipment
						Total	Wages	Salaries	Supplies and materials	Fuel	Purchased electric energy	Contract work	
LEAD AND ZINC													
United States, total-----	1939	246	15,637	1,972	\$62,651,505	\$40,451,815	\$20,146,165	\$5,049,448	\$10,535,895	\$943,373	\$3,530,863	\$346,071	345,086
	1929	375	25,907	1,818	112,427,804	71,880,859	39,191,774	5,053,414	18,343,872	1,536,005	6,102,428	1,653,563	357,737
	1919	473	21,884	1,734	75,173,296	56,093,433	30,708,319	3,884,940	15,311,548	2,783,249	2,591,906	883,471	229,401
LEAD													
United States, total-----	1939	76	6,984	998	31,487,413	19,921,824	9,921,086	2,848,247	4,896,940	266,783	1,851,399	137,369	193,248
	1929	171	14,007	944	67,561,778	41,287,387	22,917,435	2,546,150	10,377,787	680,700	3,733,230	1,032,085	194,380
Arizona-----	1939	6	411	20	1,039,440	925,685	611,354	48,895	217,627	46,459	1,350	-----	2,556
	1929	13	309	25	770,543	711,103	399,348	47,212	219,764	23,636	-----	22,143	1,917
Colorado-----	1939	6	35	1	49,124	89,272	43,656	1,000	33,732	266	8,515	2,103	1,260
	1929	20	733	51	2,946,136	2,349,337	1,449,608	125,509	568,503	22,438	178,652	4,627	8,651
Idaho-----	1939	16	2,335	182	9,199,145	6,148,561	3,524,613	557,860	1,495,565	67,007	498,034	5,482	43,940
	1929	32	3,189	170	17,400,861	9,682,249	5,787,689	471,652	2,531,180	104,822	701,540	65,166	55,836
Missouri-----	1939	9	2,285	358	11,674,167	6,934,933	3,090,978	900,523	1,882,643	79,582	945,537	35,690	114,796
	1929	15	3,773	394	22,955,417	11,500,947	5,909,659	984,183	2,574,206	306,579	1,679,163	47,157	80,432
Montana-----	1939	7	120	11	339,584	285,689	179,149	22,620	67,797	1,840	13,424	859	1,597
	1929	17	379	29	1,581,577	1,118,659	656,643	57,675	317,328	15,345	48,419	23,249	3,250
Oklahoma-----	1939	5	69	2	145,844	115,882	66,553	4,920	42,116	2,269	4	-----	165
	1929	6	390	22	1,508,124	1,006,105	528,097	75,404	280,596	36,062	73,076	12,870	4,281
Utah-----	1939	22	1,691	291	8,789,616	4,907,488	2,379,921	639,772	1,146,360	67,165	384,535	89,735	28,349
	1929	34	4,083	161	17,249,862	11,978,514	6,691,787	522,282	3,093,277	86,846	776,564	807,558	30,176
Other States <sup>2</sup> -----	1939	5	38	133	31,492	514,334	24,862	472,657	11,100	2,215	-----	3,500	585
	1929	34	1,151	92	3,149,258	2,960,873	1,495,404	262,433	792,933	84,972	275,816	49,115	11,635
ZINC													
United States, total-----	1939	170	8,653	974	31,184,092	20,529,991	10,225,079	2,201,201	5,638,955	576,590	1,679,464	208,702	151,636
	1929	204	11,900	874	44,866,026	30,593,469	16,274,339	2,507,264	7,965,885	865,305	2,369,198	621,478	163,357
Colorado-----	1939	4	74	6	135,791	169,408	99,467	11,640	36,761	727	16,739	5,074	1,165
	1929	10	238	17	906,538	646,627	365,137	44,475	140,440	7,903	89,672	-----	4,069
Idaho-----	1939	8	413	24	2,306,171	1,062,556	616,735	56,857	306,988	2,295	54,719	24,962	6,228
	1929	7	459	21	1,240,562	1,231,082	692,602	42,055	420,856	3,906	67,150	4,493	3,743
Kansas-----	1939	26	1,318	68	4,167,802	2,763,670	1,489,377	161,806	765,996	87,163	220,811	36,517	16,228
	1929	45	2,428	135	9,912,331	6,132,446	3,140,236	411,369	1,685,967	107,664	667,274	119,936	33,640
Missouri-----	1939	19	352	45	803,644	648,762	301,522	103,310	189,290	20,096	33,765	779	3,632
	1929	14	266	13	638,031	565,265	323,175	29,065	122,326	18,882	63,461	8,356	4,456
New Mexico-----	1939	10	610	56	1,699,296	1,205,001	665,449	105,338	297,319	38,292	91,105	7,498	4,962
	1929	9	1,036	65	4,046,072	2,663,348	1,429,239	192,893	782,911	64,043	97,343	96,919	8,102
Oklahoma-----	1939	81	2,671	312	10,594,730	6,382,028	2,896,121	534,293	2,111,929	193,215	522,091	124,379	48,668
	1929	87	4,117	248	16,518,953	10,936,453	5,509,272	801,249	3,248,176	317,021	831,517	229,218	57,558
Other States <sup>3</sup> -----	1939	22	3,215	463	11,474,658	8,298,566	4,157,408	1,227,957	1,930,672	234,802	740,234	7,493	68,915
	1929	32	3,356	375	11,803,539	8,418,268	4,614,678	986,158	1,565,209	335,886	553,761	162,556	51,569

<sup>1</sup> For definition of the industries see tables 2 and 56, footnote 1.

<sup>2</sup> Distributed as follows: For 1939—Nevada, 3 mines; New Mexico, 1; and Washington, 1. For 1929—Arkansas, 2 mines; California, 4; Kansas, 7; Nevada, 10; New Mexico, 5; Texas, 1; Virginia, 1; Washington, 2; Wisconsin, 1; and not specified, 1.

<sup>3</sup> Distributed as follows: For 1939—Arizona, 1 mine and 1 mill; Kentucky, 1 mine and 1 mill; Nevada, 3 mines; New Jersey, 2 mines and 2 mills; New York, 2 mines and 2 mills; Tennessee, 4 mines and 3 mills; Utah, 2 mines and 1 mill; Virginia, 1 mine and 1 mill; Washington, 2 mines and 2 mills; and Wisconsin, 4 mines and 4 mills. For 1929—Arizona, 1 mine; Montana and Nevada, 8; New Jersey, 2; New York, 1; Tennessee, 5; Utah, 1; Virginia, 1; Washington, 1; Wisconsin, 9; and not specified, 5.

## LEAD AND ZINC ORES

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TABLE 58.—PRINCIPAL STATISTICS FOR THE LEAD- AND ZINC-ORE INDUSTRIES IN THE UNITED STATES, BY REGION: 1939<sup>1</sup>

(For producing operations only)

ITEM	United States	MISSISSIPPI VALLEY REGION				WESTERN REGION			Eastern region <sup>2</sup>
		Total	Tri-State district <sup>3</sup>	Southeastern Missouri district <sup>4</sup>	Kentucky and Wisconsin	Total	Coeur d'Alene district <sup>5</sup>	All other <sup>6</sup>	
Number of operating companies <sup>7</sup>	193	109	100	5	5	83	14	69	5
Number of mines	246	145	133	7	5	92	17	75	9
Number of mills	120	79	67	7	5	33	8	25	8
Number of persons engaged, total	17,697	7,685	4,882	2,636	187	7,188	2,587	4,571	2,854
Wage earners (average for the year)	15,637	6,849	4,417	2,278	154	6,352	2,397	3,955	2,436
Salaried employees	1,972	794	427	358	9	760	176	584	941
Proprietors and firm members	88	42	38	4	4	46	14	32	—
Performing manual labor	47	20	20	—	—	27	7	20	—
Production:									
Crude ore mined, excluding tailings (tons of 2,000 pounds)	16,316,926	10,831,397	5,691,367	4,938,447	201,583	2,793,651	1,174,804	1,618,847	2,691,878
Direct-smelting ore (tons)	203,581	—	—	—	—	195,650	11,922	183,728	7,731
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons) <sup>10</sup>	4,186,638	3,617,938	3,617,033	—	905	588,700	48,046	520,654	—
Milling ore and tailings treated (tons), total	24,022,662	18,322,442	13,093,173	4,978,591	250,678	3,016,757	1,164,567	1,852,190	2,693,463
Purchased and custom <sup>10</sup>	4,459,216	3,711,499	3,661,499	—	50,000	747,717	44,282	703,435	—
All other <sup>11</sup>	19,563,446	14,610,943	9,431,674	4,978,591	200,678	2,269,040	1,120,285	1,148,755	2,688,463
Concentrates produced (tons), total	1,981,081	702,423	446,097	210,265	46,061	658,263	195,394	462,869	600,395
From purchased and custom material <sup>10</sup>	566,920	253,973	243,642	—	10,331	312,947	5,482	307,465	—
From all other material	1,394,161	448,450	202,455	210,265	35,730	345,316	189,912	155,404	600,395
Recoverable metal content of above direct-smelting ore, milling ore and tailings sold or shipped to custom mills, and concentrates (excluding metal content of concentrates produced from purchased or custom ore) <sup>12</sup>									
Lead (pounds)	724,408,034	378,195,377	71,432,222	306,318,568	444,587	333,546,091	180,227,610	173,318,481	12,666,566
Zinc (pounds)	1,066,197,702	449,423,580	435,957,865	—	13,465,715	253,294,907	80,030,046	173,264,861	363,479,215
Silver (fine ounces)	11,506,701	—	—	—	—	11,461,089	4,074,824	7,386,265	45,612
Gold (fine ounces)	61,538.04	—	—	—	—	61,538.04	1,531.94	60,006.10	—
Copper (pounds)	11,446,192	—	—	—	—	11,446,192	821,707	10,624,485	—
Value of all products	\$62,651,505	\$28,095,360	\$15,725,064	\$11,861,123	\$509,173	\$25,869,958	\$9,482,631	\$16,387,327	\$8,686,187
Principal expenses designated below, total	\$40,451,815	\$17,154,281	\$9,918,022	\$6,927,233	\$309,026	\$16,969,274	\$6,354,290	\$10,614,984	\$6,326,260
Wages	\$20,146,165	\$7,999,619	\$4,760,073	\$3,084,478	\$155,068	\$9,083,120	\$3,659,731	\$5,423,389	\$3,063,426
Salaries	\$5,049,448	\$1,718,494	\$804,329	\$900,523	\$13,642	\$2,045,561	\$549,248	\$1,496,313	\$1,285,393
Supplies and materials	\$10,535,895	\$5,066,491	\$3,110,331	\$1,881,643	\$74,517	\$4,124,132	\$1,562,300	\$2,561,832	\$1,345,272
Fuel	\$843,373	\$387,448	\$302,943	\$79,362	\$5,143	\$267,010	\$54,911	\$212,099	\$188,915
Purchased electric energy	\$3,530,863	\$1,782,864	\$776,671	\$945,537	\$60,656	\$1,308,465	\$512,315	\$796,150	\$439,534
Contract work	\$346,071	\$199,365	\$163,675	\$35,690	—	\$140,986	\$15,785	\$125,201	\$5,720
Cost of buildings, machinery, and equipment erected or installed during year	\$1,451,589	\$496,117	\$429,942	\$31,782	\$34,393	\$812,873	\$169,922	\$643,951	\$142,599
Buildings	\$377,911	\$159,493	\$159,131	—	\$362	\$172,204	\$20,359	\$151,845	\$46,214
Machinery and equipment	\$1,073,678	\$336,624	\$270,811	\$31,782	\$34,031	\$640,669	\$178,563	\$462,106	\$96,385
Man-shifts worked by wage earners, total	4,081,409	1,818,147	1,224,930	545,268	47,929	1,670,255	606,762	1,063,493	593,007
On active days, total <sup>13</sup>	3,944,240	1,727,304	1,189,655	490,215	47,434	1,627,945	588,522	1,039,423	588,991
At mines	3,103,675	1,295,208	858,807	407,808	30,593	1,445,736	543,897	902,049	362,731
At mills	840,565	432,096	332,848	82,407	16,841	182,209	44,835	137,374	226,260
On inactive days <sup>13</sup>	137,169	90,843	35,275	55,073	495	42,310	18,240	24,070	4,016
Man-hours worked by wage earners, total	32,282,964	14,337,290	9,663,610	4,339,462	335,218	13,286,328	4,846,500	8,439,828	4,659,346
On active days, total <sup>13</sup>	31,189,071	13,610,093	9,583,267	3,894,878	331,948	12,946,366	4,700,583	8,247,783	4,630,612
At mines	24,547,734	10,206,468	6,751,043	3,238,306	217,109	11,489,024	4,344,007	7,145,017	2,852,252
Per ton of crude ore mined	1.50	0.94	1.19	0.66	1.08	4.11	3.70	4.41	1.06
At mills	6,641,337	3,403,635	2,632,224	656,572	114,839	1,459,342	356,576	1,102,766	1,778,360
Per ton of ore and tailings treated	0.28	0.19	0.20	0.13	0.46	0.48	0.31	0.60	0.66
On inactive days <sup>13</sup>	1,093,893	727,197	280,343	443,584	3,270	337,962	145,917	192,045	28,734
Value of all products per man-hour worked at mines and mills	\$1.94	\$1.96	\$1.63	\$2.73	\$1.52	\$1.95	\$1.96	\$1.94	\$1.66
Average number of full days mines and mills were active	242	226	221	236	266	251	256	248	273
Mines	242	226	216	236	271	250	256	246	272
Mills	251	237	235	241	259	260	248	264	274
Average number of hours worked per shift	7.9	7.9	7.9	8.0	7.0	8.0	8.0	7.9	7.9
Average hourly earning of wage earners	\$0.62	\$0.56	\$0.49	\$0.71	\$0.46	\$0.68	\$0.76	\$0.64	\$0.66
Horsepower rating of power equipment, total	345,086	187,213	70,899	114,610	1,704	105,303	47,637	57,666	52,570
Per wage earner	22.1	27.3	16.1	50.3	11.1	16.6	19.9	14.6	21.6
Stationary equipment	300,318	156,894	61,706	93,524	1,664	96,849	44,047	52,802	46,575
Mobile equipment	44,768	30,319	9,193	21,086	40	8,454	3,590	4,864	5,995
Electric energy consumed (thousands of kw.-hrs.), total	499,023	215,424	87,229	124,708	3,487	175,703	83,387	92,316	107,896
Purchased	449,883	189,771	62,404	123,880	3,487	158,592	81,933	76,659	101,520
Generated by reporting companies	49,140	25,653	24,825	828	—	17,111	1,454	15,657	6,376

<sup>1</sup> For definition of the industries, see tables 2 and 56, footnote 1.<sup>2</sup> New Jersey, New York, Tennessee, and Virginia.<sup>3</sup> Cherokee County, Kansas; Christian, Jasper, and Newton Counties, Missouri; and Ottawa County, Oklahoma.<sup>4</sup> Iron, Madison, and St. Francois Counties, Missouri.<sup>5</sup> Shoshone County, Idaho.<sup>6</sup> Arizona, Colorado, Idaho (Blaine, Bonner, Boundary, Custer, and Lemhi Counties), Montana, Nevada, New Mexico, Utah, and Washington.<sup>7</sup> Companies engaged in mining or milling activities in more than one of the designated areas are counted separately for each area but only once for the United States. In some cases a single mine was operated by more than one company during the year.<sup>8</sup> Includes statistics for salaried employees at central offices in California and Oregon.<sup>9</sup> Includes statistics for salaried employees at central offices in Massachusetts.<sup>10</sup> Includes intracompany shipments of ore to central mills for treatment.<sup>11</sup> The milling ore included represents ore treated at mills operated in conjunction with the mines from which the ore was obtained, but excludes minor quantities of purchased and custom ores also treated at these mills; the tailings included represent only those reclaimed and treated by the same mills, and exclude tailings purchased or treated on a custom basis.<sup>12</sup> The figures shown for each metal represent the recoverable quantities after deducting estimated milling and smelting losses.<sup>13</sup> Active days are those on which the respective operations were actively engaged in production or development work; inactive days are those on which the respective operations employed only watchmen or maintenance men.

TABLE 59.—PRINCIPAL PRODUCTS OF LEAD AND ZINC MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY REGION: 1939<sup>1</sup>

PRODUCT	Total	Mississippi Valley region	Western region	Eastern region
Value of all products-----	\$62,651,505	\$28,095,360	\$25,869,958	\$9,686,187
Direct-smelting ore:				
Quantity (tons of 2,000 pounds)-----	203,381	-----	( <sup>2</sup> )	( <sup>2</sup> )
Recoverable metal content--				
Lead (pounds)-----	37,124,343	-----	( <sup>2</sup> )	( <sup>2</sup> )
Zinc (pounds)-----	4,519,366	-----	( <sup>2</sup> )	( <sup>2</sup> )
Silver (fine ounces)-----	1,723,832	-----	( <sup>2</sup> )	( <sup>2</sup> )
Gold (fine ounces)-----	22,550.16	-----	( <sup>2</sup> )	( <sup>2</sup> )
Copper (pounds)-----	2,702,004	-----	( <sup>2</sup> )	( <sup>2</sup> )
Mine value, total-----	\$2,545,657	-----	( <sup>2</sup> )	( <sup>2</sup> )
Per ton of ore-----	\$12.51	-----	( <sup>2</sup> )	( <sup>2</sup> )
Per pound of recoverable lead or zinc <sup>3</sup> -----	\$0.030	-----	( <sup>2</sup> )	( <sup>2</sup> )
Milling ore and tailings sold to mill operators or sent to custom mills for treatment:				
Quantity (tons)-----	4,186,638	3,617,958	588,700	-----
Recoverable metal content--				
Lead (pounds)-----	135,252,659	42,403,911	92,848,748	-----
Zinc (pounds)-----	325,597,636	258,348,474	87,249,162	-----
Silver (fine ounces)-----	3,585,188	-----	3,585,188	-----
Gold (fine ounces)-----	24,097.31	-----	24,097.31	-----
Copper (pounds)-----	4,177,216	-----	4,177,216	-----
Mine value, total-----	\$9,997,075	\$5,352,212	\$4,643,863	-----
Per ton of ore-----	\$2.39	\$1.48	\$8.17	-----
Per pound of recoverable lead or zinc <sup>3</sup> -----	\$0.019	\$0.019	\$0.018	-----
Concentrates produced at mills operated in conjunction with mines (excluding concentrates produced from purchased and custom ore and tailings): <sup>4</sup>				
Quantity (tons)-----	1,394,161	448,450	345,316	600,395
Recoverable metal content--				
Lead (pounds)-----	552,031,032	335,791,466	203,573,000	12,686,566
Zinc (pounds)-----	736,080,700	211,075,106	163,946,408	361,059,186
Silver (fine ounces)-----	8,189,681	-----	6,144,069	45,612
Gold (fine ounces)-----	14,890.57	-----	14,890.57	-----
Copper (pounds)-----	4,512,879	-----	4,512,879	-----
Mine value, total-----	\$41,844,266	\$19,299,924	\$14,343,061	\$8,211,281
Per ton of concentrates-----	\$30.01	\$43.01	\$41.54	\$13.68
Per pound of recoverable lead or zinc <sup>3</sup> -----	\$0.030	\$0.035	\$0.031	\$0.022
Concentrates produced from ore and tailings purchased or treated on a custom basis:				
Quantity (tons)-----	566,920	253,973	312,947	-----
Recoverable metal content--				
Lead (pounds)-----	147,803,347	42,680,029	105,123,318	-----
Zinc (pounds)-----	343,980,946	247,490,377	96,470,569	-----
Silver (fine ounces)-----	5,586,129	-----	5,586,129	-----
Gold (fine ounces)-----	42,399.85	-----	42,399.85	-----
Copper (pounds)-----	5,632,557	-----	5,632,557	-----
Value added by milling purchased ore and receipts for custom milling-----	\$7,436,137	\$3,299,015	\$4,137,122	-----
Recoverable metal content of mine-water precipitates:				
Copper (pounds)-----	54,093	-----	54,093	-----
Mine value-----	\$5,924	-----	\$5,924	-----
Value of miscellaneous secondary products-----	\$449,660	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Electric energy sold:				
Quantity (thousands of kw.-hrs.)-----	11,883	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value, total-----	\$119,940	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Per kw.-hr.-----	\$0.010	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Receipts for miscellaneous services performed for other concerns (excluding custom milling)-----	\$256,846	\$48,667	\$208,179	-----

<sup>1</sup> For definition of the industries see tables 2 and 58, footnote 1.<sup>2</sup> Not shown separately.<sup>3</sup> Computed by distributing the reported value of ores or concentrates among the metals contained in direct proportion to the respective recoverable quantities of these metals multiplied by their market price. The average market prices of refined lead (at New York) and zinc (at St. Louis) were identical in 1939, namely \$0.051 per pound.<sup>4</sup> Includes concentrates produced from tailings reclaimed and treated by the same mills.

TABLE 60.—RECOVERABLE METAL CONTENT OF CONCENTRATES PRODUCED FROM CRUDE ORE AND TAILINGS CONCENTRATED AT LEAD AND ZINC MILLS IN THE UNITED STATES, BY REGION: 1939<sup>1</sup>

ITEM	UNITED STATES			MISSISSIPPI VALLEY REGION			WESTERN REGION			Eastern region <sup>2</sup>
	Total	At lead mills	At zinc mills	Total	At lead mills	At zinc mills	Total	At lead mills	At zinc mills	
All ore and tailings concentrated:										
Ore and tailings treated (tons of 2,000 pounds)-----	24,022,662	7,097,526	16,925,136	18,322,442	4,981,691	13,340,751	3,016,757	2,115,835	900,922	2,683,463
Concentrates produced (tons)-----	1,961,081	675,481	1,285,600	702,423	210,579	491,844	658,263	464,902	193,361	600,395
Ratio of material treated to concentrates recovered-----	12.2	10.5	13.2	26.1	23.7	27.1	4.6	4.6	4.7	4.5
Recoverable metal content of concentrates-----										
Lead (pounds)-----	699,834,379	571,003,863	128,830,516	379,471,495	306,583,168	71,888,327	308,696,318	264,420,695	44,275,623	12,666,566
Zinc (pounds)-----	1,080,041,648	134,030,363	945,981,283	458,565,483	147,600	458,417,883	260,416,977	133,912,763	126,504,214	361,059,186
Silver (fine ounces)-----	11,775,810	9,809,470	1,966,340	-----	-----	-----	11,730,198	9,809,470	1,920,728	45,612
Gold (fine ounces)-----	57,290,42	39,700,76	17,589,66	-----	-----	-----	57,290,42	39,700,76	17,589,66	-----
Copper (pounds)-----	10,145,256	8,037,753	2,107,483	-----	-----	-----	10,145,256	8,037,753	2,107,483	-----
Percent metal content:										
Lead-----		42.3	5.0	-----	72.8	7.3	-----	28.4	11.4	1.1
Zinc-----		9.9	36.8	-----	(3)	46.6	-----	14.4	32.7	30.1
Non-custom ore and tailings concentrated: <sup>4</sup>										
Ore and tailings treated (tons)-----	19,563,446	6,805,691	12,957,565	14,610,943	4,981,691	9,629,252	2,269,040	1,624,190	644,850	2,683,463
Concentrates produced (tons)-----	1,394,161	456,851	937,310	446,450	210,579	237,871	345,316	246,272	99,044	600,395
Ratio of material treated to concentrates recovered-----	14.0	14.5	13.8	32.6	23.7	40.5	6.6	6.6	6.5	4.5
Recoverable metal content of concentrates-----										
Lead (pounds)-----	552,031,032	493,619,314	58,411,718	335,791,466	306,583,168	29,208,298	203,573,000	187,036,146	16,536,854	12,666,566
Zinc (pounds)-----	736,080,700	81,443,178	654,637,522	211,075,106	147,600	210,927,506	163,946,408	81,295,578	82,660,830	361,059,186
Silver (fine ounces)-----	6,169,681	5,851,327	338,354	-----	-----	-----	6,144,069	5,851,327	292,742	45,612
Gold (fine ounces)-----	14,690,57	8,211,89	6,478,68	-----	-----	-----	14,690,57	8,211,89	6,478,68	-----
Copper (pounds)-----	4,512,879	3,834,500	678,379	-----	-----	-----	4,512,879	3,834,500	678,379	-----
Percent metal content:										
Lead-----		54.0	3.1	-----	72.8	6.1	-----	38.0	8.3	1.1
Zinc-----		8.9	34.9	-----	(3)	44.3	-----	16.5	41.7	30.1
Custom ore and tailings concentrated: <sup>5</sup>										
Ore and tailings treated (tons)-----	4,459,216	491,645	3,967,571	3,711,499	-----	3,711,499	747,717	491,645	256,072	-----
Concentrates produced (tons)-----	566,920	218,630	348,290	253,973	-----	253,973	312,947	218,630	94,317	-----
Ratio of material treated to concentrates recovered-----	7.9	2.2	11.4	14.6	-----	14.6	2.4	2.2	2.7	-----
Recoverable metal content of concentrates-----										
Lead (pounds)-----	147,803,347	77,384,549	70,418,798	42,680,029	-----	42,680,029	105,123,318	77,384,549	27,738,769	-----
Zinc (pounds)-----	343,960,946	52,617,185	291,343,761	247,490,377	-----	247,490,377	96,470,569	52,617,185	43,853,394	-----
Silver (fine ounces)-----	5,536,129	3,958,143	1,627,986	-----	-----	-----	5,536,129	3,958,143	1,627,986	-----
Gold (fine ounces)-----	42,399,85	31,488,87	10,910,98	-----	-----	-----	42,399,85	31,488,87	10,910,98	-----
Copper (pounds)-----	5,632,357	4,203,253	1,429,104	-----	-----	-----	5,632,357	4,203,253	1,429,104	-----
Percent metal content:										
Lead-----		17.7	10.1	-----	-----	8.4	-----	17.7	14.7	-----
Zinc-----		12.0	41.8	-----	-----	48.7	-----	12.0	23.2	-----

<sup>1</sup> The statistics shown cover all ore and tailings treated at lead and zinc mills during 1939, regardless of the source of the material. The figures, therefore, are not exactly comparable with those for mine production of milling ore shown in other tables, since lead and zinc mills performing custom work draw some of their material from mines not classified as lead or zinc mines, and from mines that were too small to come within the scope of the census canvass. Moreover, silver, gold, and copper ores originating at lead and zinc mines and sent to custom mills for treatment are usually sent to mills handling that particular type of ore rather than to lead or zinc mills.

<sup>2</sup> Represents statistics for ore treated at 7 zinc mills and 1 lead mill. In totals for the United States this lead mill is included with zinc mills to avoid disclosure of data for a single operation.

<sup>3</sup> Less than one-tenth of one percent.

<sup>4</sup> Represents milling ore treated at mills operated in conjunction with the mines from which the ore was obtained and tailings reclaimed and treated by the same mills.

<sup>5</sup> Includes all milling ore purchased by mill operators or treated on a custom basis (see footnote 1).

## MINERAL INDUSTRIES

TABLE 61.—NUMBER OF WAGE EARNERS IN THE LEAD- AND ZINC-ORE INDUSTRIES IN THE UNITED STATES, BY INDUSTRY, BY TYPE OF OPERATION, BY REGION AND STATE, AND BY MONTH: 1939<sup>1</sup>

(For producing operations only)

INDUSTRY, TYPE OF OPERATION, REGION, AND STATE	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF EACH MONTH											
		January	February	March	April	May	June	July	August	September	October	November	December
LEAD AND ZINC													
United States, total-----	15,637	14,881	14,793	14,862	14,683	15,305	15,141	15,081	15,467	15,974	16,751	17,362	17,340
Type of Operation													
Mines only-----	3,887	3,251	3,370	3,404	3,488	3,844	3,885	3,808	3,917	4,175	4,429	4,578	4,522
Mines and mills operated together-----	10,673	10,667	10,482	10,463	10,175	10,415	10,221	10,202	10,443	10,695	11,178	11,543	11,560
Mills only-----	1,077	983	941	975	1,020	1,046	1,035	1,071	1,107	1,104	1,144	1,241	1,259
Region													
Mississippi Valley region-----	6,849	6,256	6,219	6,384	6,393	6,586	6,675	6,640	6,784	7,034	7,585	7,872	7,751
Western region-----	6,352	6,206	6,161	6,057	5,866	6,289	6,020	5,994	6,229	6,494	6,726	7,053	7,134
Eastern region-----	2,436	2,419	2,413	2,421	2,424	2,430	2,446	2,447	2,454	2,446	2,440	2,437	2,455
LEAD													
United States, total-----	6,984	6,512	6,590	6,687	6,621	6,825	6,957	7,001	7,243	7,257	7,253	7,379	7,484
Type of operation													
Mines only-----	1,412	1,341	1,349	1,408	1,423	1,449	1,376	1,337	1,419	1,443	1,428	1,456	1,519
Mines and mills operated together-----	5,385	4,991	5,062	5,094	4,999	5,173	5,380	5,471	5,629	5,637	5,641	5,737	5,778
Mills only-----	189	180	179	185	199	203	201	193	195	177	184	186	187
State													
Arizona-----	411	348	405	422	382	412	388	407	433	434	405	455	443
Colorado-----	35	33	24	27	22	34	38	41	38	42	48	35	34
Idaho-----	2,355	2,251	2,255	2,266	2,242	2,221	2,266	2,313	2,421	2,410	2,424	2,484	2,491
Missouri-----	2,285	2,275	2,261	2,267	2,282	2,265	2,292	2,275	2,291	2,278	2,301	2,293	2,301
Montana-----	120	107	109	109	100	117	114	113	118	137	132	130	148
Oklahoma-----	69	65	66	66	62	64	68	68	71	72	68	74	76
Utah-----	1,691	1,410	1,422	1,472	1,480	1,675	1,755	1,738	1,850	1,840	1,850	1,884	1,949
Nevada, New Mexico, and Washington-----	38	23	30	36	35	37	36	46	41	44	45	44	44
ZINC													
United States, total-----	8,653	8,369	8,203	8,175	8,062	8,480	8,184	8,080	8,224	8,717	9,498	9,963	9,856
Type of operation													
Mines only-----	2,475	1,890	2,021	1,996	2,065	2,395	2,509	2,471	2,498	2,732	3,001	3,122	3,003
Mines and mills operated together-----	5,290	5,676	5,420	5,389	5,176	5,242	4,841	4,751	4,814	5,058	5,537	5,806	5,762
Mills only-----	888	803	762	790	821	843	834	878	912	927	960	1,055	1,071
State													
Colorado-----	74	75	72	78	73	65	73	48	44	88	91	94	93
Idaho-----	413	379	371	352	314	321	313	297	306	349	542	706	704
Kansas-----	1,318	1,263	1,195	1,301	1,282	1,319	1,253	1,223	1,214	1,272	1,413	1,556	1,528
Missouri-----	352	225	285	278	298	329	350	361	391	422	452	434	375
Nevada-----	204	164	171	168	189	242	232	222	203	209	224	217	207
New Mexico-----	610	991	985	831	792	793	426	391	400	436	424	429	416
Oklahoma-----	2,671	2,302	2,278	2,339	2,359	2,486	2,563	2,529	2,637	2,810	3,158	3,297	3,280
Arizona, Utah, and Washington-----	421	425	319	296	221	372	379	378	395	505	561	595	607
Kentucky and Wisconsin-----	154	126	114	111	110	123	149	164	180	180	193	218	161
New Jersey, New York, Tennessee, and Virginia-----	2,436	2,419	2,413	2,421	2,424	2,430	2,446	2,447	2,454	2,446	2,440	2,437	2,455

<sup>1</sup>For definition of the industries see tables 2 and 56, footnote 1.

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TABLE 62.—NUMBER OF MAN-SHIFTS WORKED ON ACTIVE DAYS AT LEAD AND ZINC MINES AND MILLS IN THE UNITED STATES, BY INDUSTRY, BY STATE, AND BY SHIFT: 1939<sup>1</sup>

(For producing operations only)

INDUSTRY AND STATE	Mines and mills, total	MINES				MILLS			
		Total	First shift	Second shift	Third shift	Total	First shift	Second shift	Third shift
Lead- and zinc-ore industries, United States	3,944,240	3,103,675	2,376,442	653,053	74,180	840,565	458,341	229,695	154,529
Mississippi Valley region	1,727,304	1,295,208	1,093,699	181,029	20,480	432,098	225,284	120,364	86,468
Western region	1,627,945	1,445,736	1,041,621	350,415	53,700	182,209	96,562	46,417	39,230
Eastern region	588,991	362,731	241,122	121,609	-----	226,260	134,515	62,914	28,831
Percent of total, United States	-----	100.0	76.6	21.0	2.4	100.0	54.3	27.3	18.4
Lead-ore industry, United States	1,685,027	1,462,296	1,102,955	346,252	33,089	202,731	113,287	47,770	41,674
Arizona	128,170	111,757	62,095	44,355	5,307	16,413	8,480	4,371	3,562
Colorado	9,813	8,813	8,813	-----	-----	1,000	1,000	-----	-----
Idaho	576,319	533,213	450,549	69,563	13,101	45,106	28,476	8,130	6,500
Missouri	492,315	409,308	280,566	121,423	7,319	85,007	48,144	18,876	16,987
Montana	28,920	26,680	21,210	5,470	-----	2,240	1,792	448	-----
Oklahoma	19,962	19,962	19,962	-----	-----	-----	-----	-----	-----
Utah	421,661	364,696	251,893	105,441	7,362	56,965	25,395	15,945	15,625
Nevada, New Mexico, and Washington	7,867	7,867	7,867	-----	-----	-----	-----	-----	-----
Percent of total, United States	-----	100.0	74.4	23.4	2.2	100.0	55.9	23.6	20.5
Zinc-ore industry, United States	2,259,213	1,621,379	1,273,487	306,801	41,091	637,834	343,054	181,925	112,855
Colorado	17,022	14,855	12,136	2,699	-----	2,187	1,215	486	486
Idaho	105,219	99,176	66,777	30,399	-----	6,043	3,288	1,465	1,290
Kansas	353,378	277,802	253,583	23,149	1,070	75,576	47,628	17,186	10,762
Missouri	96,619	75,192	66,128	6,901	2,163	21,427	12,665	4,706	4,056
Nevada	59,699	59,699	29,985	14,857	14,857	-----	-----	-----	-----
New Mexico	163,527	128,223	73,553	41,837	12,833	35,304	14,905	11,915	8,484
Oklahoma	717,596	482,351	458,315	20,249	3,787	235,245	110,001	74,126	51,118
Arizona, Utah, and Washington	109,728	90,777	54,743	35,794	240	18,951	12,011	3,657	3,283
Kentucky and Wisconsin	47,434	30,593	15,145	9,307	6,141	16,841	6,828	5,470	4,545
New Jersey, New York, Tennessee, and Virginia	588,991	362,731	241,122	121,609	-----	226,260	134,515	62,914	28,831
Percent of total, United States	-----	100.0	78.6	18.9	2.5	100.0	53.8	28.5	17.7

<sup>1</sup> For definition of the industries see tables 2 and 56, footnote 1.

