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U. S. DEPARTMENT OF THE INTERIOR
HAROLD L. ICKES, Secretary
BUREAU OF MINES
JOHN W. FINCH, Director

STATISTICAL APPENDIX TO
MINERALS YEARBOOK

1934

O. E. KIESSLING
Chief Economist, Division of Mineral Statistics



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1935

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INTRODUCTION

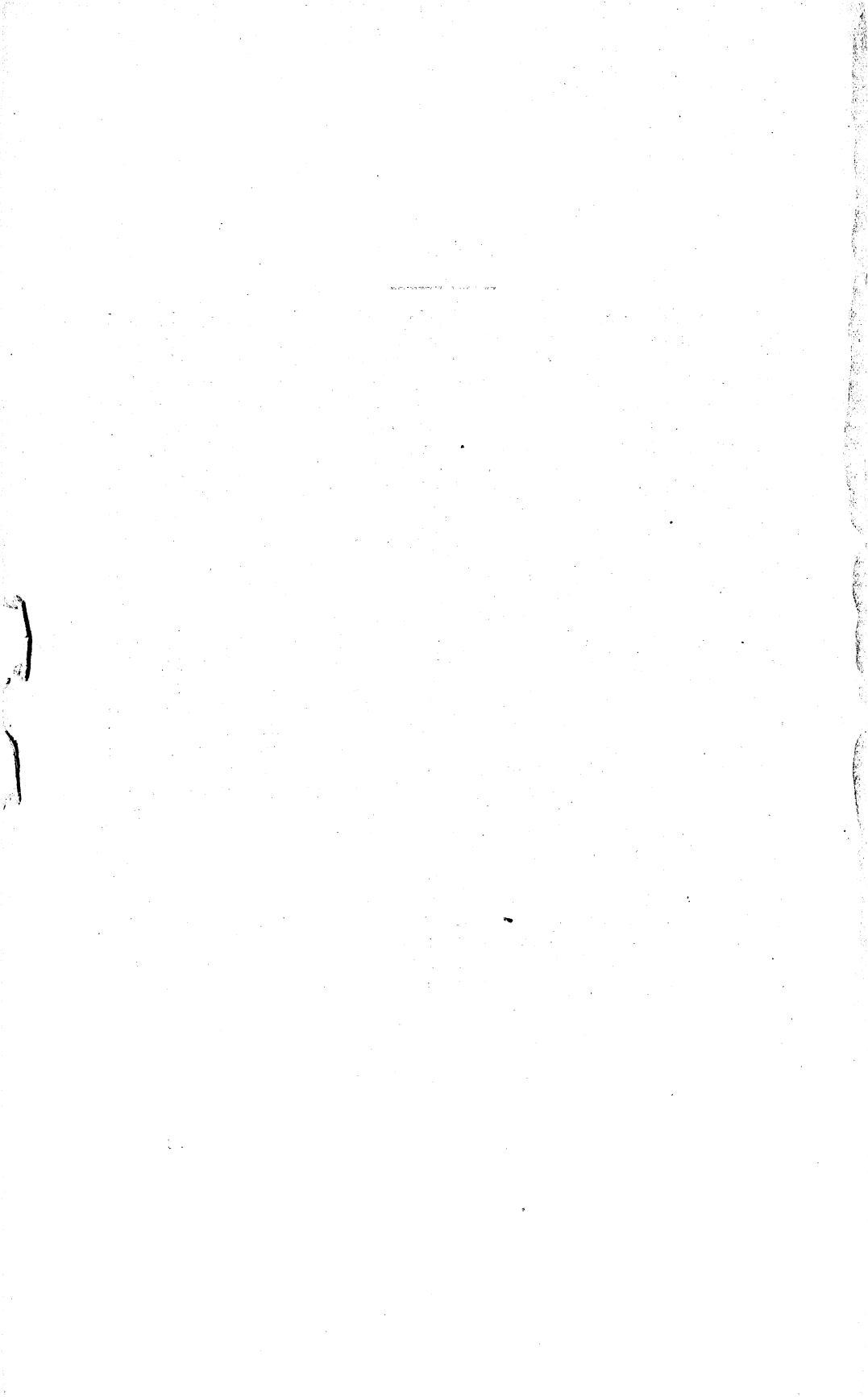
To expedite prompt release of basic statistical information in 1933 the Bureau of Mines replaced the annual volume "Mineral Resources of the United States" with the "Minerals Yearbook." A rigorous schedule for completion of canvasses must be maintained to assemble the manuscript for the Minerals Yearbook in time to be sent to the printer in June. Mimeographed summaries of essential statistics of each commodity are released as soon as the figures are compiled.

For some minerals—such as coal or stone, where the number of producers is large—it is physically impossible, with present limited staff and resources, to close the canvasses and prepare the detailed tables until after the Yearbook manuscript has been completed. For these minerals the data included in the Yearbook are subject to slight revision and are supplemented by final detailed tables subsequently published as separate statistical appendixes to the Minerals Yearbook and finally assembled in bound form, as in this volume.

In addition to the introduction and the summary of mineral production 15 chapters of final statistics are included in this volume as supplementary to discussions of specific mineral commodities in the 1934 Yearbook. Fourteen other chapters included in the 1932-33 appendix are not included in the 1934 appendix, as these reports were presented complete in final form in the Minerals Yearbook 1934. The reports thus attaining earlier publication in the 1934 volume were Clay, Coke and Byproducts, Gypsum, Mica, Phosphate Rock, Slate, and the state metal-mining reports for Colorado, New Mexico, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.

Each chapter of the Statistical Appendix was published separately upon completion of detailed compilations, and copies were distributed free by the Bureau to those mineral producers who cooperated in supplying information. Furthermore, a limited number of bound volumes of both the Minerals Yearbook and the Statistical Appendix customarily are distributed to reference libraries and educational institutions. Copies of either the separate chapters or the bound volumes can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a moderate cost. The office of the Superintendent of Documents is in no way connected with the Bureau of Mines, and no money derived from sales reverts to the Bureau.

O. E. KIESSLING.



SUMMARY OF MINERAL PRODUCTION

(MINERAL PRODUCTION BY STATES AND GENERAL SUMMARY)

By M. B. CLARK.

SUMMARY OUTLINE

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Introduction.....	A1	General tables.....	A3
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This report continues, in abbreviated form, the series of annual summaries published as chapters of Mineral Resources and of Statistical Appendix to Minerals Yearbook.

Unit of measurement.—The unit of measurement used by the Bureau of Mines for each mineral product in reports on the mineral resources is that common to the industry concerned, and the variation in these units makes it impracticable, if not impossible, directly to combine and compare the different minerals except as to value, especially because some products are measured by volume, although most are measured by weight.

Elimination of duplication.—In the totals for the United States, shown in the following “general” tables, duplication has been eliminated wherever practicable, and in the State totals given in the State tables virtually all duplication has been eliminated. For instance, in both general and State tables the output of coke is shown, but its value is not included in the totals, as the value of the coal used in its manufacture enters into the value of the coal production, which is included in the totals. The value of the products of the clay industries is included in both general and State totals as representing the first marketable form of the greater part of the clay produced; the quantity and value of the clay mined and sold in the raw state by miners to users of clay are shown separately, but the value is not included in the totals.

In the general tables both iron ore and pig iron are shown, but the value of the pig iron rather than that of the iron ore is included in the totals, as that is considered the better means of presenting the statistics for iron in its first marketable form. For gold, silver, copper, lead, and zinc the value of “smelter output” is included in the general totals, and to account more fully for the value of the ores treated these smelter figures are supplemented by the value of the by-product sulphuric acid. The value of pigments (white lead, red lead, lithopone, litharge, and orange mineral) manufactured from metals is not included in the general tables, as the base from which they are made is included in the output of lead or zinc, whereas the value of sublimed blue lead, sublimed white lead, leaded zinc oxide, and zinc

oxide is included, as these are made in large part direct from the ores and do not enter into the lead or zinc totals, which represent smelter output.

In the State tables also iron ore and pig iron are both shown. As blast-furnace products cannot be distributed according to the States in which the ore is mined, the value of the ore is used in the State totals. For ores of gold, silver, copper, lead, and zinc no values are shown, and in fact none are recorded; instead, for each of these metals the recoverable content of the ores is used as the basis of valuation. The value of the zinc and lead pigments is not included in the State total, as the recoverable zinc and lead content of the ores from which the products were made is included under zinc or lead. The value of the sulphuric acid produced as a byproduct of copper and zinc smelting is not included in the State total, as tracing this product back to the State producing the ore has not been possible.

GENERAL TABLES

Mineral products of the United States, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
METALLIC				
Aluminum.....pounds.....	104, 885, 000	\$20, 453, 000	85, 126, 000	\$16, 174, 000
Antimonial lead.....short tons (2,000 pounds).....	¹ 21, 024	(¹)	¹ 17, 805	(¹)
Antimony:				
Metal.....do.....	² 1, 776	(² ³)	(² ³)	(² ³)
Ore and concentrates.....do.....	900	(⁴)	1, 133	(⁴)
Bauxite.....long tons (2,240 pounds).....	96, 349	548, 168	154, 176	923, 259
Cadmium.....pounds.....	799, 501	(⁵)	2, 276, 933	(⁵)
Chromite.....long tons.....	155	2, 160	843	11, 585
Copper, ⁶ sales value.....pounds.....	544, 009, 948	34, 273, 000	449, 999, 143	28, 800, 000
Ferro-alloys.....long tons.....	218, 646	14, 003, 672	421, 423	28, 653, 794
Gold.....troy ounces.....	2, 449, 032	⁷ 50, 626, 000	2, 556, 246	⁸ 65, 337, 648
Iron:				
Ore ⁹.....long tons.....	5, 331, 201	¹⁰ 12, 898, 011	24, 624, 285	¹⁰ 63, 776, 033
Pig.....do.....	8, 518, 400	126, 032, 714	14, 353, 197	213, 347, 583
Lead (refined), ⁶ sales value.....short tons.....	255, 337	15, 320, 000	259, 616	19, 212, 000
Manganese ore (35 percent or more Mn).....long tons.....	17, 777	377, 222	18, 558	452, 173
Manganiferous ore (5 to 35 percent Mn).....long tons.....	25, 434	92, 135	191, 631	529, 204
Mercury:				
Metal.....flasks (76 pounds net).....	12, 622	731, 129	9, 402	556, 852
Ore.....short tons.....	(⁹)	(¹⁰)	(⁹)	(¹⁰)
Nickel.....do.....	195	88, 515	126	62, 913
Ores (crude), old tailings, etc.:				
Copper.....do.....	12, 319, 000	(¹⁰)	8, 385, 000	(¹⁰)
Copper-lead.....do.....	167, 000	(¹⁰)	126, 000	(¹⁰)
Dry and siliceous (gold and silver).....do.....	8, 226, 000	(¹⁰)	8, 680, 000	(¹⁰)
Lead.....do.....	4, 454, 000	(¹⁰)	3, 213, 000	(¹⁰)
Lead-zinc.....do.....	3, 336, 000	(¹⁰)	4, 894, 000	(¹⁰)
Zinc.....do.....	1, 884, 000	(¹⁰)	3, 236, 000	(¹⁰)
Platinum and allied metals (value at New York City).....troy ounces.....	17, 616	592, 000	51, 539	1, 631, 000
Silver.....do.....	23, 980, 773	6, 762, 578	23, 002, 629	8, 050, 920
Tin (metallic equivalent).....short tons.....	(¹¹)	220	3	2, 100
Titanium ore:				
Ilmenite.....do.....	(⁹)	(⁹)	(⁹)	(⁹)
Rutile.....do.....	(⁹)	(⁹)	(⁹)	(⁹)
Tungsten ore (60 percent concentrates).....do.....	396	218, 394	895	514, 234
Uranium and vanadium ores.....do.....	25, 526	479, 568	105	4, 119
Zinc, ⁶ sales value.....do.....	207, 148	12, 429, 000	306, 010	25, 705, 000
Total value of metallic products (approximate).....		283, 700, 000		411, 300, 000

¹ Figures represent antimonial lead produced at primary refineries from both domestic and foreign primary and secondary sources; no figures for value of antimonial lead available. Estimate of value of primary antimony and lead contents of antimonial lead from domestic sources included in total value of metallic products.

² All from foreign ore; Bureau of Mines not at liberty to publish value for 1932 and figures for 1933.

³ Value not included in total value.

⁴ Bureau of Mines not at liberty to publish figures. Value for 1932 excluded from metallic total as duplicated in content of antimonial lead; that for 1933 included in total value of metallic products.

⁵ Value included in total value of metallic products; Bureau of Mines not at liberty to publish figures.

⁶ Product from domestic ores only.

⁷ Valued at \$20.671834625323 per ounce.

⁸ Includes \$52,842,300, calculated by Bureau of the Mint at legal coinage value (\$20.67+ per ounce), plus \$12,495,348 premium, calculated by Bureau of Mines at average weighted price (\$25.56 per ounce). For details regarding premium on newly mined gold see chapter on Gold and Silver in Minerals Yearbook, 1934.

⁹ Figures not available.

¹⁰ Figures showing values not available.

¹¹ 1,000 pounds.

Mineral products of the United States, 1932-33—Continued

Product	1932		1933	
	Quantity	Value	Quantity	Value
NONMETALLIC				
Arsenious oxide..... short tons	12, 483	\$650, 902	11, 797	\$636, 132
Asbestos..... do	3, 559	105, 292	4, 745	130, 677
Asphalt:				
Native..... do	340, 019	1, 942, 943	313, 135	1, 705, 310
Oil (including road oil) ³ do	2, 308, 735	* 14, 898, 492	2, 122, 458	* 15, 946, 191
Barite (crude)..... do	129, 854	745, 955	167, 880	852, 611
Borates (naturally occurring sodium borates)				
..... short tons	181, 915	3, 023, 844	188, 047	3, 436, 377
Bromine..... pounds	5, 727, 561	1, 182, 569	10, 147, 960	2, 040, 352
Calcium-magnesium chloride..... short tons	66, 286	1, 163, 585	57, 813	893, 442
Cement..... barrels (376 pounds net)	81, 368, 031	82, 718, 197	64, 715, 171	86, 172, 365
Clay:				
Products ¹²		89, 024, 341		94, 726, 786
Raw ¹ short tons	1, 391, 816	* 5, 201, 609	1, 840, 173	* 6, 840, 617
Coal:				
Bituminous ¹³ do	309, 709, 872	408, 677, 000	333, 630, 533	445, 788, 000
Pennsylvania anthracite..... do	49, 855, 231	222, 375, 129	49, 541, 344	206, 718, 405
Coke ² do	21, 738, 730	* 104, 336, 616	27, 555, 378	* 122, 844, 027
Diatomite and tripoli ¹⁴ do	14, 775	232, 700	20, 878	350, 383
Emery..... do	250	2, 781	1, 056	12, 283
Feldspar (crude)..... long tons	104, 715	539, 641	150, 633	773, 826
Fluorspar..... short tons	25, 251	392, 499	72, 930	1, 039, 178
Fuller's earth..... do	252, 902	2, 440, 736	251, 158	2, 815, 974
Garnet for abrasive purposes..... do	1, 950	147, 350	2, 794	224, 717
Gems and precious stones..... do				(15)
Graphite: Amorphous..... short tons	(16)	(16)	(16)	(16)
Grindstones and pulpstones..... do	7, 668	247, 440	14, 176	444, 250
Gypsum..... do	1, 416, 274	12, 906, 286	1, 335, 192	11, 927, 478
Helium..... cubic feet	(17)	(17)	(17)	(17)
Lime..... short tons	1, 959, 990	12, 302, 231	2, 269, 280	14, 253, 659
Magnesite (crude)..... do	38, 462	283, 304	108, 187	840, 000
Mica:				
Scrap..... do	7, 040	83, 777	8, 751	98, 159
Sheet..... pounds	338, 997	45, 882	364, 540	53, 179
Millstones..... do		4, 450		8, 387
Mineral paints:				
Natural pigments ¹⁸ short tons	(18)	(18)	(18)	(18)
Zinc and lead pigments ¹⁹ do	92, 812	9, 821, 267	129, 355	13, 193, 627
Mineral waters..... gallons sold	(19)	(19)	(19)	(19)
Natural gas..... M cubic feet	1, 555, 990, 000	384, 632, 000	1, 555, 474, 000	368, 540, 000
Natural gasoline..... gallons	1, 523, 800, 000	49, 244, 000	1, 420, 000, 000	54, 368, 000
Oilstones, etc..... short tons	331	63, 960	587	96, 597
Peat..... do	(20)	(20)	(20)	(20)
Petroleum..... barrels (42 gallons)	785, 159, 000	680, 460, 000	905, 656, 000	608, 000, 000
Phosphate rock..... long tons	1, 706, 904	5, 738, 493	2, 490, 312	7, 872, 362
Potassium salts..... short tons	²⁰ 55, 620	2, 102, 590	²⁰ 139, 067	5, 296, 793
Pumice..... do	53, 214	235, 204	61, 220	241, 834
Pyrites..... long tons	²¹ 139, 703	²¹ 498, 570	284, 311	769, 942
Salt..... short tons	²¹ 6, 407, 973	²¹ 19, 938, 830	7, 604, 972	22, 318, 086
Sand and gravel:				
Glass sand..... do	1, 370, 255	2, 266, 564	1, 781, 423	3, 011, 023
Sand (molding, building, etc.) and gravel..... short tons	118, 667, 642	55, 255, 512	105, 973, 926	50, 061, 887
Sand-lime brick ²² thousands	52, 853	433, 118	22, 904	195, 318
Silica (quartz)..... short tons	7, 487	59, 158	11, 153	71, 048
Slate..... do	284, 240	3, 104, 300	259, 620	2, 696, 185
Stone ²³ do	70, 644, 310	89, 063, 608	70, 222, 210	80, 945, 608

³ Value not included in total value.¹² Figures obtained through cooperation with Bureau of the Census.¹³ Includes brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.¹⁴ Figures represent tripoli only. Value of diatomite included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures.¹⁵ No canvass. Estimate of value included in total value of nonmetallic products.¹⁶ Value included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures.¹⁷ Value included in total value of nonmetallic products. For details of production in fiscal years see chapter on Helium in Minerals Yearbook, 1934.¹⁸ Canvass discontinued after 1915. Value of iron ore sold for paint included under last item ("Un-specified").¹⁹ Sublimed blue lead, sublimed white lead, leaded zinc oxide, and zinc oxide.²⁰ Equivalent as K₂O.²¹ Revised figures.²² According to Bureau of the Census.²³ Figures include soapstone used as dimension stone; such soapstone in earlier years included under "Talc and soapstone."

Mineral products of the United States, 1932-33—Continued

Product	1932		1933	
	Quantity	Value	Quantity	Value
NONMETALLIC—continued				
Sulphur..... long tons..	1, 108, 852	\$20, 000, 000	1, 637, 368	\$29, 500, 000
Sulphuric acid (60° Baumé) from copper and zinc smelters..... short tons..	600, 334	4, 028, 738	656, 102	4, 337, 983
Talc and soapstone ²⁴ do.....	123, 221	1, 361, 633	160, 554	1, 681, 324
Total value of nonmetallic products (approximate).....		2, 172, 000, 000		2, 133, 100, 000
SUMMARY				
Total value of metallic products.....		283, 700, 000		411, 300, 000
Total value of nonmetallic products (exclusive of mineral fuels).....		428, 400, 000		449, 550, 000
Total value of mineral fuels.....		1, 743, 600, 000		1, 683, 550, 000
Total value of "unspecified" (metallic and nonmetallic) products (partly estimated) ²⁵		6, 000, 000		²⁵ 10, 900, 000
Grand total approximate value of mineral products.....		2, 461, 700, 000		2, 555, 300, 000

²⁴ Figures represent talc in 1932 and talc and ground soapstone in 1933. Value of ground soapstone in 1932 included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures. In both years soapstone used as dimension stone included in figures for stone.

²⁵ Includes for 1933 the value of bismuth, cadmium compounds, chats (\$530,074), flint lining for tube mills and pebbles for grinding (\$47,011), iodine (\$669,289), iron ore sold for magnets, iron ore sold for paint (\$3,435), lithium minerals (\$12,997), new ingot magnesium (\$377,181), natural magnesium salts (\$1,097,042), calcareous marl (\$34,865), greensand marl (\$206,985), micaceous minerals (\$83,273), molybdenum (\$4,316,000), selenium, silica sand and sandstone (finely ground) (\$891,921), sodium salts (carbonates and sulphates) from natural sources (\$1,163,535), tantalum ore (\$180), tellurium, and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Bureau of Mines.

Value of mineral products of the United States, 1880-1933

Year	Metallic		Nonmetallic		Unspeci- fied (me- talic and nonme- talic)	Total	
	Value	Increase or de- crease (per- cent)	Value	Increase or de- crease (per- cent)		Value	Increase or de- crease (per- cent)
1880	\$187,881,000	(1)	\$173,582,000	(1)	\$6,000,000	\$367,463,000	(1)
1881	189,413,000	+0.8	207,207,000	+19	6,500,000	403,120,000	+10
1882	215,820,000	+14	230,786,000	+11	6,500,000	453,108,000	+12
1883	197,881,000	-8	243,680,000	+6	6,500,000	448,061,000	-1
1884	180,284,000	-9	221,756,000	-9	5,000,000	407,040,000	-9
1885	172,218,000	-4	242,333,000	+9	5,000,000	419,551,000	+3
1886	204,400,000	+19	250,995,000	+4	790,000	456,185,000	+9
1887	240,791,000	+18	294,057,000	+17	785,000	535,633,000	+17
1888	242,010,000	+5	310,889,000	+6	900,000	553,799,000	+3
1889	250,325,000	+3	291,004,000	-6	997,000	542,326,000	-2
1890	303,440,000	+21	310,995,000	+7	994,000	615,429,000	+13
1891	280,485,000	-8	319,364,000	+3	1,000,000	600,849,000	-2
1892	283,715,000	+1	337,517,000	+6	1,000,000	622,232,000	+4
1893	223,154,000	-21	321,339,000	-5	1,000,000	545,493,000	-12
1894	186,835,000	-16	362,410,000	+13	1,000,000	550,245,000	+9
1895	248,033,000	+33	393,658,000	+9	1,000,000	642,691,000	+17
1896	252,075,000	+2	387,966,000	-1	1,000,000	641,041,000	-3
1897	269,934,000	+7	380,678,000	-2	1,000,000	651,612,000	+2
1898	308,247,000	+14	417,795,000	+10	1,000,000	727,042,000	+12
1899	483,521,000	+57	525,575,000	+26	1,000,000	1,010,096,000	+39
1900	513,732,000	+6	594,204,000	+13	1,000,000	1,108,936,000	+10
1901	493,314,000	-4	660,764,000	+11	1,000,000	1,155,078,000	+4
1902	604,517,000	+23	722,434,000	+9	1,000,000	1,327,951,000	+15
1903	588,753,000	-3	905,628,000	+25	1,000,000	1,495,381,000	+13
1904	501,114,000	-15	857,667,000	-5	400,000	1,359,181,000	-9
1905	702,585,000	+40	920,780,000	+7	400,000	1,623,765,000	+19
1906	886,180,000	+26	1,014,500,000	+10	200,000	1,900,880,000	+17
1907	904,108,000	+2	1,165,376,000	+15	86,000	2,069,570,000	+9
1908	550,768,000	-39	1,040,761,000	-11	244,000	1,591,773,000	-23
1909	754,944,000	+37	1,131,866,000	+9	297,000	1,887,107,000	+19
1910	749,879,000	-7	1,237,668,000	+9	297,000	1,987,844,000	+5
1911	680,907,000	-9	1,242,942,000	+4	232,000	1,924,081,000	-3
1912	862,008,000	+27	1,375,420,000	+11	366,000	2,237,794,000	+16
1913	878,869,000	+2	1,554,298,000	+13	378,000	2,433,545,000	+9
1914	686,639,000	-22	1,424,063,000	-8	470,000	2,111,172,000	-13
1915	991,730,000	+44	1,400,484,000	-2	2,430,000	2,394,644,000	+13
1916	1,620,745,000	+63	1,884,413,000	+35	3,281,000	3,508,439,000	+47
1917	2,086,234,000	+29	2,900,462,000	+54	5,800,000	4,992,496,000	+42
1918	2,153,318,000	+3	3,380,690,000	+17	6,700,000	5,540,708,000	+11
1919	1,359,744,000	-37	3,232,626,000	-4	3,400,000	4,595,770,000	-17
1920	1,762,350,000	+30	5,214,170,000	+61	4,820,000	6,981,340,000	+52
1921	654,130,000	-63	3,481,720,000	-33	2,650,000	4,138,500,000	-41
1922	987,180,000	+51	3,656,410,000	+5	3,700,000	4,647,290,000	+12
1923	1,510,930,000	+53	4,471,620,000	+22	3,950,000	5,986,500,000	+29
1924	1,232,330,000	-18	4,067,730,000	-9	5,740,000	5,305,800,000	-11
1925	1,380,280,000	+12	4,291,100,000	+5	6,250,000	5,677,630,000	+7
1926	1,402,920,000	+2	4,803,080,000	+12	7,600,000	6,213,600,000	+9
1927	1,217,700,000	-13	4,304,100,000	-10	8,200,000	5,530,000,000	-11
1928	1,284,580,000	+5	4,091,620,000	-5	9,000,000	5,385,200,000	-3
1929	1,475,990,000	+15	4,401,180,000	+8	10,430,000	5,887,600,000	+9
1930	982,550,000	-33	3,773,400,000	-14	8,850,000	4,764,800,000	-19
1931	567,200,000	-42	2,592,100,000	-31	7,300,000	3,166,600,000	-34
1932	283,700,000	-50	2,172,000,000	-16	6,000,000	2,461,700,000	-22
1933	411,300,000	+45	2,133,100,000	-2	10,900,000	2,555,300,000	+4
Grand total	38,643,690,000	-----	88,323,962,000	-----	173,337,000	127,140,989,000	-----

¹ Figures for earlier years not available.

SUMMARY OF MINERAL PRODUCTION

A7

Value of mineral products of the United States, 1929-33, by States¹

State	1929	1930	1931	1932	1933
Alabama	\$65,402,354	\$55,461,985	\$38,506,558	\$19,170,152	\$23,291,204
Alaska	15,946,830	13,707,235	12,371,057	11,526,387	12,680,771
Arizona	157,959,792	82,933,802	41,602,929	15,203,724	12,570,753
Arkansas	41,324,576	34,901,476	18,692,379	15,540,325	12,710,203
California	555,001,213	479,049,507	304,538,557	286,683,332	292,978,662
Colorado	55,331,911	46,270,545	32,970,230	25,800,227	27,259,095
Connecticut	7,053,468	5,485,120	4,299,790	1,910,803	1,550,594
Delaware	467,493	424,901	394,579	300,426	135,397
District of Columbia	1,064,946	1,288,344	281,980	1,819,017	423,233
Florida	14,803,606	15,484,206	10,850,806	7,107,866	8,843,896
Georgia	15,294,103	12,830,845	10,290,593	6,292,609	6,087,147
Idaho	32,142,685	22,903,659	13,177,427	9,477,884	12,429,155
Illinois	182,791,131	148,311,418	108,065,936	71,692,511	74,837,452
Indiana	96,961,947	79,226,808	50,852,088	34,602,723	34,010,753
Iowa	35,954,895	33,357,958	21,614,611	18,522,625	15,154,652
Kansas	124,472,480	100,253,311	56,804,312	58,471,164	57,974,881
Kentucky	132,649,508	111,691,254	74,868,106	59,076,459	65,536,454
Louisiana	62,725,997	71,929,038	61,692,802	61,097,004	54,886,010
Maine	6,748,799	6,227,528	4,889,282	3,174,278	2,593,871
Maryland	18,469,568	14,959,695	11,830,323	7,233,821	7,014,570
Massachusetts	16,030,807	12,722,974	11,170,497	8,058,615	4,917,110
Michigan	151,975,563	111,405,530	62,785,908	34,713,951	54,222,848
Minnesota	136,349,610	103,931,377	55,275,230	12,272,622	42,472,038
Mississippi	2,572,616	1,774,621	2,387,771	2,718,919	2,765,988
Missouri	78,948,484	69,074,500	41,805,772	29,245,055	30,588,018
Montana	93,842,135	50,995,123	32,359,904	19,023,093	21,662,089
Nebraska	4,844,542	4,962,012	3,623,426	1,548,486	2,047,335
Nevada	36,775,743	24,075,375	14,963,785	6,568,283	7,455,493
New Hampshire	3,725,951	3,337,169	2,796,132	1,351,554	1,457,041
New Jersey	71,891,861	57,206,357	41,632,683	23,073,173	22,580,043
New Mexico	37,127,621	31,850,263	25,349,712	20,263,883	23,354,681
New York	109,361,349	99,622,368	78,007,467	50,175,726	42,940,471
North Carolina	10,963,596	7,462,450	5,554,190	2,466,311	3,350,800
North Dakota	3,465,563	3,056,493	2,271,454	2,385,735	2,960,811
Ohio	220,061,343	186,971,555	130,927,783	87,996,538	91,145,600
Oklahoma	516,685,232	390,170,991	181,904,857	185,120,909	172,560,924
Oregon	6,876,703	6,169,898	5,045,307	2,989,353	3,521,626
Pennsylvania	892,913,833	778,523,421	594,642,736	424,734,073	421,846,539
Rhode Island	939,602	1,209,227	792,911	506,325	386,983
South Carolina	3,592,112	3,341,051	3,031,459	950,693	1,014,182
South Dakota	8,914,344	11,075,808	11,338,739	11,118,029	14,658,504
Tennessee	40,719,706	32,499,380	24,461,447	14,561,792	16,771,369
Texas	495,819,500	450,373,151	302,201,046	360,141,325	365,674,433
Utah	115,131,131	64,224,307	40,301,788	22,620,230	24,311,851
Vermont	14,602,589	11,637,393	8,421,911	6,401,143	5,792,574
Virginia	39,752,683	24,602,749	26,150,641	16,927,446	18,845,740
Washington	22,435,359	20,075,844	14,800,603	12,816,678	9,387,645
West Virginia	346,594,746	290,118,914	221,734,789	156,643,214	172,726,605
Wisconsin	24,222,229	17,711,394	11,843,343	7,414,456	7,153,881
Wyoming	51,237,407	46,735,184	30,892,663	27,343,288	22,025,393

¹ In this table iron ore, not pig iron, is taken as the basis of valuation of iron, and in the case of other metals mine production (recoverable content of metals) is the basis.

Mineral products of the United States and principal producing States in 1933

Rank in value	Product	Principal producing States ¹	
		In order of quantity	In order of value
19	Aluminum	New York, Tennessee, North Carolina	Rank same as for quantity.
(²)	Antimonial lead	Not separable by States	Not separable by States.
75	Antimony ore	Idaho	Rank same as for quantity.
51	Arsenious oxide	Montana, Utah, Idaho	Do.
68	Asbestos	Vermont, Arizona, Maryland, Montana	Do.
	Asphalt:		
26	Native	Texas, Alabama, Kentucky, Oklahoma	Utah, Kentucky, Texas, Alabama.
20	Oil	Not separable by States	Not separable by States.
46	Barite (crude)	Missouri, Georgia, California, Tennessee	Rank same as for quantity.
43	Bauxite	Arkansas, Alabama, Georgia	Do.
54	Bismuth	Not separable by States	Not separable by States.
32	Borates	California	Rank same as for quantity.
31	Briquets, fuel	Wisconsin, West Virginia, Pennsylvania, Massachusetts	Wisconsin, Oregon, Massachusetts, Pennsylvania.
35	Bromine	Michigan, California, West Virginia, Ohio	Michigan, California, West Virginia, Oklahoma.
39	Cadmium (metal and compounds)	Not separable by States	Not separable by States.
44	Calcium-magnesium chloride	Michigan, Oklahoma, West Virginia, Ohio	Rank same as for quantity.
7	Cement	Pennsylvania, California, Illinois, New York	Pennsylvania, California, New York, Texas.
53	Chats	Missouri, Oklahoma, Kansas	Missouri, Kansas, Oklahoma.
81	Chromite	California	Rank same as for quantity.
6	Clay products		Ohio, Pennsylvania, West Virginia, New Jersey.
26	Clay, raw	Pennsylvania, Georgia, Missouri, Ohio	Georgia, Pennsylvania, Missouri, South Carolina.
1	Coal:		
	Bituminous	West Virginia, Pennsylvania, Illinois, Kentucky	Pennsylvania, West Virginia, Illinois, Kentucky.
	Pennsylvania anthracite	Pennsylvania	Rank same as for quantity.
5	Coke	Pennsylvania, Ohio, New York, Michigan	Pennsylvania, New York, Ohio, Indiana.
14	Copper	Arizona, Utah, Montana, Michigan	Rank same as for quantity.
41	Diatomite	California, Oregon, Washington, Nevada	California, Oregon, Washington, New York.
30	Emery	New York	Rank same as for quantity.
48	Feldspar (crude)	North Carolina, Virginia, New Hampshire, Maine	North Carolina, New Hampshire, Virginia, Maine.
15	Ferro-alloys	Pennsylvania, New York, Ohio, Iowa	Pennsylvania, New York, Ohio, West Virginia.
77	Flint lining for tube mills	Minnesota	Rank same as for quantity.
42	Fluorspar	Illinois, Kentucky, New Mexico, Colorado	Do.
34	Fuller's earth	Georgia, Florida, Texas, Illinois	Do.
34	Garnet, abrasive	New York, New Hampshire	Do.
63	Gems and precious stones	No canvass for 1933.	No canvass for 1933.
(³)	9	California, South Dakota, Alaska, Colorado	Rank same as for quantity.
	Gold		Do.
82	Graphite	Nevada, Michigan	Do.
59	Grindstones and pulpstones	Ohio, West Virginia, Washington	Do.
23	Gypsum	New York, Michigan, Iowa, Texas	Do.
67	Hellum	Texas	Do.
50	Iodine (natural)	California, Louisiana	Do.
10	Iron ore	Minnesota, Michigan, Alabama, Wisconsin	Do.

4	Iron, pig	Ohio, Pennsylvania, Indiana, Illinois	Pennsylvania, Ohio, Illinois, Indiana.
18	Lead	Missouri, Idaho, Utah, Oklahoma	Rank same as for quantity.
21	Lime	Ohio, Pennsylvania, Missouri, West Virginia	Do.
79	Lithium minerals	South Dakota, New Mexico	Do.
47	Magnesite	Washington, California	Do.
60	Magnesium	Michigan	Do.
40	Magnesium salts (natural)	Michigan, Oklahoma, California, Washington	Michigan, California, Oklahoma, Washington.
58	Manganese ore	Montana, Virginia, Arkansas, Georgia	Rank same as for quantity.
55	Manganiferous ore	Minnesota, Georgia, Michigan, Alabama	Do.
	Marl:		
74	Calcareous	West Virginia, Ohio, Virginia, Nevada	Ohio, West Virginia, Nevada, Virginia.
64	Greensand	New Jersey	Rank same as for quantity.
52	Mercury	California, Texas, Oregon, Nevada	Do.
66	Mica	North Carolina, New Hampshire, Colorado, New Mexico	North Carolina, New Hampshire, Connecticut, New Mexico.
	Scrap	do.	Do.
	Sheet	New Hampshire, North Carolina, Connecticut, Maine	Rank same as for quantity.
70	Micaceous minerals	Montana, North Carolina, Georgia, California	North Carolina, Georgia, Montana, California.
83	Millstones		New York, North Carolina, Virginia.
22	Mineral paints, zinc and lead pigments	Pennsylvania, Ohio, Indiana, Kansas	Rank same as for quantity.
(*)	Mineral waters	No canvass for 1933.	No canvass for 1933.
30	Molybdenum	Colorado, New Mexico, Arizona, California	Rank same as for quantity.
8	Natural gas	Texas, California, Oklahoma, Louisiana	Texas, California, West Virginia, Louisiana.
11	Natural gasoline	California, Texas, Oklahoma, West Virginia	California, Oklahoma, Texas, West Virginia
73	Nickel	Not separable by States.	Not separable by States.
69	Oilstones, etc.	Ohio, Vermont, Indiana, Arkansas	Ohio, Vermont, Arkansas, Indiana,
(*)	Ores (crude), etc.:		
	Copper	Utah, Nevada, New Mexico, Arizona	Value not available.
	Copper-lead	Idaho, Nevada, New Mexico, Colorado	Do.
	Dry and siliceous (gold and silver)	Alaska, South Dakota, California, Colorado	Do.
	Lead	Missouri, Idaho, Utah, Arizona	Do.
	Lead-zinc	Oklahoma, Kansas, Utah, Idaho	Do.
	Zinc	Oklahoma, Tennessee, Kansas, New Jersey	Do.
(*)	Peat	No canvass for 1933.	No canvass for 1933.
76	Pebbles for grinding	Minnesota, California	Rank same as for quantity.
2	Petroleum	Texas, Oklahoma, California, Kansas	Texas, California, Oklahoma, Kansas.
25	Phosphate rock	Florida, Tennessee, Idaho, Virginia	Rank same as for quantity.
38	Platinum and allied metals	California, Alaska, Oregon	Do.
27	Potassium salts	New Mexico, California, Maryland, Wyoming	Do.
62	Pumice	Kansas, Nebraska, California, Oklahoma	Do.
49	Pyrites	Virginia, Tennessee, California, New York	Tennessee, California, Virginia, New York.
17	Salt	Michigan, New York, Ohio, Kansas	Michigan, New York, Kansas, Ohio.
12	Sand and gravel	New York, California, Illinois, Pennsylvania	Pennsylvania, New York, California, Illinois.
65	Sand-lime brick	New York, Massachusetts, Minnesota, Michigan	Massachusetts, New York, Minnesota, Michigan.
56	Selenium and tellurium ⁴	Not separable by States.	Not separable by States.
71	Silica (quartz)	Missouri, Ohio, Tennessee, New York	Missouri, Tennessee, Wisconsin, Ohio.

¹ Rank of States in metal production (except aluminum, ferro-alloys, and pig iron) arranged according to mine reports, not smelter output.

² Separate figures for antimonial lead from primary sources not available.

³ No canvass for 1933.

⁴ Amorphous only. No crystalline produced in 1933.

⁵ Value not available.

⁶ Separate values for selenium and tellurium not available.

Mineral products of the United States and principal producing States in 1933—Continued

Rank in value	Product	Principal producing States	
		In order of quantity	In order of value
45	Silica sand and sandstone (finely ground) ..	New Jersey, Illinois, Pennsylvania, Ohio	New Jersey, Pennsylvania, Illinois, Ohio.
24	Silver	Idaho, Utah, Montana, Arizona	Rank same as for quantity.
33	Slate	Idaho, Utah, Montana, Arizona	Pennsylvania, Vermont, New York, Virginia.
28	Sodium salts (other than NaCl) from natural sources.	California, Arizona, Nevada, Wyoming	Rank same as for quantity.
8	Stone	Pennsylvania, New York, Michigan, Ohio	Pennsylvania, New York, Indiana, Ohio.
13	Sulphur	Texas, Louisiana, California, Utah	Rank same as for quantity.
29	Sulphuric acid from copper and zinc smelters.	Tennessee, Illinois, Pennsylvania, Oklahoma	Do.
37	Talc and ground soapstone ¹	New York, Vermont, California, North Carolina	Do.
86	Tantalum ore (tantalite)	New Mexico	Do.
85	Tin	Alaska, South Dakota	Do.
	Titanium ore:		
78	Ilmenite	Virginia	Do.
72	Rutile	do	Do.
61	Tripoli	Illinois, Missouri, Oklahoma, Arkansas	Do.
57	Tungsten ore	Nevada, California, Colorado, Washington	Nevada, California, Colorado, Arizona.
84	Uranium and vanadium ores	Colorado, Nevada, Utah	Rank same as for quantity.
16	Zinc	Oklahoma, New Jersey, Kansas, New Mexico	New Jersey, Oklahoma, Kansas, New Mexico.

¹ Exclusive of soapstone used as dimension stone (all from Virginia), which is included in figures for stone.

States and their principal mineral products in 1933 ¹

State	Rank	Percent of total value for United States	Principal mineral products in order of value
Alabama.....	19	1.00	Coal, iron ore, cement, stone.
Alaska.....	28	.54	Gold, coal, lead, silver.
Arizona.....	29	.54	Copper, gold, sand and gravel, silver.
Arkansas.....	27	.54	Petroleum, coal, natural gas, bauxite.
California.....	3	12.55	Petroleum, natural gas, natural gasoline, gold.
Colorado.....	16	1.17	Coal, gold, molybdenum, clay products.
Connecticut.....	45	.07	Stone, clay products, sand and gravel, lime.
Delaware.....	50	.01	Stone, sand and gravel, clay products, silica sand and sandstone (finely ground).
District of Columbia.....	48	.02	Clay products, sand and gravel, stone.
Florida.....	32	.38	Phosphate rock, cement, fuller's earth, stone.
Georgia.....	36	.26	Stone, clay products, fuller's earth, cement.
Idaho.....	30	.53	Lead, silver, zinc, gold.
Illinois.....	7	3.21	Coal, cement, clay products, petroleum.
Indiana.....	14	1.46	Coal, stone, cement, clay products.
Iowa.....	25	.65	Coal, cement, gypsum, sand and gravel.
Kansas.....	9	2.48	Petroleum, natural gas, coal, zinc.
Kentucky.....	8	2.81	Coal, natural gas, petroleum, clay products.
Louisiana.....	10	2.35	Natural gas, petroleum, salt, sulphur.
Maine.....	43	.11	Stone, cement, sand and gravel, clay products.
Maryland.....	35	.30	Coal, sand and gravel, clay products, cement.
Massachusetts.....	38	.21	Stone, sand and gravel, clay products, lime.
Michigan.....	11	2.32	Iron ore, petroleum, salt, cement.
Minnesota.....	13	1.82	Iron ore, stone, sand and gravel, cement.
Mississippi.....	42	.12	Natural gas, sand and gravel, clay products, petroleum.
Missouri.....	15	1.31	Lead, coal, clay products, cement.
Montana.....	22	.93	Natural gas, copper, coal, petroleum.
Nebraska.....	44	.09	Cement, sand and gravel, stone, clay products.
Nevada.....	33	.32	Gold, copper, sand and gravel, zinc.
New Hampshire.....	46	.06	Sand and gravel, stone, clay products, feldspar.
New Jersey.....	20	.97	Clay products, zinc, sand and gravel, stone.
New Mexico.....	18	1.00	Petroleum, coal, potassium salts, zinc.
New York.....	12	1.84	Stone, petroleum, cement, salt.
North Carolina.....	40	.14	Stone, clay products, feldspar, copper.
North Dakota.....	41	.13	Coal, sand and gravel, clay products.
Ohio.....	6	3.91	Natural gas, coal, clay products, petroleum.
Oklahoma.....	5	7.39	Petroleum, natural gas, natural gasoline, zinc.
Oregon.....	39	.15	Stone, sand and gravel, cement, gold.
Pennsylvania.....	1	18.08	Coal, natural gas, petroleum, cement.
Rhode Island.....	49	.02	Stone, sand and gravel, clay products, lime.
South Carolina.....	47	.04	Stone, clay products, sand and gravel, gold.
South Dakota.....	26	.63	Gold, sand and gravel, stone, cement.
Tennessee.....	24	.72	Coal, stone, cement, zinc.
Texas.....	2	15.67	Petroleum, natural gas, sulphur, natural gasoline.
Utah.....	17	1.04	Coal, copper, lead, gold.
Vermont.....	37	.25	Stone, slate, talc, lime.
Virginia.....	23	.81	Coal, stone, cement, sand and gravel.
Washington.....	31	.40	Coal, cement, stone, sand and gravel.
West Virginia.....	4	7.40	Coal, natural gas, clay products, petroleum.
Wisconsin.....	34	.31	Stone, iron ore, sand and gravel, clay products.
Wyoming.....	21	.94	Coal, petroleum, natural gas, natural gasoline.

¹ In this table iron ore, not pig iron, is taken as the basis of iron valuation, and in the case of other metals mine production (recoverable content of metals) is the basis.

Prices of silver, copper, lead, and zinc, 1929-33

Year	Silver ¹	Copper ²	Lead ²	Zinc ²	Year	Silver ¹	Copper ²	Lead ²	Zinc ²
	<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>		<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>
1929.....	\$0.533	\$0.176	\$0.063	\$0.066	1932.....	\$0.282	\$0.063	\$0.030	\$0.030
1930.....	.385	.130	.050	.048	1933.....	.350	.064	.037	.042
1931.....	.290	.091	.037	.038					

¹ Average price furnished by Bureau of the Mint.

² Average price, all grades.