## MINERAL INDUSTRIES

TABLE 63.—NUMBER OF UNDERGROUND POWER-LOADING MACHINES IN THE LEAD- AND ZINC-ORE INDUSTRIES IN THE UNITED STATES, BY TYPE, BY SIZE, BY KIND OF POWER USED, AND BY REGION: 1939<sup>1</sup>

(For producing operations only)

REGION AND KIND OF MINE	SHOVEL LOADERS				SCRAPER LOADERS AND SLUSHERS		
	Requiring a minimum working height of 8 feet or less			Requiring a minimum working height of more than 8 feet	Total	Kind of power used	
	Total	Kind of power used				Electric	Compressed air
		Electric	Compressed air				
United States, total-----	132	85	47	2 4	286	203	83
Lead mines-----	111	84	27	1	91	43	48
Zinc mines <sup>3</sup> -----	21	1	20	3	195	160	35
Mississippi Valley region, total-----	84	84	-----	-----	75	70	5
Lead mines-----	84	84	-----	-----	38	38	-----
Zinc mines-----	-----	-----	-----	-----	37	32	5
Western region, total-----	38	1	37	2 4	93	40	53
Lead mines-----	27	-----	27	1	53	5	48
Zinc mines-----	11	1	10	3	40	35	5
Eastern region-----	10	-----	10	-----	118	93	25

<sup>1</sup> For definition of the industries see tables 2 and 56, footnote 1.<sup>2</sup> Includes 1 electric and 3 compressed-air loaders.<sup>3</sup> Includes statistics for all mines in the Eastern region (see table 56, footnote 2).TABLE 64.—PRINCIPAL STATISTICS FOR NONPRODUCING OPERATIONS IN THE LEAD- AND ZINC-ORE INDUSTRIES IN THE UNITED STATES: 1939<sup>1</sup>

Number of operating companies-----	15	Cost of buildings, machinery, and equipment erected or installed during year-----	\$55,825
Number of mines-----	14	Number of man-shifts worked by wage earners-----	25,017
Number of mills-----	4	Number of man-hours worked by wage earners-----	198,016
Number of wage earners (average for the year)-----	94	Average hourly earning of wage earners-----	\$0.54
Number of salaried employees-----	22	Horsepower rating of power equipment, total-----	7,662
Principal expenses designated below, total-----	\$227,304	Stationary equipment-----	7,432
Wages-----	\$107,027	Mobile equipment-----	230
Salaries-----	\$54,880	Purchased electric energy consumed (thousands of kw.-hrs.) <sup>2</sup> -----	1,517
Supplies and materials-----	\$44,729		
Fuel-----	\$5,240		
Purchased electric energy-----	\$18,570		
Contract work-----	\$16,878		

<sup>1</sup> Statistics are for mines and mills ordinarily engaged in mining or treating ore or tailings valued chiefly for their lead or zinc content but whose activities during 1939 were confined to development, construction, or maintenance work, for which the reported principal expenses or cost of buildings, machinery, and equipment amounted to \$2,500 or more. The operations were distributed as follows: Arizona, 1 operator, 1 mine, and 1 mill; Colorado, 3 operators, 3 mines, and 1 mill; Idaho, 2 operators and 2 mines; Kansas, 2 operators, 1 mine, and 1 mill; Kentucky, 1 operator and 1 mine; Missouri, 1 operator, 1 mine, and 1 mill; Montana, 1 operator and 1 mine; Utah, 3 operators and 3 mines; Washington, 1 operator and 1 mine. Statistics for major nonferrous-metal operations without products that could not be classified by metal are excluded from this table but are included in table 1.

<sup>2</sup> No electric energy was reported generated by the reporting companies.

## LEAD AND ZINC ORES

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TABLE 65.—PRINCIPAL STATISTICS FOR THE LEAD-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

ITEM	United States	Arizona	Colorado	Idaho	Missouri	Montana	Oklahoma	Utah	Nevada, New Mexico, and Washington <sup>2</sup>
Number of operating companies-----	62	7	6	13	6	7	4	16	5
Number of mines-----	76	6	6	16	9	7	5	22	5
Number of mills-----	29	5	2	9	8	1	-----	6	-----
Number of persons engaged, total-----	8,015	434	38	2,522	2,643	141	71	1,988	178
Wage earners (average for the year)-----	6,984	411	35	2,335	2,285	120	69	1,691	38
Salaried employees-----	998	20	1	182	558	11	2	291	3 133
Proprietors and firm members-----	33	3	2	5	-----	10	-----	6	3 7
Performing manual labor-----	21	3	2	4	-----	6	-----	3	3
Production:									
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----	6,978,040	166,498	4,373	1,154,400	4,941,547	55,958	97,667	556,078	1,529
Direct-smelting ore (tons)-----	145,416	5,611	2,668	13,768	-----	6,491	-----	115,334	1,529
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----	488,156	880	703	14,057	-----	-----	97,741	374,775	-----
Milling ore and tailings treated (tons), total-----	7,097,526	171,462	2,187	1,115,299	4,981,691	49,467	-----	777,420	-----
Purchased and custom-----	491,645	996	-----	1,083	-----	-----	-----	489,586	-----
All other-----	6,605,881	170,466	2,187	1,114,236	4,981,691	49,467	-----	287,834	-----
Concentrates produced (tons), total-----	675,491	18,715	187	180,571	210,579	5,529	-----	259,900	-----
From purchased and custom material-----	218,630	357	-----	201	-----	-----	-----	218,072	-----
From all other material-----	456,861	18,358	187	180,370	210,579	5,529	-----	41,828	-----
Recoverable metal content of above direct-smelting ore, milling ore and tailings sold or shipped to custom mills, and concentrates (excluding metal content of concentrates produced from purchased or custom ore)-----									
Lead (pounds)-----	602,316,964	12,219,230	785,568	180,636,187	306,593,168	10,625,999	4,630,049	106,159,846	677,517
Zinc (pounds)-----	151,972,086	6,723,076	-----	66,528,360	147,600	874,847	1,957,806	55,603,997	36,400
Silver (fine ounces)-----	9,433,615	694,472	27,177	4,215,649	-----	98,180	-----	4,372,769	25,368
Gold (fine ounces)-----	40,649.98	5,410.00	761.09	1,531.11	-----	528.44	-----	32,415.14	4.20
Copper (pounds)-----	10,513,111	502,882	14,085	794,537	-----	64,584	-----	8,332,520	4,613
Value of all products-----	\$51,467,413	\$1,039,440	\$49,124	\$9,196,146	\$11,874,167	\$339,584	\$145,844	\$9,789,616	\$31,492
Principal expenses designated below, total-----	\$19,921,824	\$925,685	\$89,272	\$6,148,561	\$6,934,933	\$285,689	\$115,862	\$4,907,488	\$514,334
Wages-----	\$9,921,086	\$611,354	\$43,656	\$3,524,613	\$3,090,978	\$179,149	\$68,553	\$2,379,921	\$24,862
Salaries-----	\$2,848,247	\$48,895	\$1,000	\$557,860	\$900,523	\$22,820	\$4,920	\$839,772	\$472,657
Supplies and materials-----	\$4,896,940	\$217,627	\$33,732	\$1,495,565	\$1,862,643	\$87,797	\$42,116	\$1,146,360	\$11,100
Fuel-----	\$266,783	\$46,459	\$266	\$87,007	\$79,562	\$1,840	\$2,269	\$67,185	\$2,215
Purchased electric energy-----	\$1,851,399	\$1,350	\$8,515	\$498,034	\$945,537	\$13,424	\$4	\$384,535	-----
Contract work-----	\$137,369	-----	\$2,103	\$5,482	\$35,690	\$859	-----	\$89,735	\$3,500
Cost of buildings, machinery, and equipment erected or installed during year-----	\$614,655	\$201,500	\$4,418	\$187,071	\$31,782	\$3,840	\$1,344	\$129,200	\$75,500
Buildings-----	\$144,271	\$103,489	\$4,378	\$7,845	-----	\$250	\$507	\$28,002	-----
Machinery and equipment-----	\$470,384	\$98,011	-----	\$159,226	\$31,782	\$3,590	\$1,037	\$101,198	\$75,500
Purchased in new condition-----	\$324,863	\$54,805	-----	\$157,909	\$31,782	\$2,590	\$617	\$76,680	\$500
Purchased in used condition-----	\$145,521	\$43,206	\$40	\$1,117	-----	\$1,000	\$420	\$24,538	\$75,000
Man-shifts worked by wage earners, total-----	1,765,873	126,479	9,813	593,279	547,388	30,061	20,111	428,703	8,039
On active days, total-----	1,685,027	128,170	9,813	576,319	492,315	28,920	19,962	421,661	7,867
At mines-----	1,482,296	111,757	8,813	535,213	409,308	26,680	19,962	364,696	7,867
At mills-----	202,731	16,413	1,000	43,108	83,007	2,240	-----	56,965	-----
On inactive days-----	80,846	309	-----	16,960	55,073	1,141	149	7,042	172
Man-hours worked by wage earners, total-----	14,065,329	1,027,830	78,496	4,731,333	4,355,262	240,488	158,503	3,429,109	64,308
On active days, total-----	13,435,591	1,025,358	78,496	4,595,658	3,911,878	231,364	157,320	3,372,777	62,932
At mines-----	11,816,418	894,054	70,496	4,250,809	3,250,308	213,444	157,320	2,917,057	62,932
Per ton of crude ore mined-----	1.69	5.37	16.12	3.68	0.69	8.81	1.61	5.25	41.16
At mills-----	1,619,183	131,304	8,000	344,847	661,372	17,920	-----	455,720	-----
Per ton of ore and tailings treated-----	0.23	0.77	8.66	0.31	0.13	0.56	-----	0.59	-----
On inactive days-----	649,748	2,472	-----	135,677	443,584	9,124	1,183	56,332	1,376
Value of all products per man-hour worked at mines and mills-----	\$2.23	\$1.01	\$0.63	\$1.94	\$2.73	\$1.41	\$0.92	\$2.56	\$0.49
Average number of full days mines and mills were active-----	260	309	245	262	237	235	263	279	231
Mines-----	260	317	252	261	238	236	263	277	231
Mills-----	265	265	200	276	241	224	-----	294	-----
Average number of hours worked per shift-----	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0	8.0
Average hourly earning of wage earners-----	\$0.70	\$0.59	\$0.56	\$0.74	\$0.71	\$0.74	\$0.42	\$0.69	\$0.39
Horsepower rating of power equipment, total-----	193,248	2,556	1,260	43,940	114,796	1,597	165	28,349	585
Per wage earner-----	27.7	6.2	36.0	18.8	50.2	13.3	2.4	18.8	15.4
Stationary equipment-----	166,679	2,351	1,260	40,735	93,710	1,278	165	26,730	450
Mobile equipment-----	26,569	205	-----	3,205	21,086	319	-----	1,619	135
Electric energy consumed (thousands of kw.-hrs.), total-----	250,505	2,683	341	79,642	124,708	2,172	-----	40,717	42
Purchased-----	245,815	43	326	78,677	123,880	2,172	-----	40,717	-----
Generated by reporting companies-----	4,690	2,840	15	965	828	-----	-----	-----	42

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Nevada, 3 operators and 3 mines; New Mexico, 1 operator and 1 mine; and Washington, 1 operator and 1 mine.<sup>3</sup> Includes statistics covering central-office personnel in California, Massachusetts, New York, and Oregon.

TABLE 66.—PRINCIPAL STATISTICS FOR THE LEAD-ORE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION AND BY MINING METHOD: 1939<sup>1</sup>

(For producing operation only)

ITEM	All operations	MINES ONLY		MINES AND MILLS OPERATED TOGETHER				Mills only <sup>2</sup>
		Total	Mining method		Total	Mining method		
			Open stoping <sup>3</sup>	Timbered methods <sup>4</sup>		Open stoping <sup>3</sup>	Timbered methods <sup>4</sup>	
Number of operations-----	80	49	13	36	27	9	18	4
Number of persons engaged, total-----	5,015	1,539	149	1,390	5,798	2,502	3,296	229
Wage earners (average for the year)-----	6,984	1,412	137	1,275	5,383	2,285	3,098	189
Salaried employees-----	6,998	100	9	91	410	217	193	40
Proprietors and firm members-----	533	27	3	24	5	-----	5	-----
Performing manual labor-----	21	17	3	14	4	-----	4	-----
Production:								
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----	6,978,040	620,123	102,668	517,455	6,357,917	4,941,547	1,416,370	-----
Direct-smelting ore (tons)-----	143,416	131,730	1,883	129,847	11,681	-----	11,681	5
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----	488,156	488,156	100,859	387,297	-----	-----	-----	-----
Milling ore and tailings treated (tons), total-----	7,097,526	-----	-----	-----	6,384,600	4,961,691	1,402,909	712,926
Purchased and custom-----	491,645	-----	-----	-----	2,059	-----	2,059	489,586
All other-----	6,605,881	-----	-----	-----	6,382,541	4,961,691	1,400,850	223,340
Concentrates produced (tons), total-----	875,481	-----	-----	-----	433,855	210,579	223,276	241,626
From purchased and custom material-----	218,630	-----	-----	-----	558	-----	558	218,072
From all other material-----	456,851	-----	-----	-----	433,297	210,579	222,718	23,554
Recoverable metal content of above direct-smelting ore, milling ore and tailings sold or sent to custom mills, and concentrates produced from other than purchased or custom material-----								
Lead (pounds)-----	602,316,964	99,061,203	5,540,103	93,521,100	496,346,313	306,583,168	189,763,145	6,909,448
Zinc (pounds)-----	131,872,086	50,428,908	2,062,299	48,366,609	81,443,178	147,600	81,295,578	-----
Silver (fine ounces)-----	9,433,615	3,301,458	47,292	3,254,166	5,631,934	-----	5,631,934	500,223
Gold (fine ounces)-----	40,649,98	32,345,80	202,24	32,143,56	8,048,18	-----	8,048,18	256,00
Copper (pounds)-----	10,313,111	6,428,682	34,829	6,393,853	1,651,601	-----	1,651,601	2,232,828
Value of all products-----	\$31,487,413	\$4,328,768	\$197,473	\$4,131,295	\$23,498,060	\$11,874,167	\$11,623,893	\$3,640,585
Principal expenses designated below, total-----	\$19,921,824	\$3,069,787	\$200,655	\$2,869,131	\$14,431,924	\$6,601,042	\$7,830,882	\$1,002,951
Wages-----	\$9,921,086	\$1,849,690	\$120,557	\$1,729,133	\$7,745,625	\$3,090,978	\$4,654,647	\$325,771
Salaries-----	\$2,846,247	\$225,523	\$13,243	\$212,280	\$1,133,950	\$566,632	\$567,318	\$77,612
Supplies and materials-----	\$4,696,940	\$744,763	\$54,779	\$689,984	\$3,772,389	\$1,882,643	\$1,889,746	\$379,788
Fuel-----	\$266,785	\$50,946	\$4,534	\$46,412	\$201,554	\$79,582	\$121,992	\$14,263
Purchased electric energy-----	\$1,651,599	\$176,526	\$4,043	\$172,483	\$1,535,131	\$945,537	\$589,594	\$139,742
Contract work-----	\$137,369	\$22,339	\$3,500	\$18,839	\$43,275	\$35,690	\$7,585	\$71,755
Cost of buildings, machinery, and equipment erected or installed during year-----	\$614,655	\$175,765	\$77,308	\$98,457	\$409,578	\$31,782	\$377,796	\$29,312
Buildings-----	\$144,271	\$22,583	\$307	\$22,276	\$108,978	-----	\$108,978	\$12,710
New machinery and equipment-----	\$324,863	\$59,622	\$1,117	\$58,505	\$248,639	\$31,782	\$216,857	\$16,602
Used machinery and equipment-----	\$145,521	\$93,560	\$75,884	\$17,676	\$51,961	-----	\$51,961	-----
Man-shifts worked by wage earners, total-----	1,765,873	357,853	33,724	324,129	1,357,322	547,388	809,934	50,698
On active days, total-----	1,685,027	351,173	33,403	317,770	1,283,932	492,315	791,617	49,922
At mines-----	1,482,296	351,173	33,403	317,770	1,131,123	409,308	721,815	-----
At mills-----	202,731	-----	-----	-----	152,809	83,007	69,802	49,922
On inactive days-----	80,846	6,680	321	6,359	73,390	55,073	18,317	776
Man-hours worked by wage earners, total-----	14,085,329	2,857,421	267,407	2,590,014	10,822,324	4,355,262	6,467,062	405,584
On active days, total-----	13,435,561	2,803,994	264,848	2,539,146	10,232,211	3,911,678	6,320,533	399,376
At mines-----	11,816,418	2,803,994	264,848	2,539,146	9,012,424	3,250,306	5,762,118	-----
Per ton of crude ore mined-----	1.69	4.52	2.58	4.91	1.42	0.66	4.07	-----
At mills-----	1,619,163	-----	-----	-----	1,219,787	661,372	559,415	399,376
Per ton of ore and tailings treated-----	0.23	-----	-----	-----	0.19	0.13	0.40	0.56
On inactive days-----	649,748	53,427	2,559	50,868	590,113	443,584	146,529	6,208
Value of all products per man-hour-----	\$2.23	\$1.51	\$0.74	\$1.60	\$2.17	\$2.73	\$1.80	\$6.98
Average number of full days mines and mills were active-----	260	275	259	277	255	237	268	295
Mines-----	260	275	259	277	255	236	268	-----
Mills-----	263	-----	-----	-----	254	241	271	295
Average number of hours worked per shift-----	8.0	8.0	7.9	8.0	8.0	8.0	8.0	8.0
Average hourly earning of wage earners-----	\$0.70	\$0.65	\$0.45	\$0.67	\$0.72	\$0.71	\$0.72	\$0.80
Horsepower rating of power equipment, total-----	193,248	15,765	995	14,790	169,407	114,796	54,611	8,056
Per wage earner-----	27.7	11.2	7.3	11.6	31.5	50.2	17.6	42.6
Stationary equipment-----	166,879	13,990	775	13,215	144,723	93,710	51,013	7,966
Mobile equipment-----	26,569	1,795	220	1,575	24,684	21,086	3,598	90
Electric energy consumed (thousands of kw.-hrs.), total-----	250,505	16,301	169	16,132	217,183	124,706	92,475	17,021
Purchased-----	245,815	16,203	127	16,076	212,604	123,880	88,724	17,008
Generated by reported companies-----	4,690	98	42	56	4,579	828	3,751	13

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Includes 2 custom mills and 2 tailing mills.<sup>3</sup> Includes room-and-pillar, casual pillars, and sublevel stoping.<sup>4</sup> Includes square-setting, cut-and-fill stoping, shrinkage stoping, and top slicing.<sup>5</sup> Includes statistics for 448 salaried employees who were paid \$1,411,162 and 1 proprietor or firm member at central offices that were not classified by type of operation.

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TABLE 67.—PRINCIPAL PRODUCTS OF LEAD MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

PRODUCT	United States	Arizona	Colorado	Idaho	Missouri	Montana	Oklahoma	Utah	Nevada, New Mexico, and Washington
Value of all products-----	\$31,467,413	\$1,039,440	\$49,124	\$9,198,146	\$11,874,167	\$339,584	\$145,844	\$8,789,616	\$31,492
Direct-smelting ore:									
Quantity (tons of 2,000 pounds)-----	143,416	3,611	2,883	13,768	-----	6,491	-----	115,334	1,529
Recoverable metal content--									
Lead (pounds)-----	32,444,003	837,916	536,961	9,548,164	-----	3,873,398	-----	16,970,047	677,517
Zinc (pounds)-----	207,937	-----	-----	23,733	-----	22,000	-----	125,804	36,400
Silver (fine ounces)-----	1,044,308	23,270	14,041	320,729	-----	70,719	-----	590,181	25,568
Gold (fine ounces)-----	12,657,66	159,00	629,39	160,06	-----	454,90	-----	11,250.11	4.20
Copper (pounds)-----	2,630,130	25,541	1,292	46,572	-----	25,532	-----	2,528,580	4,613
Mine value, total-----	\$1,651,123	\$39,971	\$34,543	\$456,920	-----	\$122,578	-----	\$965,619	\$31,492
Per ton of ore-----	\$11.51	\$11.07	\$12.87	\$33.19	-----	\$18.88	-----	\$6.37	\$20.60
Per pound of recoverable lead <sup>2</sup> -----	\$0.027	\$0.031	\$0.030	\$0.033	-----	\$0.024	-----	\$0.026	\$0.030
Milling ore and tailings sold to mill operators:									
Quantity (tons of 2,000 pounds)-----	488,156	880	703	14,057	-----	-----	97,741	374,775	-----
Recoverable metal content--									
Lead (pounds)-----	76,253,647	200,300	122,707	2,053,350	-----	-----	4,630,049	69,247,241	-----
Zinc (pounds)-----	50,220,971	162,000	-----	400,000	-----	-----	1,957,806	47,701,165	-----
Silver (fine ounces)-----	2,537,980	3,785	8,868	98,295	-----	-----	-----	2,427,032	-----
Gold (fine ounces)-----	19,760,43	5.00	73.40	17.00	-----	-----	-----	19,685.03	-----
Copper (pounds)-----	3,764,388	1,400	10,193	17,397	-----	-----	-----	3,765,398	-----
Mine value, total-----	\$3,050,204	\$8,500	\$6,318	\$94,624	-----	-----	\$145,844	\$2,794,918	-----
Per ton of ore-----	\$6.25	\$9.66	\$8.99	\$6.73	-----	-----	\$1.49	\$7.46	-----
Per pound of recoverable lead <sup>2</sup> -----	\$0.017	\$0.020	\$0.020	\$0.025	-----	-----	\$0.022	\$0.016	-----
Concentrates produced at mills, operated in conjunction with mines (excluding concentrates produced from purchased and custom ore and tailings): <sup>3</sup>									
Quantity (tons)-----	456,651	18,358	187	180,370	210,579	5,529	-----	41,828	-----
Recoverable metal content--									
Lead (pounds)-----	493,619,314	11,181,014	125,900	149,034,873	308,583,168	6,752,001	-----	19,942,558	-----
Zinc (pounds)-----	61,445,176	6,561,076	-----	66,104,627	147,600	852,847	-----	7,777,028	-----
Silver (fine ounces)-----	5,851,327	667,417	4,268	3,798,625	-----	27,481	-----	1,355,558	-----
Gold (fine ounces)-----	6,211.89	5,246.00	59.30	1,354.05	-----	73.54	-----	1,480.00	-----
Copper (pounds)-----	3,834,500	475,881	2,550	730,568	-----	41,052	-----	2,584,449	-----
Mill value, total-----	\$23,338,154	\$982,657	\$8,263	\$8,465,501	\$11,812,592	\$217,006	-----	\$1,852,135	-----
Per ton of concentrates-----	\$51.08	\$53.53	\$44.19	\$46.95	\$56.10	\$59.25	-----	\$44.28	-----
Per pound of recoverable lead <sup>2</sup> -----	\$0.035	\$0.032	\$0.036	\$0.032	\$0.039	\$0.027	-----	\$0.036	-----
Concentrates produced from ore and tailings purchased or treated on a custom basis:									
Quantity (tons)-----	218,650	357	-----	201	-----	-----	-----	218,072	-----
Recoverable metal content--									
Lead (pounds)-----	77,384,549	237,214	-----	152,327	-----	-----	-----	76,995,008	-----
Zinc (pounds)-----	52,617,185	173,490	-----	64,484	-----	-----	-----	52,379,211	-----
Silver (fine ounces)-----	3,959,143	4,825	-----	4,005	-----	-----	-----	3,949,313	-----
Gold (fine ounces)-----	31,488.87	-----	-----	1.87	-----	-----	-----	31,487.00	-----
Copper (pounds)-----	4,203,253	1,619	-----	702	-----	-----	-----	4,200,932	-----
Value added by milling purchased ore and receipts for custom milling-----	\$3,139,582	\$8,312	-----	\$2,179	-----	-----	-----	\$3,129,091	-----
Mine-water precipitates:									
Recoverable metal content--									
Copper (pounds)-----	54,093	-----	-----	-----	-----	-----	-----	54,093	-----
Mine value, total-----	\$5,924	-----	-----	-----	-----	-----	-----	\$5,924	-----
Mine or mill value of miscellaneous secondary products (including electric energy sold)-----	\$31,403	-----	-----	(*)	(*)	-----	-----	-----	-----
Receipts for miscellaneous services performed for other concerns-----	\$253,023	-----	-----	(*)	(*)	-----	-----	\$43,929	-----

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Computed by distributing the reported value of ores or concentrates among the metals contained in direct proportion to the respective recoverable quantity of these metals multiplied by their average market prices for the year.<sup>3</sup> Includes concentrates produced from old tailings reclaimed and treated.

\* Not shown separately.

## MINERAL INDUSTRIES

TABLE 68.—EMPLOYMENT AND WORKING TIME IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, BY DEPARTMENT AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

DEPARTMENT	United States	Arizona	Colorado	Idaho	Missouri	Montana	Oklahoma	Utah	Nev., N. Mex., and Wash.
Average number of wage earners on active days, total-----	6,476	415	40	2,198	2,080	123	76	1,510	34
At mines, total-----	5,705	353	35	2,042	1,736	113	76	1,316	34
Underground-----	4,858	284	29	1,584	1,407	89	70	1,170	25
Surface shops and yards-----	1,047	69	6	458	329	24	6	146	9
At mills-----	771	62	5	156	344	10	-----	194	-----
Average number of equivalent full days operations were active-----	260	309	245	262	237	235	263	279	231
At mines-----	260	317	252	261	236	236	263	277	231
Underground-----	259	308	254	259	236	235	260	277	205
Surface shops and yards-----	263	350	259	268	233	242	297	275	305
At mills-----	263	265	200	276	241	224	-----	294	-----
Number of man-shifts worked by wage earners, total-----	1,765,873	128,479	9,813	593,279	547,388	30,061	20,111	428,703	8,059
On active days, total-----	1,685,027	128,170	9,813	576,319	492,315	28,920	19,962	421,661	7,867
At mines, total-----	1,482,296	111,757	8,813	533,213	409,308	28,680	19,962	364,696	7,867
Underground-----	1,206,641	87,591	7,378	410,277	332,686	20,871	18,180	324,556	5,122
Surface shops and yards-----	275,655	24,166	1,435	122,936	76,642	5,809	1,782	40,140	2,745
At mills-----	202,731	16,413	1,000	43,106	83,007	2,240	-----	56,965	-----
On inactive days-----	80,846	309	-----	16,960	55,073	1,141	149	7,042	172
Number of man-hours worked by wage earners, total-----	14,085,329	1,027,850	78,496	4,731,333	4,355,262	240,488	158,503	3,429,109	64,308
On active days, total-----	13,435,581	1,025,358	78,496	4,595,656	3,911,678	231,364	157,320	3,372,777	62,932
At mines, total-----	11,816,418	894,054	70,496	4,250,809	3,250,306	213,444	157,320	2,917,067	62,932
Underground-----	9,615,833	700,726	59,024	3,268,342	2,640,794	166,972	143,064	2,595,939	40,972
Surface shops and yards-----	2,200,585	193,328	11,472	982,467	609,512	46,472	14,256	321,118	21,960
At mills-----	1,619,163	131,304	8,000	344,847	661,372	17,920	-----	455,720	-----
On inactive days-----	649,748	2,472	-----	135,677	443,584	9,124	1,183	56,332	1,376

<sup>1</sup> For definition of the industry see tables 2 and 58, footnote 1.

TABLE 69.—NUMBER OF LEAD MINES AND MILLS IN THE UNITED STATES WORKING ONE, TWO, OR THREE SHIFTS AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT AND BY STATE: 1939

(For producing operations only)

SHIFT	UNITED STATES		Arizona	Colorado	Idaho	Missouri	Montana	Oklahoma	Utah	Nevada, New Mexico, and Washington
	Number	Percent of total								
Number of mines, total-----	76	100.0	6	6	16	9	7	5	22	5
Working 1 shift per day-----	46	60.5	4	6	7	3	5	5	11	5
Working 2 shifts per day-----	13	17.1	-----	-----	4	1	2	-----	6	-----
Working 3 shifts per day-----	17	22.4	2	-----	5	5	-----	-----	5	-----
Number of mills, total-----	29	100.0	3	2	9	8	1	-----	6	-----
Working 1 shift per day-----	9	31.0	1	2	3	1	-----	-----	2	-----
Working 2 shifts per day-----	2	6.9	-----	-----	-----	1	1	-----	-----	-----
Working 3 shifts per day-----	18	62.1	2	-----	6	6	-----	-----	4	-----
Number of man-shifts worked by wage earners on active days, total-----	1,685,027	100.0	128,170	9,813	576,319	492,315	28,920	19,962	421,661	7,867
During first shift-----	1,216,242	72.2	70,575	9,813	479,025	328,710	23,002	19,962	277,288	7,867
During second shift-----	394,022	23.4	48,726	-----	77,693	140,299	5,918	-----	121,386	-----
During third shift-----	74,763	4.4	8,869	-----	19,601	23,306	-----	-----	22,987	-----
At mines, total-----	1,482,296	100.0	111,757	8,813	533,213	409,308	28,680	19,962	364,696	7,867
During first shift-----	1,102,955	74.4	62,095	8,813	450,549	280,566	21,210	19,962	251,893	7,867
During second shift-----	346,252	23.4	44,355	-----	69,583	121,423	5,470	-----	105,441	-----
During third shift-----	33,089	2.2	5,307	-----	13,101	7,319	-----	-----	7,362	-----
At mills, total-----	202,731	100.0	16,413	1,000	43,106	83,007	2,240	-----	56,965	-----
During first shift-----	113,287	55.9	8,460	1,000	28,476	48,144	1,792	-----	25,395	-----
During second shift-----	47,770	23.6	4,371	-----	8,130	18,876	448	-----	15,945	-----
During third shift-----	41,674	20.5	3,582	-----	6,500	15,987	-----	-----	15,625	-----

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TABLE 70.—QUANTITY OF FUEL AND ELECTRIC ENERGY CONSUMED IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>  
(For producing operations only)

STATE	FUEL					ELECTRIC ENERGY (THOUSANDS OF KILOWATT-HOURS)		
	Anthracite (short tons)	Bituminous coal (short tons)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Natural gas (thousands of cubic feet)	Total	Purchased	Generated by reporting companies
United States, total-----	68	26,542	25,586	235,648	125,675	250,505	245,615	4,690
Arizona-----			15,626	6,067		2,883	43	2,840
Colorado-----		4		1,250		341	326	15
Idaho-----	52	4,871	4,358	47,222		79,642	78,677	965
Missouri-----		9,706	4,082	133,352	113,905	124,708	123,880	828
Montana-----		71	89	5,527		2,172	2,172	
Oklahoma-----		8		1,346	4,920			
Utah-----	36	11,837	1,109	28,983	6,850	40,717	40,717	
Nevada, New Mexico, and Washington-----		45	322	11,921		42		42

<sup>1</sup>For definition of the industry see tables 2 and 56, footnote 1.