STATE TABLES

Mineral production of Alabama, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native)..... short tons.....	(1)	(1)	(1)	(1)
Bauxite..... long tons.....	(1)	(1)	6,899	(1)
Cement..... barrels.....	² 1,591,166	² \$1,807,088	² 1,999,412	² \$2,536,121
Clay products.....		³ 532,287		³ 824,215
Clay, raw..... short tons.....	33,748	⁴ 47,179	26,966	⁴ 31,699
Coal..... do.....	7,856,939	12,138,000	8,759,989	13,758,000
Coke..... do.....	1,400,597	⁴ 3,770,988	1,668,975	⁴ 3,885,858
Ferro-alloys..... long tons.....	(1 ⁴)	(1 ⁴)	12,318	⁴ 509,463
Fuller's earth..... short tons.....	32	288	266	2,028
Gold ⁵ troy ounces.....	69	1,423	4	101
Iron ore..... long tons.....	1,470,445	2,428,227	2,156,142	3,252,630
Iron, pig..... do.....	733,774	⁴ 8,076,727	987,606	⁴ 11,385,080
Lime..... short tons.....	92,359	492,248	107,810	565,384
Manganese ore..... long tons.....	267	2,834	806	9,930
Manganiferous ore..... do.....	4,545	16,899	3,495	18,683
Mineral waters..... gallons sold.....	(⁶)	(⁶)	(⁶)	(⁶)
Ore (dry and siliceous) (gold and silver)..... short tons.....	800	(⁷)		
Sand and gravel..... do.....	588,209	246,317	934,641	416,857
Silver..... troy ounces.....	10	3		
Stone..... short tons.....	⁸ 269,570	⁸ 1,141,476	⁸ 521,750	⁸ 1,442,628
Miscellaneous ⁹		616,236		464,627
Total value, eliminating duplications.....		19,170,152		23,291,204

¹ Value included under "Miscellaneous."

² Exclusive of puzzolan, value for which is included under "Miscellaneous."

³ Figures obtained through cooperation with Bureau of the Census.

⁴ Value not included in total value for State.

⁵ Gold valued as follows—1932: At legal value (\$20.67+per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ No canvass.

⁷ Not valued as ore; value of recoverable metal content included under the metals.

⁸ Exclusive of sandstone, value for which is included under "Miscellaneous."

⁹ Includes minerals indicated by "1", "2", and "3" above.

Mineral production of Alaska, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Arsenic..... short tons.....	(1)	(1)	(1)	(1)
Coal..... do.....	102,700	\$514,000	96,467	\$481,000
Copper..... pounds.....	8,738,500	550,526	29,000	1,856
Gold ² troy ounces.....	493,860	10,209,000	469,286	11,994,947
Lead..... short tons.....	1,261	75,639	1,157	85,618
Mercury..... flasks (76 pounds).....	(³)	(³)		
Natural gas..... M cubic feet.....	(³)	(³)	19,500	2,300
Natural gasoline..... gallons.....	25,000	4,000	25,000	4,000
Ores (crude), etc.:				
Copper..... short tons.....	56,900	(⁴)		
Dry and siliceous (gold and silver)..... do.....	4,068,000	(⁴)	4,171,000	(⁴)
Petroleum..... barrels.....	(⁵)	(⁵)	(⁵)	(⁵)
Platinum and allied metals..... troy ounces.....	23	948	99	3,729
Sand and gravel..... short tons.....			(³)	(³)
Silver..... troy ounces.....	234,050	66,002	157,150	55,003
Stone..... short tons.....	(⁶)	(⁶)	19,930	16,078
Tin (metallic equivalent)..... do.....			3	(³)
Miscellaneous ⁴		106,272		36,240
Total value, eliminating duplications.....		11,526,387		12,680,771

¹ Figures not available.

² Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

³ Value included under "Miscellaneous."

⁴ Not valued as ore; value of recoverable metal content included under the metals.

⁵ Includes minerals indicated by "3" above.

Mineral production of Arizona, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asbestos.....short tons..	(1)	(1)	(1)	(1)
Barite.....do.....	1,271	\$8,896		
Clay products.....		(1) ²		(1) ²
Clay, raw.....short tons..	6,096	\$22,000	11,616	\$90,986
Coal.....do.....	6,877	33,000	10,345	52,000
Copper.....pounds.....	182,491,825	11,496,985	114,041,781	7,298,674
Feldspar (crude).....long tons..	1,232	4,496	(1)	(1)
Gems and precious stones.....		(4)		(4)
Gold ⁵.....troy ounces..	66,790	1,380,665	79,993	2,044,611
Gypsum.....short tons..	(1)	(1)	1,100	10,563
Lead.....do.....	1,182	70,929	1,721	127,374
Lime.....do.....	11,061	119,138	8,587	95,432
Mercury.....flasks (76 pounds)..	(1)	(1)		
Molybdenum.....pounds.....	(1)	(1)	76,643	(1)
Ores (crude), etc.:				
Copper.....short tons..	4,343,070	(9)	888,508	(9)
Copper-lead.....do.....	18	(9)		
Dry and siliceous (gold and silver).....do.....	60,129	(9)	96,090	(9)
Lead.....do.....	11,362	(9)	11,029	(9)
Lead-zinc.....do.....			101	(9)
Sand and gravel.....do.....	1,448,501	1,092,757	3,402,249	1,723,894
Silica (quartz).....do.....	(1)	(1)	(1)	(1)
Silver.....troy ounces..	2,082,823	587,356	2,390,363	836,627
Sodium sulphate from natural sources.....short tons..	(1)	(1)	(1)	(1)
Stone.....do.....	199,410	145,897	124,540	102,219
Sulphuric acid ⁷.....do.....	(1) ³	(1) ³	(1) ³	(1) ³
Tungsten ore (80 percent concentrates).....do.....	62	35,281	42	(1)
Vanadium ores.....do.....	3,250	(1)		
Zinc.....do.....			6	463
Miscellaneous ⁸		276,255		302,471
Total value, eliminating duplications.....		15,203,724		12,570,758

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ From copper smelting.

⁸ Includes minerals indicated by "1" above.

Mineral production of Arkansas, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Bauxite.....long tons..	89,779	\$507,697	142,179	\$853,718
Cement.....barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$211,685		(1) ²
Clay, raw.....short tons..	(1) ³	(1) ³	224	\$960
Coal.....do.....	1,033,471	2,831,000	882,924	2,348,000
Gems and precious stones.....		(4)		(4)
Iron ore sold for magnets.....long tons..	2	(1)	1	(1)
Lead.....short tons..	4	240	10	740
Lime.....do.....	(1)	(1)	(1)	(1)
Manganese ore.....long tons..	1,306	(1)	1,890	(1)
Manganiferous ore.....do.....	208	(1)	1,060	(1)
Mercury.....flasks (76 pounds)..	(1)	(1)	(1)	(1)
Mineral waters.....gallons sold	(1)	(1)	(1)	(1)
Natural gas.....M cubic feet.	10,235,000	2,242,000	8,288,000	1,812,000
Natural gasoline.....gallons	18,653,000	557,000	15,215,000	602,000
Oilstones.....short tons..	40	25,129	20	10,417
Ores (lead and zinc).....do.....	(9)	(9)	(9)	(9)
Petroleum.....barrels.....	12,051,000	7,690,000	11,686,000	4,850,000
Sand and gravel.....short tons..	464,560	273,013	1,264,742	600,998
Slate.....do.....	(1)	(1)		35,420
Stone.....short tons..	\$48,530	\$82,177	402,820	422,692
Tripoli.....do.....	1,055	22,397	1,175	21,072
Zinc.....do.....			11	924
Miscellaneous ⁷		1,098,387		1,152,222
Total value, eliminating duplications.....		15,540,325		12,710,203

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Figures not available.

⁶ Exclusive of unclassified stone, value for which is included under "Miscellaneous."

⁷ Includes minerals indicated by "1" and "4" above.

Mineral production of California, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native).....short tons.....	(1)	(1)	(1)	(1)
Barite.....do.....	7,789	\$55,346	9,266	\$54,404
Borates.....do.....	181,915	3,023,844	188,047	3,436,377
Briquets, fuel.....do.....	(1) ²	(1) ²	(1) ²	(1) ²
Bromine.....pounds.....	(1)	(1)	(1)	(1)
Calcium chloride.....short tons.....	(1)	(1)	(1)	(1)
Cement.....barrels.....	5,729,705	8,485,537	7,168,835	10,530,698
Chromite.....long tons.....	155	2,160	843	11,585
Clay products.....		\$ 5,469,905		\$ 5,317,227
Clay, raw.....short tons.....	117,461	² 272,059	117,782	² 333,053
Coal.....do.....	(1)	(1)	(1)	(1)
Copper.....pounds.....	1,417,876	89,326	990,380	63,384
Diatomite.....short tons.....	(1)	(1)	(1)	(1)
Feldspar (crude).....long tons.....	(1)	(1)	1,433	10,189
Fuller's earth.....short tons.....	100	2,250		
Gems and precious stones.....				(4)
Gold ⁵.....troy ounces.....	569,167	11,765,726	613,579	15,683,075
Gypsum.....short tons.....	49,997	(1)	57,175	(1)
Iodine.....pounds.....	(1)	(1)	(1)	(1)
Iron ore sold for paint.....long tons.....			25	(1)
Lead.....short tons.....	1,209	72,522	381	28,163
Lime.....do.....	29,925	284,467	35,754	342,999
Magnesite.....do.....	(1)	(1)	(1)	(1)
Magnesium salts (natural).....pounds.....	(1)	(1)	(1)	(1)
Marl, calcareous.....short tons.....	(1)	(1)		
Mercury.....flasks (76 pounds).....	5,172	299,588	3,663	216,948
Micaceous minerals (muscovite schist).....short tons.....			(1)	(1)
Mineral waters.....gallons sold.....	(4)	(4)	(4)	(4)
Molybdenum.....pounds.....			634	
Natural gas.....M cubic feet.....	263,484,000	73,172,000	259,799,000	74,480,000
Natural gasoline.....gallons.....	551,897,000	25,085,000	496,293,000	22,820,000
Ores (crude), etc.:				
Copper.....short tons.....	78,031	(6)	38,176	(6)
Copper-lead.....do.....			8	(6)
Dry and siliceous (gold and silver).....do.....	978,218	(6)	1,281,843	(6)
Lead.....do.....	4,112	(6)	1,257	(6)
Zinc.....do.....			816	(6)
Peat.....do.....	(4)	(4)	(4)	(4)
Pebbles for grinding.....do.....	4	40	4	44
Petroleum.....barrels.....	178,128,000	144,600,000	172,010,000	143,300,000
Platinum and allied metals.....troy ounces.....	240	9,960	207	7,755
Potassium salts.....short tons.....	(1)	(1)	(1)	(1)
Pumice.....do.....	7,459	66,730	8,337	55,449
Pyrites.....long tons.....	(1)	(1)	(1)	(1)
Salt.....short tons.....	281,349	1,824,021	331,009	2,018,694
Sand and gravel.....do.....	6,593,404	3,692,733	6,347,503	3,746,130
Sand and sandstone (finely ground).....do.....	(1)	(1)	(1)	(1)
Silica (quartz).....do.....	253	4,897	(1)	(1)
Silver.....troy ounces.....	493,533	139,176	402,591	140,907
Slate.....		27,542		38,945
Sodium salts (carbonate, bicarbonate, and trona) from natural sources.....short tons.....	55,377	888,052	70,461	918,295
Stone.....do.....	3,807,080	3,925,122	4,362,720	3,994,581
Sulphur.....long tons.....	740	12,920	(1)	(1)
Talc and ground soapstone.....short tons.....	9,979	139,322	14,545	185,268
Tripoli.....do.....			(1)	(1)
Tungsten ore (60 percent concentrates).....do.....	(1)	(1)	174	(1)
Zinc.....do.....			145	12,189
Miscellaneous ⁷		3,574,150		5,622,456
Total value, eliminating duplications.....		286,683,332		292,978,662

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Includes minerals indicated by "1" above.

Mineral production of Colorado, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons	(1) ¹	(1) ¹	(1) ¹	(1) ¹
Cement..... barrels	(1)	(1)	(1)	(1)
Clay products.....		\$1,142,499		\$870,488
Clay, raw..... short tons	41,529	49,617	28,644	43,055
Coal..... do	5,598,721	12,237,000	5,229,767	11,350,000
Coke..... do	115,944	(1) ²	174,883	(1) ²
Copper..... pounds	7,398,000	466,074	9,667,000	615,688
Feldspar (crude)..... long tons	5,612	20,304	(1)	(1)
Ferro-alloys..... do	(1) ³	(1) ³	(1) ³	(1) ³
Fluorspar..... short tons	333	3,330	742	6,778
Fuller's earth..... do	(1)	(1)	(1)	(1)
Gems and precious stones.....		(1)		(1)
Gold..... troy ounces	317,928	6,572,154	242,828	6,206,676
Gypsum..... short tons	(1)	(1)	(1)	(1)
Iron, pig..... long tons	(1) ³	(1) ³	(1) ³	(1) ³
Lead..... short tons	2,150	128,970	2,402	177,711
Lime..... do	(1)	(1)	2,887	31,337
Mica, scrap..... do	108	1,028	(1)	(1)
Micaceous minerals (vermiculite)..... do		(1)		(1)
Mineral paints, zinc and lead pigments.....	(1) ³	(1) ³	(1) ³	(1) ³
Mineral waters..... gallons sold	(1)	(1)	(1)	(1)
Molybdenum..... pounds	1,913,395	(1)	5,028,695	(1)
Natural gas..... M cubic feet	2,547,000	757,000	2,449,000	671,000
Natural gasoline..... gallons	472,000	11,000	408,000	14,000
Ores (crude), etc.:				
Copper..... short tons	49,404	(1)	91,133	(1)
Copper-lead..... do	25	(1)	66	(1)
Dry and siliceous (gold and silver)..... do	885,087	(1)	741,900	(1)
Lead..... do	837	(1)	2,604	(1)
Lead-zinc..... do			9,792	(1)
Zinc..... do	542	(1)		(1)
Petroleum..... barrels	1,136,000	880,000	919,000	540,000
Pyrites..... long tons	1,496	2,073	4,059	(1)
Sand and gravel..... short tons	850,966	497,595	1,395,524	564,677
Silver..... troy ounces	1,860,408	524,635	2,186,140	765,149
Stone..... short tons	133,300	248,789	7,599,970	7,506,118
Sulphur ore..... long tons	27	675		
Tungsten ore (60 percent concentrates)..... short tons			86	49,371
Uranium and vanadium ores..... do	(1)	(1)	50	(1)
Zinc..... do	109	6,540	1,285	107,898
Miscellaneous..... do		4,196,539		7,034,298
Total value, eliminating duplications.....		25,800,227		27,259,095

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of marble, value for which is included under "Miscellaneous."

⁸ Includes minerals indicated by "1" and "7" above.

Mineral production of Connecticut, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Clay products.....		¹ \$504, 852		¹ \$396, 838
Clay, raw..... short tons.....	53	² 954	(2 2)	(2 2)
Coke..... do.....	(2 2)	(2 2)	(2 2)	(2 2)
Feldspar (crude)..... long tons.....	(2)	(2)	(2)	(2)
Lime..... short tons.....	(2)	(2)	(2)	(2)
Mica:				
Scrap..... do.....	93	1, 394	(2)	(2)
Sheet..... pounds.....	49, 920	7, 731	(2)	(2)
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Sand and gravel..... short tons.....	323, 803	178, 406	453, 494	133, 418
Stone..... do.....	³ 1, 144, 720	³ 1, 142, 050	³ 1, 075, 160	³ 939, 853
Miscellaneous ⁶		2, 477, 355		2, 558, 927
Total value, eliminating duplications.....		1, 910, 803		1, 550, 594

¹ Figures obtained through cooperation with Bureau of the Census.

² Value not included in total value for State.

³ Value included under "Miscellaneous."

⁴ No canvass.

⁵ Exclusive of sandstone, value for which is included under "Miscellaneous."

⁶ Includes minerals indicated by "2" and "3" above.

Mineral production of Delaware, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Clay products.....		(1 2)		(1 2)
Clay, raw..... short tons.....	1, 995	² \$28, 253	1, 876	² \$24, 879
Sand and gravel..... do.....	73, 931	38, 116	58, 297	33, 223
Sand and sandstone (finely ground)..... do.....	(1)	(1)	(1)	(1)
Stone..... do.....	(1)	(1)	62, 380	78, 856
Miscellaneous ⁴		262, 310		23, 318
Total value, eliminating duplications.....		300, 426		135, 397

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ Includes minerals indicated by "1" above.

Mineral production of the District of Columbia, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Clay products.....		(1 2)		(1 2)
Sand and gravel..... short tons.....	(1)	(1)	(1)	(1)
Sand-lime brick..... thousands.....	(1 2)	(1 2)		
Stone..... short tons.....	(1)	(1)	(1)	(1)
Miscellaneous ²		\$1, 819, 017		\$423, 233
Total value, eliminating duplications.....		1, 819, 017		423, 233

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Includes minerals indicated by "1" above.

SUMMARY OF MINERAL PRODUCTION

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Mineral production of Florida, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement.....barrels.....	(1)	(1)	(1)	(1)
Clay products.....	(1)	\$ 221,943	(1)	\$ 71,277
Clay, raw.....short tons.....	(1)	(1)	(1)	(1)
Fuller's earth.....do.....	(1)	(1)	(1)	(1)
Lime.....do.....	10,841	99,387	(1)	(1)
Mineral waters.....gallons sold.....	(1)	(1)	(1)	(1)
Peat.....short tons.....	(1)	(1)	(1)	(1)
Phosphate rock.....long tons.....	1,469,976	4,779,612	2,136,123	6,417,110
Sand and gravel.....short tons.....	276,008	178,654	299,365	202,679
Sand-lime brick.....thousands.....	(1)	(1)	(1)	(1)
Stone.....short tons.....	\$ 877,880	\$ 701,593	\$ 606,530	\$ 519,005
Miscellaneous ⁶.....short tons.....		1,459,890		1,792,455
Total value, eliminating duplications.....		7,107,866		8,843,896

¹ Value included under "Miscellaneous."² Figures obtained through cooperation with Bureau of the Census.³ Value not included in total value for State.⁴ No canvass.⁵ Exclusive of unclassified stone, value for which is included under "Miscellaneous."⁶ Includes minerals indicated by "1" and "4" above.*Mineral production of Georgia, 1932-33*

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asbestos.....short tons.....	300	\$3,008		
Barite.....do.....	(1)	(1)	(1)	(1)
Bauxite.....long tons.....	(1)	(1)	5,098	(1)
Cement.....barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$ 794,892		\$ 1,168,420
Clay, raw.....short tons.....	234,334	\$ 1,197,078	280,098	\$ 1,417,680
Coal.....do.....	27,208	48,000	41,382	77,000
Fuller's earth.....do.....	(1)	(1)	(1)	(1)
Gold ⁴.....troy ounces.....	279	5,760	558	14,273
Iron ore.....long tons.....	925	(1)	302	(1)
Lime.....short tons.....	3,567	21,176	3,898	23,506
Manganese ore.....long tons.....	200	2,400	1,565	(1)
Manganiferous ore.....do.....	9,700	(1)	8,505	36,386
Mica, sheet.....pounds.....	479	30		
Micaceous minerals (chlorite schist).....short tons.....	(1)	(1)	(1)	(1)
Mineral waters.....gallons sold.....	(1)	(1)	(1)	(1)
Ore (dry and siliceous) (gold and silver).....short tons.....	440	(1)	529	(1)
Sand and gravel.....do.....	291,867	127,655	247,030	124,544
Silver.....troy ounces.....	30	9	65	23
Slate.....		(1)		(1)
Stone.....short tons.....	1,094,040	3,374,555	915,640	2,769,395
Talc.....do.....	(1)	(1)	(1)	(1)
Tripoli.....do.....		(1)		(1)
Miscellaneous ⁷		1,915,124		1,873,600
Total value, eliminating duplications.....		6,292,609		6,087,147

¹ Value included under "Miscellaneous."² Figures obtained through cooperation with Bureau of the Census.³ Value not included in total value for State.⁴ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).⁵ No canvass.⁶ Not valued as ore; value of recoverable metal content included under the metals.⁷ Includes minerals indicated by "1" above.

Mineral production of Idaho, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Antimony ore and concentrates..... short tons.....	858	(1)	1,133	(1)
Arsenious oxide..... do.....			120	\$6,450
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		(1) ²		(1) ²
Clay, raw..... short tons.....	456	\$5,401	252	\$2,868
Coal..... do.....	(1)	(1)	(1)	(1)
Copper..... pounds.....	1,143,381	72,033	1,562,234	99,983
Diatomite..... short tons.....	100	500	10	80
Gems and precious stones.....		(4)		(4)
Gold ⁵ troy ounces.....	46,885	969,207	64,592	1,650,977
Lead..... short tons.....	72,118	4,327,052	74,363	5,502,888
Lime..... do.....	(1)	(1)	(1)	(1)
Ores (crude), etc.:				
Copper..... do.....	12	(9)	17	(9)
Copper-lead..... do.....	165,490	(9)	121,769	(9)
Dry and siliceous (gold and silver)..... do.....	108,122	(9)	131,187	(9)
Lead..... do.....	585,841	(9)	630,305	(9)
Lead-zinc..... do.....	173,388	(9)	307,573	(9)
Phosphate rock..... long tons.....	23,172	103,243	19,751	80,622
Sand and gravel..... short tons.....	1,307,568	651,720	304,266	151,011
Silver..... troy ounces.....	6,716,968	1,894,185	6,987,960	2,445,786
Stone..... short tons.....	7,699,400	7,534,990	7,536,410	7,440,969
Zinc..... do.....	10,252	615,127	20,968	1,761,311
Miscellaneous ⁶		309,827		289,048
Total value, eliminating duplications.....		9,477,884		12,429,155

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of unclassified stone in 1932 and of sandstone in 1933, value for which is included under "Miscellaneous."

⁸ Includes minerals indicated by "1" and "7" above.