TABLE 71.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, 1939 AND 1929, AND BY TYPE OF OPERATION AND BY STATE: 1939<sup>1</sup>  
(For producing operations only)

TYPE OF OPERATION, STATE, AND TYPE OF EQUIPMENT		PRIME MOVERS AND ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY										Electric Motors driven by energy generated by reporting companies		
		Aggregate horsepower	Prime movers						Ordinarily idle (included in preceding columns)		Electric motors driven by purchased energy			
			Total		Driving generators		Not driving generators							
			Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power
United States, total-----1939-----		193,248	122	20,195	35	12,928	87	7,267	8	7,980	4,767	173,053	247	2,630
-----1929-----		194,380	148	38,234	(2)	(2)	(2)	(2)	(2)	4,719	4,370	156,146	411	16,422
Stationary-----1939-----		166,679	73	17,471	33	12,688	40	4,783	8	7,980	4,400	149,208	244	2,459
-----1929-----		176,941	133	37,494	(2)	(2)	(2)	(2)	(2)	4,719	3,869	139,447	343	14,150
Mobile-----1939-----		26,569	49	2,724	2	240	47	2,484	-----	-----	367	23,845	3	171
-----1929-----		17,439	15	740	(2)	(2)	(2)	(2)	-----	-----	501	16,699	68	2,272
TYPE OF OPERATION: 1939														
Mines only, total-----		15,785	35	3,460	11	1,483	24	1,977	1	200	243	12,325	24	302
Stationary-----		13,990	21	2,570	10	1,433	11	1,137	1	200	195	11,420	24	302
Mobile-----		1,795	14	890	1	50	13	840	-----	-----	48	905	-----	-----
Mines and mills operated together, total-----		169,407	84	16,475	22	11,275	62	5,200	7	7,780	4,088	152,932	223	2,328
Stationary-----		144,723	50	14,731	21	11,085	29	3,646	7	7,780	3,769	129,692	220	2,157
Mobile-----		24,684	34	1,744	1	190	33	1,554	-----	-----	519	22,940	3	171
Mills only, total-----		8,056	3	280	2	170	1	90	-----	-----	436	7,796	-----	-----
Stationary-----		7,966	2	170	2	170	-----	-----	-----	-----	436	7,796	-----	-----
Mobile-----		90	1	90	-----	-----	1	90	-----	-----	-----	-----	-----	-----
STATE: 1939														
Arizona, total-----		2,556	19	2,521	9	1,670	10	851	2	300	1	35	135	1,350
Stationary-----		2,351	14	2,316	9	1,670	5	646	2	300	1	35	135	1,350
Mobile-----		205	5	205	-----	-----	5	205	-----	-----	-----	-----	-----	-----
Colorado, total-----		1,260	3	630	1	200	2	430	-----	-----	8	630	35	245
Stationary-----		1,260	3	630	1	200	2	430	-----	-----	8	630	35	245
Mobile-----		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Idaho, total-----		43,940	41	4,955	12	1,958	29	2,997	3	320	1,448	38,965	38	464
Stationary-----		40,735	28	4,411	11	1,908	17	2,503	3	320	1,382	36,324	38	464
Mobile-----		3,205	13	544	1	50	12	494	-----	-----	66	2,661	-----	-----
Missouri, total-----		114,796	23	9,425	8	8,555	15	870	2	7,300	2,280	105,371	26	274
Stationary-----		93,710	10	8,551	7	8,365	3	186	2	7,300	2,036	95,159	23	103
Mobile-----		21,086	13	874	1	190	12	684	-----	-----	244	20,212	3	171
Montana, total-----		1,597	5	375	1	60	4	315	1	60	87	1,222	-----	-----
Stationary-----		1,278	1	60	1	60	-----	-----	1	60	86	1,216	-----	-----
Mobile-----		319	4	315	-----	-----	4	315	-----	-----	1	4	-----	-----
Oklahoma, total-----		165	1	165	-----	-----	1	165	-----	-----	-----	-----	-----	-----
Stationary-----		165	1	165	-----	-----	1	165	-----	-----	-----	-----	-----	-----
Mobile-----		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Utah, total-----		28,349	24	1,539	1	120	23	1,419	-----	-----	943	26,810	1	22
Stationary-----		26,730	12	888	1	120	11	768	-----	-----	887	25,842	1	22
Mobile-----		1,619	12	651	-----	-----	12	651	-----	-----	56	968	-----	-----
Nevada, New Mexico, and Washington, total-----		585	6	585	3	365	3	220	-----	-----	-----	-----	12	275
Stationary-----		450	4	450	3	365	1	85	-----	-----	-----	-----	12	275
Mobile-----		135	2	135	-----	-----	2	135	-----	-----	-----	-----	-----	-----

<sup>1</sup>For definition of the industry see tables 2 and 56, footnote 1.

\*Not available.

## MINERAL INDUSTRIES

TABLE 72.—NUMBER OF POWER LOADING MACHINES AT LEAD MINES AND MILLS IN THE UNITED STATES, BY TYPE, KIND OF POWER USED, SIZE, AND STATE: 1939<sup>1</sup>

(For producing operations only)

TYPE OF MACHINE, KIND OF POWER USED, AND SIZE	United States	Colorado	Idaho	Missouri	Montana	Utah
Underground equipment:						
Shovel loaders, total-----	112	-----	16	84	1	11
Kind of power used:						
Electric-----	85	-----	-----	84	-----	1
Compressed air-----	27	-----	16	-----	1	10
Requiring minimum working height of 8 feet or less, total-----	111	-----	16	84	1	10
Kind of power used:						
Electric-----	84	-----	-----	84	-----	-----
Compressed air-----	27	-----	16	-----	1	10
Requiring minimum working height of more than 8 feet <sup>2</sup> -----	1	-----	-----	-----	-----	1
Scraper loaders (including slushers), total-----	91	1	19	38	-----	33
Kind of power used:						
Electric-----	43	1	-----	38	-----	4
Compressed air-----	48	-----	19	-----	-----	29
Horsepower rating of hoists:						
Less than 10-----	27	1	3	-----	-----	23
10 to 25-----	27	-----	16	1	-----	10
26 to 100-----	37	-----	-----	37	-----	-----
Surface equipment, all types-----	8	-----	3	4	5	-----

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. No units were reported in States other than those designated.<sup>2</sup> Operated by electricity.<sup>3</sup> Represents 1 power shovel with a bucket capacity of less than 3 cubic yards and 2 bulldozers; all operated by gasoline or Diesel engines.<sup>4</sup> Represents 4 steam and 1 electric locomotive cranes.TABLE 73.—SELECTED STATISTICS FOR INCORPORATED AND UNINCORPORATED CONCERNS IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND CHARACTER OF OWNERSHIP	Number of operating companies	Number of mines	Number of mills	Mine production of recoverable lead (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	62	76	29	602,316,964	\$31,467,413	8,015	6,984	998	33	\$9,921,086	\$2,846,247
Incorporated-----	41	55	26	591,990,411	30,982,442	7,813	6,922	991	-----	9,715,771	2,939,111
Unincorporated-----	21	21	3	10,326,553	484,971	202	162	7	33	205,315	9,136
Arizona, total-----	7	6	3	12,219,230	1,039,440	434	411	20	3	611,354	48,895
Incorporated-----	5	4	3	12,219,230	1,039,440	434	411	20	3	611,354	48,895
Unincorporated-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
Colorado, total-----	6	6	2	785,568	49,124	38	35	1	2	43,656	1,000
Incorporated-----	2	2	1	785,568	49,124	38	35	1	2	43,656	1,000
Unincorporated-----	4	4	-----	-----	-----	-----	-----	-----	-----	-----	-----
Idaho, total-----	13	16	9	180,636,187	9,198,146	2,522	2,335	182	5	3,584,613	557,860
Incorporated-----	9	12	7	155,246,450	8,937,173	2,438	2,259	179	-----	3,418,086	555,160
Unincorporated-----	4	4	2	5,389,737	260,973	84	76	3	5	106,527	2,700
Missouri <sup>2</sup> -----	6	9	8	306,583,168	11,874,167	2,843	2,285	358	-----	3,090,978	900,523
Montana, total-----	7	7	1	10,625,399	339,584	141	120	11	10	179,149	22,620
Incorporated-----	2	2	1	10,625,399	339,584	141	120	11	10	179,149	22,620
Unincorporated-----	5	5	-----	-----	-----	-----	-----	-----	-----	-----	-----
Utah, total-----	16	22	6	106,159,846	8,789,616	1,988	1,691	291	6	2,379,921	839,772
Incorporated-----	14	20	6	106,159,846	8,789,616	1,988	1,691	291	6	2,379,921	839,772
Unincorporated-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nevada, New Mexico, Oklahoma, and Washington, total <sup>3</sup> -----	9	10	-----	5,307,566	177,336	249	107	135	7	91,415	477,577
Incorporated-----	5	6	-----	4,439,173	140,910	216	84	132	-----	74,362	473,741
Unincorporated-----	4	4	-----	868,393	36,426	33	23	3	7	17,053	3,836

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Incorporated only; no unincorporated concerns were reported.<sup>3</sup> Nevada, 1 mine operated by an incorporated concern and 2 mines operated by unincorporated concerns; New Mexico, 1 incorporated; Oklahoma, 4 incorporated and 1 unincorporated; and Washington, 1 unincorporated.

## LEAD AND ZINC ORES

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TABLE 74.—SELECTED STATISTICS FOR OPERATIONS AND OPERATING COMPANIES IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS	Number of operating companies <sup>2</sup>	Number of mines	Number of mills	Mine production of recoverable lead (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	62	76	29	602,316,964	\$31,467,413	8,015	6,984	998	33	\$9,921,086	\$2,848,247
BY OPERATION											
Less than \$20,000-----	31	30	9	5,034,531	219,581	279	234	21	24	265,359	28,114
\$20,000 - \$49,999-----	9	9	3	6,717,770	318,168	237	214	20	3	215,696	52,100
\$50,000 - \$99,999-----	4	4	1	6,479,514	264,000	94	80	2	2	101,143	300
\$100,000 - \$249,999-----	7	6	3	15,513,176	632,808	329	304	22	5	352,157	48,566
\$250,000 - \$499,999-----	4	4	3	21,078,559	1,351,611	458	424	34	-----	586,713	84,861
\$500,000 - \$999,999-----	4	3	4	53,787,743	2,809,182	730	671	59	-----	988,780	139,639
\$1,000,000 - \$2,499,999-----	4	5	4	215,169,970	9,695,771	2,286	2,121	165	-----	3,046,488	496,150
\$2,500,000 - \$4,999,999-----	3	2	3	254,697,041	14,552,417	2,830	2,620	210	-----	3,925,920	546,600
\$5,000,000 and over-----	1	1	1	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	5	12	2	23,838,660	1,223,895	782	316	465	1	455,850	1,452,117
BY OPERATING COMPANY											
Less than \$20,000-----	31	31	6	5,299,131	232,355	216	173	18	25	160,658	23,132
\$20,000 - \$49,999-----	8	10	3	6,552,310	275,029	214	196	15	3	178,024	35,894
\$50,000 - \$99,999-----	5	6	1	9,152,809	335,408	121	115	4	2	136,266	5,220
\$100,000 - \$499,999 <sup>3</sup> -----	8	10	3	21,620,257	1,280,748	594	553	39	3	699,237	86,818
\$500,000 - \$999,999-----	4	5	6	46,154,441	2,808,899	851	729	122	-----	1,088,586	442,801
\$1,000,000 - \$2,499,999-----	3	3	3	97,458,510	6,166,335	1,648	1,508	140	-----	2,270,192	426,502
\$3,000,000 and over-----	3	11	7	417,059,506	20,368,638	4,371	3,710	661	-----	5,393,141	1,827,980

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports classified by value of products represent a single mine or mill, or a mine and mill reported as a single unit. Reports classified by value of products by operating company represent all operations of each company in the lead-ore industry. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Ten multi-unit companies operated mines or mills that were classified in more than one of the class intervals; thus the numbers of companies shown for each classification by operation do not add to the total.

<sup>3</sup> Includes combined statistics for 2 companies operating the same mine during different parts of the year.

TABLE 75.—SELECTED STATISTICS FOR OPERATIONS AND OPERATING COMPANIES IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF WAGE EARNERS: 1939<sup>1</sup>

(For producing operations only)

NUMBER OF WAGE EARNERS	Number of operating companies <sup>2</sup>	Number of mines	Number of mills	Mine production of recoverable lead (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	62	76	29	602,316,964	\$31,467,413	8,015	6,984	998	33	\$9,921,086	\$2,848,247
BY OPERATION											
None-----	2	2	-----	4,414,582	159,337	81	55	5	21	68,050	4,920
1 - 5-----	16	17	3	7,813,869	420,763	251	221	23	7	237,365	41,564
6 - 20-----	21	19	4	14,452,592	1,130,220	276	250	22	4	310,199	44,647
21 - 50-----	7	7	4	25,972,234	4,059,221	575	515	60	-----	771,613	118,941
51 - 100-----	7	5	4	46,717,516	2,138,615	784	722	62	-----	900,837	157,644
101 - 250-----	5	5	5	162,354,813	8,241,353	1,916	1,782	134	-----	2,615,555	430,326
251 - 500-----	4	5	5	314,642,698	14,095,009	3,350	3,123	227	-----	4,561,617	598,088
501 - 1,000-----	3	3	2	-----	-----	-----	-----	-----	-----	-----	-----
1,001 and over-----	1	1	1	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	5	12	2	23,838,660	1,223,895	782	316	465	1	455,850	1,452,117
BY OPERATING COMPANY											
None-----	2	2	-----	4,414,582	159,337	84	55	7	22	68,050	7,888
1 - 5-----	17	16	3	8,102,999	390,217	236	210	19	7	222,530	28,434
6 - 20-----	20	21	4	11,407,871	628,984	232	213	15	4	243,483	24,465
21 - 50-----	7	11	4	12,872,694	1,119,277	511	250	81	-----	268,965	220,438
51 - 100-----	4	2	3	26,824,976	1,248,068	558	524	34	-----	644,455	95,024
101 - 250-----	4	7	2	72,339,536	4,795,999	1,436	1,339	97	-----	2,020,812	448,462
251 - 500-----	4	6	5	466,354,306	23,126,531	5,158	4,413	745	-----	6,452,791	2,025,536
501 and over-----	4	11	8	-----	-----	-----	-----	-----	-----	-----	-----

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports classified by average number of wage earners employed during the year by operation represent a single mine or mill or a mine and mill reported as a single unit. Reports classified by average number of wage earners by operating company represent all operations of each company in the lead-ore industry. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Six multi-unit companies operated mines or mills that were classified in more than one of the class intervals; thus the numbers of companies shown for each classification by operation do not add to the total.

## MINERAL INDUSTRIES

TABLE 76.—SELECTED STATISTICS FOR OPERATIONS IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF HOURS PER WAGE EARNER IN THE FULL-TIME WORKWEEK: 1939<sup>1</sup>

(For producing operations only)

HOURS PER WEEK	Number of mines	Number of mills	Mine production of recoverable lead (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	76	29	602,316,964	\$31,467,413	8,015	6,984	998	33	\$9,921,086	\$2,848,247
40-----	18	13	421,703,626	21,176,049	4,258	3,929	328	1	5,780,141	892,439
41 - 42-----	10	2	5,893,137	202,151	201	187	9	5	156,358	26,991
43 - 44-----	13	8	143,240,889	7,794,767	2,292	2,115	167	10	2,980,501	408,029
45 - 47-----	1									
48-----	2	2	12,609,999	656,626	302	275	21	6	395,438	35,707
49 and over-----	2	1								
Unclassified-----	24	3	18,859,313	1,637,820	962	478	473	11	606,648	1,485,081

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports were classified by number of hours in the full-time workweek reported for wage earners in that department of the mine or mill for which the largest number of man-hours worked was reported. Statistics shown for "Unclassified" represent: Reports on which number of hours was not reported; reports on which no wage earners were reported; and reports for central offices reported separately from their associated mines and mills.

TABLE 77.—SELECTED STATISTICS FOR OPERATIONS IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF DAYS ACTIVE DURING THE YEAR: 1939<sup>1</sup>

(For producing operations only)

NUMBER OF DAYS ACTIVE DURING YEAR	Number of mines	Number of mills	Mine production of recoverable lead (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	76	29	602,316,964	\$31,467,413	8,015	6,984	998	33	\$9,921,086	\$2,848,247
50 - 99-----	2	-----	1,442,164	59,691	24	20	-----	4	22,214	-----
100 - 149-----	3	-----	-----	-----	-----	-----	-----	-----	-----	-----
150 - 199-----	5	2	1,214,004	350,019	87	66	14	7	60,356	23,256
200 - 249-----	4	3	238,740	12,416	35	31	3	1	25,290	3,300
225 - 249-----	7	6	301,508,354	11,663,505	2,300	2,094	206	-----	2,953,695	535,456
250 - 274-----	14	6	166,503,233	9,853,950	2,751	2,583	167	1	3,863,249	505,541
275 - 299-----	12	2	77,694,597	3,267,455	948	880	59	9	1,160,530	127,563
300 - 324-----	6	3	14,912,753	4,012,657	617	562	54	1	815,281	131,466
325 and over-----	6	5	14,231,281	945,642	428	397	25	6	528,786	55,088
Unclassified-----	17	2	24,576,838	1,302,078	825	351	470	4	491,685	1,466,447

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports classified by number of days active represent a single mine or mill or a mine and mill reported as a single unit; reports for a single mine or mill were classified by number of days the mine or mill was in operation for production or development purposes during the year; reports for a mine and mill reported as a single unit were classified by number of days the mine was in operation during the year. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of days active was not reported; and reports for central offices reported separately from their associated mines and mills.

TABLE 78.—SELECTED STATISTICS FOR OPERATIONS IN THE LEAD-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS PER MAN-HOUR: 1939<sup>1</sup>

(For producing operations only)

VALUE OF PRODUCTS PER MAN-HOUR	Number of mines	Number of mills	Mine production of recoverable lead (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	76	29	602,316,964	\$31,467,413	8,015	6,984	998	33	\$9,921,086	\$2,848,247
Less than \$0.50-----	12	6	1,758,306	90,419	294	272	21	1	280,390	42,661
\$0.50 - \$0.74-----	6	1	1,294,434	75,076	60	50	6	4	64,835	8,020
\$0.75 - \$0.99-----	5	2	11,250,787	509,897	257	241	16	-----	284,711	28,215
\$1.00 - \$1.24-----	5	1	16,324,769	1,133,846	492	463	26	3	632,375	76,088
\$1.25 - \$1.49-----	3	2	12,543,784	520,929	208	193	14	1	269,897	27,379
\$1.50 - \$1.74-----	3	2	3,614,239	211,487	72	66	3	3	95,745	6,060
\$1.75 - \$1.99-----	7	3	187,533,408	9,257,513	2,581	2,403	172	1	3,518,277	427,846
\$2.00 - \$2.49-----	4	2	16,278,627	1,551,871	384	366	16	2	514,437	60,258
\$2.50 - \$2.99-----	4	2	61,540,858	2,406,909	474	425	46	3	604,104	110,135
\$3.00 - \$3.99-----	3	3	-----	-----	-----	-----	-----	-----	-----	-----
\$4.00 and over-----	2	2	228,896,309	12,305,301	1,818	1,649	169	-----	2,397,196	436,644
Unclassified-----	24	3	61,281,443	3,404,165	1,375	851	509	15	1,259,119	1,624,740

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports classified by value of products per man-hour represent a single mine, a single mill, or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

## LEAD AND ZINC ORES

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TABLE 79.—PRINCIPAL STATISTICS FOR THE ZINC-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

ITEM	United States	Colorado	Idaho	Kansas	Missouri	Nevada	New Mexico	Oklahoma	Arizona, Utah, and Washington <sup>2</sup>	Kentucky and Wisconsin <sup>3</sup>	New Jersey, New York, Tennessee, and Virginia <sup>4</sup>
Number of operating companies-----	138	5	9	26	20	4	11	59	6	5	5
Number of mines-----	170	4	8	26	19	3	10	81	5	5	9
Number of mills-----	91	1	3	20	11	-----	4	55	4	5	8
Number of persons engaged, total-----	9,682	81	448	1,399	400	220	667	3,005	553	167	2,742
Wage earners (average for the year)-----	8,653	74	413	1,318	352	204	610	2,871	421	154	2,436
Salaried employees-----	974	6	24	68	45	16	56	312	132	9	306
Proprietors and firm members-----	55	1	11	13	3	-----	1	22	-----	4	-----
Performing manual labor-----	26	1	4	8	1	-----	1	11	-----	-----	-----
Production:											
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----	9,538,886	12,061	194,702	1,818,420	448,788	44,970	296,551	3,323,392	306,541	201,583	2,691,878
Direct-smelting ore (tons)-----	59,965	175	40,638	-----	-----	1,477	4,013	-----	5,931	-----	7,751
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----	3,696,482	201	99,434	664,982	345,683	43,493	5,629	2,508,627	29,528	905	-----
Milling ore and tailings treated (tons), total-----	16,925,136	11,685	115,787	3,293,309	414,353	-----	340,968	9,382,411	432,482	250,678	2,683,463
Purchased and custom-----	3,967,571	-----	43,219	62,806	318,396	-----	51,453	3,280,297	161,400	50,000	-----
All other-----	12,957,565	11,685	72,568	3,230,503	95,957	-----	289,515	6,102,114	271,082	200,678	2,683,463
Concentrates produced (tons), total-----	1,285,800	3,038	18,554	89,211	22,531	-----	69,406	334,041	102,363	46,061	600,395
From purchased and custom material-----	348,290	-----	5,281	3,175	16,766	-----	12,535	223,681	76,501	10,331	-----
From all other material-----	937,510	3,038	13,273	86,036	5,745	-----	56,871	110,360	25,862	35,730	600,395
Recoverable metal content of above direct-smelting ore, milling ore and tailings sold or sent to custom mills, and concentrates produced from other than purchased or custom material-----											
Zinc (pounds)-----	334,325,616	1,726,000	29,912,386	133,612,316	27,757,484	12,076,400	51,668,015	272,482,659	28,145,426	13,465,715	363,479,215
Lead (pounds)-----	122,091,070	1,402,930	17,049,083	25,262,495	3,251,579	5,156,215	4,966,777	38,023,499	13,867,339	444,587	12,666,566
Silver (fine ounces)-----	2,075,066	36,850	1,301,558	-----	-----	248,754	166,404	-----	273,908	-----	45,612
Gold (fine ounces)-----	20,888,06	87.44	12,505.79	-----	-----	969.74	5,808.09	-----	1,718.00	-----	-----
Copper (pounds)-----	1,133,081	124,500	309,557	-----	-----	21,750	511,455	-----	165,819	-----	-----
Value of all products-----	\$31,184,092	\$135,791	\$2,308,171	\$4,167,802	\$803,544	\$284,356	\$1,699,296	\$10,594,730	\$1,994,942	\$509,173	\$8,686,187
Principal expenses designated below, total-----	\$20,529,991	\$169,408	\$1,062,556	\$2,763,670	\$648,762	\$577,954	\$1,205,001	\$6,382,028	\$1,528,115	\$309,026	\$5,883,471
Wages-----	\$10,225,079	\$98,467	\$616,735	\$1,489,377	\$301,522	\$299,584	\$665,449	\$2,896,121	\$639,330	\$155,068	\$3,063,426
Salaries-----	\$2,201,201	\$11,640	\$58,857	\$161,806	\$103,310	\$45,294	\$105,358	\$534,283	\$330,417	\$13,642	\$940,604
Supplies and materials-----	\$5,636,955	\$36,761	\$306,988	\$765,996	\$189,290	\$111,788	\$297,319	\$2,111,929	\$399,095	\$74,517	\$1,345,272
Fuel-----	\$576,590	\$727	\$2,295	\$87,163	\$20,096	\$1,114	\$58,262	\$169,215	\$59,650	\$5,148	\$188,915
Purchased electric energy-----	\$1,679,464	\$16,759	\$54,719	\$220,811	\$53,765	\$122,174	\$61,105	\$522,091	\$117,787	\$60,656	\$459,534
Contract work-----	\$208,702	\$5,074	\$24,962	\$58,517	\$779	-----	\$7,498	\$124,378	\$1,773	-----	\$5,720
Cost of buildings, machinery, and equipment erected or installed during year-----	\$836,934	\$12,738	\$75,509	\$109,063	\$40,662	\$18,429	\$56,014	\$278,873	\$68,654	\$34,393	\$142,599
Buildings-----	\$233,640	\$2,012	\$18,034	\$20,375	\$13,787	-----	\$7,536	\$124,662	\$658	\$362	\$46,214
Machinery and equipment-----	\$603,294	\$10,726	\$57,475	\$88,688	\$26,875	\$18,429	\$48,478	\$154,211	\$67,996	\$34,031	\$96,385
Purchased in new condition-----	\$419,712	\$10,711	\$52,735	\$70,389	\$11,266	\$18,429	\$39,345	\$39,653	\$83,068	\$17,731	\$96,385
Purchased in used condition-----	\$185,582	\$15	\$4,740	\$18,299	\$15,609	-----	\$9,133	\$114,558	\$4,928	\$16,300	-----
Man-shifts worked by wage earners, total-----	2,515,536	17,022	106,778	360,292	99,682	60,581	173,169	742,745	114,351	47,929	593,007
On active days, total-----	2,259,213	17,022	105,219	353,378	96,619	59,699	163,527	717,596	109,728	47,454	589,991
At mines-----	1,621,379	14,835	99,176	277,802	75,192	59,699	128,223	482,351	90,777	30,593	362,751
At mills-----	637,834	2,187	6,043	75,576	21,427	-----	35,304	235,245	18,951	16,841	226,260
On inactive days-----	56,323	-----	1,559	6,914	3,063	882	9,642	25,149	4,603	495	4,016
Man-hours worked by wage earners, total-----	18,197,635	129,284	819,289	2,861,678	794,285	484,648	1,358,927	5,832,544	922,616	335,218	4,659,546
On active days, total-----	17,755,490	129,284	806,935	2,806,409	769,581	477,592	1,282,178	5,633,157	885,796	331,948	4,630,612
At mines-----	12,731,316	111,788	760,689	2,198,667	594,074	477,592	1,003,963	5,798,782	726,180	217,109	2,852,252
Per ton of crude ore mined-----	1.36	9.27	3.21	1.21	1.32	10.62	5.39	1.14	2.57	1.08	1.06
At mills-----	5,022,174	17,496	46,244	607,542	175,507	-----	278,195	1,844,375	159,616	114,839	1,778,360
Per ton of ore and tailings treated-----	0.30	1.50	0.40	0.18	0.42	-----	0.62	0.20	0.37	0.46	0.66
On inactive days-----	444,145	-----	12,366	55,269	24,704	7,056	76,749	199,187	36,820	3,270	28,734
Value of all products per man-hour worked at mines and mills-----	\$1.71	\$1.05	\$2.82	\$1.46	\$1.01	\$0.59	\$1.25	\$1.82	\$2.16	\$1.52	\$1.86
Average number of full days mines and mills were active-----	230	250	257	229	206	300	169	218	209	266	273
Mines-----	224	297	267	237	204	300	157	206	200	271	272
Mills-----	247	122	169	205	214	-----	237	249	271	259	274
Average number of hours worked per shift-----	7.9	7.6	7.7	7.9	8.0	8.0	7.8	7.9	8.1	7.0	7.9
Average hourly earning of wage earners-----	\$0.56	\$0.76	\$0.75	\$0.52	\$0.56	\$0.62	\$0.49	\$0.50	\$0.69	\$0.46	\$0.66
Horsepower rating of power equipment, total-----	151,838	1,165	6,228	18,228	3,632	5,066	4,982	48,688	9,575	1,704	52,570
Per wage earner-----	17.5	15.7	15.1	13.8	10.3	24.8	8.2	18.2	22.7	11.1	21.6
Stationary equipment-----	133,639	980	5,693	15,300	2,791	4,971	4,764	43,264	7,637	1,664	46,575
Mobile equipment-----	18,199	185	535	2,928	841	95	218	5,424	1,938	40	5,995
Electric energy consumed (thousands of kw.-hrs.), total-----	248,518	846	6,460	22,147	3,055	12,000	13,350	62,027	17,250	3,487	107,696
Purchased-----	204,068	846	5,901	18,178	2,893	12,000	6,454	41,833	11,476	3,487	101,520
Generated by reporting companies-----	44,450	-----	559	3,969	162	-----	6,916	20,694	5,774	-----	6,376

<sup>1</sup> For definition of the industry and explanations of terms used see tables 2 and 56, footnote 1.<sup>2</sup> Arizona, 1 operator, 1 mine, and 1 mill; Utah, 3 operators, 2 mines, and 1 mill; and Washington, 2 operators, 2 mines, and 2 mills.<sup>3</sup> Kentucky, 1 operator, 1 mine, and 1 mill; and Wisconsin, 4 operators, 4 mines, and 4 mills.<sup>4</sup> New Jersey, 1 operator, 2 mines, and 2 mills; New York, 1 operator, 2 mines, and 2 mills; Tennessee, 3 operators, 4 mines (including 1 lead mine) and 3 mills (including 1 lead mill); and Virginia, 1 operator (also operating in New Jersey), 1 mine and 1 mill.<sup>5</sup> Represents \$107,475 expended for loading and hauling, \$90,012 for drilling and exploration, and \$11,215 for miscellaneous work such as construction of roads and dams, excavations for drainage ditches and tailing ponds, filling old shafts, laying pipe lines, and moving equipment.

TABLE 80.—PRINCIPAL STATISTICS FOR THE ZINC-ORE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION AND BY MINING METHOD: 1939<sup>1</sup>  
(For producing operations only)

ITEM	All operations	MINES ONLY			MINES OPERATED IN CONJUNCTION WITH MILLS			MILLS ONLY		
		Total	Mining method		Total	Mining method		Total	Kind of mill	
			Open stoping <sup>2</sup>	Timbered methods <sup>3</sup>		Open stoping <sup>2</sup>	Timbered methods <sup>3</sup>		Custom	Tailings
Number of operations-----	202	107	96	11	63	55	8	32	17	15
Number of persons engaged, total-----	4 9,882	2,619	2,050	569	5,753	3,952	1,801	976	567	409
Wage earners (average for the year)-----	8,653	2,475	1,947	528	5,290	3,684	1,606	888	512	376
Salaried employees-----	4 974	115	76	39	445	258	187	80	51	29
Proprietors and firm members-----	55	29	27	2	18	18	8	8	4	4
Performing manual labor-----	26	19	18	1	3	1	2	4	3	1
Production:										
Crude ore mined, excluding tailings (tons of 2,000 pounds)-----	9,338,886	3,231,066	3,029,834	201,232	6,107,820	5,327,803	780,217			
Direct-smelting ore (tons)-----	59,935	51,466	4,744	46,744	8,477	746	7,731			
Milling ore and tailings sold to mill operators or sent to custom mills for treatment (tons)-----	3,698,482	3,217,193	3,062,702	154,488	481,292	481,292				
Milling ore and tailings treated (tons), total-----	18,925,136				6,403,858	5,628,548	775,310	10,521,278	3,783,116	6,738,162
Purchased and custom-----	3,937,571				174,252	172,285	2,040	3,763,246	3,783,116	10,130
All other-----	12,987,565				6,229,533	5,456,263	773,270	6,728,032		6,728,032
Concentrates produced (tons), total-----	1,285,600				883,352	420,586	462,766	402,248	334,678	67,570
From purchased and custom material-----	348,290				12,970	12,857	313	335,320	334,678	642
From all other material-----	937,310				870,382	407,929	462,453	66,928		66,928
Recoverable metal content of above direct-smelting ore, milling ore, and tailings sold or sent to custom mills, and concentrates produced from other than purchased or custom material-----										
Zinc (pounds)-----	934,325,616	253,915,686	225,292,740	28,622,946	609,082,436	399,337,725	209,744,711	71,327,494		71,327,494
Lead (pounds)-----	122,091,070	56,591,192	37,133,075	19,458,117	64,599,237	55,821,746	8,777,491	900,641		900,641
Silver (fine ounces)-----	2,073,086	1,734,059	283,593	1,450,466	339,027	111,806	227,221			
Gold (fine ounces)-----	20,886.06	14,207.72	1,084.93	13,122.79	6,680.34	57.19	6,623.15			
Copper (pounds)-----	1,133,081	454,302	48,421	405,881	678,779	259,600	419,179			
Value of all products-----	\$31,184,092	\$7,269,637	\$5,010,504	\$2,259,133	\$17,405,988	\$12,931,005	\$4,474,983	\$6,508,467	\$4,284,727	\$2,223,740
Principal expenses designated below, total-----	\$20,529,991	\$4,835,162	\$3,665,171	\$1,169,991	\$11,733,551	\$8,172,013	\$3,561,538	\$3,276,756	\$1,999,986	\$1,276,770
Wages-----	\$10,225,079	\$2,862,778	\$2,169,000	\$693,778	\$6,268,479	\$4,156,537	\$2,131,942	\$1,073,822	\$642,043	\$431,779
Salaries-----	\$2,201,201	\$269,102	\$171,074	\$98,028	\$1,094,420	\$626,590	\$467,830	\$153,157	\$109,279	\$43,879
Supplies and materials-----	\$5,638,955	\$1,254,735	\$964,896	\$289,839	\$3,092,642	\$2,449,339	\$643,303	\$1,291,576	\$687,152	\$424,424
Fuel-----	\$573,590	\$54,889	\$46,843	\$8,046	\$335,537	\$149,050	\$186,487	\$166,164	\$113,106	\$73,059
Purchased electric energy-----	\$1,679,464	\$300,875	\$236,802	\$64,276	\$984,763	\$753,244	\$131,519	\$493,823	\$265,844	\$229,979
Contract work-----	\$208,702	\$92,780	\$76,756	\$16,024	\$37,710	\$37,253	\$457	\$78,212	\$4,562	\$73,650
Cost of buildings, machinery, and equipment erected or installed during year-----	\$836,934	\$238,785	\$178,633	\$60,152	\$408,220	\$295,128	\$113,092	\$189,929	\$131,170	\$58,759
Buildings-----	\$233,840	\$55,806	\$37,472	\$18,334	\$143,722	\$97,026	\$46,696	\$34,112	\$29,770	\$4,342
New machinery and equipment-----	\$419,712	\$101,596	\$80,293	\$21,303	\$186,725	\$125,544	\$61,181	\$131,391	\$79,072	\$52,319
Used machinery and equipment-----	\$183,582	\$81,383	\$60,868	\$21,515	\$77,773	\$72,558	\$5,215	\$24,426	\$22,328	\$2,098
Man-shifts worked by wage earners, total-----	2,315,536	662,989	532,149	130,820	1,387,407	1,000,300	387,107	265,160	150,339	114,821
On active days, total-----	2,259,213	650,553	523,117	127,436	1,354,027	976,770	377,257	254,633	141,833	112,800
At mines-----	1,821,379	650,553	523,117	127,436	970,826	702,381	268,445			
At mills-----	637,834				383,201	274,389	106,812	254,633	141,833	112,800
On inactive days-----	56,323	12,416	9,032	3,384	33,380	23,530	9,850	10,527	8,506	2,021
Man-hours worked by wage earners, total-----	18,197,635	5,202,868	4,196,722	1,006,166	10,912,759	7,839,748	3,073,011	2,081,998	1,180,738	891,260
On active days, total-----	17,752,490	5,105,474	4,126,264	979,210	10,649,538	7,654,938	2,994,601	1,998,477	1,123,351	875,096
At mines-----	12,731,316	5,105,474	4,126,264	979,210	7,635,842	5,497,498	2,128,344			
Per ton of crude ore mined-----	1.36	1.58	1.36	4.67	1.25	1.03	2.73			
At mills-----	5,022,174				3,023,697	2,157,440	866,257	1,998,477	1,123,351	875,096
Per ton of ore and tailings treated-----	0.30				0.47	0.38	1.12	0.19	0.30	0.13
On inactive days-----	444,145	97,414	70,458	26,956	263,220	184,810	78,410	83,511	67,357	16,154
Value of all products per man-hour-----	\$1.71	\$1.40	\$1.19	\$2.25	\$1.60	\$1.65	\$1.46	\$3.13	\$3.60	\$2.50
Average number of full days operations were active-----	230	216	220	212	229	245	196	276	284	268
Mines-----	224	218	220	212	229	249	188			
Mills-----	247				231	235	220	276	284	268
Average number of hours worked per shift-----	7.9	7.8	7.7	7.7	7.9	7.8	7.9	7.9	7.9	7.8
Average hourly earning of wage earners-----	\$0.56	\$0.55	\$0.52	\$0.69	\$0.58	\$0.53	\$0.69	\$0.52	\$0.54	\$0.49
Horsepower rating of power equipment, total-----	151,638	28,838	21,827	5,011	91,004	66,684	24,320	33,996	22,583	11,413
Per wage earner-----	17.5	10.8	11.2	9.5	17.2	18.1	15.1	38.3	44.1	30.4
Stationary equipment-----	133,639	22,747	19,709	3,038	63,313	60,006	23,307	27,579	20,067	7,512
Mobile equipment-----	18,199	4,091	2,118	1,973	7,691	6,678	1,013	6,417	2,516	3,901
Electric energy consumed (thousands of kw.-hrs.), total-----	248,518	25,339	20,372	4,967	160,287	137,619	22,668	62,892	37,118	25,774
Purchased-----	204,068	23,313	18,905	4,408	135,272	123,941	11,331	45,483	21,502	23,981
Generated by reporting companies-----	44,450	2,026	1,467	559	25,015	13,678	11,337	17,409	15,616	1,793

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Includes room-and-pillar, casual pillars, and sublevel stoping. Statistics for 3 open-cut mines in Idaho, 1 in Kansas, and 1 in Missouri are included with those for mines employing only open-stope mining methods; the total value of products for these 5 mines was \$171,988.<sup>3</sup> Includes square-setting, cut-and-fill stoping, shrinkage stoping, and top slicing.<sup>4</sup> Includes statistics for 334 salaried employees who were paid \$684,522 at central offices that were not classified by type of operation.

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TABLE 81.—SELECTED STATISTICS FOR THE ZINC-ORE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION, AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND TYPE OF OPERATION	Number of operations	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Man-hours worked by wage earners	Wages	Salaries <sup>2</sup>
				Total <sup>2</sup>	Wage earners (average for the year)	Salaried employees <sup>2</sup>	Proprietors and firm members			
United States, total-----	202	954,525,516	\$51,184,092	9,682	8,653	974	55	18,197,635	\$10,225,079	\$2,201,201
Mines only-----	107	253,915,686	7,269,637	2,619	2,475	115	29	5,202,898	2,862,778	269,102
Mines and mills operated together-----	63	609,082,436	17,405,988	5,753	5,290	445	18	10,912,759	6,288,479	1,094,420
Mills only-----	32	71,527,494	6,508,467	976	888	80	8	2,081,988	1,073,822	153,157
Idaho, total-----	9	29,912,386	2,308,171	448	413	24	11	819,289	616,735	56,857
Mines only-----	6	19,758,386	1,828,469	309	288	18	3	563,909	411,049	42,288
Mines and mills operated together-----	2	10,154,000	479,702	134	125	1	8	255,580	205,686	3,000
Mills only-----	1									
Kansas, total-----	32	133,612,316	4,167,802	1,399	1,318	68	13	2,861,678	1,489,377	161,806
Mines only-----	12	48,861,940	829,913	394	373	18	3	794,331	393,813	54,498
Mines and mills operated together-----	14	64,900,228	2,665,689	865	832	28	5	1,796,411	955,093	55,503
Mills only-----	6	19,850,148	652,281	124	113	6	5	270,936	140,471	9,572
Missouri, total-----	22	27,757,484	803,644	400	352	45	3	794,285	301,522	103,310
Mines only-----	11	22,040,830	408,193	182	173	8	1	399,445	169,886	16,070
Mines and mills operated together-----	8	5,716,654	196,528	133	128	4	1	274,720	83,562	5,591
Mills only-----	3		198,923	56	51	4	1	120,120	48,074	7,540
New Mexico, total-----	11	51,668,015	1,699,296	687	610	56	1	1,358,927	665,449	105,338
Mines only-----	7	2,268,743	51,204	48	43	4	1	71,597	30,968	6,340
Mines and mills operated together-----	3	49,399,272	1,648,092	608	567	41		1,287,530	654,461	76,909
Mills only-----	1									
Oklahoma, total-----	100	272,482,659	10,594,730	3,005	2,671	312	22	5,832,344	2,896,121	534,293
Mines only-----	62	141,659,469	3,434,651	1,237	1,185	33	19	2,493,084	1,291,134	59,529
Mines and mills operated together-----	19	79,545,844	2,739,950	924	879	44	1	1,941,284	919,670	112,929
Mills only-----	19	51,477,346	4,420,129	668	607	59	2	1,397,976	685,317	96,586
Other States, total <sup>3</sup> -----	28	418,892,756	11,610,449	3,763	3,289	469	5	6,531,112	4,255,875	1,239,597
Mines only-----	9	19,326,318	717,207	449	415	34	2	880,722	565,928	90,377
Mines and mills operated together-----	17	399,566,438	10,893,242	3,217	2,876	338	3	5,650,390	3,680,947	879,947
Mills only-----	2									

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Statistics for number and compensation of central-office employees not classified by type of operation are included in United States and separate State totals.<sup>3</sup> Arizona, 1 operation; Colorado, 4; Kentucky, 1; Nevada, 2; New Jersey, 2; New York, 2; Tennessee, 4; Utah, 3; Virginia, 2; Washington, 2; Wisconsin, 5.

## MINERAL INDUSTRIES

TABLE 82.—PRINCIPAL PRODUCTS OF ZINC MINES AND MILLS IN THE UNITED STATES, BY PRODUCT AND BY STATE: 1939<sup>1</sup>

PRODUCT	United States	Colorado	Idaho	Kansas	Missouri	Nevada	New Mexico	Oklahoma	Arizona, Utah, and Washington	Kentucky and Wisconsin	New Jersey, New York, Tennessee, and Virginia
Value of all products-----	\$31,184,092	\$135,781	\$2,308,171	\$4,167,802	\$803,644	\$284,356	\$1,629,296	\$10,594,730	\$1,994,942	\$509,173	\$8,886,187
Direct-smelting ore:											
Quantity (tons of 2,000 pounds)-----	59,965	(2)	40,638	-----	-----	1,477	4,013	-----	5,931	-----	(2)
Recoverable metal content-----											
Zinc (pounds)-----	4,311,429	(2)	-----	-----	-----	602,400	1,232,000	-----	-----	-----	(2)
Lead (pounds)-----	4,880,340	(2)	3,164,212	-----	-----	289,715	586,597	-----	611,816	-----	(2)
Silver (fine ounces)-----	879,524	(2)	578,439	-----	-----	2,444	1,372	-----	95,452	-----	(2)
Gold (fine ounces)-----	9,892.50	(2)	9,612.00	-----	-----	59.74	88.98	-----	129.00	-----	(2)
Copper (pounds)-----	71,874	(2)	19,787	-----	-----	21,750	7,969	-----	19,168	-----	(2)
Mine value, total-----	\$892,534	(2)	\$710,071	-----	-----	\$22,133	\$38,584	-----	\$80,645	-----	(2)
Per ton of ore-----	\$14.88	(2)	\$17.47	-----	-----	\$14.99	\$9.61	-----	\$13.60	-----	(2)
Milling ore and tailings sold to mill operators or sent to custom mills for treatment:											
Quantity (tons)-----	3,698,482	201	99,434	664,982	345,683	43,493	5,629	2,508,627	29,528	905	-----
Recoverable metal content-----											
Zinc (pounds)-----	275,376,665	89,000	19,758,386	53,482,540	22,040,830	11,474,000	1,239,743	160,188,248	6,424,868	679,050	-----
Lead (pounds)-----	59,999,012	38,800	10,192,673	6,455,781	2,880,769	4,686,500	502,408	28,259,932	5,604,769	177,380	-----
Silver (fine ounces)-----	1,055,208	4,124	680,368	-----	-----	246,310	1,452	-----	142,656	-----	-----
Gold (fine ounces)-----	4,318.88	55.13	2,839.25	-----	-----	910.00	13.50	-----	499.00	-----	-----
Copper (pounds)-----	382,828	3,000	254,070	-----	-----	-----	8,054	-----	117,704	-----	-----
Mine value, total-----	\$6,946,871	\$5,964	\$1,113,398	\$928,184	\$408,193	\$282,223	\$26,258	\$3,854,701	\$326,680	\$16,290	-----
Per ton of ore-----	\$1.88	\$29.87	\$11.25	\$1.40	\$1.18	\$6.03	\$4.66	\$1.54	\$11.06	\$18.00	-----
Concentrates produced at mills operated in conjunction with mines (excluding concentrates produced from purchased and custom ore and tailings): <sup>3</sup>											
Quantity (tons)-----	937,310	3,038	13,273	86,036	5,745	-----	56,871	110,360	25,862	35,730	800,395
Recoverable metal content-----											
Zinc (pounds)-----	654,637,522	1,590,000	10,154,000	80,129,776	5,716,654	-----	49,198,272	112,294,411	21,720,558	12,786,665	361,059,188
Lead (pounds)-----	59,411,719	1,616,150	3,692,198	19,809,714	370,810	-----	3,877,772	9,763,587	7,650,754	287,207	12,686,568
Silver (fine ounces)-----	338,354	50,909	62,453	-----	-----	-----	165,580	-----	35,800	-----	45,612
Gold (fine ounces)-----	6,678.68	29.53	54.54	-----	-----	-----	5,508.61	-----	1,058.00	-----	-----
Copper (pounds)-----	678,379	118,800	55,700	-----	-----	-----	495,432	-----	28,847	-----	-----
Mill value, total-----	\$18,506,112	\$126,535	\$399,747	\$3,181,240	\$194,495	-----	\$1,481,223	\$3,841,622	\$809,894	\$259,975	\$9,211,281
Per ton of concentrates-----	\$19.74	\$41.65	\$30.12	\$36.98	\$35.85	-----	\$26.05	\$34.61	\$31.32	\$7.28	\$13.68
Concentrates produced from ore and tailings purchased or treated on a custom basis:											
Quantity (tons)-----	348,296	-----	5,281	3,175	16,786	-----	12,535	223,681	76,501	10,331	-----
Recoverable metal content-----											
Zinc (pounds)-----	291,343,761	-----	3,041,965	3,076,219	15,628,229	-----	6,687,262	217,965,409	34,124,157	10,820,520	-----
Lead (pounds)-----	70,418,798	-----	2,297,976	520,257	3,027,752	-----	3,740,655	38,907,014	21,700,138	425,006	-----
Silver (fine ounces)-----	1,627,986	-----	85,028	-----	-----	-----	140,978	-----	1,401,982	-----	-----
Gold (fine ounces)-----	10,910.98	-----	31.00	-----	-----	-----	113.59	-----	10,766.39	-----	-----
Copper (pounds)-----	1,429,104	-----	26,620	-----	-----	-----	1,198,676	-----	205,808	-----	-----
Value added by milling purchased ore and receipts for custom milling-----	\$4,296,556	-----	\$79,955	\$54,333	\$200,956	-----	\$153,231	\$2,846,894	\$764,354	\$196,832	-----
Value of miscellaneous secondary products-----	\$433,503	-----	-----	(2)	-----	-----	-----	(2)	(2)	(2)	\$359,558
Electric energy sold:											
Quantity (thousands of kw.-hrs.)-----	9,444	-----	-----	(2)	-----	-----	-----	(2)	(2)	-----	(2)
Value, total-----	\$104,894	-----	-----	(2)	-----	-----	-----	(2)	(2)	-----	(2)
Per kw.-hr-----	\$0.011	-----	-----	(2)	-----	-----	-----	(2)	(2)	-----	(2)
Receipts for miscellaneous services performed for other concerns (excluding custom milling)-----	\$5,823	(2)	-----	\$904	-----	-----	-----	(2)	-----	-----	-----

<sup>1</sup> For definition of the industry see tables 2 and 58, footnote 1.<sup>2</sup> Not shown separately.<sup>3</sup> Includes concentrates produced from old tailings reclaimed and treated.

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TABLE 83.—EMPLOYMENT AND WORKING TIME IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, BY DEPARTMENT OF OPERATIONS AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

DEPARTMENT	United States	Colorado	Idaho	Kansas	Missouri	Nevada	New Mexico	Oklahoma	Ariz., Utah, and Wash.	Ky., and Wis.	N. J., N. Y., Tenn., and Va.
Average number of wage earners on active days, total-----	9,806	68	409	1,543	468	199	966	3,290	524	178	2,161
At mines, total-----	7,225	50	371	1,174	368	199	817	2,344	454	113	1,335
Underground-----	6,435	39	325	1,056	299	176	750	2,193	346	105	1,146
Open-cut-----	48	11	33	118	35	23	67	151	108	8	189
Surface shops and yards-----	742	18	38	369	100	-----	149	946	70	65	826
At mills-----	2,581	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Average number of equivalent full days operations were active-----	230	250	257	229	206	300	169	218	209	266	273
At mines-----	224	297	267	237	204	300	157	206	200	271	272
Underground-----	223	296	272	236	187	301	157	205	197	270	273
Open-cut-----	293	-----	110	-----	361	-----	-----	-----	-----	-----	-----
Surface shops and yards-----	233	300	284	240	194	289	155	222	211	274	263
At mills-----	247	122	159	205	214	-----	237	249	271	259	274
Number of man-shifts worked by wage earners, total-----	2,315,536	17,022	106,778	350,292	99,682	60,581	178,169	742,745	114,331	47,929	593,007
On active days, total-----	2,259,213	17,022	105,219	353,378	96,619	59,699	163,527	717,596	109,728	47,434	588,991
At mines, total-----	1,621,379	14,835	99,176	277,802	75,192	59,699	128,223	482,351	90,777	30,593	362,731
Underground-----	1,434,510	11,534	88,395	249,493	55,986	53,057	117,824	448,814	68,008	28,397	313,002
Open-cut-----	14,044	-----	9,425	-----	12,619	-----	-----	-----	-----	-----	-----
Surface shops and yards-----	172,825	3,301	9,356	28,309	6,587	5,642	10,399	38,537	22,769	2,196	49,729
At mills-----	637,834	2,187	6,043	75,576	21,427	-----	35,304	235,245	18,951	16,841	226,260
On inactive days-----	56,323	-----	1,559	6,914	3,063	832	9,642	25,149	4,603	495	4,016
Number of man-hours worked by wage earners, total-----	18,197,635	129,284	819,289	2,361,678	794,285	464,648	1,358,927	5,832,344	922,616	335,218	4,659,346
On active days, total-----	17,753,490	129,284	806,933	2,306,409	769,581	477,592	1,282,178	5,633,157	885,796	331,948	4,630,612
At mines, total-----	12,731,316	111,788	760,689	2,198,867	594,074	477,592	1,003,983	3,788,782	726,180	217,109	2,852,252
Underground-----	11,253,422	87,253	677,597	1,975,275	440,876	424,456	920,792	3,523,459	544,036	201,814	2,457,864
Open-cut-----	112,352	-----	11,400	-----	100,952	-----	-----	-----	-----	-----	-----
Surface shops and yards-----	1,365,542	24,535	71,692	223,592	52,246	53,136	83,191	265,323	182,144	15,295	394,388
At mills-----	5,022,174	17,496	46,244	607,542	175,507	-----	272,195	1,844,375	159,616	114,839	1,778,360
On inactive days-----	444,145	-----	12,356	55,269	24,704	7,056	76,749	199,187	36,820	3,270	28,734

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.TABLE 84.—NUMBER OF ZINC MINES AND MILLS IN THE UNITED STATES WORKING ONE, TWO, OR THREE SHIFTS AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

SHIFT	UNITED STATES		Colorado	Idaho	Kansas	Missouri	Nevada	New Mexico	Oklahoma	Arizona, Utah, and Washington	Kentucky and Wisconsin	New Jersey, New York, Tennessee, and Virginia
	Number	Percent of total										
Number of mines, total-----	170	100.0	4	8	26	19	3	10	81	5	5	9
Working 1 shift per day-----	130	76.5	3	6	19	17	2	8	70	1	2	2
Working 2 shifts per day-----	32	18.8	1	2	6	2	-----	1	8	3	2	7
Working 3 shifts per day-----	8	4.7	-----	-----	1	-----	1	-----	3	-----	1	-----
Number of mills, total-----	91	100.0	1	3	20	11	-----	4	35	4	5	8
Working 1 shift per day-----	30	33.0	-----	-----	8	7	-----	-----	11	-----	2	2
Working 2 shifts per day-----	18	14.3	-----	-----	3	2	-----	-----	5	-----	1	1
Working 3 shifts per day-----	43	52.7	1	3	9	2	-----	1	19	4	2	5
Number of man-shifts worked by wage earners on active days, total-----	2,259,213	100.0	17,022	105,219	353,378	96,619	59,699	163,527	717,596	109,728	47,434	588,991
During first shift-----	1,616,541	71.6	13,351	72,065	301,211	78,793	29,985	88,458	568,316	66,754	21,971	375,637
During second shift-----	488,726	21.6	3,185	31,864	40,335	11,607	14,857	53,752	94,375	39,451	14,777	184,523
During third shift-----	153,946	6.8	486	1,290	11,832	6,219	14,857	21,317	54,905	3,523	10,686	28,831
At mines, total-----	1,621,379	100.0	14,835	99,176	277,802	75,192	59,699	128,223	482,351	90,777	30,593	362,731
During first shift-----	1,273,487	78.6	12,136	68,777	253,593	66,128	29,985	73,553	458,315	54,743	15,145	241,122
During second shift-----	306,801	18.9	2,699	30,399	23,149	6,901	14,857	41,837	20,249	35,794	9,307	121,609
During third shift-----	41,091	2.5	-----	-----	1,070	2,168	14,857	12,838	8,787	240	6,141	-----
At mills, total-----	637,834	100.0	2,187	6,043	75,576	21,427	-----	35,304	235,245	18,951	16,841	226,260
During first shift-----	343,054	53.8	1,215	3,288	47,628	12,665	-----	14,905	110,001	12,011	6,826	134,515
During second shift-----	181,925	28.5	486	1,455	17,186	4,706	-----	11,915	74,126	3,657	5,470	62,914
During third shift-----	112,855	17.7	486	1,290	10,762	4,056	-----	8,484	51,118	3,283	4,545	28,831

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.

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TABLE 85.—QUANTITY OF FUEL AND ELECTRIC ENERGY CONSUMED IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, 1939 AND 1929, AND BY TYPE OF OPERATION AND BY STATE, 1939<sup>1</sup>

(For producing operations only)

TYPE OF OPERATION AND STATE	Anthracite (short tons)	Bituminous coal (short tons)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Natural gas (thousands of cubic feet)	ELECTRIC ENERGY (thousands of kilowatt-hours)		
						Total	Purchased	Generated by reporting companies
United States, total-----1939-----	40,815	20,980	77,067	724,940	593,851	246,518	204,068	44,450
-----1929-----	59,783	46,859	48,129	261,701	784,183	251,695	196,949	54,746
TYPE OF OPERATION: 1939								
Mines only-----	73	1,854	5,404	132,151	83,430	25,339	23,313	2,026
Mines and mills operated together-----	40,737	9,294	32,448	200,864	280,572	160,287	135,272	25,015
Mills only-----	5	9,832	39,215	391,925	229,849	62,892	45,483	17,409
STATE: 1939								
Colorado-----		84		1,840		846	846	
Idaho-----		337				6,460	5,901	559
Kansas-----		882	7,630	120,393	303,622	22,147	18,178	3,969
Missouri-----	10	118	2,245	99,565	9,097	3,055	2,893	162
Nevada-----	72		46	2,705		12,000	12,000	
New Mexico-----		4,652	6,412	12,453		13,350	6,434	6,916
Oklahoma-----	9	4,507	51,672	399,183	281,132	62,027	41,533	20,694
Arizona, Utah, and Washington-----		6,551	515	38,430		17,250	11,476	5,774
Kentucky and Wisconsin-----		775	119	4,800		3,487	3,487	
New Jersey, New York, Tennessee, and Virginia-----	40,724	3,074	8,426	45,791		107,896	101,520	6,376

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.

TABLE 86.—NUMBER AND HORSEPOWER RATING OF POWER EQUIPMENT IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, 1939 AND 1929, AND BY TYPE OF OPERATION AND BY STATE, 1939<sup>1</sup>

(For producing operations only)

TYPE OF OPERATION, STATE, AND TYPE OF EQUIPMENT	PRIME MOVERS AND ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY										ELECTRIC MOTORS DRIVEN BY ENERGY GENERATED BY REPORTING COMPANIES		
	Aggregate horse- power	Prime movers								Electric motors driven by purchased energy			
		Total		Driving generators		Not driving generators		Ordinarily idle (included in preceding columns)					
		Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power
United States, total-----1939	151,838	403	58,747	36	29,409	367	29,338	47	11,681	3,649	93,081	1,298	22,101
-----1929	163,357	308	55,829	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	11,501	2,577	107,528	740	17,206
Stationary-----1939	133,639	251	48,876	36	29,409	215	19,467	44	11,568	3,325	84,763	1,284	21,405
-----1929	157,438	247	53,000	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	11,501	2,512	104,438	716	17,015
Mobile-----1939	18,199	152	9,871	-----	-----	152	9,371	3	113	324	8,328	34	696
-----1929	5,919	61	2,829	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-----	65	3,090	24	191
TYPE OF OPERATION, 1939													
Mines only, total-----	26,838	133	9,269	6	1,103	127	8,166	20	2,107	485	17,569	73	2,039
Stationary-----	22,747	103	7,598	6	1,103	97	6,495	20	2,107	427	15,149	72	2,023
Mobile-----	4,091	30	1,671	-----	-----	30	1,671	-----	-----	58	2,420	1	16
Mines and mills operated together, total-----	91,004	155	30,684	15	18,239	140	12,445	27	9,574	2,434	60,320	1,042	15,751
Stationary-----	83,313	111	28,351	15	18,239	98	10,112	24	9,461	2,179	54,962	1,009	15,071
Mobile-----	7,691	44	2,333	-----	-----	44	2,333	3	113	255	5,358	33	680
Mills only, total-----	33,996	115	18,794	15	10,067	100	8,727	-----	-----	730	15,202	183	4,311
Stationary-----	27,579	37	12,927	15	10,067	22	2,930	-----	-----	719	14,352	183	4,311
Mobile-----	6,417	78	5,867	-----	-----	78	5,867	-----	-----	11	550	-----	-----
STATE: 1939													
Colorado, total-----	1,165	4	200	-----	-----	4	200	-----	-----	60	965	-----	-----
Stationary-----	980	2	40	-----	-----	2	40	-----	-----	59	940	-----	-----
Mobile-----	185	2	160	-----	-----	2	160	-----	-----	1	25	-----	-----
Idaho, total-----	6,228	36	1,349	3	228	33	1,121	-----	-----	248	4,879	9	291
Stationary-----	5,923	29	1,177	3	228	26	949	-----	-----	221	4,516	8	275
Mobile-----	535	7	172	-----	-----	7	172	-----	-----	27	363	1	16
Kansas, total-----	18,228	78	7,067	6	1,105	72	5,962	5	488	386	11,161	49	1,681
Stationary-----	15,300	39	4,539	6	1,105	33	3,434	2	375	380	10,761	49	1,681
Mobile-----	2,928	39	2,528	-----	-----	39	2,528	3	113	6	400	-----	-----
Missouri, total-----	3,632	42	2,396	-----	-----	42	2,396	-----	-----	40	1,236	-----	-----
Stationary-----	2,791	27	1,555	-----	-----	27	1,555	-----	-----	40	1,236	-----	-----
Mobile-----	841	15	841	-----	-----	15	841	-----	-----	-----	-----	-----	-----
Nevada, total-----	5,066	1	25	-----	-----	1	25	-----	-----	53	5,041	-----	-----
Stationary-----	4,971	1	25	-----	-----	1	25	-----	-----	49	4,946	-----	-----
Mobile-----	95	-----	-----	-----	-----	-----	-----	-----	-----	4	95	-----	-----
New Mexico, total-----	4,982	24	2,562	7	1,875	17	687	3	875	153	2,420	32	513
Stationary-----	4,764	18	2,394	7	1,875	11	519	3	875	152	2,370	32	513
Mobile-----	218	6	168	-----	-----	6	168	-----	-----	1	50	-----	-----
Oklahoma, total-----	48,688	164	24,846	10	11,650	154	13,196	35	2,082	923	23,842	306	7,512
Stationary-----	43,264	99	20,322	10	11,650	89	8,672	35	2,082	894	22,942	306	7,512
Mobile-----	5,424	65	4,524	-----	-----	65	4,524	-----	-----	29	900	-----	-----
Arizona, Utah, and Washington, total-----	9,575	7	3,493	3	2,920	4	573	-----	-----	319	6,082	140	2,400
Stationary-----	7,637	4	3,270	3	2,920	1	350	-----	-----	281	4,367	120	1,900
Mobile-----	1,938	3	223	-----	-----	3	223	-----	-----	38	1,715	20	500
Kentucky and Wisconsin, total-----	1,704	2	20	-----	-----	2	20	-----	-----	75	1,684	-----	-----
Stationary-----	1,664	2	20	-----	-----	2	20	-----	-----	73	1,644	-----	-----
Mobile-----	40	-----	-----	-----	-----	-----	-----	-----	-----	2	40	-----	-----
New Jersey, New York, Tennessee, and Virginia, total-----	52,570	45	16,789	7	11,631	38	5,158	4	8,236	1,392	35,781	762	9,704
Stationary-----	46,575	30	15,534	7	11,631	23	3,903	4	8,236	1,176	31,041	749	9,524
Mobile-----	5,995	15	1,255	-----	-----	15	1,255	-----	-----	216	4,740	13	180

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> Not available.

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TABLE 87.—NUMBER OF UNDERGROUND POWER LOADING MACHINES AT ZINC MINES IN THE UNITED STATES, BY TYPE, BY SIZE, BY KIND OF POWER USED, AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

TYPE OF MACHINE, KIND OF POWER USED, AND SIZE	United States	Colorado	Idaho	Kansas	Missouri	Nevada	New Mexico	Oklahoma	Arizona, Utah, and Washington	New York, New Jersey, Tennessee, and Virginia
Shovel loaders, total-----	24	1	8	-----	-----	4	-----	-----	1	10
Kind of power used:										
Electric-----	1	-----	-----	-----	-----	1	-----	-----	-----	-----
Compressed air-----	23	1	8	-----	-----	3	-----	-----	1	10
Requiring minimum working height of 8 feet or less, total-----	21	1	5	-----	-----	4	-----	-----	1	10
Kind of power used:										
Electric-----	1	-----	-----	-----	-----	1	-----	-----	-----	-----
Compressed air-----	20	1	5	-----	-----	3	-----	-----	1	10
Requiring minimum working height of more than 8 feet <sup>2</sup> -----	3	-----	3	-----	-----	-----	-----	-----	-----	-----
Scraper loaders (including slushers), total-----	205	1	13	7	2	10	3	28	23	118
Kind of power used:										
Electric-----	170	-----	12	3	2	10	3	27	20	93
Compressed air-----	35	1	1	4	-----	-----	-----	1	3	25
Horsepower rating of hoists:										
Less than 10-----	51	1	13	1	1	5	1	-----	5	24
10 to 25-----	123	-----	-----	6	1	5	2	28	18	63
26 to 100-----	31	-----	-----	-----	-----	-----	-----	-----	-----	31

<sup>1</sup> For definition of the industry see tables 2 to 56, footnote 1. No units were reported in States other than those designated.<sup>2</sup> All operated by compressed air.TABLE 88.—NUMBER OF SURFACE LOADING MACHINES AT ZINC MINES AND MILLS IN THE UNITED STATES, BY TYPE, BY SIZE, BY KIND OF POWER USED, AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

TYPE OF MACHINE, KIND OF POWER USED, AND SIZE	United States	Kansas	Missouri	New Mexico	Oklahoma	Arizona, Utah, and Washington	New Jersey, New York, Tennessee, and Virginia
Power shovels, total-----	40	10	3	-----	24	-----	3
Kind of power used:							
Steam-----	3	-----	-----	-----	2	-----	1
Electric-----	5	1	-----	-----	3	-----	1
Gasoline or Diesel-----	32	9	3	-----	19	-----	1
Dipper capacity (cubic yards):							
Less than 3-----	39	9	3	-----	24	-----	3
3 to 5-----	1	1	-----	-----	-----	-----	-----
Dragline excavators, total <sup>2</sup> -----	3	2	-----	-----	1	-----	-----
Kind of power used:							
Electric-----	2	2	-----	-----	-----	-----	-----
Gasoline or Diesel-----	1	-----	-----	-----	1	-----	-----
Scraper loaders, total <sup>3</sup> -----	5	-----	-----	3	-----	-----	2
Horsepower rating of hoists:							
10 to 25-----	4	-----	-----	3	-----	-----	1
26 to 100-----	1	-----	-----	-----	-----	-----	1
Other types, total <sup>4</sup> -----	5	-----	-----	-----	-----	2	3

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. No units were reported in States other than those designated.<sup>2</sup> All had bucket capacities of less than 3 cubic yards.<sup>3</sup> All operated by electric hoists.<sup>4</sup> Distributed as follows: Arizona, Utah, and Washington, 1 clamshell loader with a bucket capacity of less than 3 cubic yards, and 1 Cletrack; New Jersey, New York, Tennessee, and Virginia, 3 cranes. All equipment operated by gasoline or Diesel engines.

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TABLE 89.—SELECTED STATISTICS FOR INCORPORATED AND UNINCORPORATED CONCERNS IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND CHARACTER OF OWNERSHIP	Number of operating companies	Number of mines	Number of mills	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
						Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	138	170	91	934,325,616	\$31,184,092	9,682	8,653	974	55	\$10,225,079	\$2,201,201
Incorporated <sup>2</sup> -----	82	113	72	864,413,847	29,410,932	8,954	8,011	943	-----	9,591,064	2,149,280
Unincorporated <sup>2</sup> -----	56	57	19	69,911,769	1,773,160	728	642	31	55	634,015	51,941
Colorado, total-----	5	4	1	1,728,000	135,791	81	74	6	1	98,487	11,640
Incorporated <sup>2</sup> -----	3	4	1	1,728,000	135,791	81	74	6	1	98,487	11,640
Unincorporated <sup>2</sup> -----	2										
Idaho, total-----	9	8	3	29,912,586	2,308,171	448	413	24	11	616,735	56,857
Incorporated-----	4	3	2	24,832,214	2,125,575	405	382	23	-----	561,977	53,857
Unincorporated-----	5	5	1	5,080,172	182,596	43	31	1	11	54,758	3,000
Kansas, total-----	26	26	20	133,612,316	4,167,802	1,399	1,318	68	13	1,489,377	161,806
Incorporated-----	15	19	14	115,498,487	3,679,290	1,228	1,171	57	-----	1,338,957	141,943
Unincorporated-----	11	7	6	18,113,829	488,512	171	147	11	13	152,420	19,863
Missouri, total-----	20	19	11	27,757,484	803,844	400	352	45	3	301,522	103,310
Incorporated-----	8	8	5	19,794,449	552,814	261	220	41	-----	197,968	95,125
Unincorporated-----	12	11	6	7,963,035	250,830	139	132	4	3	103,524	8,185
Oklahoma, total-----	59	81	35	272,482,659	10,594,730	3,005	2,671	312	22	2,896,121	534,293
Incorporated-----	34	54	32	238,820,948	9,841,151	2,705	2,403	302	-----	2,618,487	517,030
Unincorporated-----	25	27	3	33,661,711	753,579	300	268	10	22	277,634	17,263
New Jersey, New York, Tennessee, and Virginia <sup>3</sup> -----	5	9	8	363,479,215	8,686,197	2,742	2,436	306	-----	3,063,426	840,604
Arizona, Kentucky, Nevada, New Mexico, Utah, Washington, and Wisconsin, total <sup>4</sup> -----	26	23	13	106,355,556	4,497,767	1,607	1,389	213	5	1,759,431	492,691
Incorporated-----	19	16	10	100,262,534	4,390,124	1,533	1,325	208	-----	1,713,752	489,061
Unincorporated-----	7	7	3	5,093,022	97,643	74	64	5	5	45,679	3,630

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1.<sup>2</sup> One mine in Colorado was operated by three different concerns during the year, one of which was incorporated and two unincorporated. In the totals for the United States all statistics for this mine, except for number of unincorporated operating companies and number of proprietors and firm members, are included under "Incorporated."<sup>3</sup> Incorporated only; no unincorporated concerns were reported.<sup>4</sup> Arizona, 1 corporation operating 1 mine and 1 mill; Kentucky, 1 individual proprietor operating 1 mine and 1 mill; Nevada, 2 corporations operating 2 mines, and 2 individual proprietors operating 2 mines; New Mexico, 9 corporations operating 8 mines and 5 mills, and 2 individual proprietors operating 2 mines; Utah, 3 corporations operating 2 mines and 1 mill; Washington, 2 corporations operating 2 mines and 2 mills; Wisconsin, 1 corporation operating 1 mine and 2 mills, and 3 individual proprietors operating 3 mines and 2 mills. In Nevada, 1 corporation and 1 proprietorship each operated the same mine for a part of the year; statistics covering the operation of this mine have been combined and included with those for corporations.