Mineral production of Illinois, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement..... barrels.....	1 5,829,687	1 \$3,446,482	1 4,193,048	1 \$4,607,335
Clay products.....		2 4,571,807		2 3,991,779
Clay, raw..... short tons.....	45,747	3 113,236	72,447	3 197,532
Coal..... do.....	33,474,553	51,316,000	37,413,145	54,578,000
Coke..... do.....	1,428,334	3 6,830,743	1,501,020	3 7,379,561
Fluorspar..... do.....	9,615	156,279	36,075	543,060
Fuller's earth..... do.....	(4)	(4)	(4)	(4)
Grindstones..... do.....	(4)	(4)		
Iron, pig..... long tons.....	731,872	3 11,544,298	1,269,940	3 20,063,481
Lead..... short tons.....	31	1,860	240	17,760
Lime..... do.....	62,436	450,033	81,888	575,862
Marl, calcareous..... do.....			(4)	(4)
Mineral paints, zinc and lead pigments..... do.....	7,482	3 779,764	12,539	3 1,268,853
Mineral waters..... gallons sold.....	(9)	(9)	(9)	(9)
Natural gas..... M cubic feet.....	1,769,000	1,016,000	1,631,000	951,000
Natural gasoline..... gallons.....	4,558,000	139,000	3,673,000	194,000
Ore (lead and zinc)..... short tons.....	(9)	(9)	(9)	(9)
Peat..... do.....	(9)	(9)	(9)	(9)
Petroleum..... barrels.....	4,673,000	4,720,000	4,244,000	3,690,000
Sand and gravel..... short tons.....	6,751,324	3,184,407	6,107,829	3,370,039
Sand and sandstone (finely ground)..... do.....	27,511	132,323	39,248	182,776
Silver..... troy ounces.....	257	72	1,422	498
Stone..... short tons.....	3,002,030	2,157,368	2,433,940	7 1,735,420
Sulphuric acid (60° Baumé) ⁸ do.....	154,394	3 1,173,395	129,194	3 974,123
Tripoli..... do.....	6,097	84,795	8,757	149,979
Miscellaneous ⁹		316,085		249,944
Total value, eliminating duplications.....		71,692,511		74,837,452

¹ Exclusive of natural cement, value for which is included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ Value included under "Miscellaneous."

⁵ No canvass.

⁶ No ore milled in Northern Illinois; lead output of Southern Illinois is byproduct of fluorspar milling.

⁷ Exclusive of sandstone, value for which is included under "Miscellaneous."

⁸ From zinc smelting.

⁹ Includes minerals indicated by "1", "4", and "7" above.

Mineral production of Indiana, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$2,165,995		\$2,604,609
Clay, raw..... short tons.....	83,335	\$54,113	51,139	\$52,745
Coal..... do.....	13,323,573	17,267,000	13,761,052	17,567,000
Coke..... do.....	1,435,405	\$7,894,902	2,089,100	\$12,031,285
Iron, pig..... long tons.....	713,415	\$11,019,875	1,296,518	\$19,989,998
Lime..... short tons.....	58,440	351,240	64,479	355,720
Mineral paints, zinc and lead pigments..... do.....	(1) ³	(1) ³	(1) ³	(1) ³
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Natural gas..... M cubic feet.....	1,349,000	842,000	1,544,000	899,000
Natural gasoline..... gallons.....	1,000	(1)	(4)	(4)
Peat..... short tons.....	(4)	(4)	(4)	(4)
Petroleum..... barrels.....	806,000	828,000	737,000	650,000
Rubbing stones and whetstones..... short tons.....	(1)	(1)	(1)	(1)
Sand and gravel..... do.....	6,974,375	2,839,622	3,996,248	1,706,309
Sand-lime brick..... thousands.....	(1) ³	(1) ³		
Stone..... short tons.....	2,472,450	6,987,755	\$2,269,490	\$6,265,952
Miscellaneous ⁴		4,641,033		5,915,060
Total value, eliminating duplications.....		34,602,723		34,010,753

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Exclusive of unclassified stone, value for which is included under "Miscellaneous."

⁶ Includes minerals indicated by "1" and "2" above.

Mineral production of Iowa, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement..... barrels.....	4,373,642	\$3,907,427	2,770,656	\$3,651,921
Clay products.....		1,796,445		1,842,726
Clay, raw..... short tons.....	3,433	\$9,354	9,379	\$74,822
Coal..... do.....	3,862,435	9,254,000	3,194,983	7,217,000
Ferro-alloys..... long tons.....	(2) ³	(2) ³	(2) ³	(2) ³
Gypsum..... short tons.....	178,087	1,468,414	172,555	1,357,407
Iron, pig..... long tons.....	(2) ³	(2) ³	(2) ³	(2) ³
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Sand and gravel..... short tons.....	5,230,562	1,706,874	4,343,781	1,165,066
Stone..... do.....	1,591,240	1,389,465	1,050,190	920,532
Miscellaneous ⁴		387,064		900,203
Total value, eliminating duplications.....		18,522,625		15,154,652

¹ Figures obtained through cooperation with Bureau of the Census.

² Value not included in total value for State.

³ Value included under "Miscellaneous."

⁴ No canvass.

⁵ Includes minerals indicated by "2" above.

Mineral production of Kansas, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native)..... short tons.....	1,050	\$4,200	(1)	(1)
Cement..... barrels.....	² 2,224,079	² 1,880,583	² 2,189,137	² \$2,881,978
Chats..... short tons.....	139,000	27,800	88,450	18,267
Clay products.....		³ 521,838		³ 372,762
Coal..... short tons.....	1,952,885	3,420,000	2,217,622	3,881,000
Gypsum..... do.....	56,054	326,266	62,636	341,333
Lead..... do.....	6,490	329,400	6,089	450,586
Mineral paints, zinc and lead pigments..... do.....	(1 ⁴)	(1 ⁴)	(1 ⁴)	(1 ⁴)
Mineral waters..... gallons sold.....	(5)	(5)	(5)	(5)
Natural gas..... M cubic feet.....	40,690,000	13,420,000	41,596,000	13,179,000
Natural gasoline..... gallons.....	24,792,000	614,000	24,869,000	841,000
Ores (crude), etc.:				
Lead..... short tons.....	2,000	(5)	5,000	(5)
Lead-zinc..... do.....	505,100	(5)	720,400	(5)
Zinc..... do.....	243,400	(5)	503,600	(5)
Petroleum..... barrels.....	34,848,000	31,720,000	41,976,000	27,700,000
Pumice..... short tons.....	39,375	117,558	42,355	109,454
Salt..... do.....	648,800	2,876,239	732,947	3,039,343
Sand and gravel..... do.....	1,851,211	878,733	2,015,799	734,343
Stone..... do.....	⁷ 733,350	⁷ 650,843	1,052,980	956,734
Zinc..... do.....	26,277	1,576,620	40,947	3,439,548
Miscellaneous ⁸ do.....		674,599		1,474,863
Total value, eliminating duplications.....		58,471,164		57,974,881

¹ Value included under "Miscellaneous."

² Exclusive of natural cement, value for which is included under "Miscellaneous."

³ Figures obtained through cooperation with Bureau of the Census.

⁴ Value not included in total value for State.

⁵ No canvass.

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of sandstone, value for which is included under "Miscellaneous."

⁸ Includes minerals indicated by "1", "2", and "7" above.

Mineral production of Kentucky, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native)..... short tons.....	91,289	\$792,643	44,369	\$356,139
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		² 1,117,093		² 2,186,367
Clay, raw..... short tons.....	51,004	⁴ 282,027	114,190	⁴ 477,400
Coal..... do.....	35,299,582	34,892,000	36,099,729	40,745,000
Coke..... do.....	(1 ³)	(1 ³)	(1 ³)	(1 ³)
Fluorspar..... do.....	14,725	225,052	34,614	469,451
Fluorspar, optical..... ounces.....	50	59		
Iron, pig..... long tons.....	74,431	(1 ³)	103,017	(1 ³)
Lead..... short tons.....			176	13,024
Lime..... do.....	(1)	(1)	(1)	(1)
Mineral waters..... gallons sold.....	(1)	(1)	(1)	(1)
Natural gas..... M cubic feet.....	29,005,000	13,551,000	31,380,000	14,546,000
Natural gasoline..... gallons.....	4,877,000	177,000	4,514,000	224,000
Ores (lead and zinc)..... short tons.....	(5)	(5)	(5)	(5)
Petroleum..... barrels.....	6,287,000	5,906,000	4,606,000	3,780,000
Sand and gravel..... short tons.....	1,064,194	547,782	1,173,727	679,641
Stone..... do.....	1,651,540	1,278,792	2,101,740	1,773,977
Zinc..... do.....	46	2,760	228	19,152
Miscellaneous ⁶ do.....		2,208,839		2,831,335
Total value, eliminating duplications.....		59,076,459		65,536,454

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Figures not available.

⁶ Includes minerals indicated by "1" above.

Mineral production of Louisiana, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel.....short tons.....			(1) ²	(1) ²
Cement.....barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$ 113, 129		\$ 160, 143
Iodine.....pounds.....	(1)	(1)	(1)	(1)
Mineral waters.....gallons sold.....	(4)	(4)	(4)	(4)
Natural gas.....M cubic feet.....	201, 561, 000	36, 992, 000	197, 826, 000	32, 339, 000
Natural gasoline.....gallons.....	46, 199, 000	1, 090, 000	36, 973, 000	1, 149, 000
Petroleum.....barrels.....	21, 807, 000	18, 550, 000	25, 168, 000	15, 280, 000
Salt.....short tons.....	488, 805	2, 095, 943	532, 569	2, 345, 208
Sand and gravel.....do.....	1, 888, 554	1, 022, 763	1, 018, 588	633, 395
Stone.....do.....	(1)	(1)	65, 090	43, 383
Sulphur.....long tons.....			128, 916	2, 320, 496
Miscellaneous ³		1, 228, 164		617, 085
Total value, eliminating duplications.....		61, 097, 004		54, 886, 010

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Includes minerals indicated by "1" above.

Mineral production of Maine, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement.....barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$ 213, 447		\$ 208, 910
Clay, raw.....short tons.....	85	\$ 1, 309	84	\$ 1, 236
Feldspar (crude).....long tons.....	8, 345	41, 874	11, 273	48, 380
Gems and precious stones.....	(1)	(1)	(1)	(1)
Lime.....short tons.....	23, 354	186, 251	(1)	(1)
Mica:				
Scrap.....do.....	80	1, 160	(1)	(1)
Sheet.....pounds.....			(1)	(1)
Mineral waters.....gallons sold.....	(1)	(1)	(1)	(1)
Peat.....short tons.....	(1)	(1)	(1)	(1)
Sand and gravel.....do.....	3, 736, 440	396, 842	2, 822, 330	359, 315
Slate.....		105, 192		114, 588
Stone.....short tons.....	\$ 251, 710	\$ 1, 588, 031	186, 870	1, 114, 184
Miscellaneous ⁴		641, 481		748, 494
Total value, eliminating duplications.....		3, 174, 278		2, 593, 871

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Exclusive of unclassified stone, value for which is included under "Miscellaneous."

⁶ Includes minerals indicated by "1" and "2" above.

Mineral production of Maryland, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asbestos..... short tons..	(1)	(1)	(1)	(1)
Cement..... barrels..	(1)	(1)	(1)	(1)
Clay products.....		\$1, 153, 852		\$1, 285, 849
Clay, raw..... short tons..	12, 614	\$ 53, 912	21, 459	\$ 65, 105
Coal..... do.....	1, 428, 937	1, 827, 000	1, 530, 743	2, 134, 000
Coke..... do.....	493, 502	(1 ²)	702, 227	(1 ²)
Feldspar (crude)..... long tons..	90	1, 157		
Gold ¹ troy ounces..			14	345
Iron, pig..... long tons..	367, 614	(1 ²)	639, 539	(1 ²)
Lime..... short tons..	26, 536	171, 312	26, 469	154, 318
Mineral waters..... gallons sold	(1)	(1)	(1)	(1)
Potassium salts..... short tons..	(1)	(1)	(1)	(1)
Sand and gravel..... do.....	1, 622, 298	1, 200, 802	1, 444, 120	1, 328, 266
Silica (quartz)..... do.....	347	5, 200	371	5, 565
Slate.....	(1)	(1)	(1)	(1)
Stone..... short tons..	\$ 993, 500	\$ 1, 209, 706	\$ 690, 160	\$ 778, 792
Talc..... do.....	(1)	(1)	(1)	(1)
Miscellaneous ⁷		9, 022, 420		13, 713, 152
Total value, eliminating duplications.....		7, 233, 821		7, 014, 570

¹ Value included under "Miscellaneous."² Figures obtained through cooperation with Bureau of the Census.³ Value not included in total value for State.⁴ Gold valued at average weighted price (\$25.56 per ounce).⁵ No canvass.⁶ Exclusive of marble, value for which is included under "Miscellaneous."⁷ Includes minerals indicated by "1" and "6" above.

Mineral production of Massachusetts, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons..	23, 011	\$166, 834	(1 ²)	(1 ²)
Clay products.....		\$ 965, 295		\$569, 486
Clay, raw..... short tons..	425	1 5, 265	837	1 12, 891
Coke..... do.....	987, 106	1 6, 493, 682	1, 020, 255	1 5, 935, 219
Fuller's earth..... do.....	(1)	(1)	(1)	(1)
Iron, pig..... long tons..	(1 ²)	(1 ²)	(1 ²)	(1 ²)
Lime..... short tons..	68, 959	527, 305	56, 941	481, 487
Mineral waters..... gallons sold	(1)	(1)	(1)	(1)
Sand and gravel..... short tons..	5, 003, 193	2, 334, 043	3, 420, 096	1, 233, 158
Sand and sandstone (finely ground)..... do.....			343	2, 509
Sand-lime brick..... thousands	(1 ²)	(1 ²)	(1 ²)	(1 ²)
Silica (quartz)..... short tons..	373	2, 170		
Stone..... do.....	1, 824, 330	4, 079, 845	1, 396, 310	2, 580, 791
Miscellaneous ⁴		447, 575		822, 658
Total value, eliminating duplications.....		8, 038, 615		4, 917, 110

¹ Value not included in total value for State.² Value included under "Miscellaneous."³ Figures obtained through cooperation with Bureau of the Census.⁴ No canvass.⁵ Includes minerals indicated by "1" above.

Mineral production of Michigan, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Bromine.....pounds..	(1)	(1)	(1)	(1)
Calcium chloride.....short tons..	(1)	(1)	(1)	(1)
Cement.....barrels..	4,886,928	\$4,442,666	3,447,867	\$4,128,082
Clay products.....		\$2,632,226		\$2,657,248
Clay, raw.....short tons..	76	904	114	546
Coal.....do..	446,149	1,219,000	406,584	1,171,000
Coke.....do..	2,165,109	10,144,218	2,341,081	9,911,010
Copper.....pounds..	54,396,108	3,426,955	46,853,130	2,998,600
Gems and precious stones.....		(1)		(1)
Gold ¹.....troy ounces..			10	247
Graphite, amorphous.....short tons..			(1)	(1)
Grindstones.....do..	(1)	(1)		
Gypsum.....do..	248,542	2,099,040	211,392	2,170,243
Iron ore:				
Sold to furnaces.....long tons..	968,789	2,703,900	6,099,031	18,442,073
Sold for paint.....do..			417	1,992
Iron, pig.....do..	280,536	4,269,528	407,011	6,181,318
Lime.....short tons..	38,610	267,520	43,959	292,144
Magnesium.....pounds..	791,699	228,653	1,434,893	377,181
Magnesium chloride (natural).....do..	(1)	(1)	(1)	(1)
Magnesium sulphate (natural).....do..	(1)	(1)	(1)	(1)
Manganiferous ore.....long tons..	9,582	29,356	6,445	19,817
Marl, calcareous.....short tons..	(1)	(1)	450	269
Mineral waters.....gallons sold..	(1)	(1)	(1)	(1)
Natural gas.....M cubic feet..	968,000	262,000	1,528,000	635,000
Natural gasoline.....gallons..			188,000	6,000
Ores (crude), etc.:				
Copper.....short tons..	1,142,775	(²)	697,158	(²)
Dry and siliceous (gold and silver).....do..			200	(²)
Peat.....do..	(⁴)	(⁴)	(⁴)	(⁴)
Petroleum.....barrels..	6,910,000	5,260,000	7,942,000	7,150,000
Salt.....short tons..	1,715,304	4,845,379	2,090,254	5,679,737
Sand and gravel.....do..	5,468,663	2,291,106	4,619,223	1,805,360
Sand-lime brick.....thousands..	8,420	75,717	(1 ³)	(1 ³)
Silver.....troy ounces..	71,408	20,137	125,926	44,074
Stone.....short tons..	3,695,210	2,003,492	5,702,000	3,094,912
Miscellaneous ⁵		2,906,804		3,548,869
Total value, eliminating duplications.....		34,713,951		54,222,848

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Gold valued at average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of unclassified stone, value for which is included under "Miscellaneous."

⁸ Includes minerals indicated by "1" and "7" above.

Mineral production of Minnesota, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons.....			(1) ²	(1) ²
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$ 595,757 ²		(1) ²
Clay, raw..... short tons.....	6,541	14,437 ²	(1) ²	(1) ²
Coke..... do.....	385,699	2,782,262 ²	412,037	\$2,919,602 ²
Feldspar (crude)..... long tons.....	(1)	(1)	(1)	(1)
Flint lining for tube mills..... short tons.....	(1)	(1)	(1)	(1)
Gems and precious stones.....		(4)		(4)
Iron ore:				
Sold to furnaces..... long tons.....	2,248,727	6,263,181	14,784,763	38,291,656
Sold for paint..... do.....			34	375
Iron, pig..... do.....	1,571	(1) ²	(1) ²	(1) ²
Lime..... short tons.....	(1)	(1)	(1)	(1)
Manganiferous ore..... long tons.....	1,399	4,030	171,722	450,134
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Pebbles for grinding..... short tons.....	(1)	(1)	(1)	(1)
Sand and gravel..... do.....	3,950,289	1,983,235	2,719,282	768,714
Sand-lime brick..... thousands.....	3,645	38,740 ²	(1) ²	(1) ²
Stone..... short tons.....	302,080 ²	1,876,420 ²	316,980	1,361,121
Miscellaneous ⁴		1,535,741		1,662,106
Total value, eliminating duplications.....		12,272,622		42,472,038

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Exclusive of basalt, value for which is included under "Miscellaneous."

⁶ Includes minerals indicated by "1" and "2" above.

Mineral production of Mississippi, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Clay products.....		\$77,067		\$220,638
Clay, raw..... short tons.....	(1) ²	(2) ²	(1) ²	(2) ²
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Natural gas..... M cubic feet.....	8,648,000	2,324,900	8,679,000	2,171,000
Petroleum..... barrels.....		(3)		(3)
Sand and gravel..... short tons.....	707,949	317,477	838,725	369,745
Stone..... do.....	(2)	(2)	(2)	(2)
Miscellaneous ⁴		1,629		5,932
Total value, eliminating duplications.....		2,718,919		2,765,988

¹ Figures obtained through cooperation with Bureau of the Census.

² Value included under "Miscellaneous."

³ Value not included in total value for State.

⁴ No canvass.

⁵ Includes minerals indicated by "1" above.

Mineral production of Missouri, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native).....short tons..	9,863	\$52,945	3,979	\$20,890
Barite.....do.....	85,458	463,347	112,335	510,551
Briquets, fuel.....do.....	(1) ²	(1) ²	(1) ²	(1) ²
Cement.....barrels..	4,846,871	3,666,220	3,994,690	4,722,441
Chats.....short tons..	1,300,000	280,000	1,934,349	493,597
Clay products.....	³ 3,462,036	-----	-----	³ 5,080,420
Clay, raw.....short tons..	126,490	³ 504,403	177,169	² 713,127
Coal.....do.....	4,069,598	6,654,000	3,432,212	6,175,000
Coke.....do.....	(1) ²	(1) ²	(1) ²	(1) ²
Iron ore.....long tons..	25,418	72,144	-----	-----
Lead.....short tons..	117,159	7,029,540	84,980	6,288,520
Lime.....do.....	174,427	1,034,850	230,051	1,121,295
Mineral paints, zinc and lead pigments.....do.....	4,780	(1) ²	1,757	(1) ²
Mineral waters.....gallons sold..	(4)	(4)	(4)	(4)
Natural gas.....M cubic feet..	932,000	502,000	673,000	380,000
Ores (crude), etc.:				
Lead.....short tons..	3,754,200	(5)	2,490,000	(5)
Lead-zinc.....do.....	23,500	(5)	170,800	(5)
Zinc.....do.....	8,900	(5)	-----	-----
Petroleum.....barrels..	10,000	9,000	10,000	6,000
Pyrites.....long tons..	3,953	(1)	18,355	50,161
Sand and gravel.....short tons..	3,526,373	2,114,440	3,434,540	1,668,048
Silica (quartz).....do.....	-----	-----	(1)	(1)
Silver.....troy ounces..	1,123	318	-----	-----
Stone.....short tons..	3,303,290	3,769,087	2,860,590	3,509,248
Tripoli.....do.....	(1)	(1)	(1)	(1)
Zinc.....do.....	986	59,160	5,042	423,528
Miscellaneous ⁴	-----	1,492,870	-----	1,230,942
Total value, eliminating duplications.....	-----	29,245,055	-----	30,588,018

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Not valued as ore; value of recoverable metal content included under the metals.

⁶ Includes minerals indicated by "1" above.