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TABLE 90.—SELECTED STATISTICS FOR OPERATIONS AND OPERATING COMPANIES IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND VALUE OF PRODUCTS	Number of mines	Number of mills	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	170	91	934,325,616	\$31,184,092	9,682	8,653	974	55	\$10,225,079	\$2,201,201
BY OPERATION										
United States:										
\$1 - \$19,999-----	55	12	21,888,098	581,567	437	388	23	26	323,908	27,992
\$20,000 - \$49,999-----	24	13	32,302,567	999,216	437	404	25	8	424,859	28,547
\$50,000 - \$99,999-----	25	15	81,374,090	2,192,737	845	786	43	16	812,470	80,247
\$100,000 - \$249,999-----	22	22	160,578,182	5,896,540	1,652	1,583	66	3	1,869,478	172,464
\$250,000 - \$499,999-----	13	14	157,726,046	5,697,837	1,638	1,563	75	-----	1,860,615	180,563
\$500,000 - \$999,999-----	7	8	162,852,713	5,546,578	1,573	1,457	116	-----	1,851,528	309,008
\$1,000,000 - \$2,499,999-----	4	4	243,288,634	8,789,492	2,019	1,801	218	-----	2,360,363	563,919
Unclassified-----	20	3	74,395,086	1,780,025	1,081	671	408	2	721,858	841,761
Idaho, total-----	8	3	29,912,386	2,308,171	448	413	24	11	616,735	56,857
\$1 - \$19,999-----	1	-----	-----	-----	38	35	-----	3	55,930	-----
\$20,000 - \$49,999-----	4	-----	3,347,686	146,813	-----	-----	-----	-----	-----	-----
\$50,000 - \$99,999-----	1	2	-----	-----	-----	-----	-----	-----	-----	-----
\$250,000 - \$499,999-----	1	1	26,564,700	2,161,358	410	378	24	8	562,805	56,857
\$1,000,000 - \$2,499,999-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Kansas, total-----	26	20	133,612,316	4,167,802	1,399	1,318	68	13	1,469,377	161,806
\$1 - \$19,999-----	4	2	788,581	28,180	23	10	2	11	8,923	580
\$20,000 - \$49,999-----	4	3	5,858,438	159,352	61	77	4	-----	71,391	5,465
\$50,000 - \$99,999-----	6	4	20,300,859	567,594	212	202	9	1	204,673	19,134
\$100,000 - \$249,999-----	6	6	40,463,146	1,232,267	403	387	15	1	455,271	43,262
\$250,000 - \$499,999-----	3	4	52,460,394	1,564,205	308	303	5	-----	361,187	9,152
\$500,000 - \$999,999-----	1	1	33,720,898	816,204	372	339	33	-----	387,932	84,213
Unclassified-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
Missouri, total-----	19	11	27,757,484	803,844	400	352	45	3	301,522	103,310
\$1 - \$19,999-----	9	6	3,546,373	109,978	85	82	3	-----	52,659	4,806
\$20,000 - \$49,999-----	4	3	4,405,799	153,721	89	87	-----	2	88,348	-----
\$50,000 - \$99,999-----	4	1	18,805,312	356,508	139	132	6	-----	124,015	9,255
\$100,000 - \$249,999-----	-----	1	1,000,000	183,437	87	51	36	-----	56,500	69,149
Unclassified-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
New Mexico, total-----	10	4	51,668,015	1,699,296	667	610	56	1	665,449	105,338
\$1 - \$19,999-----	7	-----	2,268,743	51,204	48	43	4	1	30,968	6,340
\$20,000 - \$49,999-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
\$100,000 - \$249,999-----	1	1	49,399,272	1,648,092	619	567	52	-----	634,481	98,999
\$250,000 - \$499,999-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----
\$500,000 - \$999,999-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Oklahoma, total-----	81	35	272,482,859	10,594,730	3,005	2,671	312	22	2,896,121	534,293
\$1 - \$19,999-----	27	2	13,150,079	325,308	207	185	11	11	161,314	10,176
\$20,000 - \$49,999-----	11	6	17,320,144	507,773	201	179	18	4	195,981	15,167
\$50,000 - \$99,999-----	11	5	33,771,415	925,123	352	331	17	4	339,744	34,211
\$100,000 - \$249,999-----	14	11	109,624,154	3,484,445	1,013	973	38	2	1,150,895	100,391
\$250,000 - \$499,999-----	6	8	89,396,372	5,082,135	928	880	48	-----	957,466	100,289
\$1,000,000 - \$2,499,999-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	12	2	9,320,195	279,946	304	123	180	1	90,721	274,060
Other States, total <sup>2</sup> -----	26	18	418,892,756	11,610,449	3,763	3,289	469	5	4,255,875	1,239,597
\$1 - \$19,999-----	7	2	1,749,822	54,588	71	66	3	2	66,300	5,990
\$20,000 - \$49,999-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
\$50,000 - \$99,999-----	3	3	7,024,504	222,545	135	120	13	2	128,191	22,582
\$100,000 - \$249,999-----	2	3	-----	-----	-----	-----	-----	-----	-----	-----
\$250,000 - \$499,999-----	2	-----	25,286,878	1,223,312	543	505	38	-----	679,904	99,033
\$500,000 - \$999,999-----	4	5	112,625,896	3,748,095	897	821	76	-----	1,108,427	230,625
\$1,000,000 - \$2,499,999-----	3	3	226,848,134	5,135,958	1,568	1,388	180	-----	1,818,558	486,528
Unclassified-----	4	1	42,357,522	1,225,451	549	389	159	1	454,495	394,859
BY OPERATING COMPANY (UNITED STATES)										
Less than \$20,000-----	50	13	17,344,535	469,758	351	308	15	28	243,809	17,631
\$20,000 - \$49,999-----	24	11	25,820,902	603,263	410	363	35	12	353,541	49,806
\$50,000 - \$99,999-----	12	10	35,266,555	1,086,131	409	366	31	12	375,546	52,369
\$100,000 - \$249,999-----	38	27	204,440,898	6,650,660	2,182	2,039	140	3	2,242,259	358,030
\$250,000 - \$499,999-----	9	11	126,816,714	4,718,389	1,485	1,398	97	-----	1,620,240	246,584
\$500,000 - \$999,999-----	14	8	188,626,680	8,062,592	1,896	1,655	241	-----	2,178,759	566,477
\$1,000,000 - \$2,999,999-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$3,000,000 and over-----	25	11	335,009,552	9,413,301	2,949	2,534	415	-----	3,210,925	910,304

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports classified by value of products by operation represent a single mine or mill or a mine and mill reported as a single unit. Reports classified by value of products by operating company represent all operations of each company in the zinc-ore industry. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Arizona, 1 mine and 1 mill; Colorado, 4 mines and 1 mill; Kentucky, 1 mine and 1 mill; Nevada, 3 mines; New Jersey, 2 mines and 2 mills; New York, 2 mines and 2 mills; Tennessee, 4 mines and 3 mills; Utah, 2 mines and 1 mill; Virginia, 1 mine and 1 mill; Washington, 2 mines and 2 mills; and Wisconsin, 4 mines and 4 mills.

TABLE 91.—SELECTED STATISTICS FOR OPERATIONS IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF WAGE EARNERS AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND NUMBER OF WAGE EARNERS	Number of mines	Number of mills	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	170	91	934,325,616	\$31,184,092	9,682	8,653	974	55	\$10,225,079	\$2,201,201
None-----	2	1	744,594	40,822	5	-----	-----	5	-----	-----
1 - 5-----	27	4	7,743,188	243,187	110	93	6	11	86,987	5,377
6 - 20-----	46	22	46,204,119	1,698,105	665	606	41	18	803,143	42,514
21 - 50-----	36	33	177,485,832	6,622,386	1,763	1,651	93	19	1,885,019	218,438
51 - 100-----	24	15	198,095,899	6,093,509	1,892	1,819	73	-----	2,121,961	187,331
101 - 250-----	10	9	175,484,422	8,143,582	1,924	1,791	133	-----	2,167,530	334,106
251 - 500-----	4	3	254,172,506	6,562,476	2,242	2,022	220	-----	2,638,601	571,874
501 - 1,000-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	20	3	74,395,086	1,780,025	1,081	671	406	2	721,858	841,761
Idaho, total-----	8	3	29,912,386	2,308,171	448	413	24	11	616,735	56,857
None-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
1 - 5-----	3	-----	1,903,172	177,573	17	14	-----	3	27,970	-----
6 - 20-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
21 - 50-----	2	1	-----	-----	-----	-----	-----	-----	-----	-----
51 - 100-----	1	1	28,009,214	2,130,598	426	399	19	8	588,765	45,283
251 - 500-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	-----	-----	-----	-----	5	-----	5	-----	-----	11,569
Kansas, total-----	26	20	133,612,316	4,167,802	1,399	1,318	68	13	1,499,377	161,806
None-----	1	1	672,348	24,138	9	3	-----	6	3,793	-----
1 - 5-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
6 - 20-----	4	5	6,381,009	225,974	83	73	4	6	63,091	3,870
21 - 50-----	10	8	51,859,396	1,432,145	451	428	22	1	482,146	53,997
51 - 100-----	5	4	52,982,196	2,203,032	594	673	21	-----	784,955	46,364
101 - 250-----	2	2	21,717,369	252,613	162	141	21	-----	155,392	57,575
Unclassified-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Missouri, total-----	19	11	27,757,484	803,644	400	352	45	3	301,522	103,310
1 - 5-----	5	2	1,411,220	39,017	19	19	-----	-----	15,860	-----
6 - 20-----	6	5	6,418,959	212,039	100	95	4	1	81,499	6,526
21 - 50-----	6	4	18,927,305	530,574	231	220	9	2	182,913	15,175
Unclassified-----	2	-----	1,000,000	22,015	50	18	32	-----	21,250	81,609
New Mexico, total-----	10	4	51,668,015	1,699,296	667	610	56	1	685,449	105,338
1 - 5-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
6 - 20-----	5	-----	2,268,743	51,204	48	43	4	1	30,988	6,340
21 - 50-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
51 - 100-----	1	1	49,399,272	1,648,092	608	567	41	-----	634,481	76,909
101 - 250-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
251 - 500-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	-----	-----	-----	-----	11	-----	11	-----	-----	22,089
Oklahoma, total-----	81	35	272,482,659	10,594,730	3,005	2,671	312	22	2,896,121	534,293
1 - 5-----	12	1	3,720,696	98,472	56	44	6	6	39,861	5,377
6 - 20-----	28	10	30,222,914	1,101,928	405	368	26	9	393,675	25,178
21 - 50-----	12	12	93,416,113	2,986,467	691	653	32	6	734,549	75,713
51 - 100-----	15	7	113,985,890	3,458,535	1,124	1,085	39	-----	1,227,156	107,147
101 - 250-----	2	3	21,816,861	2,669,392	425	398	27	-----	410,159	48,818
Unclassified-----	12	2	9,320,195	278,946	304	123	180	1	90,721	274,060
Other States, total <sup>2</sup> -----	26	18	418,892,756	11,610,449	3,763	3,289	469	5	4,255,875	1,239,597
1 - 5-----	3	1	469,472	15,561	12	11	-----	1	8,668	-----
6 - 20-----	3	1	1,223,350	36,289	31	29	1	1	24,725	600
21 - 50-----	6	7	8,661,504	1,357,552	299	260	27	2	356,096	66,436
51 - 100-----	2	2	137,052,631	4,643,346	1,195	1,098	97	-----	1,439,533	265,616
101 - 250-----	5	3	-----	-----	-----	-----	-----	-----	-----	-----
251 - 500-----	2	2	229,128,277	4,332,230	1,687	1,502	185	-----	1,972,358	512,386
501 - 1,000-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	4	1	42,357,522	1,225,451	549	369	189	1	454,495	394,859

<sup>1</sup> For definition of the industry see tables 2 and 56, footnote 1. Reports classified by average number of wage earners employed during the year represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of wage earners, by month, was not adequately reported; and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup> Arizona, 1 mine and 1 mill; Colorado, 4 mines and 1 mill; Kentucky, 1 mine and 1 mill; Nevada, 3 mines; New Jersey, 2 mines and 2 mills; New York, 2 mines and 2 mills; Tennessee, 4 mines and 3 mills; Utah, 2 mines and 1 mill; Virginia, 1 mine and 1 mill; Washington, 2 mines and 2 mills; and Wisconsin, 4 mines and 4 mills.

## MINERAL INDUSTRIES

TABLE 92.—SELECTED STATISTICS FOR OPERATIONS IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF HOURS PER WAGE EARNER IN THE FULL-TIME WORKWEEK: 1939<sup>1</sup>

(For producing operations only)

HOURS PER WEEK	Number of mines	Number of mills	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	170	91	934,325,616	\$31,184,092	9,682	8,553	974	55	\$10,225,079	\$2,201,201
1 - 34-----		1								
35 - 39-----	1		520,592,346	18,473,584	5,820	5,386	430	4	6,470,179	1,054,235
40-----	66	34								
41 - 42-----	46	25	178,782,537	6,906,961	1,585	1,460	112	13	1,623,975	250,625
43 - 44-----	17	10	58,587,429	2,086,976	671	631	31	9	708,668	68,479
45 - 47-----		1								
48-----	12	7	41,325,325	1,800,438	854	795	48	11	949,307	89,359
49 - 53-----		1								
54 - 59-----	2	2	3,004,190	1,082,588	125	112	11	2	188,949	35,481
Unclassified-----	25	10	32,023,789	883,600	627	269	342	16	284,001	703,022

<sup>1</sup>For definition of the industry see tables 2 and 56, footnote 1. Reports were classified by number of hours in the full-time workweek reported for wage earners in that department of the mine or mill for which the largest number of man-hours worked was reported. Statistics shown for "Unclassified" represent: Reports on which number of hours was not reported; reports on which no wage earners were reported; and reports for central offices reported separately from their associated mines and mills.

TABLE 93.—SELECTED STATISTICS FOR OPERATIONS IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY NUMBER OF DAYS ACTIVE DURING THE YEAR: 1939<sup>1</sup>

(For producing operations only)

NUMBER OF DAYS ACTIVE DURING YEAR	Number of mines	Number of mills	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	170	91	934,325,616	\$31,184,092	9,682	8,553	974	55	\$10,225,079	\$2,201,201
1 - 49-----	4	3	4,729,826	165,080	48	37	11		30,741	2,917
50 - 99-----	19	6	18,669,346	565,487	219	192	16	11	215,718	17,439
100 - 149-----	20	6	18,332,125	842,434	429	400	23	6	431,881	23,030
150 - 199-----	15	4	26,164,356	989,170	418	385	31	2	445,507	72,213
200 - 224-----	8	7	41,642,360	1,199,320	430	393	34	3	456,304	77,716
225 - 249-----	16	7	156,599,769	2,984,947	1,261	1,115	141	5	1,365,909	360,044
250 - 274-----	35	20	259,636,684	7,966,554	2,440	2,343	98	4	2,787,354	247,820
275 - 299-----	9	6	41,906,738	1,331,865	457	440	15	2	503,882	40,283
300 - 324-----	22	18								
325 and over-----	2	11	291,044,855	13,329,877	2,887	2,663	203	21	3,256,981	519,085
Unclassified-----	20	3	75,597,557	1,809,358	1,093	685	407	1	730,902	840,653

<sup>1</sup>For definition of the industry see tables 2 and 56, footnote 1. Reports classified by number of days active represent a single mine or mill, or a mine and mill reported as a single unit; reports for a single mine or mill were classified by number of days the mine or mill was in operation for production or development purposes during the year; reports for a mine and mill reported as a single unit were classified by number of days the mine was in operation during the year. Statistics shown for "Unclassified" represent: Reports for more than one mine or mill; reports on which number of days active was not reported; and reports for central offices reported separately from their associated mines and mills.

## LEAD AND ZINC ORES

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TABLE 94.—SELECTED STATISTICS FOR OPERATIONS IN THE ZINC-ORE INDUSTRY IN THE UNITED STATES, CLASSIFIED BY VALUE OF PRODUCTS PER MAN-HOUR, BY STATE: 1939<sup>1</sup>

(For producing operations only)

STATE AND VALUE OF PRODUCTS PER MAN-HOUR	Number of mines	Number of mills	Mine production of recoverable zinc (pounds)	Value of all products	NUMBER OF PERSONS ENGAGED				Wages	Salaries
					Total	Wage earners (average for the year)	Salaried employees	Proprietors and firm members		
United States, total-----	170	91	934,325,616	\$31,184,092	9,692	8,653	974	55	\$10,225,079	\$2,201,201
Less than \$0.50-----	8	3	1,434,933	45,787	103	89	8	6	78,289	10,746
\$0.50 - \$0.74-----	23	8	29,043,722	719,148	559	526	31	2	585,958	70,792
\$0.75 - \$0.99-----	28	9	73,347,167	1,961,775	1,028	971	46	11	988,241	71,511
\$1.00 - \$1.24-----	18	7	57,483,792	1,723,592	728	696	27	5	734,021	58,277
\$1.25 - \$1.49-----	23	13	162,440,974	4,616,387	1,796	1,698	97	1	1,923,958	269,231
\$1.50 - \$1.74-----	16	9	255,199,718	5,347,463	1,889	1,698	183	8	2,210,642	479,120
\$1.75 - \$1.99-----	13	9	78,970,181	2,670,551	702	649	48	5	836,575	112,074
\$2.00 - \$2.49-----	6	11	86,032,814	2,956,138	669	644	25	-----	757,057	65,574
\$2.50 - \$2.99-----	2	6	14,724,198	808,205	156	143	13	-----	161,995	21,937
\$3.00 - \$3.99-----	3	5	55,742,711	3,045,105	492	450	41	1	618,070	91,573
\$4.00 and over-----	2	6	57,048,920	5,039,199	487	433	52	2	606,405	123,947
Unclassified-----	28	5	62,856,586	1,950,742	1,073	656	403	14	743,888	826,419
Idaho, total-----	8	3	29,912,386	2,308,171	448	413	24	11	616,735	56,857
\$0.75 - \$0.99-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$1.50 - \$1.74-----	1	1	5,268,514	158,412	62	53	1	8	87,271	3,000
\$2.50 - \$2.99-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$3.00 - \$3.99-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$4.00 and over-----	1	1	17,183,372	1,806,815	285	264	18	3	378,578	42,288
Unclassified-----	2	1	7,460,500	342,944	101	96	5	-----	150,886	11,569
Kansas, total-----	26	20	133,612,316	4,167,802	1,399	1,318	88	13	1,489,377	161,806
Less than \$0.50-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
\$0.50 - \$0.74-----	2	1	3,801,731	75,764	64	53	6	5	49,933	6,045
\$0.75 - \$0.99-----	4	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$1.00 - \$1.24-----	3	2	26,122,659	353,735	198	189	6	1	214,107	18,202
\$1.25 - \$1.49-----	8	7	16,310,023	520,161	201	194	7	-----	208,946	15,152
\$1.50 - \$1.74-----	1	1	45,262,780	1,544,108	551	529	21	1	618,449	50,979
\$1.75 - \$1.99-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
\$2.00 - \$2.49-----	1	1	9,877,266	327,220	94	86	7	1	86,513	20,043
\$2.50 - \$2.99-----	2	4	-----	-----	-----	-----	-----	-----	-----	-----
\$3.00 - \$3.99-----	1	1	30,969,439	1,308,300	261	256	5	-----	301,624	9,152
Unclassified-----	3	1	1,278,418	40,514	32	11	16	5	9,805	42,233
Missouri, total-----	19	11	27,757,484	805,644	400	352	45	3	301,522	103,310
Less than \$0.50-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
\$0.50 - \$0.74-----	4	3	2,602,258	85,799	80	77	3	-----	48,015	4,906
\$0.75 - \$0.99-----	6	5	12,043,044	298,845	154	148	3	3	115,446	3,685
\$1.00 - \$1.24-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$1.25 - \$1.49-----	2	1	-----	-----	-----	-----	-----	-----	-----	-----
\$1.50 - \$1.74-----	1	1	11,912,915	390,791	112	105	7	-----	113,381	13,110
\$1.75 - \$1.99-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$2.00 - \$2.49-----	3	1	1,199,267	28,209	54	22	32	-----	24,680	61,609
Unclassified-----	3	-----	-----	-----	-----	-----	-----	-----	-----	-----
New Mexico, total-----	10	4	51,669,015	1,699,296	687	610	56	1	665,449	105,338
Less than \$0.50-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$0.50 - \$0.74-----	3	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$0.75 - \$0.99-----	1	1	1,366,743	27,505	36	33	2	1	21,353	5,500
\$1.00 - \$1.24-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$1.25 - \$1.49-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$1.50 - \$1.74-----	1	2	9,535,529	572,289	295	276	19	-----	318,739	17,840
\$1.75 - \$1.99-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----
\$2.00 - \$2.49-----	1	2	40,765,743	1,099,502	325	301	24	-----	325,357	59,909
Unclassified-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Oklahoma, total-----	81	35	272,482,659	10,564,730	3,005	2,671	312	22	2,896,121	534,293
Less than \$0.50-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$0.50 - \$0.74-----	9	1	8,172,152	186,486	147	143	4	-----	125,061	4,429
\$0.75 - \$0.99-----	12	1	19,597,466	569,701	295	278	12	5	234,479	21,436
\$1.00 - \$1.24-----	10	4	29,719,044	940,450	416	394	17	5	409,819	40,530
\$1.25 - \$1.49-----	10	3	32,794,891	918,728	308	298	10	-----	344,258	27,010
\$1.50 - \$1.74-----	11	3	60,575,648	1,612,954	470	454	16	-----	539,588	33,595
\$1.75 - \$1.99-----	9	6	47,600,454	1,534,136	407	380	23	4	461,389	44,569
\$2.00 - \$2.49-----	3	5	36,527,300	1,159,359	245	238	7	-----	275,522	20,248
\$2.50 - \$2.99-----	-----	5	12,447,765	820,624	137	124	13	-----	144,748	21,937
\$3.00 - \$3.99-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----
\$4.00 and over-----	3	-----	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	15	2	14,493,659	2,546,089	259	229	30	-----	282,135	46,479
Other States, total <sup>2</sup> -----	26	18	418,892,756	11,610,449	3,763	3,289	469	5	4,255,875	1,239,597
Less than \$0.50-----	2	1	-----	-----	-----	-----	-----	-----	-----	-----
\$0.50 - \$0.74-----	5	3	14,535,771	391,381	335	309	24	2	399,865	60,658
\$0.75 - \$0.99-----	4	2	5,505,955	141,709	74	64	8	2	75,119	11,188
\$1.00 - \$1.24-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
\$1.25 - \$1.49-----	3	2	86,422,125	2,446,263	982	916	66	-----	1,012,391	190,547
\$1.50 - \$1.74-----	2	2	-----	-----	-----	-----	-----	-----	-----	-----
\$1.75 - \$1.99-----	2	2	198,164,535	3,962,797	1,425	1,256	169	-----	1,771,383	458,703
\$2.00 - \$2.49-----	1	2	-----	-----	-----	-----	-----	-----	-----	-----
\$2.50 - \$2.99-----	1	2	71,700,248	3,435,498	393	350	43	-----	537,722	123,642
\$3.00 - \$3.99-----	1	2	-----	-----	-----	-----	-----	-----	-----	-----
\$4.00 and over-----	1	2	-----	-----	-----	-----	-----	-----	-----	-----
Unclassified-----	5	1	42,584,122	1,232,801	554	394	159	1	459,395	394,859

<sup>1</sup>For definition of the industry see tables 2 and 56, footnote 1. Reports classified by value of products per man-hour represent a single mine or mill or a mine and mill reported as a single unit. Statistics shown for "Unclassified" represent reports for more than one mine or mill and reports for central offices reported separately from their associated mines and mills.

<sup>2</sup>Arizona, 1 mine and 1 mill; Colorado, 4 mines and 1 mill; Kentucky, 1 mine and 1 mill; Nevada, 3 mines; New Jersey, 2 mines and 2 mills; New York, 2 mines and 2 mills; Tennessee, 4 mines and 3 mills; Utah, 2 mines and 1 mill; Virginia, 1 mine and 1 mill; Washington, 2 mines and 2 mills; and Wisconsin, 4 mines and 4 mills.

## BAUXITE

Mines and processing plants in the United States producing bauxite had a total output in 1939 valued at \$2,527,000, about 13 percent higher than in 1929. The total quantity of crude ore mined amounted to 450,157 long tons, or about 388,000 long tons when converted to dried-bauxite equivalent. Plants in the industry treated 391,254 long tons of crude ore and produced 233,031 long tons of dried ore, 58,521 long tons of calcined and sintered ore, and 8,753 long tons of activated ore.

Bauxite is the ore from which aluminum is derived. According to the United States Bureau of Mines, about 46 percent of the total domestic bauxite shipments in 1939 (on a dried-bauxite equivalent basis) went to the aluminum industry and accounted for about one-fourth of that industry's requirements. The remaining bauxite is used in the manufacture of aluminum abrasives, chemicals, and refractories and to some extent in oil refining.

Bauxite mines and processing plants employed an average of 727 wage earners, representing an increase of about 20 percent over 1929. These wage earners worked a total of 1,176,000 man-hours. In addition, there were 100 salaried employees.

The total wage payments were \$578,000—an average of 49 cents per man-hour. Salary payments aggregated \$241,000. Other principal expenses in 1939 included \$269,000 for supplies and materials, \$60,000 for purchased electric energy, \$187,000 for fuels, and \$46,000 for work done on contract. Thus the reported principal expenses totaled \$1,380,000. The cost of buildings erected and machinery installed during 1939 amounted to \$200,000.

Ten companies operated the 12 mines and 11 processing plants producing bauxite in 1939. Eight mines, located in Pulaski and Saline Counties, Arkansas, accounted for 97 percent of the 451,000 long tons of crude bauxite mined. The remainder was produced at four mines in Barbour and Henry Counties, Alabama. Bauxite used for metal production comes largely from Arkansas; the output from the smaller deposits in Alabama is used largely for the other purposes mentioned above. The mines and plants for the industry as a whole averaged 208 full days of operation during the year. In general, mines and processing plants, particularly the former, operated only one shift per day, the average length of workshift being 8.1 hours. Until recently open-cut mining methods predominated. For 1939, however, it is estimated that about 60 percent of the crude-ore output was produced by underground methods and 40 percent by open-cut methods.

Only a relatively small amount of crude (undried) bauxite is shipped directly to consumers. The usual practice is to dry or calcine the ore before shipment to reduce freight charges and to facilitate fine grinding.<sup>1</sup> A total of 391,254 long tons of ore, having a mine value of \$1,722,000, was treated in 1939 in 11 processing plants. Of these, nine plants were in Arkansas,

<sup>1</sup>In drying operations the ore is heated to the stage where the "free" or mechanically held moisture is driven off. In calcining operations the ore is heated beyond the drying stage not only to drive off the "free" moisture but also to expel some or all of the combined moisture—water included in the molecular structure of the bauxite.

one in Alabama, and one in Florida. Seven of the 11 were operated in conjunction with mines. The plants produced 233,000 long tons of dried ore (exclusive of ore both dried and activated during the year) and 58,500 long tons of calcined and sintered ore. Three plants, two in Arkansas and one in Florida, produced 8,750 long tons of activated bauxite—a specially processed bauxite used principally in oil refining. The crushed, dried bauxite had an average value of \$5.40 per long ton at the points of production. The corresponding value for calcined and sintered bauxite was \$13; for activated bauxite it was \$36.75.

The fuels consumed by the industry in 1939, used principally for drying and calcining ore, cost \$187,000. This represents 14 percent of the reported principal expenses compared with 10 percent in 1929 and 9 percent in 1919. During this 20-year span wood has been entirely displaced as a fuel, and the consumption of natural gas has increased by 160 percent. Decennial census figures also reveal a striking change in the source of the electric energy utilized. In 1919 all electric motors were driven by energy generated by the operating companies; in 1929 and 1939 all electric motors were driven by purchased electric energy.

The 1939 statistics reveal a continuation of the trend toward the greater use of mechanical equipment. The horsepower rating of the power equipment available for use at the end of the year was 13,290 compared with 5,711 in 1929 and 2,507 in 1919. The available horsepower per wage earner rose from 3.4 in 1919 to 9.5 in 1929 and to 18.3 in 1939. Engines and motors used to drive mobile equipment such as power shovels, trucks, and tractors accounted for about one-fourth of the aggregate horsepower rating of all equipment available at the end of 1939. The mobile power equipment available for use at the end of 1939 included nine surface power shovels, eight of them having a dipper or bucket capacity of less than 3 cubic yards. Five shovels were driven by steam and the other four by either gasoline or Diesel engines. The nine shovels were located at mines in Arkansas.

As defined for census purposes, the bauxite industry embraces all mines and processing plants mining and preparing bauxite ores. In 1939 there were, in addition to the 14 active mines, 2 mines that had no products but which expended \$2,500 or more for development, for maintenance, or for buildings, machinery, and equipment. Statistics for small producing operations and these two nonproducing mines are not included in the summaries presented in this report. The quantity and value figures shown in this report represent quantities produced during the year and their net value to the producer; hence they differ somewhat from available figures that represent shipments from mines or processing plants to consuming industries. For distribution of bauxite operations by value of products, number of wage earners, number of days active, number of hours per wage earner in the full-time workweek, and by type of ownership, see General Summary tables 8, 15, 17, 18, and 26, respectively.

TABLE 1.--PRINCIPAL STATISTICS FOR THE BAUXITE INDUSTRY IN THE UNITED STATES: 1939, 1935, 1929, 1919, 1909, AND 1902<sup>1</sup>  
(For producing operations only)

ITEM	1939	1935	1929	1919	1909	1902
Number of operating companies <sup>2</sup>	10	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	10	7
Number of mines	12	11	11	15	10	38
Production of bauxite (tons of 2,240 pounds) <sup>4</sup>	388,000	( <sup>3</sup> )	364,670	( <sup>3</sup> )	( <sup>3</sup> )	29,222
Value of all products <sup>4</sup>	\$2,527,050	\$1,545,050	\$2,238,892	\$2,190,279	\$670,829	\$128,206
Number of persons engaged, total	827	<sup>5</sup> 636	690	806	599	7 192
Wage earners (average for the year, including inactive periods)	727	<sup>5</sup> 559	602	738	563	<sup>5</sup> 150
Salaried employees	100	<sup>5</sup> 77	87	66	35	42
Proprietors and firm members		( <sup>3</sup> )		2	1	( <sup>3</sup> )
Performing manual labor		( <sup>3</sup> )	( <sup>3</sup> )			( <sup>3</sup> )
Principal expenses designated below, total	\$1,380,231	<sup>7</sup> \$818,442	\$1,247,734	\$1,540,502	\$286,048	\$133,512
Wages	\$577,902	\$330,196	\$512,606	\$941,807	\$198,273	\$59,763
Salaries	\$240,731	<sup>6</sup> \$130,721	\$277,013	\$157,371	\$32,486	\$33,230
Supplies and materials	\$268,736	\$213,376	\$216,234	\$303,558	\$21,665	
Fuel	\$186,761	\$105,092	\$121,793	\$137,766	<sup>8</sup> \$33,624	\$40,019
Purchased electric energy	\$59,709	\$39,057	\$37,845			
Contract work	\$46,892	( <sup>3</sup> )	\$82,243			\$500
Cost of machinery and equipment erected or installed during year	\$180,155	( <sup>3</sup> )	\$95,550	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Horsepower rating of power equipment, total	13,290	( <sup>3</sup> )	5,711	2,507	1,565	624
Per wage earner	18.3	( <sup>3</sup> )	9.5	3.4	2.6	4.2
Prime movers	5,002	( <sup>3</sup> )	2,124	2,507	1,565	624
Electric motors driven by purchased energy	8,288	( <sup>3</sup> )	3,587			
Horsepower rating of electric motors driven by energy generated by reporting companies		( <sup>3</sup> )		2,564	180	64

<sup>1</sup> Figures for 1939 cover only those producing operations (mines, plants, or mines and plants operated together) engaged principally in mining and treating ores valued chiefly for their bauxite content and for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. Figures for 1929 represent "enterprises" for which the total value of products or total cost of development work was at least \$2,500. The corresponding minimum for "enterprises" in 1919 was \$500 for value of products and \$5,000 for cost of development work. No minimum was placed on the size of operations included for 1935, 1909, and 1902. No census statistics for the bauxite industry are available for 1889; the United States Geological Survey obtained for 1889 the first statistics for bauxite production: 728 long tons of ore valued at \$2,366. No bauxite ore was produced in the United States in 1880. The 1939 figures exclude 2 mines and 2 plants whose value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year was less than \$2,500. The total value of products at these operations was \$4,688. Only two mines without production were reported. Statistics for these mines are excluded from all tables in this report and included in the General Summary only.

<sup>2</sup> For 1939 and 1909, companies that submitted more than 1 report are counted only once in the totals.

<sup>3</sup> Not available.

<sup>4</sup> The quantity figure for 1939 represents the estimated dried-bauxite equivalent of crude ore mined during the year. The value figure for 1939 represents the sum of the f.o.b. mill values of the dried, calcined, sintered, and activated ores produced from ores mined during 1939, value added in processing ores mined prior to 1939, and the f.o.b. mine values of the crude bauxite mined but not processed during the designated years. (See detailed production statistics for 1939 in table 3.) Census figures on the quantity of bauxite produced in 1935, 1919, and 1909 are not available. The United States Bureau of Mines and the United States Geological Survey reported the following quantities and values for these years and for 1889 (not reported in the census survey): For 1935, 233,912 long tons valued at \$1,556,595; for 1919, 376,566 long tons, \$2,201,747; for 1909, 129,101 long tons, \$679,447; and for 1889, 728 long tons, \$2,366. Except for 1939, the quantities produced have not been converted to dried-bauxite equivalent. The proportion of the total output that was processed in years other than 1939 by methods other than drying, however, was probably negligible.

<sup>5</sup> Excludes value of secondary products and services rendered.

<sup>6</sup> Excludes statistics for number and compensation of persons engaged at central offices not located on the mine property.

<sup>7</sup> Excludes statistics for items for which information was not available as indicated by footnotes.

<sup>8</sup> On schedules for the 1902 census, concerns were instructed that "The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of product reported." "In editing the schedules .... the figures for average number of employees were reduced to a 300-day basis whenever the schedule showed them to be the average number for a shorter period; when it was evident that the employees had worked more than 300 days, the average number for the longer period was allowed to stand."

<sup>9</sup> Includes amounts paid for purchased power other than electric energy.

TABLE 2.—PRINCIPAL STATISTICS FOR THE BAUXITE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION: 1939 <sup>1</sup>  
(For producing operations only)

ITEM	United States	TYPE OF OPERATION		
		Mines only	Mines and preparation plants operated together	Preparation plants only
Number of operating companies-----	<sup>2</sup> 10	3	5	4
Number of mines-----	<sup>3</sup> 12	5	7	7
Number of preparation plants-----	<sup>4</sup> 11	-----	7	4
Production (tons of 2,240 pounds of dried-bauxite equivalent):				
Crude ore mined (tons)-----	389,000	37,200	350,800	-----
Products recovered from ores processed (tons)-----	359,000	-----	288,000	51,000
Value of all products-----	\$2,527,050	\$166,739	<sup>5</sup> \$2,081,621	\$278,680
Number of persons engaged, total <sup>6</sup> -----	827	44	720	63
Wage earners (average for the year, including inactive periods)-----	727	41	630	56
Salaried employees-----	100	3	90	7
Principal expenses designated below, total-----	\$1,380,231	\$49,153	\$1,201,710	\$129,368
Wages-----	\$577,902	\$35,521	\$502,723	\$41,658
Salaries-----	\$240,731	\$4,886	\$221,574	\$14,471
Supplies and materials-----	\$268,736	\$7,808	\$239,346	\$21,582
Fuel-----	\$186,761	\$905	\$142,515	\$43,341
Purchased electric energy-----	\$59,709	\$2,053	\$49,360	\$8,316
Contract work-----	\$46,392	-----	\$46,392	-----
Cost of buildings, machinery, and equipment erected or installed during year-----	\$200,462	\$573	\$108,097	\$91,792
Buildings-----	\$20,307	-----	-----	\$20,307
Machinery and equipment, total-----	\$180,155	\$573	\$108,097	\$71,485
Purchased in new condition-----	\$172,659	-----	\$107,731	\$64,928
Purchased in used condition-----	\$7,496	\$573	\$366	\$6,557
Total number of man-shifts worked by wage earners-----	145,131	9,627	125,878	9,626
Total number of man-hours worked by wage earners-----	1,175,817	75,918	1,022,885	77,014
Average number of hours worked per shift-----	8.1	7.9	8.1	8.0
Average hourly earning of wage earners-----	\$0.49	\$0.44	\$0.49	\$0.54
Average number of equivalent full days operations were active-----	208	221	214	143
Horsepower rating of power equipment, total-----	13,290	1,045	10,981	1,264
Per wage earner-----	18.3	25.5	17.4	22.5
Stationary equipment-----	10,171	275	8,640	1,256
Mobile equipment-----	3,119	770	2,341	8
Electric energy consumed (thousands of kw.-hrs.), total-----	4,206	69	3,688	449
Purchased-----	4,204	69	3,686	449
Generated by reporting companies-----	2	-----	2	-----

<sup>1</sup> For definition of the industry see table 1, footnote 1.

<sup>2</sup> Companies with more than one type of operation are counted only once in the total.

<sup>3</sup> Alabama, 4; and Arkansas, 8.

<sup>4</sup> Alabama, 1; Arkansas, 9; and Florida, 1.

<sup>5</sup> Excludes quantity and value of dried ore produced and sold to others for further processing.

<sup>6</sup> No proprietors or firm members were reported.

TABLE 3.—BAUXITE PRODUCED AT MINES AND PROCESSING PLANTS IN THE UNITED STATES: 1939 <sup>1</sup>  
(For producing operations only)

ITEM	QUANTITY (tons of 2,000 pounds)		Value at mines or processing plants
	As produced	Estimated dried- bauxite equivalent	
Crude ore mined-----	450,157	388,000	\$1,914,689
Crude ore processed-----	391,254	339,000	\$1,722,024
Prepared ore, total-----	300,305	339,000	\$2,334,385
Dried ore <sup>2</sup> -----	233,031	233,000	\$1,254,446
Calcined and sintered ore-----	58,521	87,000	\$758,362
Activated ore-----	8,753	19,000	\$321,577

<sup>1</sup> For definition of the industry see table 1, footnote 1.

<sup>2</sup> Excludes ore that was dried and activated during the year.

TABLE 4.—NUMBER OF WAGE EARNERS IN THE BAUXITE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION AND BY MONTH: 1939<sup>1</sup>  
(For producing operations only)

TYPE OF OPERATION	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF THE MONTH											
		January	February	March	April	May	June	July	August	September	October	November	December
United States, total-----	727	725	741	768	743	715	705	680	683	729	728	747	763
Mines only-----	41	46	39	27	42	36	31	37	38	52	40	56	51
Mines and preparation plants operated together-----	630	622	647	676	649	630	629	589	591	619	628	630	655
Preparation plants only-----	56	57	55	65	52	50	45	54	54	58	60	61	57

<sup>1</sup> For definition of the industry see table 1, footnote 1.

TABLE 5.—EMPLOYMENT AND WORKING TIME IN THE BAUXITE INDUSTRY IN THE UNITED STATES, BY DEPARTMENT AND BY TYPE OF OPERATION: 1939<sup>1</sup>  
(For producing operations only)

DEPARTMENT	United States	TYPE OF OPERATION		
		Mines only	Mines and preparation plants operated together	Preparation plants only
Average number of wage earners on active days, total-----	680	42	577	61
At mines, total-----	415	42	373	-----
Underground-----	237	27	210	-----
Open-pit-----	116	7	109	-----
Surface shops and yards-----	62	8	54	-----
At preparation plants-----	265	-----	204	61
Average number of equivalent full days operations were active-----	208	221	214	143
At mines-----	209	221	207	-----
Underground-----	214	236	211	-----
Open-pit-----	198	155	201	-----
Surface shops and yards-----	209	225	207	-----
At preparation plants-----	207	-----	226	143
Number of man-shifts worked by wage earners, total-----	145,131	9,627	125,878	9,626
On active days, total-----	141,477	9,262	123,520	8,695
At mines, total-----	86,639	9,262	77,377	-----
Underground-----	50,644	6,378	44,266	-----
Open-pit-----	25,017	1,084	21,933	-----
Surface shops and yards-----	12,978	1,800	11,178	-----
At preparation plants-----	54,838	-----	46,143	8,695
On inactive days-----	5,654	365	2,358	931
Number of man-hours worked by wage earners, total-----	1,175,817	75,918	1,022,885	77,014
On active days, total-----	1,147,678	74,093	1,004,021	69,564
At mines, total-----	686,551	74,093	612,458	-----
Underground-----	398,592	51,024	347,568	-----
Open-pit-----	184,138	8,672	175,466	-----
Surface shops and yards-----	103,821	14,397	89,424	-----
At preparation plants-----	461,127	-----	391,563	69,564
On inactive days-----	28,139	1,825	18,864	7,450

<sup>1</sup> For definition of the industry see table 1, footnote 1.

TABLE 6.—NUMBER OF OPERATIONS IN THE BAUXITE INDUSTRY WORKING ONE, TWO, OR THREE SHIFTS AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT: 1939<sup>1</sup>  
(For producing operations only)

OPERATION OR DEPARTMENT	NUMBER OF OPERATIONS WORKING—				NUMBER OF MAN-SHIFTS WORKED BY WAGE EARNERS ON ACTIVE DAYS			
	Total	One shift	Two shifts	Three shifts	Total	During first shift	During second shift	During third shift
Total-----	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	141,477	132,220	6,538	2,719
At mines-----	12	11	1	-----	86,639	84,960	1,679	-----
At plants-----	11	6	1	4	54,838	47,260	4,859	2,719

<sup>1</sup> For definition of the industry see table 1, footnote 1.

<sup>2</sup> Not significant.

## MINERAL INDUSTRIES

TABLE 7.—QUANTITIES OF FUEL AND ELECTRIC ENERGY CONSUMED IN THE BAUXITE INDUSTRY IN THE UNITED STATES BY KIND, 1939, 1919, AND BY TYPE OF OPERATION, 1939 <sup>1</sup>  
(For producing operations only)

TYPE OF OPERATION		FUEL <sup>2</sup>				ELECTRIC ENERGY (thousands of kw.-hrs.)		
		Bituminous coal (tons of 2,000 pounds)	Fuel oils (barrels of 42 gallons)	Gasoline and kerosene (gallons)	Natural gas (thousands of cubic feet)	Total	Purchased	Generated by reporting companies
Total	1939- 1919-	1,987 10,914	14,041 575	34,949 14,448	716,583 275,977	4,206 ( <sup>3</sup> )	4,204 ( <sup>3</sup> )	( <sup>3</sup> ) 2
Mines only, total		106		3,100		69	69	
Mines and preparation plants operated together, total		1,881	12,918	31,849	513,803	3,698	3,698	2
Preparation plants only			1,123		202,560	449	449	

<sup>1</sup> For definition of the industry see table 1, footnote 1.

<sup>2</sup> No anthracite was reported consumed. In addition 649 short tons of coke was reported consumed in 1939 and 7,962 cords of wood in 1919.

<sup>3</sup> Not available.

TABLE 8.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE BAUXITE INDUSTRY IN THE UNITED STATES, 1939, 1929, AND 1919, AND BY KIND AND TYPE OF OPERATION, 1939 <sup>1</sup>  
(For producing operations only)

TYPE OF OPERATION AND TYPE OF EQUIPMENT		PRIME MOVERS AND ELECTRIC MOTORS DRIVEN BY PURCHASED ENERGY										ELECTRIC MOTORS DRIVEN BY ENERGY GENERATED BY REPORTING COMPANIES		
		Aggregate horse- power	Prime movers								Electric motors driven by pur- chased energy			
			Total		Driving generators		Not driving generators		Ordinarily idle (included in preceding columns)					
			Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power	Number	Horse- power
Total	1939	13,280	43	5,002	(2) 8	1,711	(2) 35	3,291	(2) 9	2,003	407	8,288		
	1928	5,711	13	2,124		(2)	(2)			(2)	125	3,587		
	1919	2,507	39	2,507	(2)	(2)	(2)	(2)	(2)	(2)			94	2,564
Stationary	1939	10,171	13	1,891	8	1,711	5	180	6	1,705	406	8,280		
Mobile	1939	3,119	30	3,111			30	3,111	3	298	1	8		
Mines only, total		1,045	6	770			6	770	2	218	11	275		
Stationary		275									11	275		
Mobile		770	6	770			6	770	2	218				
Mines and preparation plants operated together, total		10,981	37	4,232	8	1,711	29	2,521	7	1,785	322	6,749		
Stationary		8,640	13	1,891	8	1,711	5	180	6	1,705	322	6,749		
Mobile		2,341	24	2,341			24	2,341	1	80				
Preparation plants only, total		1,264									74	1,264		
Stationary		1,258									73	1,258		
Mobile		8									1	8		

<sup>1</sup> For definition of the industry see table 1, footnote 1.

<sup>2</sup> Not available.

TABLE 9.—NUMBER OF POWER LOADING MACHINES IN THE BAUXITE INDUSTRY IN THE UNITED STATES, BY TYPE AND BY KIND OF POWER USED: 1939 <sup>1</sup>  
(For producing operations only)

TYPE OF EQUIPMENT	Total number of units	NUMBER OF UNITS CLASSIFIED BY KIND OF POWER OR ENGINE USED			
		Steam	Electric or Diesel-electric	Internal combustion	Compressed air
Surface loading equipment:					
Power shovels <sup>2</sup>	9	5		4	
Scraper loaders <sup>3</sup>	1		1		
Pumps	2				
Cranes and hoists	1	1			
Underground loading equipment:					
Shovel loaders <sup>4</sup>	1				1

<sup>1</sup> For definition of the industry see table 1, footnote 1.

<sup>2</sup> Of the total, 8 had dipper capacities of less than 3 cubic yards and 1 a capacity of 3 to 5 cubic yards.

<sup>3</sup> Driven by hoist with a rating of between 10 and 25 horsepower.

<sup>4</sup> Requiring headroom of 8 feet or less.

## CHROMITE AND ANTIMONY ORE

Domestic production of chromite and antimony ores supplied an extremely small proportion of the country's industrial requirements in 1939. The value of all products of chromite and antimony-ore producers in the United States in 1939 amounted to only \$47,000; average employment of wage earners amounted to 31 men. Chromite is used chiefly in the manufacture of ferrochromium, which in turn enters into the production of stainless steels and other chrome steels. Such steels are characteristically hard and resistant to corrosion. Considerable quantities of chromite, however, are consumed in the manufacture of refractory chrome brick used for lining metallurgical furnaces. Most of the recoverable antimony content of

domestic ores mined in 1939, however, was contained in complex ores mined by operations in the gold industry. Antimony, is commonly alloyed with lead or other nonferrous metals, and antimonial lead has numerous industrial uses, principally for battery plates, cable coverings, type metal, and bullets. Compounds of antimony are used chiefly as paint pigments and coloring agents.

For number of wage earners engaged by months, number and horsepower rating of prime movers and electric motors, and the quantities of fuels consumed at chromite and antimony mines and plants, see General Summary tables 13, 20, and 24, respectively.

TABLE 1.—PRINCIPAL STATISTICS FOR CHROMITE AND ANTIMONY OPERATIONS IN THE UNITED STATES: 1939<sup>1</sup>

(For producing operations only)

Number of operating companies—	24	Cost of buildings, machinery, and equipment erected or installed during year—	\$54,301
Number of mines—	33	Buildings—	\$7,339
Number of plants—	41	Machinery and equipment—	\$26,962
Number of persons engaged, total—	40	Purchased in new condition—	\$24,675
Wage earners (average for the year, including inactive periods)—	31	Purchased in used condition—	\$2,287
Salaried employees—	8	Horsepower rating of power equipment, total <sup>7</sup> —	686
Proprietors and firm members—	1	Per wage earner—	22.1
Performing manual labor—	1	Stationary equipment <sup>8</sup> —	335
Production:		Mobile equipment <sup>9</sup> —	351
Marketable ore or concentrates produced (tons of 2,240 pounds)—	5,412	Electric energy consumed (thousands of kw.-hrs.) <sup>10</sup> —	485
Value of all products—	\$47,271	Number of man-shifts worked by wage earners <sup>11</sup> —	7,469
Principal expenses designated below, total—	\$75,109	Number of man-hours worked by wage earners <sup>11</sup> —	59,270
Wages—	\$42,420	Average number of hours worked per shift—	7.9
Salaries—	\$12,416	Average number of full days operations were active—	258
Supplies and materials—	\$11,145	Average hourly earning of wage earners—	\$0.72
Fuel—	\$5,429		
Purchased electric energy—	\$5,701		
Contract work—			

<sup>1</sup> Figures cover only those producing operations (mines, plants, or mines and plants operated together) engaged principally in mining or treating ores valued chiefly for their chromite and antimony content and for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. In addition, in 1939 there were 5 smaller chromite-producing companies composed of 4 companies operating 4 mines and 1 dump (no plants). At these operations 359 long tons of marketable chromite ores and concentrates were recovered and the value of products amounted to \$2,970. The total United States production from all sources, therefore, was 3,740 long tons (877 long tons containing 35 to 45 percent Cr<sub>2</sub>O<sub>3</sub> and 3,063 long tons containing over 45 percent Cr<sub>2</sub>O<sub>3</sub>) valued at \$48,142 at points of production. In addition, in 1939 there were 19 smaller antimony-producing operations composed of 21 companies operating 17 mines, 2 dumps, and 7 plants. At these operations 283 short tons of marketable crude ores and concentrates containing 141,551 pounds of antimony were recovered. Value of all products, including secondary products recovered by this group was \$8,502. In addition to the antimonial ores and concentrates recovered at antimony mines and mills, complex concentrates containing 458,850 pounds of antimony and valued at \$17,207 (antimony content only) were recovered as a byproduct of gold-mining and -milling operations. Marketable domestic ores and concentrates from all sources in 1939 contained 652,587 pounds of antimony valued at \$25,409.

<sup>2</sup> Chromite, 3; antimony, 1.

<sup>3</sup> Chromite, 1 mine and 1 dump located in California; antimony, 1 mine located in Nevada.

<sup>4</sup> Chromite, located in California.

<sup>5</sup> Represents 3,381 long tons of chromite ores and concentrates and 31 long tons of antimony ores containing 32,206 pounds of antimony.

<sup>6</sup> Represents value of major products only (antimony and chromite ores and concentrates); no secondary products or services rendered were reported.

<sup>7</sup> Aggregate horsepower rating of prime movers and of electric motors driven by purchased electric energy in use or available for use at the end of the year. Electric motors driven by purchased energy had a total horsepower rating of 225.

<sup>8</sup> Aggregate horsepower rating of engines, motors, etc. for driving stationary or fixed equipment such as mine hoists and pumps and crushing and grinding equipment.

<sup>9</sup> Aggregate horsepower rating of engines, motors, etc. for driving mobile equipment such as power shovels and trucks.

<sup>10</sup> Purchased electric energy only. No energy generated by reporting companies was reported.

<sup>11</sup> Represents employment on days when mines or mills were actively engaged in production or development work. No employment was reported for inactive days. In addition, it is estimated that 173 man-shifts were worked by proprietors or firm members performing manual labor.

## MANGANESE ORE

The manganese-ore industry of the United States produced 47,700 long tons of merchantable manganese ore in 1939. This production, about three-fourths of which was concentrates, included over 7,900 tons of ferrograde manganese concentrates. Such material, containing a minimum of 48 percent manganese (natural), is suitable for the manufacture of 78- to 80-percent ferromanganese, the alloy used in the manufacture of steel.

The 1939 output, produced by 26 companies operating 34 producing mines, contained over 17,300 long tons of manganese (natural) and had a mine value of nearly \$890,000. The ore was obtained in 11 States; 4 of these—Montana, Colorado, Tennessee, and Arkansas—accounted for nearly three-fourths of the total production. When the value of miscellaneous secondary products and receipts for services rendered to others are included, the total value of the industry's products in 1939 was \$945,000.

Wage payments at producing mines aggregated \$483,000 in 1939 and were paid to an average of 504 wage earners. Salary payments for the year were \$84,000 and 41 salaried workers were employed as of October 15. Over \$162,000 was spent for supplies and materials, \$37,000 for fuels, and \$40,000 for purchased electric energy. Thus expenses for wages, salaries, supplies and materials, fuels, and purchased electric energy totaled \$805,000. Nearly \$38,000 was spent for buildings, machinery, and equipment, including installation costs.

The \$483,000 in wages were paid for nearly 959,000 man-hours of work—an average of about 50 cents per man-hour. The average output per man-hour was 0.05 long ton of merchantable manganese ore, the average ton of ore being valued at \$18.67 and containing over 38 percent manganese (natural). The wage earners were employed an average of 239 full days during the year. The length of shift worked by wage earners averaged 7.7 hours.

The power equipment in use or available for use by the industry at the end of 1939 had an aggregate horsepower rating of 5,035. Nearly 4,100, or 85 percent, represented prime

movers and motors for driving stationary or fixed equipment such as hoists, pumps, crushers, ventilating fans, and compressors. The remainder was for driving mobile equipment such as power shovels, locomotives, trucks, tractors, and churn drills. The horsepower rating of power equipment per wage earner amounted, on the average, to 10.

For distribution of manganese-ore operations by value of products, number of wage earners, number of days active, number of hours per wage earner in the full-time workweek, and by type of ownership, see General Summary tables 8, 15, 17, 13, and 23, respectively.

The 34 mines for which statistics are summarized for 1939 were producing mines that had products valued at \$2,500 or more or whose designated principal expenses exceeded that amount. The 31 smaller pits or mines, which produced a total of less than 2,500 long tons of merchantable ore, were too small to come within the scope of the census canvass; statistics for such mines are therefore not presented. There were also two nonproducing mines whose designated principal expenses exceeded \$2,500 which are excluded from this report but are included in the General Summary. The sum of the designated principal expenses and of the man-hours for these two mines amounted to approximately 3 percent of the corresponding totals for producing mines.

As defined for census purposes the manganese-ore industry embraces mines and beneficiating plants at mines that produce ores or concentrates valued chiefly for their manganese content. Considerable quantities of manganese, however, are contained in manganiferous iron ores. These ores comprise material containing at least 5 percent manganese but which are valued chiefly for their iron content. Mines producing such ores are classified in the "Iron ore" industry, and statistics for them are included in the report for that industry. It is noteworthy that 762,000 merchantable tons of such ore were produced in 1939, with an average manganese content of 8.45 percent.

## MANGANESE ORE

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TABLE 1.—PRINCIPAL STATISTICS FOR THE MANGANESE-ORE INDUSTRY IN THE UNITED STATES: 1939, 1929, 1919, 1909, 1902, 1889, AND 1880<sup>1</sup>

(For producing operations only)

ITEM	1939	1929	1919	1909	1902	1889	1880
Number of operating companies <sup>2</sup>	26	( <sup>3</sup> )	( <sup>3</sup> )	5	19	( <sup>3</sup> )	( <sup>3</sup> )
Number of mines	34	21	37	14	19	( <sup>3</sup> )	6
Production of merchantable manganese ore (tons of 2,240 pounds)-----	47,672	40,762	( <sup>3</sup> )	( <sup>3</sup> )	16,477	24,197	<sup>4</sup> 11,350
Value of products, total-----	\$944,691	\$1,184,561	\$2,188,312	\$51,216	\$177,911	\$240,559	<sup>4</sup> \$102,700
Value of merchantable manganese ore-----	\$889,823	\$922,403	\$2,155,353	\$51,216	\$177,911	\$240,559	\$102,700
Value of other products and services rendered-----	<sup>5</sup> \$54,868	<sup>5</sup> \$262,158	<sup>5</sup> \$32,959	-----	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Number of persons engaged, total-----	557	393	1,032	68	<sup>6</sup> 212	<sup>6</sup> 432	<sup>6</sup> 232
Wage earners (average for the year, including inactive periods)-----	504	354	909	60	<sup>6</sup> 194	<sup>6</sup> 432	<sup>10</sup> 222
Salaried employees-----	41	35	88	4	18	( <sup>3</sup> )	10
Proprietors and firm members-----	12	4	35	4	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Performing manual labor-----	4	( <sup>3</sup> )	6	1	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Principal expenses designated below, total-----	\$805,011	\$696,744	\$1,915,408	\$26,020	<sup>8</sup> \$102,047	<sup>8</sup> \$125,958	<sup>8</sup> \$62,774
Wages-----	\$462,760	\$392,362	\$1,085,869	\$15,325	\$74,924	<sup>8</sup> \$125,958	\$46,610
Salaries-----	\$84,028	\$88,095	\$134,104	\$5,100	\$9,395	-----	-----
Supplies and materials-----	\$162,086	\$139,516	\$447,833	\$4,741	-----	-----	-----
Fuel-----	\$36,630	\$32,208	\$52,228	-----	<sup>11</sup> \$17,728	( <sup>3</sup> )	<sup>11</sup> \$16,164
Purchased electric energy-----	\$39,507	\$38,739	<sup>11</sup> \$46,107	<sup>11</sup> \$854	-----	-----	-----
Contract work-----	-----	\$5,824	\$149,237	-----	-----	( <sup>3</sup> )	( <sup>3</sup> )
Cost of machinery and equipment erected or installed during year-----	\$35,118	\$12,441	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Horsepower rating of power equipment, total-----	5,035	2,342	5,800	215	354	( <sup>3</sup> )	87
Per wage earner-----	10.0	6.6	6.4	3.6	1.8	( <sup>3</sup> )	0.4
Prime movers-----	2,312	177	2,610	215	354	( <sup>3</sup> )	( <sup>3</sup> )
Electric motors driven by purchased energy-----	2,723	2,165	3,190	-----	-----	( <sup>3</sup> )	( <sup>3</sup> )
Horsepower rating of electric motors driven by energy generated by reporting companies-----	-----	-----	310	-----	-----	( <sup>3</sup> )	( <sup>3</sup> )
Fuels consumed:							
Anthracite (tons of 2,000 pounds)-----	376	-----	-----	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Bituminous coal (tons of 2,000 pounds)-----	711	8,955	6,057	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Fuel oils (barrels of 42 gallons)-----	1,078	247	105	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Gasoline and kerosene (gallons)-----	93,007	10,251	41,780	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Natural gas (thousands of cubic feet)-----	64,187	-----	-----	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Electric energy consumed (thousands of kw.-hrs.) <sup>12</sup> -----	3,845	3,881	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )

<sup>1</sup> Figures for 1939 refer to the production of ores valued chiefly for their manganese content, including 18,000 tons containing less than 35 percent manganese (natural). Thus they are not strictly comparable with figures for 1929 and 1919, which refer to the production of manganese ore containing at least 35 percent manganese. Figures for 1939 represent producing mines and beneficiating plants for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment erected or installed during the year amounted to \$2,500 or more. Statistics for 1929 refer to "enterprises" whose output was valued at \$2,500 or more or for which cost of development work amounted to at least \$2,500; the corresponding minimum for "enterprises" in 1919 was \$500 for value of products and \$5,000 for cost of development work. No minimum was placed on size of operations included in 1902, 1889 and 1880. The 1939 figures exclude 31 pits or mines that were too small to come within the scope of the census; 2,426 gross tons of merchantable ore were produced at these operations. Statistics for two operations without products are excluded from this report, but are included with the General Summary tables.

<sup>2</sup> For 1939 and 1909 companies that submitted more than one report are counted only once in the totals.

<sup>3</sup> Not available.

<sup>4</sup> Includes statistics for mines that produced 637 tons of manganese ore valued at \$5,765 for which other statistics were not obtained.

<sup>5</sup> Represents crude silver ore valued at \$1,604, crude zinc ore valued at \$46,264, and sand and gravel valued at \$7,000.

<sup>6</sup> Represents \$237,517 for custom milling and \$24,641 for services rendered and power sold.

<sup>7</sup> Represents \$32,440 for mineral products and \$519 for services rendered and power sold.

<sup>8</sup> Excludes statistics for items for which information was not available as indicated by footnotes.

<sup>9</sup> On schedules for 1902 census concerns were instructed that "The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of products reported." "In editing the schedules... the figures for the average number of employees were reduced to a 300-day basis whenever the schedule showed them to be the average number for a shorter period; when it was evident that the employees had worked more than 300-days, the average number for the longer period was allowed to stand."

<sup>10</sup> For 1880 and 1889 the number of wage earners represents the number employed during the time the mines were active.

<sup>11</sup> For 1919 and 1909 statistics include amounts paid for purchased power other than electric. Statistics for cost of purchased power for 1902 and 1880 were not explicitly requested but probably are included in part in the figures reported for supplies and materials.

<sup>12</sup> For 1939 and 1929, purchased only; no electric energy was reported generated by reporting companies.

## MINERAL INDUSTRIES

TABLE 2.—PRINCIPAL STATISTICS FOR THE MANGANESE-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>  
(For producing operations only)

ITEM	United States	Georgia	Montana	Virginia	Other States <sup>2</sup>
Number of operating companies-----	26	4	6	5	11
Number of mines-----	34	4	15	5	10
Number of beneficiating plants-----	14	3	3	3	5
Production of merchantable manganese ore:					
Tons of 2,240 pounds, total-----	47,672	4,850	12,909	5,573	24,340
Concentrates recovered, total <sup>3</sup> -----	34,034	3,410	11,792	4,748	14,064
55 percent or more manganese (natural)-----	25,533	2,929	10,042	1,248	11,314
10 to 55 percent manganese (natural)-----	8,501	481	1,750	3,500	2,770
Direct-shipping ore mined-----	13,638	1,440	1,117	825	10,256
Average percent manganese content of ore (natural)-----	36.34	38.54	45.52	30.40	32.39
Tons of manganese content (natural)-----	17,322	1,869	5,876	1,694	7,883
Value at mines-----	\$889,823	\$65,200	\$496,002	\$47,859	\$280,762
Average value of manganese ore per ton-----	\$18.67	\$13.44	\$38.42	\$8.59	\$11.54
Value of all products-----	\$944,691	\$72,200	\$543,370	\$47,859	\$280,762
Number of persons engaged, total-----	557	42	220	39	255
Wage earners (average for the year, including inactive periods)-----	504	35	197	34	238
Salaried employees-----	41	2	23	2	14
Proprietors and firm members-----	12	5	-----	3	4
Performing manual labor-----	4	2	-----	2	-----
Principal expenses designated below, total <sup>4</sup> -----	\$805,011	\$38,226	\$529,804	\$26,709	\$210,272
Wages-----	\$482,760	\$25,792	\$291,494	\$16,782	\$148,692
Salaries-----	\$84,028	\$1,675	\$62,314	\$1,800	\$18,239
Supplies and materials-----	\$162,086	\$500	\$129,471	\$6,603	\$25,412
Fuel-----	\$36,630	\$8,600	\$18,755	\$1,524	\$7,751
Purchased electric energy-----	\$39,507	\$1,559	\$27,770	-----	\$10,176
Cost of buildings, machinery, and equipment erected or installed during year-----	\$37,805	\$12,252	\$20,565	\$2,800	\$2,188
Buildings-----	\$2,687	\$2,000	\$387	\$300	-----
Machinery and equipment, total-----	\$35,118	\$10,252	\$20,178	\$2,500	\$2,188
Purchased in new condition-----	\$29,496	\$7,674	\$19,247	\$2,500	\$75
Purchased in used condition-----	\$5,622	\$2,578	\$931	-----	\$2,113
Number of man-shifts worked by wage earners, total-----	125,221	8,339	46,381	7,917	62,584
On active days-----	124,120	8,339	45,400	7,917	62,464
On inactive days-----	1,101	-----	981	-----	120
Number of man-hours worked by wage earners, total-----	959,130	76,075	367,274	64,694	451,087
On active days-----	950,318	76,075	359,422	64,694	450,127
On inactive days-----	8,812	-----	7,852	-----	960
Average number of equivalent full days operations were active-----	239	177	254	147	260
Average number of hours worked per shift-----	7.7	9.1	7.9	8.2	7.2
Average hourly earning of wage earners-----	\$0.50	\$0.34	\$0.79	\$0.26	\$0.33
Tons of manganese ore produced per man-hour-----	0.05	0.06	0.04	0.09	0.05
Horsepower rating of power equipment, total-----	5,035	398	3,546	431	660
Per wage earner-----	10.0	11.4	18.0	12.7	2.8
Stationary equipment <sup>5</sup> -----	4,092	169	3,391	44	468
Mobile equipment <sup>6</sup> -----	943	229	155	387	192
Electric energy consumed (thousands of kw.-hrs.) <sup>7</sup> -----	3,845	63	3,017	-----	765

<sup>1</sup> For definition of the industry see table 1, footnote 1.<sup>2</sup> Alabama, 1 mine; Arkansas, 2; California, 1; Colorado, 1; Massachusetts, 1; New Mexico, 2; North Carolina, 1; and Tennessee, 1.<sup>3</sup> No concentrates of 5 to 10 percent manganese (natural) were reported recovered.<sup>4</sup> No expenditures were reported for contract work.<sup>5</sup> Aggregate horsepower rating of engines, motors, etc., used for driving stationary or fixed equipment such as mine hoists, pumps, crushers, ventilating fans, compressors, etc.<sup>6</sup> Aggregate horsepower rating of engines, motors, etc., used for driving mobile equipment such as power shovels, locomotives, trucks, tractors, churn drills, etc.<sup>7</sup> Only purchased electric energy was reported consumed.