Mineral production of Montana, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Arsenious oxide..... short tons..	6,400	\$334,080	5,480	\$295,920
Asbestos..... do.....			10	350
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		(1 2)		2 35,486
Clay, raw..... short tons.....	1,189	2,291	1,092	2 3,075
Coal..... do.....	2,125,225	3,527,000	2,152,207	3,309,000
Copper..... pounds.....	84,847,349	5,345,383	65,476,375	4,190,488
Gems and precious stones.....		(4)		(4)
Gold 1..... troy ounces.....	40,602	839,318	57,822	1,477,935
Gypsum..... short tons.....	(1)	(1)	(1)	(1)
Lead..... do.....	1,079	64,733	6,582	487,047
Lime..... do.....	1,016	13,353	1,251	17,264
Manganese ore..... long tons.....	15,479	(1)	9,320	297,451
Micaceous minerals (vermiculite)..... short tons.....	(1)	(1)	(1)	(1)
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Natural gas..... M cubic feet.....	13,295,000	4,359,000	14,391,000	4,358,000
Natural gasoline..... gallons.....			1,295,000	100,000
Ores (crude), etc.:				
Copper..... short tons.....	668,679	(6)	491,893	(6)
Copper-lead..... do.....	104	(6)	60	(6)
Dry and siliceous (gold and silver)..... do.....	65,536	(6)	167,237	(6)
Lead..... do.....	1,007	(6)	7,425	(6)
Lead-zinc..... do.....	7,830	(6)	152,582	(6)
Zinc..... do.....	20,835	(6)	43,289	(6)
Petroleum..... barrels.....	2,457,000	2,560,000	2,278,000	2,220,000
Phosphate rock..... long tons.....	20,090	79,271	492	1,238
Pyrites..... do.....	(1)	(1)	(1)	(1)
Sand and gravel..... short tons.....	3,265,528	255,014	2,317,758	1,379,831
Silver..... troy ounces.....	1,686,213	475,512	2,660,700	931,245
Stone..... short tons.....	222,570	239,072	438,800	377,973
Sulphuric acid 1..... do.....	(1 3)	(1 3)		
Tungsten ore (60 percent concentrates)..... do.....	30	(1)		
Zinc..... do.....	2,197	131,791	20,724	1,740,854
Miscellaneous 2..... do.....		876,638		442,007
Total value, eliminating duplications.....		19,023,093		21,662,089

1 Value included under "Miscellaneous."

2 Figures obtained through cooperation with Bureau of the Census.

3 Value not included in total value for State.

4 No canvass.

5 Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

6 Not valued as ore; value of recoverable metal content included under the metals.

7 From copper smelting.

8 Includes minerals indicated by "1" above.

Mineral production of Nebraska, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons.....	(1 2)	(1 2)	(1 2)	(1 2)
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		(1 2)		(1 2)
Clay, raw..... short tons.....	5,787	2 \$6,748	10,178	2 \$9,371
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Pumice..... short tons.....	(1)	(1)	(1)	(1)
Sand and gravel..... do.....	1,557,663	607,343	1,560,589	656,906
Stone..... do.....	84,050	96,570	198,070	219,616
Miscellaneous 3..... do.....		847,732		1,189,954
Total value, eliminating duplications.....		1,543,486		2,047,335

1 Value included under "Miscellaneous."

2 Value not included in total value for State.

3 Figures obtained through cooperation with Bureau of the Census.

4 No canvass.

5 Includes minerals indicated by "1" above.

SUMMARY OF MINERAL PRODUCTION

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Mineral production of Nevada, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Antimony ore.....short tons..	42	(1)		
Barite.....do.....	(1)	(1)	1,040	\$7,280
Clay products.....		(1)		(1)
Clay, raw.....short tons..	641	\$3,891	(1)	(1)
Copper.....pounds..	31,487,606	1,983,719	28,489,610	1,823,335
Diatomite.....short tons..	(1)	(1)	(1)	(1)
Feldspar (crude).....long tons..	50	300		
Fluorspar.....short tons..	49	(1)	505	(1)
Fuller's earth.....do.....	(1)	(1)	5,974	61,571
Gems and precious stones.....		(4)		(4)
Gold.....troy ounces..	129,720	2,681,547	98,590	2,519,968
Graphite, amorphous.....short tons..	(1)	(1)	(1)	(1)
Gypsum.....do.....	30,938	429,998	74,249	(1)
Lead.....do.....	440	26,430	2,303	170,449
Lime.....do.....	(1)	(1)	(1)	(1)
Marl, calcareous.....do.....	(1)	(1)	(1)	(1)
Mercury.....flasks (76 pounds)..	474	27,456	387	22,921
Mineral waters.....gallons sold..	(4)	(4)	(4)	(4)
Ores (crude), etc.:				
Copper.....short tons..	1,357,464	(9)	1,197,498	(9)
Copper-lead.....do.....	484	(9)	2,885	(9)
Dry and siliceous (gold and silver).....do.....	493,191	(9)	448,984	(9)
Lead.....do.....	3,262	(9)	1,583	(9)
Lead-zinc.....do.....	594	(9)	27,302	(9)
Zinc.....do.....	36	(9)	202	(9)
Salt.....do.....	(1)	(1)	(1)	(1)
Sand and gravel.....do.....	990,415	408,423	2,522,718	937,327
Silver.....troy ounces..	1,304,365	367,831	1,148,621	402,017
Sodium sulphate from natural sources.....short tons..	(1)	(1)	(1)	(1)
Stone.....do.....	236,590	213,014	80,630	104,428
Tungsten ore (60 percent concentrates).....do.....	241	140,786	550	(1)
Vanadium ores.....do.....			50	(1)
Zinc.....do.....	127	7,644	6,387	536,531
Miscellaneous ?.....do.....		281,135		870,366
Total value, eliminating duplications.....		6,568,283		7,455,493

- 1 Value included under "Miscellaneous."
- 2 Figures obtained through cooperation with Bureau of the Census.
- 3 Value not included in total value for State.
- 4 No canvass.
- 5 Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).
- 6 Not valued as ore; value of recoverable metal content included under the metals.
- 7 Includes minerals indicated by "1" above.

Mineral production of New Hampshire, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Clay products.....		\$186,686		\$89,576
Feldspar (crude).....long tons..	8,718	61,416	12,425	82,978
Garnet, abrasive.....short tons..	(2)	(2)	(2)	(2)
Mica:				
Scrap.....do.....	344	5,585	532	9,563
Sheet.....pounds..	146,014	17,978	167,464	22,008
Mineral waters.....gallons sold..	(2)	(2)	(2)	(2)
Sand and gravel.....short tons..	1,696,441	224,101	2,414,637	744,712
Stone.....do.....	298,710	846,188	86,360	499,304
Miscellaneous.....do.....		9,600		8,900
Total value, eliminating duplications.....		1,351,554		1,457,041

- 1 Figures obtained through cooperation with Bureau of the Census.
- 2 Value included under "Miscellaneous."
- 3 No canvass.

Mineral production of New Jersey, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel.....short tons..	(1) ¹	(1) ¹	(1) ²	(1) ²
Cement.....barrels..	(1)	(1)	(1)	(1)
Clay products.....		\$9,430,892		\$9,725,135
Clay, raw.....short tons..	62,114	248,582	57,445	256,731
Coke.....do.....	805,720	(1) ²	835,125	(1) ²
Ferro-alloys.....long tons..	(1) ²	(1) ²	(1) ²	(1) ²
Graphite, artificial.....pounds..	(1) ²	(1) ²	(1) ²	(1) ²
Iron ore.....long tons..	14,966	(1)	73,385	(1)
Lime.....short tons..	(1)	(1)	(1)	(1)
Manganiferous residuum.....long tons..	25,320	(1)		
Marl, greensand.....short tons..	9,231	201,173	6,713	206,985
Mineral waters.....gallons sold..	(4)	(4)	(4)	(4)
Ore (zinc).....short tons..	559,651	(9)	471,607	(9)
Peat.....do.....	(4)	(4)	(4)	(4)
Sand and gravel.....do.....	2,646,090	1,993,281	2,064,260	1,636,406
Sand and sandstone (finely ground).....do.....	34,212	141,607	66,437	263,806
Sand-lime brick.....thousands..	(1) ²	(1) ²		
Silica (quartz).....short tons..			(1)	(1)
Stone.....do.....	1,514,800	1,743,302	1,099,310	1,272,481
Talc.....do.....	(1)	(1)	(1)	(1)
Zinc ⁶.....do.....	81,460	7,993,650	75,125	8,272,400
Miscellaneous ⁷.....do.....		6,744,465		6,381,374
Total value, eliminating duplications.....		23,073,173		22,580,043

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Not valued as ore; value of recoverable metal content included under the metal.

⁶ Value reported for zinc in New Jersey is estimated smelting value of recoverable zinc content of ore after freight, haulage, smelting, and manufacturing charges are added.

⁷ Includes minerals indicated by "1" above.

Mineral production of New Mexico, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native)..... short tons..	(1)	(1)	(1)	(1)
Clay products.....		\$60,937		(1) ¹
Clay, raw..... short tons..	266	\$1,559	142	\$1,505
Coal..... do.....	1,263,386	3,321,000	1,226,236	3,071,000
Copper..... pounds..	23,419,000	1,790,397	26,947,000	1,724,608
Fluorspar..... short tons..	529	(1)	994	(1)
Gems and precious stones.....		(1)		(1)
Gold ² troy ounces..	23,208	479,753	26,474	676,678
Lead..... short tons..	10,114	606,810	11,043	817,182
Lime..... do.....	990	8,800	(1)	(1)
Lithium minerals..... do.....	(1)	(1)	(1)	(1)
Mica:				
Scrap..... do.....	537	8,100	(1)	(1)
Sheet..... pounds..	(1)	(1)	(1)	(1)
Mineral waters..... gallons sold..	(1)	(1)	(1)	(1)
Molybdenum..... pounds..	(1)	(1)	(1)	(1)
Natural gas..... M cubic feet..	17,604,000	2,448,000	19,148,000	2,465,000
Natural gasoline..... gallons..	17,507,000	377,000	19,149,000	654,000
Ores (crude), etc.:				
Copper..... short tons..	1,184,528	(1)	1,100,707	(1)
Copper-lead..... do.....	977	(1)	1,419	(1)
Dry and siliceous (gold and silver)..... do.....	29,378	(1)	38,650	(1)
Lead..... do.....	607	(1)	877	(1)
Lead-zinc..... do.....	228,754	(1)	255,946	(1)
Zinc..... do.....	19,974	(1)	78,240	(1)
Petroleum..... barrels..	12,455,000	7,650,000	14,118,000	6,490,000
Potassium salts..... short tons..	(1)	(1)	(1)	(1)
Salt..... do.....	(1)	(1)	(1)	(1)
Sand and gravel..... do.....	884,521	570,555	777,086	776,936
Silver..... troy ounces..	1,142,351	322,143	1,181,580	413,553
Stone..... short tons..	7,308,640	7,253,051	427,980	437,287
Tantalum ore ³ pounds..	115	(1)	300	180
Zinc..... short tons..	25,593	1,535,580	30,924	2,597,616
Miscellaneous ⁴		831,757		3,230,641
Total value, eliminating duplications.....		20,263,883		23,354,681

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of unclassified stone, value for which is included under "Miscellaneous."

⁸ 1932: Columbite; 1933: Tantalite.

⁹ Includes minerals indicated by "1" and "7" above.

Mineral production of New York, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Aluminum.....pounds..	(1) ²	(1) ²	(1) ²	(1) ²
Cement.....barrels..	3 5,993,374	\$ 36,317,269	3 3,966,696	\$ 5,274,593
Clay products.....		4 4,170,130		4 3,511,639
Clay, raw.....short tons..	707	2 11,959	1,740	2 15,401
Coke.....do.....	3,130,078	2 19,246,204	3,426,529	2 19,232,209
Diatomite.....do.....	(1)	(1)	(1)	(1)
Emery.....do.....	250	2 781	1,056	12,283
Feldspar (crude).....long tons..	6,255	34,705	6,138	41,736
Ferro-alloys.....do.....	55,668	2 4,032,224	117,348	2 8,251,467
Garnet, abrasive.....short tons..	(1)	(1)	(1)	(1)
Graphite, artificial.....pounds..	(1) ²	(1) ²	(1) ²	(1) ²
Gypsum.....short tons..	408,208	4,213,793	363,745	3,646,109
Iron ore:				
Sold to furnaces.....long tons..	30,600	(1)	163,000	(1)
Sold for paint.....do.....	(1)	(1)		
Iron, pig.....do.....	594,350	2 8,546,837	851,496	2 12,344,827
Lead.....short tons..	(1)	(1)	(1)	(1)
Lime.....do.....	29,391	231,504	36,369	286,625
Millstones.....do.....		1,850		5,187
Mineral waters.....gallons sold..	(9)	(9)	(9)	(9)
Natural gas.....M cubic feet..	8,813,000	6,124,000	6,865,000	4,893,000
Natural gasoline.....gallons..	117,000	10,000	96,000	5,000
Ores (crude), etc.:				
Lead-zinc.....short tons..	117,064	(9)	120,839	(9)
Zinc.....do.....	72,615	(9)	59,831	(9)
Zinc.....do.....	(9)	(9)	(9)	(9)
Peat.....barrels..	3,508,000	6,630,000	3,181,000	5,960,000
Petroleum.....long tons..	16,871	(1)	19,824	(1)
Pyrites.....short tons..	1,556,642	4,785,351	1,847,696	5,120,846
Salt.....do.....	9,232,390	5,644,328	7,274,610	3,960,334
Sand and gravel.....thousands..	(1) ²	(1) ²	(1) ²	(1) ²
Sand-lime brick.....short tons..	(1)	(1)	(1)	(1)
Silica (quartz).....do.....		267,488		291,768
Slate.....short tons..	8,312,260	9,349,273	7,395,690	6,351,397
Stone.....do.....	62,833	764,692	82,618	969,338
Talc.....do.....	16,794	1,007,640	17,733	1,489,572
Zinc.....do.....		10,699,372		9,709,144
Miscellaneous ⁷				
Total value, eliminating duplications.....		50,175,726		42,940,471

¹ Value included under "Miscellaneous."² Value not included in total value for State.³ Exclusive of natural cement, value for which is included under "Miscellaneous."⁴ Figures obtained through cooperation with Bureau of the Census.⁵ No canvass.⁶ Not valued as ore; value of recoverable metal content included under the metals.⁷ Includes minerals indicated by "1" and "2" above.

Mineral production of North Carolina, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Aluminum..... pounds.....	(1) ²	(1) ²	(1) ²	(1) ²
Barite..... short tons.....	100	\$465		
Clay products.....		\$570, 124		\$1, 035, 195
Clay, raw..... short tons.....	7, 107	\$103, 365	6, 928	\$102, 814
Coal..... do.....	1, 900	6, 000	2, 014	7, 000
Copper..... pounds.....	(1)	(1)	(1)	(1)
Feldspar (crude)..... long tons.....	53, 465	300, 877	85, 962	471, 312
Gems and precious stones.....	(4)	(4)	(4)	(4)
Gold ³ troy ounces.....	367	7, 591	725	18, 522
Lime..... short tons.....	(1)	(1)	(1)	(1)
Marl, calcareous..... do.....	(1)	(1)	(1)	(1)
Mica:				
Scrap..... do.....	4, 837	56, 842	6, 918	74, 711
Sheet..... pounds.....	127, 696	18, 322	162, 672	21, 107
Micaceous minerals (muscovite schist)..... short tons.....	(1)	(1)	(1)	(1)
Millstones.....		1, 400		2, 400
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Ores (crude):				
Copper..... short tons.....	20, 105	(6)	22, 833	(6)
Dry and siliceous (gold and silver)..... do.....	555	(6)	1, 820	(6)
Sand and gravel..... do.....	177, 074	99, 640	524, 903	201, 113
Silica (quartz)..... do.....	1, 535	7, 045	(1)	(1)
Silver..... troy ounces.....	10, 045	2, 832	11, 492	4, 022
Stone..... short tons.....	7 429, 990	7 924, 022	599, 400	1, 049, 214
Talc..... do.....	(1)	(1)	11, 947	135, 180
Tantalum ore (columbite)..... pounds.....	275	(1)		
Miscellaneous ⁴		3, 849, 151		2, 379, 024
Total value, eliminating duplications.....		2, 466, 311		3, 350, 800

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of marble, value for which is included under "Miscellaneous."

⁸ Includes minerals indicated by "1" and "7" above.

Mineral production of North Dakota, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons.....	(1) ²	(1) ²	(1) ²	(1) ²
Clay products.....		(1) ³		(1) ³
Clay, raw..... short tons.....	5	\$81	3, 522	\$3, 381
Coal..... do.....	1, 739, 658	2, 200, 000	1, 782, 272	2, 243, 000
Mineral waters..... gallons sold.....	(4)	(4)	(4)	(4)
Sand and gravel..... short tons.....	1, 652, 264	166, 552	1, 964, 394	674, 187
Miscellaneous ⁴		87, 200		102, 243
Total value, eliminating duplications.....		2, 385, 735		2, 960, 811

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Includes minerals indicated by "1" above.

Mineral production of Ohio, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons.....			(1) ¹	(1) ¹
Bromine..... pounds.....	(1)	(1)	(1)	(1)
Calcium chloride..... short tons.....	(1)	(1)	(1)	(1)
Cement..... barrels.....	² 4, 225, 601	² \$3, 719, 250	² 3, 042, 645	² \$3, 662, 733
Clay products.....		⁴ 19, 666, 770		⁴ 19, 534, 120
Clay, raw..... short tons.....	130, 143	¹ 256, 938	167, 873	² 320, 782
Coal..... do.....	13, 909, 451	15, 418, 000	19, 538, 763	23, 549, 000
Coke..... do.....	2, 346, 686	¹ 10, 310, 300	3, 676, 727	² 14, 540, 301
Ferro-alloys..... long tons.....	32, 587	¹ 963, 457	69, 125	² 2, 563, 705
Grindstones and pulpstones..... short tons.....	4, 291	122, 759	8, 749	237, 627
Gypsum..... do.....	(1)	(1)	(1)	(1)
Iron, pig..... long tons.....	2, 505, 268	² 37, 886, 811	4, 188, 482	² 60, 995, 721
Lime..... short tons.....	475, 485	2, 511, 368	558, 901	3, 353, 102
Marl, calcareous..... do.....	(1)	(1)	(1)	(1)
Mineral paints, zinc and lead pigments..... do.....	(1) ³	(1) ³	(1) ³	(1) ³
Mineral waters..... gallons sold.....	(5)	(5)	(5)	(5)
Natural gas..... M cubic feet.....	51, 466, 000	28, 640, 000	47, 929, 000	25, 103, 000
Natural gasoline..... gallons.....	5, 163, 000	229, 000	4, 662, 000	258, 000
Petroleum..... barrels.....	4, 644, 000	5, 430, 000	4, 235, 000	4, 540, 000
Rubbing stones, scythestones, and whetstones..... short tons.....	141	17, 874	(1)	(1)
Salt..... do.....	1, 196, 993	2, 429, 613	1, 382, 294	2, 599, 055
Sand and gravel..... do.....	5, 695, 546	3, 440, 534	4, 071, 808	2, 672, 052
Sand and sandstone (finely ground)..... do.....	(1)	(1)	(1)	(1)
Sand-lime brick..... thousands.....	(1) ⁴	(1) ⁴	(1) ⁴	(1) ⁴
Silica (quartz)..... short tons.....	(1)	(1)	(1)	(1)
Stone..... do.....	⁵ 6, 319, 870	⁵ 5, 107, 775	⁵ 5, 426, 490	⁵ 4, 518, 520
Sulphuric acid ⁷ do.....	(1) ²	(1) ²	(1) ²	(1) ²
Miscellaneous ⁸	(1) ²	3, 461, 184		4, 438, 507
Total value, eliminating duplications.....		87, 996, 538		91, 145, 609

¹ Value included under "Miscellaneous."² Value not included in total value for State.³ Exclusive of puzzolan and natural cement in 1932 and of natural cement in 1933, value for which is included under "Miscellaneous."⁴ Figures obtained through cooperation with Bureau of the Census.⁵ No canvass.⁶ Exclusive of unclassified stone, value for which is included under "Miscellaneous."⁷ From zinc smelting.⁸ Includes minerals indicated by "1", "2", and "6" above.

Mineral production of Oklahoma, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native).....short tons	(1)	(1)	(1)	(1)
Briquets, fuel.....do	(1 2)	(1 2)	(1 2)	(1 2)
Bromine.....pounds	(1)	(1)	(1)	(1)
Calcium chloride.....short tons	(1)	(1)	(1)	(1)
Cement.....barrels	(1)	(1)	(1)	(1)
Chats.....short tons	110, 000	\$16, 500	91, 050	\$18, 210
Clay products.....do		\$ 79, 835		\$ 128, 396
Clay, raw.....short tons	6, 097	\$ 69, 875	5, 630	\$ 65, 141
Coal.....do	1, 255, 466	2, 646, 000	1, 238, 244	2, 616, 000
Gypsum.....do	(1)	(1)	(1)	(1)
Lead.....do	10, 634	638, 040	18, 038	1, 334, 812
Magnesium sulphate (natural).....pounds			(1)	(1)
Mineral waters.....gallons sold	(4)	(4)	(4)	(4)
Natural gas.....M cubic feet	255, 487, 000	28, 108, 000	245, 759, 000	23, 760, 000
Natural gasoline.....gallons	378, 584, 000	8, 803, 000	360, 488, 000	12, 177, 000
Ores (crude), etc.:				
Lead.....short tons	500	(5)		
Lead-zinc.....do	1, 268, 200	(5)	2, 188, 200	(5)
Zinc.....do	329, 000	(5)	1, 433, 900	(5)
Petroleum.....barrels	153, 244, 000	137, 920, 000	182, 251, 000	120, 800, 000
Potassium salts.....short tons	(1)	(1)		
Pumice.....do	812	6, 500	(1)	(1)
Salt.....do	(1)	(1)	(1)	(1)
Sand and gravel.....do	616, 250	306, 415	1, 220, 425	361, 425
Stone.....do	788, 780	589, 617	737, 060	575, 734
Sulphuric acid 6.....do	(1 2)	(1 2)	(1 2)	(1 2)
Tripoli.....do	(1)	(1)	(1)	(1)
Zinc.....do	63, 437	3, 806, 220	91, 065	7, 649, 460
Miscellaneous 7.....do		2, 492, 555		3, 493, 169
Total value, eliminating duplications.....		185, 120, 909		172, 560, 924

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Not valued as ore; value of recoverable metal content included under the metals.

⁶ From zinc smelting.

⁷ Includes minerals indicated by "1" above.

Mineral production of Oregon, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel.....short tons	(1 2)	(1 2)	(1 2)	(1 2)
Cement.....barrels	(1)	(1)	(1)	(1 2)
Clay products.....do				\$ 157, 137
Clay, raw.....short tons	(1 2)	(1 2)	(1 2)	(1 2)
Coal.....do	(1)	(1)	(1)	(1)
Copper.....pounds	32, 199	\$2, 029	11, 453	733
Diatomite.....short tons			(1)	(1)
Gems and precious stones.....do		(4)		(4)
Gold 5.....troy ounces	19, 861	410, 568	20, 240	517, 326
Lead.....short tons	4	238	5	347
Lime.....do			(1)	(1)
Mercury.....flasks (76 pounds)	2, 523	146, 145	1, 342	79, 483
Mineral waters.....gallons sold	(4)	(4)	(4)	(4)
Ores (crude), etc.:				
Copper.....short tons	176	(5)		
Dry and siliceous (gold and silver).....do	4, 973	(5)	11, 508	(5)
Lead.....do	1	(5)	2	(5)
Lead-zinc.....do	45	(5)	47	(5)
Platinum and allied metals.....troy ounces	83	3, 463	44	1, 647
Pumice.....short tons	140	2, 520	(1)	(1)
Sand and gravel.....do	1, 780, 715	839, 813	1, 636, 476	863, 671
Silver.....troy ounces	8, 616	2, 430	20, 760	7, 266
Stone.....short tons	7831, 150	7692, 266	71, 341, 660	71, 328, 940
Zinc.....do	6	362	6	516
Miscellaneous 8.....do		1, 349, 144		1, 091, 367
Total value, eliminating duplications.....		2, 989, 383		3, 521, 626

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of limestone, value for which is included under "Miscellaneous."

⁸ Includes minerals indicated by "1" and "2" above.

Mineral production of Pennsylvania, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel.....short tons.....	49, 209	¹ \$256, 163	49, 883	¹ \$244, 026
Cement.....barrels.....	² 16, 937, 209	² 16, 670, 336	² 12, 486, 585	² 15, 696, 852
Clay products.....		³ 12, 012, 271		³ 14, 020, 063
Clay, raw.....short tons.....	208, 133	¹ 551, 609	397, 944	¹ 958, 273
Coal:				
Anthracite.....do.....	49, 855, 221	222, 375, 129	49, 541, 344	206, 718, 405
Bituminous.....do.....	74, 775, 862	100, 361, 000	79, 295, 944	108, 418, 000
Coke.....do.....	4, 544, 187	¹ 17, 260, 086	6, 840, 419	¹ 25, 731, 239
Copper ⁴.....pounds.....	(⁵)	(⁵)	(⁵)	(⁵)
Feldspar (crude).....long tons.....	25	171	213	1, 442
Ferro-alloys.....do.....	96, 247	¹ 6, 733, 066	175, 172	¹ 13, 756, 984
Gems and precious stones.....do.....		(⁵)		(⁵)
Gold ⁴.....troy ounces.....	80	1, 660	209	5, 342
Iron ore:				
Sold to furnaces.....long tons.....	74, 420	157, 400	324, 052	650, 664
Sold for paint.....do.....	(⁵)	(⁵)	499	(⁵)
Iron, pig.....do.....	2, 069, 553	¹ 32, 764, 148	3, 952, 862	¹ 62, 797, 008
Lime.....short tons.....	374, 244	2, 327, 131	433, 795	2, 810, 758
Marl, calcareous.....do.....	(⁵)	(⁵)	60	150
Mineral paints, zinc and lead pigments.....do.....	(¹ ⁵)	(¹ ⁵)	(¹ ⁵)	(¹ ⁵)
Mineral waters.....gallons sold.....	(⁵)	(⁵)	(⁵)	(⁵)
Natural gas.....M cubic feet.....	61, 611, 000	32, 080, 000	63, 579, 000	31, 979, 000
Natural gasoline.....gallons.....	11, 685, 000	535, 000	11, 686, 000	568, 000
Peat.....short tons.....	(⁵)	(⁵)	(⁵)	(⁵)
Petroleum.....barrels.....	12, 412, 000	23, 400, 000	12, 624, 000	23, 590, 000
Sand and gravel.....short tons.....	5, 352, 078	3, 829, 686	5, 044, 179	4, 212, 866
Sand and sandstone (finely ground).....do.....	(⁵)	(⁵)	(⁵)	(⁵)
Sand-lime brick.....thousands.....	(² ⁵)	(² ⁵)	(² ⁵)	(² ⁵)
Silver ⁴.....troy ounces.....	830	234	2, 300	805
Slate.....do.....		1, 355, 684		1, 124, 014
Stone.....short tons.....	⁸ 10, 842, 100	⁸ 9, 264, 631	12, 802, 020	11, 660, 318
Sulphuric acid (60° Baumé) ⁹.....do.....	93, 834	¹ 713, 138	113, 596	¹ 856, 514
Talc.....do.....	(⁵)	(⁵)	(⁵)	(⁵)
Tripoli (rottenstone).....do.....	103	3, 671	148	4, 487
Miscellaneous ¹⁰.....do.....		4, 663, 079		5, 467, 196
Total value, eliminating duplications.....		424, 734, 073		421, 846, 539

¹ Value not included in total value for State.

² Exclusive of puzzolan and natural cement, value for which is included under "Miscellaneous."

³ Figures obtained through cooperation with Bureau of the Census.

⁴ Copper, gold, and silver were recovered from pyritiferous magnetite. The quantity of such ore was 69,811 short tons in 1932 and 347,290 short tons in 1933; it is included in the figures shown for iron ore.

⁵ Value included under "Miscellaneous."

⁶ No canvass.

⁷ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁸ Exclusive of marble, value for which is included under "Miscellaneous."

⁹ From zinc smelting.

¹⁰ Includes minerals indicated by "²", "³", and "⁸" above.

Mineral production of Rhode Island, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Clay products.....		(¹ ²)		(¹ ²)
Coke.....short tons.....	(¹ ³)	(¹ ³)	(¹ ³)	(¹ ³)
Lime.....do.....	1, 927	\$22, 410	1, 503	\$17, 120
Mineral waters.....gallons sold.....	(⁵)	(⁵)	(⁵)	(⁵)
Sand and gravel.....short tons.....	903, 807	132, 739	397, 977	115, 973
Stone.....do.....	³ 41, 740	³ 290, 547	³ 11, 670	³ 210, 071
Miscellaneous ⁶.....do.....		1, 537, 186		1, 530, 636
Total value, eliminating duplications.....		506, 325		386, 983

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Exclusive of limestone in 1932 and of unclassified stone in 1933, value for which is included under "Miscellaneous."

⁶ Includes minerals indicated by "¹" and "³" above.

Mineral production of South Carolina, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Barite..... short tons.....	(1)	(1)	(1)	(1)
Clay products.....		(1)		(1)
Clay, raw..... short tons.....	73,269	\$503,991	95,654	\$289,288
Gold ¹ troy ounces.....	71	1,468	235	\$72,814
Mica, sheet..... pounds.....				5,996
Mineral waters..... gallons sold.....	(9)	(9)	(9)	(9)
Ore (dry and siliceous) (gold and silver)..... short tons.....	150	(9)	510	(9)
Sand and gravel..... do.....	(1)	(1)	119,567	59,163
Silver..... troy ounces.....	5	1	103	36
Stone..... short tons.....	450,150	717,095	354,140	659,443
Miscellaneous ⁷		232,129		236
Total value, eliminating duplications.....		950,693		1,014,162

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price \$25.56 per ounce).

⁵ No canvass.

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Includes minerals indicated by "1" above.

Mineral production of South Dakota, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....				(1)
Clay, raw..... short tons.....	330	\$2,475	344	\$1,764
Coal..... do.....	49,074	87,000	59,375	104,000
Feldspar (crude)..... long tons.....	6,067	22,256	3,220	12,058
Gems and precious stones.....		(9)		(9)
Gold ¹ troy ounces.....	480,338	9,929,459	512,404	13,097,040
Gypsum..... short tons.....	(1)	(1)	(1)	(1)
Lead..... do.....	(1)	4	210	(1)
Lime..... do.....	(1)	(1)	(1)	(1)
Lithium minerals..... do.....			336	10,477
Mica:				
Scrap..... do.....			(1)	(1)
Sheet..... pounds.....	852	149		
Mineral waters..... gallons sold.....	(9)	(9)	(9)	(9)
Natural gas..... M cubic feet.....	10,000	4,000	10,000	3,000
Ores (crude), etc.:				
Dry and siliceous (gold and silver)..... short tons.....	1,409,893	(9)	1,432,555	(9)
Pumice..... do.....	(1)	(1)		
Sand and gravel..... do.....	2,065,282	248,173	3,238,940	624,428
Sand-lime brick..... thousands.....	(1)	(1)		
Silver..... troy ounces.....	126,195	35,587	125,417	43,896
Stone..... short tons.....	196,100	442,507	133,520	376,078
Tin (metallic equivalent)..... pounds.....	1,000	220	240	(1)
Miscellaneous ⁷		348,468		387,527
Total value, eliminating duplications.....		11,118,029		14,658,504

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ No canvass.

⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Includes minerals indicated by "1" above.

Mineral production of Tennessee, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Aluminum.....pounds	(1) ¹	(1) ¹	(1) ²	(1) ²
Barite.....short tons	2,825	\$15,702	(1)	(1)
Cement.....barrels	1,551,750	1,644,446	1,468,860	\$2,044,970
Clay products.....	(1) ³	(1) ³	(1)	\$1,355,308
Clay, raw.....short tons	35,787	161,727	48,222	224,586
Coal.....do	3,537,882	4,670,000	3,774,761	5,255,000
Coke.....do	83,483	264,271	82,830	275,824
Copper.....pounds	(1)	(1)	(1)	(1)
Ferro-alloys.....long tons	(1) ²	(1) ²	(1) ²	(1) ²
Gold.....troy ounces	160	3,315	223	5,712
Iron ore.....long tons	(1)	(1)	24,912	47,824
Iron pig.....do	4,623	(1) ²	14,656	(1) ²
Iron sinter from copper sulphide ore.....do	(1)	(1)	(1)	(1)
Lead.....short tons	(1)	(1)	(1)	(1)
Lime.....do	106,706	496,200	119,587	548,242
Mineral waters.....gallons sold	(1)	(1)	(1)	(1)
Natural gas.....M cubic feet	22,000	8,000	48,000	8,000
Ores (crude), etc.:				
Copper.....short tons	221,485	(1)	333,413	(1)
Lead-zinc.....do	6,000	(1)	8,000	(1)
Zinc.....do	625,400	(1)	644,820	(1)
Petroleum.....barrels	5,000	4,000	5,000	3,000
Phosphate rock.....long tons	192,747	766,797	333,051	1,366,015
Pyrites.....do	(1)	(1)	(1)	(1)
Sand and gravel.....short tons	1,830,685	1,136,386	1,363,313	752,075
Silica (quartz).....do	(1)	(1)	(1)	(1)
Silver.....troy ounces	19,300	5,443	39,869	13,954
Slate.....do	(1)	(1)	(1)	(1)
Stone.....short tons	1,235,220	3,121,740	1,227,420	2,450,168
Sulphuric acid.....do	(1) ⁴	(1) ⁴	(1) ⁴	(1) ⁴
Tripoli.....do	(1)	(1)	(1)	(1)
Zinc.....do	(1)	(1)	(1)	(1)
Miscellaneous.....do	(1)	(1)	(1)	(1)
Total value, eliminating duplications.....		14,561,792		16,771,369

¹ Value included under "Miscellaneous."
² Value not included in total value for State.
³ Figures obtained through cooperation with Bureau of the Census.
⁴ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).
⁵ No canvass.
⁶ Not valued as ore; value of recoverable metal content included under the metals.
⁷ Exclusive of sandstone, value for which is included under "Miscellaneous."
⁸ From copper smelting.
⁹ Includes minerals indicated by "1" and "7" above.

Mineral production of Texas, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asphalt (native)..... short tons.....	132, 636	\$312, 663	126, 069	\$353, 847
Briquets, fuel..... do.....	(1 ²)	(1 ²)	(1 ²)	(1 ²)
Cement..... barrels.....	3, 797, 559	4, 862, 416	3, 091, 071	5, 268, 605
Clay products.....		\$ 777, 591		\$ 1, 033, 051
Clay, raw..... short tons.....	28, 945	\$ 202, 304	28, 951	\$ 207, 817
Coal..... do.....	636, 590	904, 000	821, 878	833, 000
Copper..... pounds.....	7, 000	441	2, 000	128
Fuller's earth..... short tons.....	49, 881	463, 374	45, 395	411, 350
Gems and precious stones.....		(⁴)		(⁴)
Gold ⁵ troy ounces.....	9	179		
Gypsum..... short tons.....	110, 360	1, 094, 092	112, 106	1, 058, 869
Helium..... cubic feet.....	(1 ⁶)	(1 ⁶)	(1 ⁶)	(1 ⁶)
Lead..... short tons.....	17	1, 020	3	222
Lime..... do.....	35, 903	340, 859	36, 286	339, 035
Mercury..... flasks (76 pounds).....	(¹)	(¹)	(¹)	(¹)
Mineral waters..... gallons sold.....	(⁴)	(⁴)	(⁴)	(⁴)
Natural gas..... M cubic feet.....	456, 832, 000	89, 066, 000	475, 691, 000	88, 264, 000
Natural gasoline..... gallons.....	371, 106, 000	8, 168, 000	366, 515, 000	11, 562, 000
Ores (crude), etc.:				
Copper..... short tons.....	104	(⁷)	45	(⁷)
Lead..... do.....	81	(⁷)	18	(⁷)
Petroleum..... barrels.....	312, 473, 000	259, 700, 000	402, 609, 000	225, 000, 000
Potassium salts..... short tons.....	(¹)	(¹)		
Salt..... do.....	139, 730	432, 118	165, 603	560, 035
Sand and gravel..... do.....	3, 909, 349	2, 213, 686	4, 317, 312	2, 264, 905
Sand-lime brick..... thousands.....	(1 ³)	(1 ³)		
Silver..... troy ounces.....	1, 422	401	160	56
Sodium sulphate from natural sources..... short tons.....			(¹)	(¹)
Stone..... do.....	\$ 920, 070	\$ 1, 386, 243	1, 244, 730	1, 170, 464
Sulphur..... long tons.....	1, 108, 112	19, 946, 016	1, 507, 749	27, 139, 432
Miscellaneous ⁸		461, 417		381, 900
Total value, eliminating duplications.....		390, 141, 325		365, 674, 433

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Gold valued at legal value (\$20.67+ per ounce).

⁶ For details of production in fiscal years see chapter on Helium in Minerals Yearbook, 1934.

⁷ Not valued as ore; value of recoverable metal content included under the metals.

⁸ Exclusive of basalt, value for which is included under "Miscellaneous."

⁹ Includes minerals indicated by "1" and "8" above.

Mineral production of Utah, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Arsenious oxide.....short tons..	750	\$39,150	2,091	\$112,914
Asphalt (native).....do.....	25,980	527,516	28,065	580,146
Cement.....barrels.....	(1)	(1)	(1)	(1)
Clay products.....	(1)	(1)	(1)	(1)
Clay, raw.....short tons..	12,731	\$119,614	16,152	\$141,673
Coal.....do.....	2,852,127	5,685,000	2,674,986	5,109,000
Coke.....do.....	109,373	(1)	77,101	(1)
Copper.....pounds.....	64,964,111	4,092,739	73,583,130	4,709,320
Diatomite.....short tons..	5	25		
Fuller's earth.....do.....	(1)	(1)	(1)	(1)
Gems and precious stones.....		(4)	(4)	(4)
Gold ¹.....troy ounces..	135,256	2,795,997	109,130	2,739,351
Gypsum.....short tons..	(1)	(1)	(1)	(1)
Iron ore:				
Sold to furnaces.....long tons..	136,874	(1)	95,129	(1)
Sold for paint.....do.....	(1)	(1)	150	(1)
Iron, pig.....do.....	(1)	(1)	(1)	(1)
Lead.....short tons..	62,776	3,766,589	58,688	4,342,933
Lime.....do.....	9,092	93,060	8,557	75,889
Mercury.....flasks (76 pounds)			(1)	(1)
Natural gas.....M cubic feet..	(1)	(1)	48,000	13,000
Ores (crude), etc.:				
Copper.....short tons..	3,196,677	(6)	3,524,073	(6)
Copper-lead.....do.....	8	(6)		
Dry and siliceous (gold and silver).....do.....	111,984	(6)	150,007	(6)
Lead.....do.....	88,780	(6)	62,319	(6)
Lead-zinc.....do.....	371,093	(6)	380,489	(6)
Zinc.....do.....			47	(6)
Petroleum.....barrels.....	(1)	(1)	(1)	(1)
Salt.....short tons..	61,230	132,930	56,305	141,330
Sand and gravel.....do.....	1,488,085	575,539	1,552,690	629,680
Silver.....troy ounces..	6,962,097	1,963,311	5,669,197	1,984,219
Stone.....short tons..	143,150	230,645	7 193,470	7 183,524
Sulphur.....long tons..			(1)	(1)
Sulphuric acid ².....short tons..	(1)	(1)	(1)	(1)
Uranium and vanadium ores.....do.....	(1)	(1)	5	(1)
Zinc.....do.....	29,666	1,779,957	29,745	2,498,546
Miscellaneous ³		3,321,011		2,621,791
Total value, eliminating duplications.....		22,620,230		24,311,851

¹ Value included under "Miscellaneous."² Figures obtained through cooperation with Bureau of the Census.³ Value not included in total value for State.⁴ No canvass.⁵ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).⁶ Not valued as ore; value of recoverable metal content included under the metals.⁷ Exclusive of marble, value for which is included under "Miscellaneous."⁸ From copper smelting.⁹ Includes minerals indicated by "1" and "7" above.

Mineral production of Vermont, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asbestos.....short tons..	(1)	(1)	(1)	(1)
Clay products.....	(1)	(1)	(1)	(1)
Clay, raw.....short tons..	(1)	(1)	(1)	(1)
Lime.....do.....	29,187	\$207,032	28,509	\$196,532
Micaceous minerals (mica schist).....do.....	(1)	(1)	(1)	(1)
Mineral waters.....gallons sold..	(1)	(1)	(1)	(1)
Sand and gravel.....short tons..	238,234	111,920	335,763	117,858
Scythestones.....do.....	(1)	(1)	(1)	(1)
Slate.....		885,543		688,903
Stone.....short tons..	\$ 267,010	\$ 4,777,754	186,930	4,312,441
Talc.....do.....	30,361	250,130	36,233	289,558
Miscellaneous ¹		187,506		153,800
Total value, eliminating duplications.....		6,401,143		5,792,574

¹ Value included under "Miscellaneous."² Figures obtained through cooperation with Bureau of the Census.³ Value not included in total value for State.⁴ No canvass.⁵ Exclusive of unclassified stone, value for which is included under "Miscellaneous."⁶ Includes minerals indicated by "1" and "5" above.

Mineral production of Virginia, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Barite.....short tons..	(1)	(1)	(1)	(1)
Briquets, fuel.....do..	(1 ²)	(1 ²)	-----	-----
Cement.....barrels..	(1)	(1)	(1)	(1)
Clay products.....		² \$864,609		³ \$1,089,297
Clay, raw.....short tons..	3,186	² 11,771	4,823	² 18,145
Coal.....do..	7,692,180	9,280,000	8,178,642	10,029,000
Coke.....do..	56,143	² 185,871	70,493	² 243,475
Feldspar (crude).....long tons..	6,759	31,990	13,459	52,758
Ferro-alloys.....do..	(1 ²)	(1 ²)	(1 ²)	(1 ²)
Gold ⁴.....troy ounces..	31	637	32	824
Gypsum.....short tons..	(1)	(1)	(1)	(1)
Iron ore.....long tons..	-----	-----	287	574
Iron, pig.....do..	1,710	(1 ²)	3,092	(1 ²)
Lead.....short tons..	(1)	(1)	(1)	(1)
Lime.....do..	78,771	435,085	84,597	487,957
Manganese ore.....long tons..	525	9,855	4,882	74,050
Manganiferous ore.....do..	-----	-----	404	2,032
Marl, calcareous.....short tons..	1,654	2,656	2,175	3,706
Mica:				
Scrap.....do..	(1)	(1)	(1)	(1)
Sheet.....pounds..	(1)	(1)	-----	-----
Millstones.....	-----	1,200	-----	800
Mineral waters.....gallons sold..	(⁵)	(⁵)	(⁵)	(⁵)
Ores (crude), etc.:				
Dry and siliceous (gold and silver).....short tons..	50	(⁶)	10	(⁶)
Lead-zinc.....do..	300,723	(⁶)	247,520	(⁶)
Zinc.....do..	4,000	(⁶)	-----	-----
Phosphate rock.....long tons..	(1)	(1)	(1)	(1)
Pyrites.....do..	(1)	(1)	(1)	(1)
Salt.....short tons..	(1)	(1)	(1)	(1)
Sand and gravel.....do..	1,089,609	620,542	1,461,059	1,168,234
Sand and sandstone (finely ground).....do..	-----	-----	(1)	(1)
Silver.....troy ounces..	8	2	-----	-----
Slate.....	-----	⁷ 76,264	-----	⁷ 84,126
Stone ⁸.....short tons..	2,399,640	2,704,009	2,096,750	2,302,125
Talc and ground soapstone ⁸.....do..	(1)	(1)	9,348	40,058
Titanium minerals:				
Ilmenite.....do..	(1)	(1)	(1)	(1)
Rutile.....do..	(1)	(1)	(1)	(1)
Zinc.....do..	(1)	(1)	(1)	(1)
Miscellaneous ¹	-----	3,524,304	-----	4,087,099
Total value, eliminating duplications.....	-----	16,927,446	-----	18,845,740

¹ Value included under "Miscellaneous."

² Value not included in total value for State.

³ Figures obtained through cooperation with Bureau of the Census.

⁴ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

⁵ No canvass.

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of granules, etc., value for which is included under "Miscellaneous."

⁸ Soapstone used as dimension stone included in figures for stone.

⁹ Includes minerals indicated by "1" and "2" above.