## MANGANESE ORE

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TABLE 3.—PRINCIPAL STATISTICS FOR THE MANGANESE-ORE INDUSTRY IN THE UNITED STATES, BY TYPE OF OPERATION: 1939<sup>1</sup>  
(For producing operations only)

ITEM	All types	MINES ONLY			MINES AND BENEFICIATING PLANTS OPERATED TOGETHER		
		Total	Underground mines	Open pits	Total	Underground mines	Open pits
Number of operating companies-----	26	8	4	4	18	11	7
Number of mines-----	34	8	4	4	26	19	7
Number of beneficiating plants-----	14	---	---	---	14	7	7
Production of merchantable manganese ore:							
Tons of 2,240 pounds, total-----	47,672	11,169	9,650	1,519	36,503	19,271	17,232
From underground mines-----	28,921	9,650	9,650	---	19,271	19,271	---
From open pits-----	18,751	1,519	---	1,519	17,232	---	17,232
Value at mines-----	\$899,823	\$82,127	\$69,480	\$12,647	\$807,696	\$545,793	\$261,903
Value of all products-----	\$944,691	\$82,127	\$69,480	\$12,647	\$862,564	\$593,661	\$268,903
Number of persons engaged, total-----	2 557	62	48	14	491	274	217
Wage earners (average for the year, including inactive periods)-----	504	55	45	10	449	250	199
Salaried employees-----	241	2	---	2	35	20	15
Proprietors and firm members-----	12	5	3	2	7	4	3
Performing manual labor-----	4	---	---	---	4	3	1
Principal expenses designated below, total <sup>2</sup> -----	\$805,011	\$57,845	\$49,115	\$8,730	\$732,802	\$543,530	\$189,272
Wages-----	\$482,760	747,703	\$41,200	\$6,503	\$435,057	\$317,428	\$117,629
Salaries-----	\$84,028	\$1,132	---	\$1,132	\$68,532	\$48,522	\$20,010
Supplies and materials-----	\$162,066	\$5,697	\$5,022	\$675	\$156,189	\$130,555	\$25,634
Fuel-----	\$36,630	\$345	\$125	\$220	\$36,285	\$19,275	\$17,010
Purchased electric energy-----	\$39,507	\$2,768	\$2,768	---	\$36,739	\$27,770	\$8,969
Cost of buildings, machinery, and equipment erected or installed during year-----	\$37,805	\$375	\$325	\$50	\$37,430	\$23,940	\$13,490
Buildings-----	\$2,687	---	---	---	\$2,687	\$387	\$2,300
Machinery and equipment, total-----	\$35,118	\$375	\$325	\$50	\$34,743	\$23,553	\$11,190
Purchased in new condition-----	\$29,496	\$75	\$25	\$50	\$29,421	\$21,747	\$7,674
Purchased in used condition-----	\$5,622	\$300	\$300	---	\$5,322	\$1,806	\$3,516
Total number of man-shifts worked by wage earners-----	125,221	12,469	10,090	2,379	112,752	58,661	54,091
Total number of man-hours worked by wage earners-----	959,130	92,170	73,138	19,032	866,960	465,514	401,446
Average number of hours worked per shift-----	7.7	7.4	7.2	8.0	7.7	7.9	7.4
Average hourly earning of wage earners-----	\$0.50	\$0.52	\$0.56	\$0.34	\$0.50	\$0.68	\$0.29
Tons of manganese produced per man-hour-----	0.05	0.12	0.13	0.06	0.04	0.04	0.04
Average number of equivalent full days operations were active-----	239	174	206	103	249	240	259
Horsepower rating of power equipment, total-----	5,035	399	308	91	4,536	3,467	1,169
Per wage earner-----	10.0	7.3	6.8	9.1	10.3	13.9	5.9
Stationary equipment-----	4,092	308	308	---	3,784	3,176	608
Mobile equipment-----	943	91	---	91	852	291	561
Electric energy consumed (thousands of kw.-hrs.) <sup>4</sup> -----	3,845	121	121	---	3,724	3,017	707

<sup>1</sup> For definition of the industry see table 1, footnote 1.<sup>2</sup> Includes statistics for central-office employees reported separately from their associated mines and plants.<sup>3</sup> No expenditures were reported for contract work.<sup>4</sup> Only purchased energy was reported consumed.TABLE 4.—QUANTITY AND VALUE OF PRODUCTS OF THE MANGANESE-ORE INDUSTRY IN THE UNITED STATES, BY KIND AND BY STATE: 1939<sup>1</sup>

PRODUCT <sup>2</sup>	United States	Georgia	Montana	Virginia	Other States
Value of all products-----	\$944,691	\$72,200	\$543,870	\$47,859	\$280,762
Production of manganese ore:					
Prepared--					
Tons of 2,240 pounds-----	34,084	3,410	11,792	4,748	14,084
Value-----	\$778,782	\$52,800	\$481,234	\$39,539	\$200,059
Unprepared--					
Tons of 2,240 pounds-----	13,538	1,440	1,117	825	10,255
Value-----	\$116,091	\$12,400	\$14,768	\$6,220	\$80,703
Production of silver ore:					
Unprepared--					
Tons of 2,000 pounds-----	317	---	317	---	---
Value-----	\$1,604	---	\$1,604	---	---
Production of zinc ore:					
Unprepared--					
Tons of 2,000 pounds-----	5,741	---	5,741	---	---
Value-----	\$46,264	---	\$46,264	---	---
Production of common sand and gravel:					
Tons of 2,000 pounds-----	14,000	14,000	---	---	---
Value-----	\$7,000	\$7,000	---	---	---

<sup>1</sup> For definition of the industry see table 1, footnote 1.<sup>2</sup> No electric energy sold and no services performed for others were reported.

## MINERAL INDUSTRIES

TABLE 5.—NUMBER OF WAGE EARNERS IN THE MANGANESE-ORE INDUSTRY IN THE UNITED STATES BY STATE, BY TYPE OF OPERATION, AND BY MONTH: 1939<sup>1</sup>  
(For producing operations only)

STATE AND TYPE OF OPERATION	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF THE MONTH											
		January	February	March	April	May	June	July	August	September	October	November	December
United States, total-----	504	354	389	403	432	464	464	448	458	474	564	748	855
STATE													
Georgia-----	35	19	20	19	34	35	35	34	48	44	46	46	41
Montana-----	197	110	155	131	154	158	132	135	130	155	235	420	513
Virginia-----	34	2	5	19	25	23	47	45	51	54	50	47	47
Other States-----	238	223	251	234	239	270	250	234	229	223	235	235	254
TYPE OF OPERATION													
Mines only, total-----	55	24	27	42	56	58	57	48	50	61	83	87	73
Underground mines-----	45	22	24	40	47	50	48	34	35	47	67	72	57
Open pits-----	10	2	3	2	9	8	9	14	15	14	16	15	16
Mines and beneficiating plants operated together, total-----	449	330	362	361	376	406	407	400	408	413	481	661	784
Underground mines-----	250	145	180	166	169	176	192	195	187	216	298	483	553
Open pits-----	199	185	182	195	207	230	215	205	221	197	183	178	169

<sup>1</sup>For definition of the industry see table 1, footnote 1.

TABLE 6.—EMPLOYMENT AND WORKING TIME IN THE MANGANESE-ORE INDUSTRY IN THE UNITED STATES, BY STATE AND BY TYPE OF OPERATION: 1939<sup>1</sup>  
(For producing operations only)

ITEM	United States	STATE				TYPE OF OPERATION					
		Georgia	Montana	Virginia	Other States	Mines only			Mines and beneficiating plants operated together		
						Total	Under-ground mines	Open pits	Total	Under-ground mines	Open pits
Average number of wage earners on active days, total-----	520	47	179	54	240	71	49	22	449	240	209
At mines, total-----	346	28	134	36	148	71	49	22	275	183	92
Underground-----	204	13	105	12	74	46	46	-----	158	138	20
Open pit-----	99	15	-----	23	61	21	-----	21	76	11	67
Surface shops and yards-----	43	-----	29	1	13	4	3	1	39	34	5
At beneficiating plants-----	174	19	45	18	92	-----	-----	-----	174	57	117
Average number of equivalent full days operations were active <sup>2</sup> -----	239	177	254	147	260	174	206	103	249	240	259
At mines <sup>2</sup> -----	238	147	280	142	241	174	206	103	255	261	243
Underground <sup>2</sup> -----	253	60	282	150	261	203	203	-----	267	262	300
Open pit <sup>2</sup> -----	197	223	-----	139	212	103	-----	103	222	227	221
Surface shops and yards <sup>2</sup> -----	267	-----	272	100	266	216	255	100	272	266	310
At beneficiating plants <sup>2</sup> -----	239	222	175	157	391	-----	-----	-----	239	174	271
Number of man-shifts worked by wage earners, total-----	125,221	8,339	46,381	7,917	62,584	12,469	10,090	2,379	112,752	58,661	54,091
On active days, total-----	124,120	8,339	45,400	7,917	62,464	12,349	10,090	2,259	111,771	57,680	54,091
At mines, total-----	82,491	4,119	37,538	5,099	35,735	12,349	10,090	2,259	70,142	47,758	22,384
Underground-----	51,534	779	29,638	1,800	19,317	9,326	9,326	-----	42,208	36,208	6,000
Open pit-----	19,493	3,340	-----	3,199	12,954	2,159	-----	2,159	17,334	2,500	14,834
Surface shops and yards-----	11,464	-----	7,900	100	3,464	864	764	100	10,600	9,050	1,550
At beneficiating plants-----	41,629	4,220	7,862	2,818	26,729	-----	-----	-----	41,629	9,922	31,707
On inactive days-----	1,101	-----	981	-----	120	120	-----	120	981	981	-----
Number of man-hours worked by wage earners, total-----	959,130	76,075	367,274	64,694	451,087	92,170	73,138	19,032	866,960	465,514	401,446
On active days, total-----	950,318	76,075	359,422	64,694	450,127	91,210	73,138	18,072	859,108	457,652	401,446
At mines, total-----	629,730	37,115	296,526	41,794	254,295	91,210	73,138	18,072	538,520	378,286	160,234
Underground-----	389,683	6,235	233,477	14,400	135,571	67,646	67,646	-----	322,037	286,037	36,000
Open pit-----	149,106	30,880	-----	26,594	91,632	17,272	-----	17,272	131,634	20,000	111,634
Surface shops and yards-----	90,941	-----	63,049	800	27,092	6,292	5,492	800	84,649	72,249	12,400
At beneficiating plants-----	320,588	38,960	62,896	22,900	195,832	-----	-----	-----	320,588	79,376	241,212
On inactive days-----	8,812	-----	7,852	-----	960	960	-----	960	7,852	7,852	-----

<sup>1</sup>For definition of the industry see table 1, footnote 1.

<sup>2</sup>Represents number of man-shifts worked on active days in the department divided by average number of wage earners on active days in the department.

















TABLE 10.—PRINCIPAL STATISTICS FOR NONPRODUCING MERCURY MINES IN THE UNITED STATES: 1939<sup>1</sup>

Number of operating companies-----	8	Principal expenses—Continued	
Number of mines-----	28	Purchased electric energy-----	\$15
Number of persons engaged, total-----	32	Contract work-----	\$1,371
Wage earners (average for the year)-----	19	Cost of buildings, machinery, and equipment erected or installed during year-----	\$9,214
Salaried employees-----	7	Horsepower rating of power equipment, total-----	1,570
Proprietors and firm members-----	6	Stationary equipment-----	1,136
Performing manual labor-----	4	Mobile equipment-----	434
Principal expenses designated below, total-----	\$32,509	Electric energy consumed (thousands of kw.-hrs.) <sup>3</sup> -----	1
Wages-----	\$15,342	Number of man-shifts worked by wage earners-----	<sup>4</sup> 4,215
Salaries-----	\$28,804	Number of man-hours worked by wage earners-----	<sup>5</sup> 33,203
Supplies and materials-----	\$6,457	Average number of hours worked per shift-----	7.9
Fuel-----	\$580		

<sup>1</sup> Statistics are for mines that produced mercury (quicksilver) ores and metal in previous years or were preparing to produce such ores and metal but had no products during 1939 and for which the reported principal expenses or cost of buildings, machinery, and equipment amounted to at least \$2,500 during the year. Statistics for these mines have not been included in tables 1 through 9. In addition to the 7 mines covered in this table, there were 54 mines at which there was no production and at which neither the reported principal expenses nor the cost of buildings, machinery, and equipment amounted to \$2,500 or more.

<sup>2</sup> Arkansas, 1; California, 2; Nevada, 2; Oregon, 1; and Texas, 2.

<sup>3</sup> Only purchased electric energy was reported.

<sup>4</sup> Of this amount, 3,680 man-shifts were worked on days when the mines were active for development work. In addition, it is estimated that 674 man-shifts were worked by proprietors or firm members performing manual labor.

<sup>5</sup> Of this amount, 30,523 man-hours were worked on days when the mines were active for development work.

TABLE 11.—PRINCIPAL STATISTICS FOR SMALL NONPRODUCING MERCURY MINES IN THE UNITED STATES: 1939<sup>1</sup>

Number of operating companies-----	<sup>2</sup> 51	Principal expenses—Continued	
Number of mines-----	<sup>3</sup> 54	Purchased electric energy-----	\$191
Number of persons engaged, total-----	100	Contract work-----	
Wage earners (average for the year)-----	19	Cost of buildings, machinery, and equipment erected or installed during year-----	\$2,725
Salaried employees-----	3	Horsepower rating of power equipment, total-----	421
Proprietors and firm members-----	78	Stationary equipment-----	331
Performing manual labor-----	52	Mobile equipment-----	90
Principal expenses designated below, total-----	\$20,403	Electric energy consumed (thousands of kw.-hrs.) <sup>4</sup> -----	8
Wages-----	\$15,327	Number of man-shifts worked by wage earners <sup>5</sup> -----	3,411
Salaries-----	\$1,725	Number of man-hours worked by wage earners <sup>5</sup> -----	27,308
Supplies and materials-----	\$2,933	Average number of hours worked per shift-----	8.0
Fuel-----	\$227		

<sup>1</sup> Statistics are for mercury mines, furnaces, and retorts that had no products during 1939 and for which neither the reported principal expenses nor cost of buildings, machinery, and equipment amounted to \$2,500 or more during the year. Statistics for these operations have not been included in other tables.

<sup>2</sup> Three of these companies also operated producing mines for which the reported value of products or cost of development work amounted to at least \$2,500; two of these companies also operated producing mines for which the reported value of products or cost of development work amounted to less than \$2,500.

<sup>3</sup> Arkansas, 4 mines; California, 22; Nevada, 16; Oregon, 11; and Washington, 1.

<sup>4</sup> Only purchased electric energy was reported.

<sup>5</sup> Represents employment on days when the mine was active for development or construction work only. No employment was reported for inactive days. In addition to the number of man-shifts worked by wage earners, it is estimated that 3,775 man-shifts were worked by proprietors performing manual labor.

## MOLYBDENUM ORE

Molybdenum is one of the few ferroalloying elements of which this country has ample supplies to satisfy a considerable demand. Domestic output in 1939 is believed to have represented over 90 percent of the world production. Molybdenum can be substituted to a certain extent for such strategic metals as tungsten, manganese, and nickel.

The United States has the largest known reserves of molybdenum ore in the world. Although a small amount of molybdenum is recovered from wulfenite ( $\text{PbMoO}_4$ ), the most important source is molybdenite ( $\text{MoS}_2$ ). The ores are usually of low grade and the molybdenite is extracted from the ore by fine grinding and flotation concentration. The concentrate, containing about 50 percent molybdenum and 35 percent sulfur, is calcined to remove the sulfur; the resultant crude molybdic oxide ( $\text{MoO}_3$ ) is used in the production of the various commercial molybdenum compounds and alloys.

Domestic output of molybdenum-bearing concentrates in 1939 contained 30,328,000 pounds of molybdenum and had a value of \$20,463,000 at points of production. Although comparable census figures for 1929 are not available, it is estimated that the 1939 output was about 7-1/2 times that of 1929.

### USES

Molybdenum, chiefly in the forms of molybdic-oxide briquettes, calcium molybdate, calcium molybdenum silicate, and ferromolybdenum, is used principally by the iron and steel industries. It is sometimes used alone to impart certain desired properties to iron and steel, but it is more frequently employed in combination with other alloying elements, especially chromium, nickel, tungsten, manganese, silicon, and vanadium. Smaller quantities of molybdenum are used in incandescent lamps and radio tubes in the form of metal wire or sheet and in the manufacture of chemicals and dyes in the form of molybdic oxide.

Special alloy steels containing molybdenum are widely utilized. They can withstand high fatigue loads, high temperatures, tremendous pressures, or severely corrosive conditions. They are employed extensively in the aircraft, oil, and automobile industries. Practically all nitriding steels contain molybdenum. Also molybdenum may be widely substituted for tungsten in high-speed steels for metal cutting. It is valuable in the manufacture of rustless, heat-resisting, and acid-resistant steels and in making gray-iron and steel castings; it enters into alloy-steel guns and armor plate, saw steels, die steels, razor blades, and countless other products.

### PRODUCTION

The molybdenum-ore industry (mines and mills engaged principally in producing ores and concentrates valued chiefly for their molybdenum content) accounted for 22,338,450 pounds of molybdenum, or 74 percent of the United States total for 1939. The remaining 7,989,876 pounds, or 26 percent, were contained in concentrates recovered at operations in the copper-ore industry<sup>1</sup> (24 percent) and in the gold and tungsten-ore industries (2 percent); statistics covering this supplementary output are not included in the accompanying tables but are included in census reports for the copper-ore, gold, and tungsten-ore industries.

The five mines and associated mills comprising the molybdenum-ore industry were located in Arizona, Colorado, New Mexico, Washington, and Wisconsin. The mines recovered 3,448,444

<sup>1</sup>Successful commercial methods for recovering molybdenite concentrates from copper ores were developed in the past decade. In 1939 the Utah Copper Company was the second largest producer of molybdenum in the world, producing molybdenite concentrates as a byproduct of its copper operations.

short tons of ore in 1939, practically all by underground methods of mining. The mills treated 3,448,323 short tons of ore, from which 21,068 short tons of concentrates (chiefly molybdenite) were recovered. The value of all products of the industry was \$15,411,000 at points of production. Other recoverable metals contained in the concentrates recovered included 85 fine ounces of gold, 2,796 fine ounces of silver, and 492,510 pounds of copper.

### PRINCIPAL EXPENSES

The industry paid \$1,435,000 in wages in 1939 to an average of 910 wage earners. Salaried employees, of whom there were 112 in October, were paid \$534,000. Other expenditures included \$1,713,000 for supplies and materials, \$39,000 for fuel, \$358,000 for purchased electric energy, and \$42,000 for work done on contract by other concerns. These reported principal expenses totaled \$4,120,000. These expenditures cannot be used for determining profits or losses in molybdenum-ore production since they do not include such items as taxes, depletion, depreciation, interest, rent, insurance, and other costs; the industry was not requested to supply information concerning these expenses. The cost of new buildings erected, major repairs to old structures, and new and used machinery and equipment installed during the year by the industry amounted to \$107,000. Of this amount nearly 68 percent was for new machinery.

### EMPLOYMENT AND WORKING TIME

The number of wage earners employed by the molybdenum-ore industry fluctuated between 764 in July and August and 1,238 in February, averaging 910 for the year. Wage earners worked a total of 1,987,000 man-hours—8.0 per shift—and received an average of 72 cents per man-hour. Mines and mills were active, on the average, the equivalent of 336 full days during the year. Two of the mines worked one shift per day, two worked two shifts, and one worked three shifts per day. The output of molybdenum concentrates per man-hour averaged 0.011 ton.

### POWER EQUIPMENT AND FUELS

Power equipment in use or available for use at the end of the year had an aggregate rated capacity of 33,981 horsepower, or about 37 per wage earner. Approximately 82 percent of the total horsepower was for driving stationary equipment such as hoisting, pumping, crushing, and grinding equipment; the remaining 18 percent, for driving mobile equipment such as power shovels, scraper loaders, and trucks. About 96 percent of the aggregate horsepower rating represented 829 electric motors driven by purchased energy.

Power loading machines at molybdenum operations included 1 power shovel and 50 underground scraper loaders driven by electric hoists. Five of the hoists had horsepower ratings of less than 10, 34 had ratings of between 25 and 100 horsepower, and the remaining 11 were rated at 100 horsepower or over.

The industry consumed 52,539,000 kilowatt-hours of electric energy, of which 52,368,000 were purchased and 171,000 generated by the reporting companies for their own use. Fuels consumed by the industry included 5,437 short tons of bituminous coal, 1,930 barrels (42 gallons) of fuel oil, 16,333 gallons of gasoline and kerosene, and 40 cords of wood.

### OTHER STATISTICS

For distribution of molybdenum-ore operations by value of products, number of wage earners, number of days active,

number of hours per wage earner in the full-time workweek, and by type of ownership, see General Summary tables 8, 15, 17, 18, and 26, respectively.

#### SMALL AND NONPRODUCING OPERATIONS

The statistics for the molybdenum-ore industry discussed in the foregoing paragraphs and presented in tables 1, 2, 3, 4, and 5 cover producing operations whose value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. There were, in addition, four smaller producing mines, the

statistics for which are presented only in table 6. No concentrates were produced at these operations, but the products recovered (chiefly crude ore) were valued at \$1,530 at points of production. Nine mines were also reported that had no products but for which the reported principal expenses or cost of buildings, machinery, and equipment during the year amounted to \$2,500 or more and 15 mines that had no products and for which neither reported principal expenses nor cost of buildings, machinery, and equipment during the year amounted to as much as \$2,500. Statistics for such mines are presented in tables 7 and 8, respectively.

TABLE 1.—PRINCIPAL STATISTICS FOR THE MOLYBDENUM-ORE INDUSTRY IN THE UNITED STATES: 1939<sup>1</sup>  
(For producing operations only)

Number of operating companies	5	Cost of buildings, machinery, and equipment erected or installed during year	\$107,220
Number of mines	25	Buildings	\$30,486
Number of preparation plants	25	Machinery and equipment, total	\$78,734
Production:		Purchased in new condition	\$72,454
Crude ore mined (tons of 2,000 pounds)	3,448,444	Purchased in used condition	\$4,280
Crude ore treated (tons)	3,448,323	Total number of man-shifts worked by wage earners	5,248,376
Concentrates recovered (tons) <sup>2</sup>	21,068	Total number of man-hours worked by wage earners	71,987,008
Molybdenum (Mo) content (pounds) <sup>3</sup>	22,338,450	Average number of hours worked per shift	8.0
Value of all products <sup>4</sup>	\$15,410,581	Average hourly earning of wage earners	\$0.72
Number of persons engaged, total	1,025	Average number of equivalent full days operations were active	335
Wage earners (average for the year, including inactive periods)	910	Horsepower rating of power equipment, total	33,981
Salaried employees	112	Per wage earner	37.3
Proprietors and firm members	53	Stationary equipment	27,895
Principal expenses designated below, total	\$4,120,178	Mobile equipment	6,086
Wages	\$1,434,751	Electric energy consumed (thousands of kw.-hrs.), total	52,539
Salaries	\$533,698	Purchased	52,368
Supplies and materials	\$1,713,333	Generated by reporting companies	171
Fuel	\$38,651	Quantities of fuel consumed:	
Purchased electric energy	\$357,685	Bituminous coal (short tons)	5,437
Contract work	\$42,060	Fuel oils (barrels of 42 gallons)	1,930
		Gasoline and kerosene (gallons)	18,333
		Wood (cords)	40

<sup>1</sup> Figures cover only those producing operations (mines, plants, or mines and plants operated together) engaged principally in mining or treating ores valued chiefly for their molybdenum content and for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. In 1939 there were 4 smaller producing mines; statistics for these mines are presented only in table 6.

<sup>2</sup> Arizona, Colorado, New Mexico, Washington, and Wisconsin, 1 each.

<sup>3</sup> In addition, 7,493 short tons of molybdenum concentrates containing 7,989,876 pounds of molybdenum were recovered in 1939 at operations engaged principally in recovering ores and concentrates valued chiefly for a metal other than molybdenum.

<sup>4</sup> Includes mine value of the ore mined but not treated during 1939, plant value of the concentrates produced in 1939 from ores mined during 1939, value added by treating in 1939 ores produced prior to 1939, and value of miscellaneous secondary products. The latter amounted to \$32,435 and represents the mine value of the following recoverable quantities of metals: 85 fine ounces of gold, 2,796 fine ounces of silver, and 492,510 pounds of copper.

<sup>5</sup> None reported performing manual labor.

<sup>6</sup> Of this number, 247,855 were worked on days when the respective mines or plants were actively engaged in production or development work; the remainder was worked on inactive days when only such wage earners as watchmen and maintenance men were employed.

<sup>7</sup> Of this number, 1,982,824 were worked on active days.

TABLE 2.—NUMBER OF WAGE EARNERS AT MOLYBDENUM MINES AND PLANTS IN THE UNITED STATES, BY MONTH: 1939<sup>1</sup>  
(For producing operations only)

MONTH	Number	MONTH	Number	MONTH	Number
Average	910	April	970	September	785
January	1,194	May	793	October	779
February	1,238	June	765	November	790
March	1,200	July	764	December	881
		August	764		

<sup>1</sup> For definition of the industry see table 1, footnote 1.

## MINERAL INDUSTRIES

TABLE 3.—EMPLOYMENT AND WORKING TIME IN THE MOLYBDENUM-ORE INDUSTRY IN THE UNITED STATES: 1939<sup>1</sup>

(For producing operations only)

Average number of wage earners on active days, total-----	739	Number of man-shifts worked by wage earners, total-----	248,376
		On active days, total-----	247,853
At mines, total-----	455	At mines, total-----	151,211
Underground-----	406	Underground-----	133,787
Open pits-----	12	Open pits-----	600
Surface shops and yards-----	37	Surface shops and yards-----	11,824
At preparation plants-----	284	At preparation plants-----	96,642
		On inactive days-----	523
Average number of equivalent full days operations were active <sup>2</sup> -----	335	Number of man-hours worked by wage earners, total-----	1,987,008
		On active days, total-----	1,982,824
At mines <sup>2</sup> -----	332	At mines, total-----	1,209,688
Underground <sup>2</sup> -----	342	Underground-----	1,110,296
Open pits <sup>2</sup> -----	50	Open pits-----	4,800
Surface shops and yards <sup>2</sup> -----	320	Surface shops and yards-----	94,582
At preparation plants <sup>2</sup> -----	340	At preparation plants-----	773,136
		On inactive days-----	4,184

<sup>1</sup> For definition of the industry see table 1, footnote 1.<sup>2</sup> Number of man-shifts worked on active days in each department divided by average number of wage earners on active days in corresponding department.TABLE 4.—NUMBER OF OPERATIONS IN THE MOLYBDENUM-ORE INDUSTRY WORKING ONE, TWO, AND THREE SHIFTS AND  
NUMBER OF MAN-SHIFTS WORKED, BY SHIFT: 1939<sup>1</sup>

(For producing operations only)

OPERATION OR DEPARTMENT	NUMBER OF OPERATIONS WORKING—				NUMBER OF MAN-SHIFTS WORKED BY WAGE EARNERS ON ACTIVE DAYS			
	Total	One shift	Two shifts	Three shifts	Total	During first shift	During second shift	During third shift
Total-----	(2)	(2)	(2)	(2)	247,853	176,090	44,954	26,829
At mines-----	5	2	2	1	151,211	101,886	34,828	14,497
At preparation plants-----	5	1	3	1	96,642	74,204	10,106	12,332

<sup>1</sup> For definition of the industry see table 1, footnote 1.<sup>2</sup> Not significant.TABLE 5.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE MOLYBDENUM-ORE  
INDUSTRY IN THE UNITED STATES: 1939<sup>1</sup>

(For producing operations only)

TYPE OF EQUIPMENT	TOTAL		STATIONARY EQUIPMENT		MOBILE EQUIPMENT	
	Number of units	Horsepower rating	Number of units	Horsepower rating	Number of units	Horsepower rating
Prime movers and electric motors driven by purchased energy, total-----	842	33,981	709	27,895	133	6,086
Prime movers, total-----	13	1,210	12	1,195	1	15
Driving generators-----	1	160	1	160		
Not driving generators-----	12	1,050	11	1,035	1	15
Ordinarily idle <sup>2</sup> -----	1	160	1	160		
Electric motors driven by purchased energy-----	829	32,771	697	26,700	132	6,071
Electric motors driven by energy generated by reporting companies-----	5	60	5	60		

<sup>1</sup> For definition of the industry see table 1, footnote 1.<sup>2</sup> Included in preceding categories.



## TITANIUM ORE

The three mines and associated preparation plants in the United States engaged chiefly in producing titanium ores and concentrates in 1939 recovered 16,471 short tons of titanium concentrates. The products, including a small quantity of apatite and magnetite concentrates produced as secondary products, were valued at \$458,000 at points of production. Two of these mines and their associated plants were located in Virginia; the other was in Arkansas. All of the ore was mined by open-cut methods.

### CONSUMPTION AND USE

Although titanium ranks as one of the more abundant elements, its production and consumption, compared with other metals such as lead, copper, and zinc, have been small. Since 1929, however, it is estimated that titanium consumption increased at least tenfold. This rise may be accounted for principally by the growth in demand for paints and lacquers with titanium pigments, and, to a lesser extent, by the increased use of titanium materials in the metallurgical and ceramic industries. Titanium has been used to an increasing extent in the paint industry, partly replacing zinc and lead. Paints made with titanium pigments have greater opacity (hiding power) than paints made solely with other pigments such as white lead and zinc oxide; they are also chemically inert, resist cracking and peeling, and wear down evenly. The metallurgical industries use only a small percentage of the total supply of titanium, mostly in the form of alloys such as ferrotitanium, ferrocarbon-titanium, and cuprotitanium. Ferrotitanium alloys are used principally as a final cleanser (deoxidizer and scavenger) in the manufacture of steel. This treatment tends to produce better steel, particularly with regard to homogeneity and freedom from blowholes; the use of titanium for this purpose is a means of conserving ferromanganese. Ferrotitanium is important in the manufacture of steel sheet bars used in making high-quality galvanized sheets and tinplate. The presence of titanium also improves the properties of nickel, chromium, and manganese steels. Titanium also is used as a coating for welding rods, in the form of salts for dyeing and tanning, as a refractory pigment in the ceramic industry, in the manufacture of electrodes for arc lamps, and in pyrotechnics.

There are two principal commercial ores of titanium—ilmenite and rutile. Commercial ilmenite, the more plentiful mineral, may contain as much as 30 percent of titanium and is the one used in the manufacture of the titanium whites and ferroalloys. Commercial rutile, the natural oxide containing

about 59 percent of the element, is generally used in the manufacture of welding rods, titanium salts, ceramics, and other products.

### PRINCIPAL EXPENSES

Operators of titanium mines and mills in 1939 paid \$140,000 in wages to an average of 183 wage earners. Salaried employees, of whom there were 13 in October, were paid \$42,000. The industry spent \$38,000 for supplies and materials, \$15,000 for fuel, and \$35,000 for purchased electric energy. These expenses amounted to \$270,000. The cost of new buildings erected, major repairs to old structures, and new and used machinery and equipment installed during the year amounted to \$87,000. Of this amount, nearly 83 percent was for new machinery. The indicated expenses reported in the census cannot be used for determining profits or losses in the titanium-ore industry, since they do not include such items as taxes, depletion, depreciation, interest, rent, insurance, and marketing costs.

### EMPLOYMENT AND WORKING TIME

The number of wage earners employed by the titanium-ore industry fluctuated between 151 in January and 208 in December. Wage earners worked a total of 321,500 man-hours and received an average of 44 cents per man-hour. Mines and mills were active, on the average, the equivalent of 295 full days during the year; the average length of shift was 7.1 hours. One of the operations worked one shift per day and the other two were operated three shifts per day. The average output of titanium concentrates was 0.05 ton per man-hour; the average value per ton was \$26.58.

### POWER EQUIPMENT

Power equipment in use or available for use at the end of the year had an aggregate rated capacity of 2,250 horsepower, or about 12 per wage earner. Approximately 72 percent of the total horsepower was for driving stationary equipment such as crushing and grinding equipment; the remaining 28 percent, for driving mobile equipment such as power shovels, draglines, and trucks. About 71 percent of the aggregate horsepower rating represented 138 electric motors driven by purchased energy. The industry consumed 2,707,000 kilowatt-hours of electric energy, of which 2,703,000 were purchased and 4,000 were generated by the reporting companies for their own use.



# TUNGSTEN ORE

Tungsten mines and mills had an output in 1939 valued at \$3,354,000 at points of production, about four and one-half times that of 1929. These mines and mills produced 3,240 short tons of direct-shipping ore and concentrates containing 3,059,000 pounds of tungsten. This is equivalent to 3,214 short tons of material with a tungsten trioxide ( $WO_3$ ) content of 60 percent.<sup>1</sup>

Since 1929 the United States has produced only about half of the tungsten that it consumed. During this period there has been a tariff on imported tungsten ores and concentrates that, since 1930, has amounted to \$0.50 per pound of tungsten content. Tungsten, which as a component of steel alloys causes them to retain their hardness and temper even at a dull-red heat, is used principally in the manufacture of high-speed tool steels used for cutting metal. Other tungsten-alloy steels are used in the production of a wide range of industrial products and such military equipment as armor plate, armor-piercing projectiles, and ordnance.

## PRINCIPAL EXPENSES

Operators of tungsten mines and mills in 1939 paid \$1,300,000 in wages to an average of 690 wage earners for 1,614,000 man-hours of labor—an average of 68 cents per man-hour. Salaried employees, of whom there were 134 in October, were paid \$241,000. The industry spent \$648,000 for supplies and materials, \$97,000 for fuel, \$114,000 for purchased electric energy, and \$42,000 for work done on contract by other concerns. These reported principal expenses totaled \$2,241,000. The cost of new buildings erected, major repairs to old structures, and new and used machinery and equipment installed during the year amounted to \$448,000. Of this amount, \$286,000 was for machinery and equipment compared with \$14,000 in 1929.

## PRODUCTION

Tungsten ores and concentrates were produced in 1939 by 35 companies operating 49 producing mines and 31 mills located in 7 States. Nevada was the leading producing State, accounting for 38 percent of the tungsten content of direct-shipping ore and concentrates produced. California produced 35 percent; Colorado, 15 percent; and Arizona, Idaho, New Mexico, and Washington combined, 12 percent. Over 80 percent of the direct-shipping ore and concentrate was recovered by nine companies operating nine mines and mills. Of the total of 394,380 short tons of material mined, 80 percent was obtained from mines (employing principally underground methods) and the remainder was recovered from tailing and ore dumps.

About 98 percent of the recoverable tungsten produced by the industry in 1939 was contained in concentrates; the remaining 2 percent was in direct-shipping ores. Thirty-one tungsten mills treated 381,971 short tons of ore and tailings during the year and recovered concentrates containing 1,885 short tons of tungsten trioxide. Thus it required an average of about 203 tons of crude material to produce 1 ton of tungsten trioxide containing about four-fifths of a ton of tungsten.

The average mine value per short-ton unit (20 pounds) of tungsten trioxide contained in direct-shipping ores or concentrates was \$16.76. Average values at individual mines for the year ranged from \$11.22 to \$22.73. Mine operators in California received an average of \$15.74; in Colorado, \$16.07; and in Nevada, \$17.89. The average for mines in other States was \$16.98.

<sup>1</sup>Figures include statistics for mines or mills engaged in producing ores or concentrates valued chiefly for their tungsten content and whose reported value of products or cost of development work amounted to at least \$2,500 during 1939. Statistics for smaller mines, that produced the equivalent of 18 short tons of material with a 60-percent tungsten trioxide content, are summarized separately in table 8. In addition, some tungsten trioxide, less than 1 percent of the national output, was produced as a byproduct from operations engaged in producing ores or concentrates valued chiefly for metals other than tungsten.