Mineral production of Washington, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Asbestos..... short tons.....	(1)	(1)	(1)	(1)
Briquets, fuel..... do.....	(1 2)	(1 2)	(1 2)	(1 2)
Cement..... barrels.....	(1)	(1)	(1)	(1)
Clay products.....		\$ 722, 583		\$ 533, 822
Clay, raw..... short tons.....	10, 371	2 11, 295	6, 101	2 7, 913
Coal..... do.....	1, 591, 426	4, 759, 000	1, 394, 068	3, 916, 000
Coke..... do.....	33, 346	2 231, 950	32, 196	2 144, 170
Copper..... pounds.....	5, 524	348	5, 781	370
Diatomite..... short tons.....	465	6, 015	363	5, 700
Gold 4..... troy ounces.....	5, 082	105, 057	4, 563	116, 622
Grindstones and pulpstones..... short tons.....	(1)	(1)	(1)	(1)
Iron ore..... long tons.....			1, 631	(1)
Lead..... short tons.....	921	55, 268	840	62, 176
Lime..... do.....	18, 862	199, 617	17, 214	170, 281
Magnesite..... do.....	(1)	(1)	(1)	(1)
Magnesium sulphate (natural)..... pounds.....	(1)	(1)	(1)	(1)
Mercury..... flasks (76 pounds).....	407	23, 575	(1)	(1)
Mineral waters..... gallons sold.....	(2)	(2)	(2)	(2)
Natural gas..... M cubic feet.....	(1)	(1)	110, 500	76, 700
Ores (crude), etc.:				
Dry and siliceous (gold and silver)..... short tons.....	8, 496	(2)	5, 275	(2)
Lead..... do.....	353	(2)	230	(2)
Lead-zinc..... do.....	33, 423	(2)	48, 479	(2)
Sand and gravel..... do.....	5, 158, 240	1, 687, 217	2, 278, 097	873, 111
Sand-lime brick..... thousands.....	(1 3)	(1 3)		
Silver..... troy ounces.....	17, 412	4, 910	18, 520	6, 482
Stone..... short tons.....	2, 483, 090	2 1, 995, 076	2 1, 393, 670	2 1, 162, 323
Talc..... do.....			(1)	(1)
Tungsten ore (60 percent concentrates)..... do.....	(1)	(1)	43	(1)
Zinc..... do.....	2, 245	134, 680	3, 369	283, 003
Miscellaneous 5.....		2, 981, 444		2, 218, 672
Total value, eliminating duplications.....		12, 816, 678		9, 387, 645

1 Value included under "Miscellaneous."

2 Value not included in total value for State.

3 Figures obtained through cooperation with Bureau of the Census.

4 Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

5 No canvass.

6 Not valued as ore; value of recoverable metal content included under the metals.

7 Exclusive of marble, value for which is included under "Miscellaneous."

8 Includes minerals indicated by "1" and "2" above.

Mineral production of West Virginia, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons.....	40, 996	1 \$157, 792	57, 723	1 \$180, 865
Bromine..... pounds.....	(2)	(2)	219, 560	31, 784
Calcium chloride..... short tons.....	(2)	(2)	3, 272	21, 189
Cement..... barrels.....	(2)	(2)	(2)	(2)
Clay products.....		\$ 9, 557, 550		\$ 10, 753, 559
Clay, raw..... short tons.....	12, 240	1 17, 549	31, 765	1 43, 783
Coal..... do.....	85, 608, 735	90, 786, 000	94, 343, 535	107, 124, 000
Coke..... do.....	951, 479	1 2, 147, 431	1, 153, 530	1 2, 426, 889
Ferro-alloys..... long tons.....	(1 2)	(1 2)	(1 2)	(1 2)
Grindstones and pulpstones..... short tons.....	2, 441	102, 062	4, 753	172, 656
Iron, pig..... long tons.....	245, 869	(1 2)	449, 219	(1 2)
Lime..... short tons.....	82, 757	427, 241	121, 473	655, 303
Manganese ore..... long tons.....			95	(2)
Marl, calcareous..... short tons.....	(2)	(2)	(2)	(2)
Mineral waters..... gallons sold.....	(4)	(4)	(1)	(1)
Natural gas..... M cubic feet.....	100, 540, 000	44, 557, 000	100, 653, 000	42, 198, 000
Natural gasoline..... gallons.....	43, 773, 000	1, 612, 000	39, 848, 000	1, 803, 000
Petroleum..... barrels.....	3, 876, 000	6, 050, 000	3, 815, 000	5, 860, 000
Salt..... short tons.....	49, 629	243, 185	63, 818	329, 051
Sand and gravel..... do.....	1, 151, 985	1, 171, 377	1, 493, 483	1, 529, 031
Sand and sandstone (finely ground)..... do.....			(2)	(2)
Stone..... do.....	5 1, 264, 040	3 1, 312, 551	1, 437, 090	1, 232, 672
Sulphuric acid 6..... do.....	(1 2)	(1 2)	(1 2)	(1 2)
Miscellaneous 7.....		4, 647, 267		8, 486, 880
Total value, eliminating duplications.....		156, 643, 214		172, 726, 695

1 Value not included in total value for State.

2 Value included under "Miscellaneous."

3 Figures obtained through cooperation with Bureau of the Census.

4 No canvass.

5 Exclusive of unclassified stone, value for which is included under "Miscellaneous."

6 From zinc smelting.

7 Includes minerals indicated by "1" and "2" above.

SUMMARY OF MINERAL PRODUCTION

A41

Mineral production of Wisconsin, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Briquets, fuel..... short tons	258, 631	¹ \$2, 006, 019	275, 758	¹ \$1, 867, 619
Cement..... barrels	(²)	(²)	(²)	(²)
Clay products.....		³ 1, 398, 883		³ 906, 019
Clay, raw..... short tons			60	¹ 60
Coke..... do	(^{1 2})	(^{1 2})	(^{1 2})	(^{1 2})
Iron ore..... long tons	360, 037	905, 601	613, 011	1, 646, 076
Lead..... short tons	910	54, 600	540	39, 960
Lime..... do	27, 283	209, 868	28, 909	220, 465
Marl, calcareous..... do	(²)	(²)	500	450
Mineral paints, zinc and lead pigments..... do	(^{1 2})	(^{1 2})		
Mineral waters..... gallons sold	(⁴)	(⁴)	(⁴)	(⁴)
Ores (crude), etc.:				
Lead-zinc..... short tons	310, 300	(⁵)	256, 400	(⁵)
Pyrites..... long tons	6, 527	(²)		(²)
Sand and gravel..... short tons	3, 620, 710	1, 307, 299	3, 368, 516	1, 377, 325
Sand and sandstone (finely ground)..... do	(²)	(²)	(²)	(²)
Sand-lime brick..... thousands	(^{2 3})	(^{2 3})		
Silica (quartz)..... short tons	(²)	(²)	(²)	(²)
Stone..... do	1, 682, 510	2, 190, 938	1, 198, 630	1, 805, 201
Sulphuric acid ⁶ do	(^{1 2})	(^{1 2})	(^{1 2})	(^{1 2})
Zinc..... do	7, 522	451, 320	7, 800	655, 200
Miscellaneous ⁷		3, 656, 731		3, 804, 303
Total value, eliminating duplications.....		7, 414, 456		7, 153, 881

¹ Value not included in total value for State.

² Value included under "Miscellaneous."

³ Figures obtained through cooperation with Bureau of the Census.

⁴ No canvass.

⁵ Not valued as ore; value of recoverable metal content included under the metals.

⁶ From zinc smelting.

⁷ Includes minerals indicated by "1" above.

Mineral production of Wyoming, 1932-33

Product	1932		1933	
	Quantity	Value	Quantity	Value
Cement..... barrels	(¹)	(¹)	(¹)	(¹)
Clay products.....		(^{1 2})		(^{1 2})
Clay, raw..... short tons	13, 492	³ \$108, 177	21, 327	³ \$166, 837
Coal..... do	4, 170, 963	9, 317, 000	4, 013, 167	8, 636, 000
Copper..... pounds	397	25		
Gold ⁴ troy ounces	257	5, 305	2, 200	56, 231
Gypsum..... short tons	(¹)	(¹)	(¹)	(¹)
Iron ore..... long tons			288, 640	(¹)
Lead..... short tons	5	294		(⁵)
Mineral waters..... gallons sold	(⁵)	(⁵)	(⁵)	(⁵)
Natural gas..... M cubic feet	28, 938, 000	4, 064, 000	25, 830, 000	3, 409, 000
Natural gasoline..... gallons	44, 391, 000	1, 833, 000	34, 103, 000	1, 387, 000
Ores (crude), etc.:				
Dry and siliceous (gold and silver)..... short tons	615	(⁵)	1, 071	(⁵)
Lead..... do	25	(⁵)		(⁵)
Petroleum..... barrels	13, 418, 000	10, 942, 000	11, 227, 000	6, 570, 000
Potassium salts..... short tons			(¹)	(¹)
Sand and gravel..... do	1, 563, 338	567, 487	1, 358, 510	728, 836
Silver..... troy ounces	195	55	260	91
Sodium sulphate from natural sources..... short tons	2, 128	11, 706	(¹)	(¹)
Stone..... do	⁷ 309, 780	⁷ 320, 378	364, 270	364, 769
Talc..... do	(⁵)	(⁵)		
Miscellaneous ⁸		282, 038		873, 466
Total value, eliminating duplications.....		27, 343, 288		22, 025, 393

¹ Value included under "Miscellaneous."

² Figures obtained through cooperation with Bureau of the Census.

³ Value not included in total value for State.

⁴ Gold valued as follows—1932: At legal value (\$20.67+ per ounce); 1933: At average weighted price (\$25.56 per ounce).

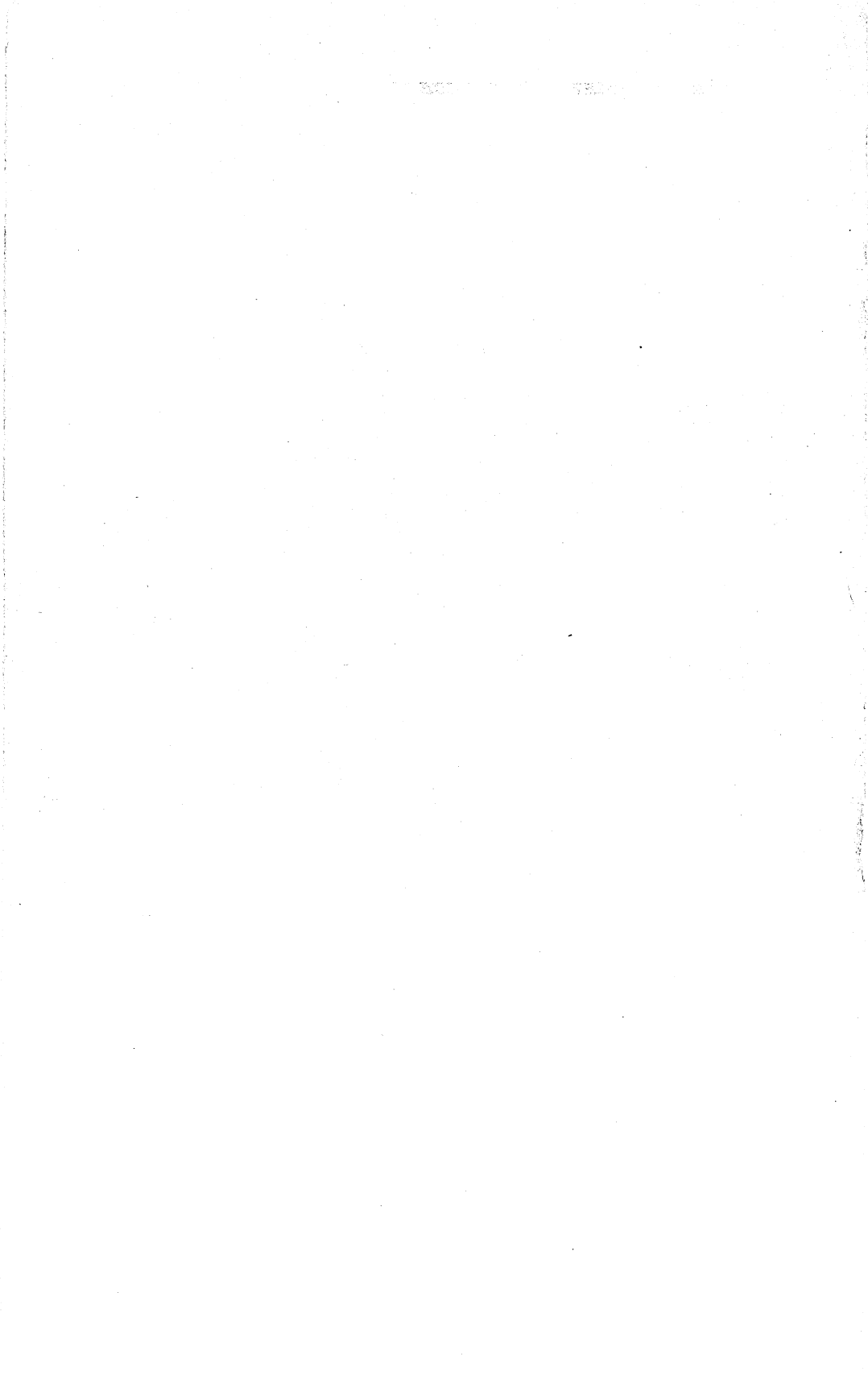
⁵ No canvass.

⁶ Not valued as ore; value of recoverable metal content included under the metals.

⁷ Exclusive of unclassified stone, value for which is included under "Miscellaneous."

⁸ Figures not available.

⁹ Includes minerals indicated by "1" and "7" above.



LIME

(DETAILED STATISTICS)

By A. T. COONS

SUMMARY OUTLINE

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PRODUCTION

Lime sold by producers in the United States, 1929-33

Year	Number of plants in operation	Short tons	Value ¹	
			Total	Average
1929.....	381	4,269,768	\$33,478,848	\$7.84
1930.....	375	3,387,880	25,616,486	7.56
1931.....	345	2,707,614	18,674,613	6.90
1932.....	343	1,959,990	12,302,231	6.28
1933.....	332	2,269,280	14,253,659	6.28

¹ Value given represents value of bulk lime f. o. b. at point of shipment and does not include cost of barrel or package.

Lime sold by producers in the United States in 1933, by States

State	Number of plants in operation	Short tons	Value	State	Number of plants in operation	Short tons	Value
Alabama.....	10	107,810	\$565,384	New Jersey.....	2	(1)	(1)
Arizona.....	3	8,587	95,432	New Mexico.....	1	(1)	(1)
Arkansas.....	2	(1)	(1)	New York.....	10	36,369	\$286,625
California.....	9	35,754	342,999	North Carolina.....	2	(1)	(1)
Colorado.....	4	2,887	31,337	Ohio.....	25	558,901	3,353,102
Connecticut.....	2	(1)	(1)	Oregon.....	1	(1)	(1)
Florida.....	2	(1)	(1)	Pennsylvania.....	110	433,795	2,810,758
Georgia.....	1	3,898	23,506	Puerto Rico.....	8	5,631	84,841
Hawaii.....	1	5,995	74,938	Rhode Island.....	1	1,503	17,120
Idaho.....	2	(1)	(1)	South Dakota.....	1	(1)	(1)
Illinois.....	6	81,888	575,862	Tennessee.....	10	119,587	548,242
Indiana.....	7	64,479	355,720	Texas.....	8	36,286	339,035
Kentucky.....	1	(1)	(1)	Utah.....	7	8,557	75,889
Maine.....	2	(1)	(1)	Vermont.....	6	28,509	196,532
Maryland.....	12	26,469	154,318	Virginia.....	23	84,597	487,957
Massachusetts.....	5	56,941	481,487	Washington.....	5	17,214	170,281
Michigan.....	5	43,959	292,144	West Virginia.....	13	121,473	655,303
Minnesota.....	2	(1)	(1)	Wisconsin.....	11	28,909	220,465
Missouri.....	9	230,051	1,121,295	Undistributed.....		117,980	875,823
Montana.....	1	1,251	17,264				
Nevada.....	2	(1)	(1)		332	2,269,280	14,253,659

¹ Included under "Undistributed."

Lime sold by producers in the United States in 1933, by uses

Use	Quantity		Value	
	Percent of total	Short tons	Total	Average
Agricultural.....	10.8	246,110	\$1,318,247	\$5.36
Building.....	23.5	533,088	3,828,594	7.18
Chemical:				
Glass works.....	3.7	82,634	391,565	4.74
Metallurgy.....	11.7	265,963	1,406,480	5.29
Paper mills.....	13.4	304,729	1,687,869	5.54
Refractory lime (dead-burned dolomite).....	11.5	261,812	2,064,869	7.89
Sugar refineries.....	.8	17,372	191,679	11.03
Tanneries.....	3.1	70,662	438,645	6.21
Water purification.....	7.7	174,694	1,001,474	5.73
Other uses ¹	13.8	312,216	1,924,237	6.16
Total chemical.....	65.7	1,490,082	9,106,818	6.11
Hydrated lime (included in above totals).....	100.0	2,269,280	14,253,659	6.28
	37.0	840,007	5,622,026	6.69

¹ Details of distribution shown in last table on p. 4.

Lime sold by producers in the United States in 1933, by States and uses

State	Building		Agricultural		Chemical																Total	
	Short tons	Value	Short tons	Value	Glass works		Paper mills		Sugar refineries		Tanneries		Metallurgy		Other chemical		Short tons	Value				
					Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value			Short tons	Value		
Alabama.....	22,452	\$128,161	22	\$82			33,474	\$141,431	2,672	\$16,085	341	\$1,849	19,435	\$114,599	29,414	\$163,177	107,810	\$665,384				
Arizona.....	4,147	44,393	(1)	(1)							(1)	(1)	690	3,588	43,185	8,587	95,432					
Arkansas.....	(1)	(1)	(1)	(1)			(1)	(1)						(1)	(1)	(1)	(1)					
California.....	15,339	163,395	1,262	9,684			3,174	27,780	(1)	(1)	(1)	(1)	4,211	35,870	10,450	95,043	35,754	342,999				
Colorado.....	876	10,064											(1)	(1)	(1)	(1)	2,887	31,337				
Connecticut.....	(1)	(1)	(1)	(1)			(1)	(1)						(1)	(1)	(1)	(1)	(1)				
Florida.....	(1)	(1)	(1)	(1)					(1)	(1)				(1)	(1)	(1)	(1)	(1)				
Georgia.....	3,898	23,506															3,898	23,506				
Hawaii.....	275	3,438							5,720	71,500							5,995	74,938				
Idaho.....	(1)	(1)															(1)	(1)				
Illinois.....	11,799	93,919	(1)	(1)			(1)	(1)			(1)	(1)	(1)	(1)		34,833	249,228	81,888	575,862			
Indiana.....	4,024	22,934	(1)	(1)	(1)	(1)	15,523	80,008			3,169	19,443	7,251	32,945	32,207	187,468	64,479	355,720				
Kentucky.....	(1)	(1)	(1)	(1)											(1)	(1)	(1)	(1)				
Maine.....	(1)	(1)	(1)	(1)			(1)	(1)			(1)	(1)			(1)	(1)	(1)	(1)				
Maryland.....	1,645	9,545	24,824	144,773													26,469	154,318				
Massachusetts.....	29,568	289,596	5,071	31,689			7,946	55,889	(1)	(1)	4,397	33,722	(1)	(1)	9,660	68,112	56,941	481,487				
Michigan.....	443	4,133	(1)	(1)			36,852	247,047	(1)	(1)	(1)	(1)	(1)	(1)	4,692	27,652	43,959	292,144				
Minnesota.....	(1)	(1)													(1)	(1)	(1)	(1)				
Missouri.....	29,924	199,838	757	5,427	(1)	(1)	28,218	114,355	(1)	(1)	2,238	11,357	28,920	108,292	138,694	675,594	230,051	1,121,295				
Montana.....	1,132	15,645											94	1,269	25	350	1,251	17,264				
Nevada.....	(1)	(1)	(1)	(1)									(1)	(1)	(1)	(1)	(1)	(1)				
New Jersey.....	(1)	(1)	(1)	(1)											(1)	(1)	(1)	(1)				
New Mexico.....	(1)	(1)													(1)	(1)	(1)	(1)				
New York.....	4,275	34,997	2,475	17,541			4,886	39,989	(1)	(1)	(1)	(1)	14,144	110,139	6,777	55,006	36,369	286,625				
North Carolina.....	(1)	(1)	(1)	(1)											(1)	(1)	(1)	(1)				
Ohio.....	215,360	1,306,201	53,738	182,775	70,432	\$325,034	25,620	126,018			202	1,215	33,842	151,772	159,207	1,260,087	558,901	3,353,102				
Oregon.....	(1)	(1)															(1)	(1)				
Pennsylvania.....	46,501	356,983	118,193	712,807	8,023	41,792	30,759	196,339	498	3,702	27,076	166,448	59,760	318,492	142,985	1,014,195	493,795	2,810,758				
Puerto Rico.....	601	10,057	821	5,025					4,209	69,759							5,631	84,841				
Rhode Island.....	494	6,330	870	8,330											139	2,460	1,503	17,120				
South Dakota.....	(1)	(1)															(1)	(1)				
Tennessee.....	30,084	195,898	(1)	(1)			47,004	179,433	(1)	(1)	3,033	15,291			18,380	86,286	119,587	548,242				
Texas.....	17,147	162,255			435	3,611			(1)	(1)	(1)	(1)	3,717	20,575	14,735	150,483	36,286	339,035				
Utah.....	1,878	22,026											(1)	(1)	(1)	(1)	8,557	75,889				
Vermont.....	5,239	41,450	1,646	6,535			4,978	36,459			1,853	15,062	14	136	14,779	96,890	28,509	196,532				
Virginia.....	27,959	195,419	11,986	59,997			4,635	27,787	125	688	9,241	44,652	5,807	25,644	24,844	133,770	84,597	487,957				
Washington.....	2,615	29,961	(1)	(1)			10,830	98,481	(1)	(1)	(1)	(1)	1,471	18,354	1,471	18,354	17,214	170,281				
West Virginia.....	10,940	66,144	8,615	34,874	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	21,986	102,070	71,295	405,159	121,473	655,303				
Wisconsin.....	13,469	99,731	685	3,717			(1)	(1)			(1)	(1)			5,758	59,739	28,909	220,465				
Undistributed.....	30,504	291,675	15,145	95,041	3,744	21,128	50,830	316,803	4,148	29,945	19,112	129,606	66,092	378,849	24,789	198,342	117,980	875,823				
	633,083	3,828,594	246,110	1,318,247	82,634	391,565	304,729	1,637,869	17,372	191,679	70,662	438,645	295,963	1,406,480	748,722	4,990,580	2,269,280	14,253,659				

1 Included under "Undistributed."

TABLE

BUILDING LIME

Lime sold by Ohio producers for construction, 1931-33¹

	1931		1932		1933	
	Short tons	Value	Short tons	Value	Short tons	Value
Quicklime.....	4,946	\$31,832	2,618	\$14,705	1,841	\$11,807
Hydrated lime.....	373,454	2,126,805	245,090	1,137,117	214,019	1,294,394
	378,400	2,158,677	247,708	1,151,822	215,860	1,306,207

¹ Ohio produced 40 percent of the total building lime sold by producers in 1931, 41.5 percent in 1932, and 40.5 percent in 1933.

Shipments of hydrated lime from plants in the United States and in Ohio in 1933, by destinations

Destination	From all plants		From Ohio plants		
	Short tons	Distribution (percent)	Short tons	Distribution (percent)	Group total (percent)
Illinois, Indiana, Michigan, Ohio.....	185,617	22.1	103,126	39.78	55.6
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, West Virginia.....	323,215	38.5	107,466	41.46	33.2
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.....	44,349	5.3	12,689	4.89	28.6
Florida, Georgia, North Carolina, South Carolina, Virginia.....	73,245	8.7	14,676	5.66	20.0
Alabama, Kentucky, Louisiana, Mississippi, Tennessee.....	43,646	5.2	6,866	2.65	15.7
Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, Texas, Wisconsin.....	116,653	13.9	13,456	5.19	11.5
Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming.....	43,283	5.1	909	.35	2.1
Undistributed and exports.....	9,999	1.2	45	.02	.5
	840,007	100.0	259,233	100.00	30.9

CHEMICAL LIME

Chemical lime sold by producers in the United States for "other uses" in 1933

Use	Short tons	Value	Use	Short tons	Value
Acid neutralization.....	5,914	\$47,606	Paint (calcimine, whitewash, varnish, etc.).....	6,800	\$43,772
Alkali works (ammonia, soda, potash).....	9,701	60,215	Polishing and buffing.....	1,140	21,283
Bleach, liquid.....	15,566	94,395	Rubber.....	2,061	13,978
Calcium acetate.....	6,253	34,382	Salt refining.....	5,138	23,670
Calcium carbide.....	23,247	89,485	Sand-lime brick.....	4,349	27,283
Coke and gas manufacture (gas purification and plant byproducts).....	22,766	133,964	Silica brick.....	8,745	56,518
Food products.....	9,190	45,518	Soap.....	7,835	27,193
Gelatin (edible).....	2,116	15,117	Tobacco curing.....	3,076	12,660
Glue.....	3,487	22,100	Wood distillation.....	1,559	10,325
Insecticides (spraying materials).....	22,428	161,931	Undistributed ¹	19,898	129,706
Magnesia works.....	4,592	29,198	Unspecified.....	105,192	665,910
Oil and fat manufacture.....	21,163	158,028		312,216	1,924,237

¹ Lime used in alcohol manufacture, asphalt filler, bichromates, bleaching powder, calcium phosphate, corn products, cosmetics, creameries and dairies, depilatories, disinfectants (chloride of lime, etc.), dyes, explosives, flour mills, fruit juices, gasoline, lubricants, mold wash, oxygen purification, retarder, roads, sanitation, slag cements, textiles, wire drawing, and wool cleaning.