## EMPLOYMENT AND WORKING TIME

The average of 690 wage earners employed by the industry in 1939 represents an increase of 271 percent over the 1929 average. Nevada employed the largest number of wage earners in 1939—about 34 percent of the total. California ranked next with more than 33 percent; Colorado had over 14 percent; and all other States, 19 percent. For the United States as a whole, the number of wage earners engaged in the production of tungsten ores and concentrates fluctuated during the year from a low level of 571 wage earners in February to a peak of 801 in November. About 69 percent of the 1,614,000 man-hours worked by wage earners was devoted to mining, mine development, and maintenance work; 31 percent, to milling ores. Wage earners worked, on the average, 7.8 hours per day. The average number of equivalent full days mines and mills were active, which indicates approximately the average number of full days worked per wage earner, was 255 for the industry as a whole. Operations were active an average of 319 full days in Nevada, 289 days in California, 256 days in Colorado, and 159 days in the other States.

The average output of recoverable tungsten per man-hour worked by wage earners at tungsten mines and mills was 1.89 pounds for the industry as a whole. The average output per man-hour at operations in Nevada was 2.04 pounds; in California, 1.96 pounds; in Colorado, 2.00 pounds; and in all other States, 1.38 pounds. The amount paid in wages per man-hour worked by wage earners, which averaged 68 cents for the industry, was 70 cents in Nevada, 74 cents in California, 56 cents in Colorado, and 62 cents in all other States.

## POWER EQUIPMENT AND FUELS

Power equipment at tungsten mines and mills at the end of the year had an aggregate rated capacity of 14,660 horsepower. The horsepower rating of power equipment per wage earner, including idle equipment, was 21 in 1939 compared with 18 in 1929. Of the total horsepower reported in 1939, 25 percent represented that used for driving mobile equipment such as power-shovels, locomotives, trucks, and tractors. The remaining horsepower was used to drive fixed or stationary equipment such as mine hoists, electric generators, pumps, crushers, ventilating fans, and compressors. Surface power loading equipment at tungsten-ore operations included four power shovels with dipper capacities of less than 3 cubic yards; one dragline with a bucket capacity of less than 3 cubic yards; nine electric pumps; and one crane. In underground operations, there were four shovel loaders requiring less than 8 feet of headroom driven by compressed air and three scraper loaders driven by compressed-air hoists, two having less than 10 horsepower capacity and one with a capacity between 10 and 25 horsepower.

Decennial census figures reveal an increase in the use of purchased electric energy, although not as large as the increase in production. The industry spent \$53,000 for electric energy in 1929 and \$114,000 in 1939. In 1929 electric motors driven by purchased energy had a total horsepower rating of 2,308; in 1939 the horsepower rating of such motors was 6,858.

## OTHER STATISTICS

For distribution of tungsten-ore operations by value of products, number of wage earners, number of days active, number of hours per wage earner in the full-time workweek, and by type of ownership, see General Summary tables 8, 15, 17, 18, and 26, respectively.

## SMALL AND NONPRODUCING OPERATIONS

The statistics discussed previously and presented in tables 1 through 7 cover producing operations whose reported value of products or development costs amounted to at least \$2,500

during the year. There were, in addition, 42 smaller producing operations, the statistics for which are presented in tables 3 and 8. These operations produced the equivalent of 10 tons of recoverable tungsten trioxide and reported products valued at \$17,000. Most of the work at these operations was carried on by working proprietors, the operations having reported 41 working proprietors and 13 wage earners.

There were, in 1939, four mines that had no products but reported expenditures of \$2,500 or more for development, maintenance, or construction work. Statistics for these mines are presented in table 9 but are excluded from tables 1 through 8. In addition, there were approximately 20 mines that had no products and reported that less than \$2,500 was spent for assessment, development, maintenance, or construction work.

TABLE 1.—PRINCIPAL STATISTICS FOR THE TUNGSTEN-ORE INDUSTRY IN THE UNITED STATES: 1939, 1929, 1909, AND 1902<sup>1</sup>

(For producing operations only)

ITEM	1939	1929	1909	1902
Number of operating companies <sup>2</sup>	35	(3)	22	4
Number of mines	49	13	116	4
Production of concentrates and direct-shipping ore (tons of 2,000 pounds) <sup>4</sup>	3,240	821	(3)	184
Value of all products <sup>5</sup>	\$3,353,852	\$733,970	\$583,457	<sup>6</sup> \$5,975
Number of persons engaged, total	855	220	227	<sup>7</sup> 2
Wage earners (average for the year)	690	186	177	2
Salaried employees	134	31	18	(3)
Proprietors and firm members	51	3	32	(3)
Performing manual labor	22		20	
Principal expenses designated below, total	\$2,241,305	\$551,702	<sup>7</sup> \$346,665	<sup>7</sup> \$1,470
Wages	\$1,099,535	\$296,975	\$178,545	\$1,280
Salaries	\$241,195	\$60,826	\$33,141	
Supplies and materials	\$648,180	\$127,198	\$85,555	
Fuel	\$98,539	\$9,711	<sup>8</sup> \$8,648	<sup>8</sup> \$210
Purchased electric energy	\$113,929	\$52,745		
Contract work	\$41,929	\$4,247	\$40,976	
Cost of machinery and equipment erected or installed during the year	\$286,397	\$13,914	(3)	(3)
Horsepower rating of power equipment, total	14,660	3,398	486	280
Per wage earner	21.2	18.3	2.7	140.0
Prime movers	7,802	1,090	(3)	220
Electric motors driven by purchased energy	6,858	2,308	(3)	<sup>9</sup> 60
Horsepower rating of electric motors driven by energy generated by reporting companies	1,866	648	(3)	
Electric energy consumed (thousands of kw.-hrs.), total	9,985	(3)	(3)	(3)
Purchased	8,085	(3)	(3)	(3)
Generated by reporting companies	1,900	(3)	(3)	(3)

<sup>1</sup> Figures for 1939 cover only those producing operations (mines, mills, or mines and mills operated together) that mined or treated ores valued chiefly for their tungsten content and for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. Figures for 1929 represent "enterprises" for which the total value of products or total cost of development work was at least \$2,500. No minimum was placed on the size of operations included for 1909 and 1902. Census statistics for tungsten in 1919 were combined with statistics for molybdenum, titanium, uranium, and vanadium. The 1939 figures exclude 42 producing mines for which the value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year was less than \$2,500; statistics for these operations are presented separately in tables 3 and 8. Statistics for mines without products are presented separately in table 9.

<sup>2</sup> For 1939 and 1909, companies that submitted more than 1 report are counted only once in the total.

<sup>3</sup> Not available.

<sup>4</sup> In addition to the figure shown for 1939, about 37 tons of tungsten concentrates were recovered at producing operations whose value of products or cost of development work was less than \$2,500 (see table 3) and as a byproduct of other mineral industries.

<sup>5</sup> Statistics for 1939 include the following: Mine value of direct-shipping ore and milling ore mined but not treated during 1939, mill value of concentrates produced from ores mined during 1939, value added in milling ore produced prior to 1939, and the value of miscellaneous secondary products. The value of miscellaneous secondary products in 1939 amounted to \$89,205 and represents the mine values of 5,105 short tons of garnet sand and the following quantities of recoverable metals: About 37,000 pounds of molybdenum, 271 fine ounces of gold, 64,473 ounces of silver, 150,428 pounds of copper, and 181,303 pounds of lead. No secondary products were reported produced in 1929.

<sup>6</sup> Excludes value of secondary products and services rendered.

<sup>7</sup> Excludes statistics for items for which information is not available as indicated by footnotes.

<sup>8</sup> For 1909 statistics include amounts paid for purchased power other than electric. Statistics for cost of purchased power for 1902 were not explicitly requested but probably are included in part in the figures reported for supplies and materials.

<sup>9</sup> Represents horsepower of equipment driven by purchased energy other than electric.



TABLE 3.—TUNGSTEN ORE AND CONCENTRATES PRODUCED AT TUNGSTEN MINES AND MILLS IN THE UNITED STATES: 1939<sup>1</sup>

ITEM	QUANTITY			VALUE AT MINES OR MILLS		
	Total	Producing mines and mills whose value of products or cost of development work was \$2,500 or more	Producing mines and mills whose value of products or cost of development work was less than \$2,500	Total	Producing mines and mills whose value of products or cost of development work was \$2,500 or more	Producing mines and mills whose value of products or cost of development work was less than \$2,500
Crude ore mined and crude ore processed:						
Material mined (tons of 2,000 pounds), total-----	396,774	394,580	2,394	\$2,292,656	\$2,281,696	\$10,940
Ore (tons)-----	317,264	314,870	2,394	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Tailings (tons)-----	79,510	79,510		( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Material treated (tons), total-----	383,204	381,971	1,233	2,167,066	2,156,232	10,834
Ore (tons)-----	303,694	302,461	1,233	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Tailings (tons)-----	79,510	79,510		( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Concentrates and direct-shipping ore produced (tons), total-----	3,257	3,240	17	3,248,197	3,231,427	16,770
Tungsten trioxide (WO <sub>3</sub> ) content (tons)-----	1,938.37	1,928.60	9.77			
Tungsten (W) content (pounds)-----	3,074,642	3,059,145	15,497			
Concentrates (tons)-----	3,123	3,106	17	3,155,953	3,139,183	16,770
Tungsten trioxide (WO <sub>3</sub> ) content (tons)-----	1,894.75	1,884.98	9.77			
Tungsten (W) content (pounds)-----	3,005,452	2,989,955	15,497			
Direct-shipping ore (tons)-----	134	134		92,244	92,244	
Tungsten trioxide (WO <sub>3</sub> ) content (tons)-----	43.62	43.62				
Tungsten (W) content (pounds)-----	69,190	69,190				
Concentrates and direct-shipping ore converted to material with a 60-percent tungsten trioxide (WO <sub>3</sub> ) content (tons)-----	3,230	3,214	16			

<sup>1</sup>Figures include statistics for all mines and mills that produced ores or concentrates valued chiefly for their tungsten content. In 1939 about 20 short tons of tungsten concentrates containing less than 14 tons of tungsten trioxide were recovered at operations other than those whose principal product was tungsten concentrates.

<sup>2</sup>Not available.

TABLE 4.—NUMBER OF WAGE EARNERS IN THE TUNGSTEN-ORE INDUSTRY IN THE UNITED STATES, BY STATE AND BY MONTH: 1939<sup>1</sup>

(For producing operations only)

STATE	Average for the 12 months	NUMBER RECEIVING PAY DURING PAY-ROLL PERIOD ENDING NEAREST THE 15TH OF THE MONTH											
		January	February	March	April	May	June	July	August	September	October	November	December
United States, total-----	690	603	571	593	629	664	667	703	707	779	791	801	772
California-----	231	181	197	198	220	229	228	240	257	277	265	265	216
Colorado-----	97	68	77	80	93	94	95	101	107	102	98	113	184
Nevada-----	233	213	208	220	222	228	229	235	220	240	261	265	253
Arizona, Idaho, New Mexico, and Washington-----	129	141	89	95	94	113	115	127	123	160	167	158	169

<sup>1</sup>For definition of industry see table 1, footnote 1.

## MINERAL INDUSTRIES

TABLE 5.—EMPLOYMENT AND WORKING TIME IN THE TUNGSTEN-ORE INDUSTRY IN THE UNITED STATES, BY STATE: 1939<sup>1</sup>

(For producing operations only)

DEPARTMENT	United States	Nevada	California	Colorado	Arizona, Idaho, New Mexico, and Washington
Average number of wage earners on active days, total-----	810	221	236	121	232
At mines, total-----	576	165	130	91	190
Underground-----	388	127	74	73	114
Open pits-----	97	8	27	4	58
Surface shops and yards-----	91	30	29	14	18
At preparation plants-----	234	56	106	30	42
Average number of equivalent full days operations were active <sup>2</sup> -----	255	319	289	256	159
At mines-----	250	332	277	274	149
Underground-----	283	340	290	264	227
Open pits-----	104	146	225	312	27
Surface shops and yards-----	266	348	292	314	49
At preparation plants-----	267	280	304	202	206
Number of man-shifts worked by wage earners, total-----	207,580	71,151	68,195	31,275	36,959
On active days, total-----	206,508	70,400	68,195	30,954	36,959
At mines, total-----	143,961	54,733	36,021	24,895	28,312
Underground-----	109,724	43,128	21,479	19,247	25,870
Open pits-----	10,061	1,188	6,087	1,248	1,558
Surface shops and yards-----	24,176	10,437	8,455	4,400	884
At preparation plants-----	62,547	15,667	32,174	6,059	8,647
On inactive days-----	1,072	751	-----	321	-----
Number of man-hours worked by wage earners, total-----	1,614,405	565,335	540,208	232,621	278,241
On active days, total-----	1,606,787	559,719	540,208	230,599	278,241
At mines, total-----	1,111,804	435,526	282,814	184,797	208,667
Underground-----	846,095	345,021	167,834	142,508	190,732
Open pits-----	76,556	7,008	46,700	9,984	10,864
Surface shops and yards-----	189,153	83,497	66,280	32,305	7,071
At preparation plants-----	494,963	124,193	257,394	45,802	67,574
On inactive days-----	7,638	5,616	-----	2,022	-----

<sup>1</sup>For definition of the industry see table 1, footnote 1.<sup>2</sup>Number of man-shifts worked on active days in each department divided by average number of wage earners on active days in corresponding department.TABLE 6.—NUMBER OF MINES AND MILLS IN THE TUNGSTEN-ORE INDUSTRY IN THE UNITED STATES WORKING ONE, TWO, OR THREE SHIFTS, AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT AND BY STATE: 1939<sup>1</sup>

(For producing operations only)

SHIFT	UNITED STATES		Nevada	California	Colorado	Arizona, Idaho, New Mexico, and Washington
	Number	Percent of total				
Number of mines, total-----	49	100.0	10	9	20	10
Working 1 shift per day-----	35	71.4	6	4	17	8
Working 2 shifts per day-----	7	14.3	-----	4	2	1
Working 3 shifts per day-----	7	14.3	4	1	1	1
Number of mills, total-----	31	100.0	7	10	7	7
Working 1 shift per day-----	15	48.4	3	4	3	5
Working 2 shifts per day-----	4	12.9	-----	1	3	-----
Working 3 shifts per day-----	12	38.7	4	5	1	2
Number of man-shifts worked by wage earners on active days, total-----	206,508	100.0	70,400	68,195	30,954	36,959
During first shift-----	135,459	65.6	41,624	46,220	20,535	24,880
During second shift-----	48,958	23.7	14,526	15,694	8,467	10,271
During third shift-----	22,091	10.7	14,050	4,281	1,952	1,808
At mines total-----	143,961	100.0	54,733	36,021	24,895	28,312
During first shift-----	96,211	66.8	33,453	26,070	16,686	20,002
During second shift-----	35,390	24.6	10,822	9,450	6,922	8,196
During third shift-----	12,360	8.6	10,458	501	1,287	114
At preparation plants, total-----	62,547	100.0	15,667	32,174	6,059	8,647
During first shift-----	39,248	62.7	8,371	22,150	3,849	4,878
During second shift-----	15,568	21.7	3,704	6,244	1,545	2,075
During third shift-----	9,731	15.6	3,592	3,780	665	1,694

<sup>1</sup>For definition of the industry see table 1, footnote 1.



## VANADIUM AND URANIUM ORE

Although vanadium and uranium mines in the United States were more active in 1939 than in any year of the previous decade, their output was not adequate to meet domestic requirements. Domestic supplies were supplemented in that year by the import of 14,011 long tons of vanadium ores containing 2,134,262 pounds of vanadium and 1,439,324 pounds of uranium salts and oxides.

The value of all products of vanadium and uranium mines and mills in the United States in 1939 amounted to \$1,484,000 at points of production. These operations mined 104,558 short tons of crude ore—5,506 tons of carnotite ore (containing uranium, radium, and vanadium) and 99,052 tons of vanadium ore.<sup>1</sup> Plants in the industry treated a total of 89,540 short tons of ore and recovered 2,703,654 pounds of vanadium salts.

### USES

Vanadium, in the form of ferrovanadium or fused vanadium oxide, is used extensively as an alloying agent in the iron and steel industries. It is usually alloyed with chromium or manganese to make chromium-vanadium or manganese-vanadium steel; it is also used in the manufacture of carbon-vanadium steel. Vanadium contributes many desirable qualities to steel—such as toughness, strength, ductility, forgeability, machinability, and hardness at high temperatures and is used principally in high-speed tool steel, special castings, and armor plate. A small quantity of vanadium is also used in the chemical, non-ferrous-metals, glass, ceramic, and pigment industries.

Sodium uranate and uranium oxide are used extensively in ceramics and glassware industries; a small quantity of uranium salts is consumed in the chemical industries. Uranium metal is used to a limited extent as an alloying element.

### PRODUCTION

The 104,558 short tons of crude ore mined by the industry during the year contained 7,842 milligrams of radium, 51,841 pounds of uranium, and 1,865,774 pounds of vanadium. Carnotite ore contained the radium and uranium and about 10 percent of the vanadium; the remainder of the vanadium was contained in vanadium ore.

Ores were mined in Colorado, Utah, and Arizona at 22 operations conducted by 23 companies. Ninety-nine percent of the ore mined came from 8 producing mines whose value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500. Over 88 percent of the radium and uranium and 98 percent of the vanadium were contained in ores mined by this group of operations. The summary that follows refers only to this group except as otherwise noted.

Chemical plants in the industry treated 5,484 short tons of carnotite ore and 84,056 short tons of vanadium ores that yielded 2,703,654 pounds of vanadium salts containing 1,306,292 pounds of vanadium. In the treatment of carnotite ores, slimes were recovered that contained less than 12 percent of the radium content of the crude ores treated. No uranium salts were reported recovered by the industry.

### PRINCIPAL EXPENSES

The industry paid \$497,000 in wages—an average of 56 cents per man-hour worked by wage earners. Salaried employees were paid \$112,000. The industry spent \$244,000 for supplies and materials, \$140,000 for fuel, and \$45,000 for work done on contract by other concerns. These reported principal expenses totaled \$1,038,000. The cost of new buildings erected, major

<sup>1</sup>In addition, a considerable quantity of vanadium-bearing ores valued chiefly for their gold content were mined by the gold industry. The quantity and value of these ores (containing over 200,000 pounds of vanadium) are included only in the report for the gold industry.

alterations to existing structures, and new and used machinery and equipment installed during the year amounted to \$263,000. About 64 percent of this amount was for new machinery.

### EMPLOYMENT AND WORKING TIME

The number of wage earners employed by the industry, which averaged 378 for the year, ranged from a low of 325 in January to a peak of 410 in December. In addition, 63 salaried employees were reported for October. Operations in Colorado reported an average of 326 wage earners; the average was 40 in Utah and 12 in Arizona.

Wage earners worked a total of 879,437 man-hours, averaging 8 hours per shift. Operations were active the equivalent of 260 full days during the year. Of the 868,037 man-hours worked on days when the mines and plants were actively engaged in production or development work, about 48 percent was devoted to mining, mine development, and maintenance, and 52 percent to treating ores. All the mines and two of the mills worked only one shift per day; four mills worked three shifts per day for at least part of the year. Of the total number of man-shifts worked during the year on active days, about 96 percent was worked on the first shift.

### POWER EQUIPMENT AND FUEL

Power equipment in use or available for use at the end of the year had an aggregate rated capacity of 6,824 horsepower, or about 18 per wage earner. Approximately 63 percent of the total horsepower was for driving stationary or fixed equipment such as mine hoists, electric generators, and crushing and grinding equipment; the remaining 37 percent was for driving mobile equipment such as power shovels and trucks. All of the above horsepower represents the rating of prime movers such as gasoline, Diesel, or steam engines. The industry reported 176 electric motors, with an aggregate horsepower rating of 1,730, driven by energy generated by the reporting companies for their own use. No electric motors driven by purchased electric energy were reported.

Power loading machines at vanadium and uranium operations included one power shovel, with a dipper capacity of less than 3 cubic yards, driven by an internal-combustion engine; two surface scraper loaders driven by electricity; and three underground shovel loaders, each requiring less than 8 feet of headroom, driven by compressed air.

The industry consumed 2,044,000 kilowatt-hours of electricity in 1939, all of which was generated at the mines or mills. Fuels consumed included 26,506 short tons of bituminous coal, 7,606 barrels of fuel oil, and 40,533 gallons of gasoline and kerosene.

### OTHER STATISTICS

For distribution of vanadium and uranium ore operations by value of products, number of wage earners, number of days active, number of hours per wage earner in the full-time work-week, and by type of ownership, see General Summary tables 8, 15, 17, 18, and 26, respectively.

### SMALL AND NONPRODUCING OPERATIONS

In addition to the 8 operations summarized above, there were 14 smaller producing mines. No ore was treated by chemical process at these operations. Their output (principally crude ore) was valued at \$12,000 at points of production. Eighteen additional mines were reported that had no products and for which neither reported principal expenses nor cost of buildings, machinery, and equipment during the year amounted to as much as \$2,500. Statistics for these nonproducing mines are presented only in table 7. No larger nonproducing mines were reported for 1939.

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TABLE 1.—PRINCIPAL STATISTICS FOR THE VANADIUM AND URANIUM ORE INDUSTRY IN THE UNITED STATES: 1939<sup>1</sup>

(For producing operations only)

ITEM	Total	Large operations	Small operations
Number of operating companies-----	23	8	15
Number of mines-----	22	28	314
Number of preparation plants-----	7	46	51
Production:			
Crude ore mined (tons of 2,000 pounds), total-----	104,558	103,846	712
Vanadium and complex ores-----	99,052	98,800	452
Carnotite ores-----	5,506	5,246	260
Value of all products <sup>2</sup> -----	\$1,484,409	\$1,472,664	\$11,745
Number of persons engaged, total-----	469	446	23
Wage earners (average for the year, including inactive periods)-----	365	378	5
Salaried employees-----	63	63	
Proprietors and firm members-----	23	5	18
Performing manual labor-----	20	3	17
Principal expenses designated below, total-----	\$1,045,523	\$1,038,156	\$7,367
Wages-----	\$500,906	\$496,712	\$4,194
Salaries-----	\$112,276	\$112,276	
Supplies and materials-----	\$246,877	\$244,334	\$2,543
Fuel-----	\$140,897	\$140,237	\$660
Purchased electric energy-----			
Contract work-----	\$44,567	\$44,567	
Cost of buildings, machinery, and equipment erected or installed during year-----	\$265,269	\$262,859	\$2,410
Buildings-----	\$76,979	\$76,869	\$110
Machinery and equipment-----	\$188,290	\$185,990	\$2,300
Purchased in new condition-----	\$168,544	\$168,544	
Purchased in used condition-----	\$19,746	\$17,446	\$2,300
Number of man-shifts worked by wage earners-----	110,966	7109,942	81,024
Number of man-hours worked by wage earners-----	987,629	9879,437	8,192
Average number of full days operations were active-----	254	260	78
Average number of hours worked per shift-----	8.0	8.0	8.0
Average hourly earning of wage earners-----	\$0.56	\$0.56	\$0.51
Horsepower rating of power equipment, total-----	6,994	6,824	170
Per wage earner-----	18.3	18.1	34.0
Stationary equipment <sup>10</sup> -----	4,413	4,321	92
Mobile equipment <sup>11</sup> -----	2,581	2,503	78
Electric energy consumed (thousands of kw.-hrs.) <sup>12</sup> total-----	2,044	2,044	
Quantity of fuels consumed: 13			
Bituminous coal (tons of 2,000 pounds)-----	26,506	26,506	
Fuel oils (barrels of 42 gallons)-----	7,618	7,606	12
Gasoline and kerosene (gallons)-----	43,460	40,533	2,927

<sup>1</sup>Figures cover producing operations (mines, plants, or mines and plants operated together) engaged principally in mining or treating ores valued chiefly for their vanadium and uranium content. Statistics presented in the column headed "Large operations" cover operations for which value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500; these operations are ordinarily regarded as coming within the scope of the census survey. Complex concentrates containing over 200,000 pounds of vanadium valued at less than \$30,000 were recovered at operations engaged principally in the recovery of materials valued chiefly for their gold content.

<sup>2</sup>Arizona, 1; Colorado, 4; and Utah, 3. One of the mines used open-cut methods and 3 used combination open-cut and underground methods; the remaining 4 mines were underground operations.

<sup>3</sup>Arizona, 1; Colorado, 6; and Utah, 7.

<sup>4</sup>Arizona, 1; Colorado, 3; and Utah, 2 (including one mill at which only mechanical concentration processes were employed).

<sup>5</sup>Arizona.

<sup>6</sup>Includes mine value of ore mined but not treated during 1939, mill value of the concentrates and salts produced in 1939 from ores mined during 1939, value added in 1939 by treating ores produced prior to 1939, and value of miscellaneous secondary products. The latter amounted to almost \$100,000.

<sup>7</sup>Of this number, 108,517 were worked on days when mines or plants were actively engaged in production or development work; the remainder was worked on inactive days when only such wage earners as watchmen and maintenance men were employed. In addition, it is estimated, 225 man-shifts were worked by proprietors or firm members performing manual labor.

<sup>8</sup>Represents employment on active days. No employment was reported for inactive days.

<sup>9</sup>Of this number, 868,037 man-hours were worked on active days and the remainder on inactive days.

<sup>10</sup>Aggregate horsepower rating of engines, motors, etc. for driving stationary or fixed equipment such as mine hoists, pumps, crushers, ventilating fans, and compressors.

<sup>11</sup>Aggregate horsepower rating of engines, motors, etc. for driving mobile equipment such as power shovels, trucks, and tractors.

<sup>12</sup>Energy generated by reporting companies only. No purchased energy was reported.

<sup>13</sup>No anthracite or natural gas was reported consumed.

TABLE 2.—NUMBER OF WAGE EARNERS IN THE VANADIUM AND URANIUM ORE INDUSTRY IN THE UNITED STATES, BY MONTH: 1939 <sup>1</sup>

(For "large" producing operations only)

MONTH	Number	MONTH	Number	MONTH	Number
Average-----	378	April-----	353	September-----	381
January-----	325	May-----	385	October-----	383
February-----	337	June-----	377	November-----	403
March-----	400	July-----	356	December-----	410
		August-----	381		

<sup>1</sup>Figures refer only to "large" operations, for which value of products, reported principal expenses, or cost of buildings, machinery, and equipment during the year amounted to at least \$2,500 (see table 1, footnote 1).

TABLE 3.—QUANTITY AND VALUE OF VANADIUM AND URANIUM ORES AND CONCENTRATES AND VANADIUM SALTS, AND ESTIMATED METAL CONTENT OF VANADIUM AND URANIUM MATERIALS, PRODUCED AT VANADIUM AND URANIUM MINES AND PLANTS IN THE UNITED STATES: 1939 <sup>1</sup>

ITEM	QUANTITY			VALUE AT MINES OR PLANTS		
	Total	Large operations	Small operations	Total	Large operations	Small operations
Crude ores mined (tons of 2,000 pounds) <sup>2</sup> -----	104,558	103,846	712	\$689,740	\$678,024	\$11,716
Vanadium content (pounds)-----	1,865,774	1,835,917	29,857			
Uranium content (pounds)-----	51,841	45,908	5,933			
Radium content (milligrams) <sup>3</sup> -----	7,842	6,944	898			
Ores made available for chemical treatment (tons) <sup>4</sup> -----	103,784	103,149	635	698,772	687,027	11,745
Vanadium content (pounds)-----	1,855,732	1,826,034	29,698			
Uranium content (pounds)-----	51,841	45,908	5,933			
Radium content (milligrams) <sup>3</sup> -----	7,842	6,944	898			
Ores chemically treated (tons) <sup>5</sup> -----	89,540	89,540		658,120	658,120	
Vanadium content (pounds)-----	1,834,761	1,834,761				
Uranium content (pounds)-----	37,212	37,212				
Radium content (milligrams) <sup>3</sup> -----	5,829	5,829				
Vanadium salts recovered from material chemically treated (pounds) <sup>6</sup> -----	2,703,654	2,703,654		1,345,339	1,345,339	
Vanadium content (pounds)-----	1,306,292	1,306,292				

<sup>1</sup>For definition of the industry, distinction between "large" and "small" operations, and vanadium produced in other mineral industries see table 1, footnote 1.

<sup>2</sup>Of the total quantity of ores mined, 5,506 tons were carnotite ores that contained all of the uranium and radium indicated and 187,757 pounds of the vanadium.

<sup>3</sup>Computed on basis of 258.58 milligrams of radium per ton of uranium oxide (U<sub>3</sub>O<sub>8</sub>).

<sup>4</sup>Represents ores available for chemical treatment, some of them after treatment by mechanical processes. All of the ores mined by the industry must be chemically treated (by the industry or outside the industry) before the valuable salts of radium, uranium, or vanadium can be recovered.

<sup>5</sup>Differences between figures for materials chemically treated in 1939 by the industry and materials made available for chemical treatment in 1939 by the industry are due largely to the shipment of some untreated material for treatment at establishments outside the industry. Some material, furthermore, was stocked for treatment after 1939. On the other hand, the industry treated in 1939 some material mined before 1939.

<sup>6</sup>In addition, slimes containing nearly 700 milligrams of radium were recovered. The industry also produced salt brine. No uranium salts were recovered.

TABLE 4.—EMPLOYMENT AND WORKING TIME IN THE VANADIUM AND URANIUM ORE INDUSTRY IN THE UNITED STATES: 1939 <sup>1</sup>

(For "large" producing operations only)

Average number of wage earners on active days, total-----	417	Number of man-shifts worked by wage earners, total-----	109,942
At mines, total-----	214	On active days, total-----	108,517
Underground-----	146	At mines, total-----	52,120
Open pits-----	58	Underground-----	36,605
Surface shops and yards-----	30	Open pits-----	10,450
At preparation plants-----	205	Surface shops and yards-----	5,065
		At preparation plants-----	56,397
		On inactive days-----	1,425
Average number of equivalent full days operations were active <sup>2</sup> -----	260	Number of man-hours worked by wage earners, total-----	879,457
At mines <sup>2</sup> -----	244	On active days, total-----	868,037
Underground <sup>2</sup> -----	251	At mines, total-----	418,980
Open pits <sup>2</sup> -----	274	Underground-----	292,840
Surface shops and yards <sup>2</sup> -----	170	Open pits-----	85,440
At preparation plants <sup>2</sup> -----	278	Surface shops and yards-----	40,680
		At preparation plants-----	451,077
		On inactive days-----	11,400

<sup>1</sup>For definition of the industry see table 1, footnote 1.

<sup>2</sup>Number of man-shifts worked on active days in each department divided by average number of wage earners on active days in corresponding department.

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TABLE 5.—NUMBER OF OPERATIONS IN THE VANADIUM AND URANIUM ORE INDUSTRY WORKING ONE, TWO, OR THREE SHIFTS AND NUMBER OF MAN-SHIFTS WORKED, BY SHIFT: 1939<sup>1</sup>

(For "large" producing operations only)

OPERATION OR DEPARTMENT	NUMBER OF OPERATIONS WORKING—				NUMBER OF MAN-SHIFTS WORKED BY WAGE EARNERS ON ACTIVE DAYS			
	Total	One shift	Two shifts	Three shifts	Total	During first shift	During second shift	During third shift
Total	(2)	(2)	(2)	(2)	108,517	104,509	2,025	1,983
At mines	8	8	—	—	52,120	52,120	—	—
At preparation plants	6	2	—	4	56,397	52,389	2,025	1,983

<sup>1</sup>For definition of the industry see table 1, footnote 1.  
<sup>2</sup>Not significant.

TABLE 6.—NUMBER AND HORSEPOWER RATING OF PRIME MOVERS AND ELECTRIC MOTORS IN THE VANADIUM AND URANIUM ORE INDUSTRY IN THE UNITED STATES: 1939<sup>1</sup>

(For "large" producing operations only)

TYPE OF EQUIPMENT	TOTAL		STATIONARY EQUIPMENT		MOBILE EQUIPMENT	
	Number of units	Horsepower rating	Number of units	Horsepower rating	Number of units	Horsepower rating
Prime movers and electric motors driven by purchased energy, total	80	6,824	39	4,321	41	2,503
Prime movers, total	80	6,824	39	4,321	41	2,503
Driving generators	14	2,348	14	2,348	—	—
Not driving generators	66	4,476	25	1,973	41	2,503
Ordinarily idle <sup>2</sup>	8	1,200	6	1,160	2	40
Electric motors driven by purchased energy	—	—	—	—	—	—
Electric motors driven by energy generated by reporting companies	176	1,730	176	1,730	—	—

<sup>1</sup>For definition of the industry see table 1, footnote 1.  
<sup>2</sup>Included in preceding categories.

TABLE 7.—PRINCIPAL STATISTICS FOR SMALL NONPRODUCING VANADIUM AND URANIUM MINES IN THE UNITED STATES: 1939<sup>1</sup>

Number of operating companies	218	Cost of buildings, machinery, and equipment erected or installed during year	—
Number of mines	118	Horsepower rating of power equipment	—
Number of persons engaged, total	24	Electric energy consumed (thousands of kw.-hrs.)	—
Wage earners (average for the year)	8	Number of man-shifts worked by wage earners	51,580
Salaried employees	—	Number of man-hours worked by wage earners	12,514
Proprietors and firm members	16	Average number of hours worked per shift	7.7
Performing manual labor	14		
Principal expenses designated below, total <sup>4</sup>	\$5,701		
Wages	\$4,930		
Supplies and materials	\$771		

<sup>1</sup>Figures cover mines that produced vanadium and uranium ores in previous years or were preparing to produce such ores but had no products during 1939 and for which neither the reported principal expenses nor cost of buildings, machinery, and equipment during the year amounted to as much as \$2,500. Statistics for these operations have not been included in other tables. No larger nonproducing mines were reported for 1939.

<sup>2</sup>One of these companies also operated a small producing mine.

<sup>3</sup>Arizona, 5; Colorado, 8; Nevada, 1; and Utah, 4.

<sup>4</sup>No expenditures were reported for salaries, fuel, purchased electric energy, or contract work.

<sup>5</sup>Of this number, 1,200 were worked on active days and the remainder on inactive days. In addition, it is estimated, 1,195 man-shifts were worked by proprietors or firm members performing manual labor.

<sup>6</sup>Of this number, 9,064 man-hours were worked on active days and the remainder on inactive days.