AGRICULTURAL LIME AND OTHER LIMING MATERIALS

Agricultural lime and other liming materials sold by producers in the United States in 1933, by kinds

Kind	Short tons		Value	
	Gross	Effective lime content ¹	Total	Average
Lime from limestone:				
Quicklime.....	84,267	71,000	\$315,566	\$3.74
Hydrated.....	161,843	107,200	1,002,681	6.20
Lime from oyster shells ²	3,314	2,800	22,948	6.92
Oyster shells (crushed) ²	38,619	19,000	76,628	1.98
Limestone.....	994,540	428,000	1,239,724	1.25
Calcareous marl.....	10,641	4,700	34,865	3.28

¹ Estimated.

² Bureau of Fisheries, Statistical Bull. 1086 for 1933, p. 7.

HYDRATED LIME

Hydrated lime sold by producers in the United States, 1929-33

Year	Number of plants in operation	Short tons	Value	
			Total	Average
1929.....	157	1,550,771	\$12,771,525	\$8.24
1930.....	163	1,329,562	10,357,445	7.79
1931.....	157	1,119,266	7,739,047	6.91
1932.....	158	852,251	5,370,273	6.30
1933.....	157	840,007	5,622,026	6.69

Hydrated lime sold by producers in the United States in 1933, by States

State	Short tons	Value	State	Short tons	Value
Alabama.....	21,184	\$130,872	Pennsylvania.....	138,914	\$973,762
California.....	11,334	110,414	Rhode Island.....	1,084	11,102
Georgia.....	3,898	23,506	Tennessee.....	27,409	185,132
Hawaii.....	5,970	74,625	Texas.....	20,351	211,347
Illinois.....	24,491	172,627	Vermont.....	8,468	51,969
Indiana.....	30,730	185,718	Virginia.....	36,645	234,994
Maryland.....	15,300	96,440	Washington.....	2,637	27,957
Massachusetts.....	22,142	173,474	West Virginia.....	28,017	169,244
Michigan.....	9,111	74,573	Wisconsin.....	7,304	54,319
Missouri.....	91,240	524,115	Undistributed ¹	62,160	516,360
Montana.....	751	10,514			
New York.....	11,634	89,246		840,007	5,622,026
Ohio.....	259,233	1,519,716			

¹ Arizona, Arkansas, Colorado, Connecticut, Florida, Kentucky, Maine, Minnesota, Nevada, New Jersey, North Carolina, Puerto Rico, South Dakota, and Utah.

Hydrated lime sold by producers in the United States in 1933, by uses

Use	Short tons	Value	Use	Short tons	Value
Agricultural.....	161,843	\$1,002,681	Chemical—Continued.		
Building.....	392,498	2,637,148	Tanneries.....	27,231	\$174,517
Chemical:			Water purification.....	85,978	570,814
Glass works.....	841	4,449	Other uses.....	125,545	861,406
Metallurgy.....	10,541	75,691	Total chemical.....	285,666	1,982,197
Paper mills.....	22,272	154,971		840,007	5,622,026
Sugar refineries.....	13,258	140,350			

EXPORTS AND IMPORTS ¹*Lime exported from the United States, 1929-33*

Year	Short tons	Value	Year	Short tons	Value
1929.....	17,334	\$239,440	1932.....	3,579	\$56,479
1930.....	14,536	192,421	1933.....	3,710	58,095
1931.....	11,924	129,943			

¹ Figures on exports and imports compiled by Claude Galiher, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Lime exported from the United States in 1933, by countries

Country	Short tons	Value	Country	Short tons	Value
North America:			South America:		
Bermudas.....	2	\$60	Argentina.....	3	\$46
Canada.....	431	6,502	Chile.....	4	111
Central America:			Colombia.....	44	681
British Honduras.....	(¹)	7	Peru.....	832	11,923
Costa Rica.....	2	36	Venezuela.....	43	623
Guatemala.....	22	390	Europe:		
Honduras.....	76	1,214	France.....	10	418
Nicaragua.....	7	243	Italy.....	29	658
Panama.....	190	3,647	Sweden.....	17	677
Salvador.....	35	527	United Kingdom.....	16	588
Mexico.....	174	3,190	Asia:		
Newfoundland and Labrador.....	132	2,207	China.....	1	32
West Indies:			Japan.....	388	10,193
British:			Philippine Islands.....	113	2,308
Jamaica.....	47	1,174	Other Asia.....	1	8
Other British.....	22	405	Africa (Union of South).....	1	56
Cuba.....	42	958		3,710	58,095
Dominican Republic.....	941	7,500			
Netherland.....	7	134			
Virgin Islands of the United States.....	78	1,579			

¹ Less than 1 ton.

Lime imported for consumption in the United States, 1929-33

Year	Hydrated lime		Other lime		Dead-burned dolomite		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1929.....	6,347	\$97,238	15,154	\$293,498	(¹)	(¹)	21,501	\$390,736
1930.....	3,336	40,381	17,370	238,516	² 3,024	² \$77,918	23,730	356,815
1931.....	2,268	26,622	12,190	155,245	6,051	152,795	20,509	334,662
1932.....	1,677	18,756	7,100	77,279	5,120	115,808	13,897	211,843
1933.....	1,200	11,865	9,305	93,399	6,763	163,081	17,268	268,345

¹ Not separately recorded.

² June 18 to Dec. 31; not separately recorded prior to change in tariff.

Lime (exclusive of dead-burned dolomite) imported into the United States, 1932-33,
by countries and districts

[General imports]

Country	District	1932		1933	
		Short tons	Value	Short tons	Value
Belgium	Massachusetts			(¹)	\$4
	(Maine and New Hampshire)	164	\$2,689	174	2,204
Canada	San Francisco	756	8,868	906	8,841
	Vermont	(¹)	3	2	12
	Washington	7,788	83,025	9,349	92,700
Cuba	Puerto Rico	1	7		
Germany	New York	11	668	15	747
Mexico	Arizona			1	12
	(New York)	6	287	6	139
United Kingdom	Philadelphia	51	488	52	581
	Pittsburgh			(¹)	24
		8,777	96,035	10,505	105,264

¹ Less than 1 ton.

SHIPMENTS

Lime supplies available for consumption in continental United States in 1933, by States, in short tons

State	Sales by producers	Shipments from State	Shipments into State	Supply			
				Hydrated	Quicklime	Total	Pounds per capita ¹
Alabama	107,810	39,448	7,331	10,917	64,776	75,693	56
Arizona	8,587	6,359		748	1,480	2,228	10
Arkansas	(²)	(²)	(²)	3,874	7,856	11,730	13
California	35,754	5,829	16,852	16,261	30,516	46,777	15
Colorado	2,887		3,328	3,224	2,991	6,215	12
Connecticut	(²)	(²)	(²)	6,364	10,730	17,094	21
Delaware			12,918	3,774	9,144	12,918	107
District of Columbia			17,327	14,711	2,616	17,327	70
Florida	(²)		(²)	11,846	9,443	21,289	27
Georgia	3,898	550	17,707	14,576	6,479	21,055	14
Idaho	(²)	(²)	(²)	317	563	880	4
Illinois	81,888	34,756	79,417	49,035	77,514	126,549	32
Indiana	64,479	38,066	56,721	34,311	48,823	83,134	51
Iowa			31,572	12,161	19,411	31,572	25
Kansas			20,453	12,398	8,055	20,453	22
Kentucky	(²)		(²)	8,654	31,520	40,174	30
Louisiana	(²)		50,394	7,435	42,959	50,394	47
Maine	(²)	(²)	(²)	8,008	33,038	41,046	102
Maryland	26,469	8,527	31,273	27,192	22,023	49,215	59
Massachusetts	56,941	43,033	33,089	21,359	25,638	46,997	22
Michigan	43,959	31,465	76,864	32,112	57,246	89,358	35
Minnesota	(²)	(²)	(²)	9,147	13,960	23,107	18
Mississippi			10,668	3,228	7,440	10,668	10
Missouri	230,051	174,956	7,175	26,345	35,925	62,270	34
Montana	1,251	94	1,402	2,070	489	2,559	10
Nebraska			7,314	5,908	1,406	7,314	11
Nevada	(²)	(²)	(²)	6,069	542	6,611	142
New Hampshire			7,328	1,992	5,336	7,328	31
New Jersey	(²)		(²)	51,931	33,446	85,377	41
New Mexico	(²)		(²)	689	4,481	5,170	24
New York	36,369	10,017	153,529	101,425	78,456	179,881	28
North Carolina	(²)	(²)	(²)	18,409	25,978	44,387	27
North Dakota			4,543	4,141	402	4,543	13
Ohio	558,901	358,945	78,632	70,159	208,429	278,588	82
Oklahoma	(²)		12,273	7,556	4,717	12,273	10
Oregon	(²)		(²)	1,265	4,609	5,874	12
Pennsylvania	433,795	178,016	125,498	115,956	265,321	381,277	78
Rhode Island	1,503	395	9,285	5,320	5,073	10,393	30
South Carolina	(²)		8,184	5,820	2,364	8,184	9
South Dakota	(²)		(²)	1,985	340	2,325	7
Tennessee	119,587	91,390	7,809	13,412	22,594	36,006	27

See footnotes at end of table.

Lime supplies available for consumption in continental United States in 1933, by States, in short tons—Continued

State	Sales by producers	Shipments from State	Shipments into State	Supply			
				Hydrated	Quicklime	Total	Pounds per capita ¹
Texas.....	36,286	5,059	1,844	20,819	12,252	33,071	11
Utah.....	8,557	284	93	2,682	5,684	8,366	32
Vermont.....	28,509	25,990	920	1,306	2,133	3,439	19
Virginia.....	84,597	57,486	30,925	22,594	35,442	58,036	48
Washington.....	17,214	2,883	1,223	2,671	12,883	15,554	19
West Virginia.....	121,473	101,322	61,898	8,226	73,823	82,049	93
Wisconsin.....	28,909	7,631	43,086	18,445	45,019	64,364	43
Wyoming.....	-----	-----	1,257	1,161	96	1,257	11
Undistributed.....	117,980	46,675	233,759	-----	-----	-----	-----
	2,257,654	³ 1,269,176	1,263,891	830,008	1,422,361	2,252,369	36

¹ Based on Bureau of the Census preliminary statement.

² Included under "Undistributed."

³ Includes 5,235 tons of lime exported or unspecified by producers as to destination.

Lime shipped in continental United States in 1933, by origin and destination of shipments, in short tons

Destination	Illinois, Indiana, Michigan, Ohio			Maryland, New Jersey, New York, Pennsylvania, West Virginia			Connecticut, Maine, Massachusetts, Rhode Island, Vermont			Florida, Georgia, North Carolina, Virginia		
	Hydrated lime	Quick lime	Total	Hydrated lime	Quick lime	Total	Hydrated lime	Quick lime	Total	Hydrated lime	Quick lime	Total
Illinois, Indiana, Michigan, Ohio	152,237	283,893	436,130	3,492	42,608	46,100	-----	-----	-----	45	1,018	1,063
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, West Virginia	107,860	88,376	196,236	184,377	345,959	530,336	18,282	20,846	39,128	10,980	29,323	40,303
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	12,689	2,104	14,793	4,367	27,371	31,738	27,293	51,954	79,247	-----	516	516
Florida, Georgia, North Carolina, South Carolina, Virginia	14,676	840	15,516	2,679	6,118	8,797	107	-----	107	37,520	24,616	62,136
Alabama, Kentucky, Louisiana, Mississippi, Tennessee	9,986	20,960	30,946	23	377	400	-----	-----	-----	-----	-----	-----
Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, Texas, Wisconsin	24,883	29,077	53,960	-----	221	221	-----	-----	-----	-----	3	3
Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	1,063	93	1,156	-----	-----	-----	-----	-----	-----	-----	-----	-----

Destination	Alabama, Kentucky, Tennessee			Arkansas, Minnesota, Missouri, Texas, Wisconsin			Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington			United States		
	Hydrated lime	Quick lime	Total	Hydrated lime	Quick lime	Total	Hydrated lime	Quick lime	Total	Hydrated lime	Quick lime	Total
Illinois, Indiana, Michigan, Ohio	1,101	12,699	13,800	28,742	51,794	80,536	-----	-----	-----	185,617	392,012	577,629
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, West Virginia	-----	-----	-----	1,716	325	2,041	-----	-----	-----	323,215	484,829	808,044
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	-----	-----	-----	-----	3	3	-----	-----	-----	44,349	81,948	126,297
Florida, Georgia, North Carolina, South Carolina, Virginia	18,158	47,883	66,041	105	249	354	-----	-----	-----	73,245	79,706	152,951
Alabama, Kentucky, Louisiana, Mississippi, Tennessee	29,895	117,834	147,729	3,742	30,118	33,860	-----	-----	-----	43,646	169,289	212,935
Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, Texas, Wisconsin	69	245	314	91,571	119,955	211,526	130	-----	130	116,653	149,501	266,154
Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	-----	-----	-----	9,247	6,928	16,175	32,973	58,055	91,028	43,283	65,076	108,359

LIME

GOLD, SILVER, COPPER, LEAD, AND ZINC IN NEVADA

(DETAILED STATISTICS—MINE REPORT)

By F. W. HORTON AND H. M. GAYLORD

SUMMARY OUTLINE

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The output of gold, silver, copper, lead, and zinc from Nevada ores and gravels in 1933, in terms of recovered metals, was 98,590.28 fine ounces of gold, 1,148,621 fine ounces of silver, 28,489,610 pounds of copper, 4,606,732 pounds of lead, and 12,774,550 pounds of zinc. The quantity of gold decreased 24 percent, that of silver 12 percent, and that of copper 9.5 percent. These decreases, however, were more than offset by increases of over 3,725,000 and 12,519,000 pounds in the output of lead and zinc, respectively, and by improvement in price of all five metals. The large increase in output of zinc was due partly to the marketing in 1933 of zinc concentrates which had been produced and stock-piled in 1931. There were 422 lode mines and 116 placers producing in 1933 compared with 382 lode mines and 103 placers in 1932.

White Pine and Nye Counties retained their positions as the leading producers. The metal output of each exceeded \$1,000,000 in value, and together they accounted for two thirds of the State total.

Premium on newly mined gold.—There were four epochs of gold prices for newly mined gold in the United States in 1933: (1) The period of the legal coinage value of \$20.671835, from January 1 to August 9 to all producers; (2) that of (a) \$20.671835 to the majority of producers and (b) the fluctuating world price as secured by export by some producers, to August 29; (3) the period of fluctuating world price as secured through the agency of the Federal Reserve banks, to October 25 (period of actual bank sales, from September 8 to November 1); and (4) the period of the Reconstruction Finance Corporation arbitrarily fixed, gradually rising price (generally above the world price), from October 25 to December 31, 1933. For further details see chapter of Minerals Yearbook, 1934, on Gold and Silver (pp. 25 to 52), by Chas. W. Henderson.

Following is a table on mine production of gold in Nevada, 1929–33, in terms of recovered metal; two values are given for 1933—(1) at legal coinage value (\$20.67 + per ounce) and (2) at average weighted price (\$25.56 per ounce).

*Mine production of gold in Nevada, 1929–33, in terms of recovered metal*¹

Year	Fine ounces	Value ¹	Year	Fine ounces	Value ¹
1929.....	163, 711. 22	\$3, 384, 211	1932.....	129, 719. 83	\$2, 681, 547
1930.....	149, 064. 47	3, 081, 436	1933.....	98, 590. 28	2, 038, 042
1931.....	142, 293. 76	2, 941, 473			2, 519, 968

¹ 1929–32: At legal value (\$20.67+ per ounce); 1933: At both legal coinage value (\$20.67+ per ounce) and average weighted price (\$25.56 per ounce).

² At legal coinage value (\$20.67+ per ounce).

³ At average weighted price (\$25.56 per ounce).

Calculation of value of metal production.—The value of metal production hereinafter reported has been calculated at the figures given in the table that follows. Gold is figured at the mint value for fine gold, that is, \$20.671835 an ounce. The silver price is the average New York price for bar silver. The copper, lead, and zinc prices are weighted averages, for each year, of all grades of primary metal sold by producers.

Prices of silver, copper, lead, and zinc, 1929–33

Year	Silver	Copper	Lead	Zinc	Year	Silver	Copper	Lead	Zinc
	<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>		<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>
1929.....	\$0.533	\$0.176	\$0.063	\$0.066	1932.....	\$0.282	\$0.063	\$0.030	\$0.030
1930.....	.385	.130	.050	.048	1933.....	.350	.064	.037	.042
1931.....	.290	.091	.037	.038					

Mine production of gold, silver, copper, lead, and zinc in Nevada, 1929–33, in terms of recovered metals

Year	Mines producing		Ore, old tailings, etc. (short tons)	Gold		Silver	
	Lode	Placer		Fine ounces	Value	Fine ounces	Value
1929.....	323	15	7,355,500	163,711.22	\$3,384,211	4,923,526	\$2,624,239
1930.....	247	33	4,757,178	149,064.47	3,081,436	4,219,832	1,624,635
1931.....	271	65	3,565,472	142,293.76	2,941,473	2,562,071	743,001
1932.....	382	103	1,855,031	129,719.83	2,681,547	1,304,365	367,831
1933 ¹	422	116	1,678,454	98,590.28	2,038,042	1,148,621	402,017

Year	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
1929.....	140,138,809	\$24,664,430	19,692,568	\$1,240,632	16,920,083	\$1,116,725	\$33,030,237
1930.....	109,203,512	14,196,457	23,058,381	1,152,919	29,168,117	1,400,070	21,455,517
1931.....	72,634,497	6,609,739	15,860,634	586,843	20,861,348	792,731	11,673,787
1932.....	31,487,606	1,983,719	880,986	26,430	254,795	7,644	5,067,171
1933 ¹	28,489,610	1,823,335	4,606,732	170,449	12,774,550	536,531	4,970,374

¹ Figures include gold, silver, copper, lead, and zinc recovered from zinc concentrates produced in 1931 but not marketed until 1933.

Gold and silver produced at placer mines in Nevada, 1929–33

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value
1929.....	2,117.00	\$43,762	1,025	\$546
1930.....	1,859.44	38,438	847	326
1931.....	2,883.25	59,602	860	249
1932.....	5,408.22	111,798	1,743	492
1933.....	5,769.54	119,267	1,991	697

Gold.—In 1933 the output of gold in Nevada was 98,590.28 fine ounces compared with 129,719.83 ounces in 1932, a decrease of 24 percent. Nye, White Pine, and Esmeralda Counties, in the order given, were the leading gold producers and furnished 70 percent of the entire output; they were followed by Storey and Lander Counties, each with an output exceeding 5,000 ounces. Robinson, Round Mountain, Manhattan, Goldfield, Silver Peak, and Comstock were

the leading gold-producing districts; each yielded more than 5,000 but less than 20,000 ounces, and their total output amounted to 63,916.56 ounces or 65 percent of the State total.

Dry gold ore yielded nearly 74 percent, copper ore nearly 12 percent, and dry silver ore 5 percent of the total gold produced in Nevada in 1933. Direct smelting of ore was the leading method of recovery, accounting for 38 percent of the total; amalgamation yielded 24 percent; smelting of concentrates, 17 percent; and cyanidation, 15 percent. Nearly five times as much gold was derived from flotation concentrates as from table concentrates.

The production of gold from placers was 5,769.54 ounces, slightly more than in 1932 but again less than 6 percent of the total.

Silver.—Continuing a decline that has been uninterrupted since 1928, production of silver in Nevada decreased 155,744 ounces in 1933 compared with 1932 and was less than in any year since 1899. The value of the output, however, was \$34,186 more than in 1932, due to the higher price of the metal.

Nye County was by far the largest silver producer, accounting for 43 percent of the State total; it was followed by Lincoln and White Pine Counties, which contributed 19 and 14 percent, respectively. The following districts, in order of output, each produced over 80,000 ounces of silver: Tonopah, Pioche, Robinson, and Comstock. Collectively these four districts furnished 785,790 ounces or 68 percent of the State total.

In 1933 smelting of ore yielded 57 percent of the total silver; smelting of concentrates, 31 percent; and cyanidation, 6 percent. More than 95 percent of the silver recovered from concentrates was derived from flotation concentrates.

Of the total silver, 68 percent (780,148 ounces) was obtained from dry and siliceous ores in 1933 compared with 93 percent in 1932, indicating a notable increase in importance of base-metal ores as a source of silver.

Copper.—The quantity of copper produced in Nevada in 1933 was less than in any year after 1922 and only 18 percent of that in 1928, since when there has been a continuous decline. The output in 1933 decreased 2,997,996 pounds (9.5 percent) from that in 1932 and its value \$160,384; 99 percent of it came from White Pine County—almost entirely from the Robinson district—and .98 percent from smelting flotation concentrates.

Lead.—The production of lead in Nevada in 1933 was 4,606,732 pounds or more than five times and its value was \$170,449 or nearly seven times that in 1932. Lincoln County furnished 83 percent of the State total, largely from the Pioche, Jack Rabbit, and Groom districts, in the order named.

Lead-zinc ore supplied 71 percent of the total lead; lead ore, 14 percent; and copper-lead ore, 10 percent. Three quarters of the production was obtained from flotation concentrates and the remainder almost entirely from direct smelting of ores.

Zinc.—The increase in production in 1933 was even greater in zinc than in lead. The output was 50 times and its value 70 times that in 1932. It came largely from the Pioche and Tybo districts, Lincoln and Nye Counties, respectively. The ores were treated by flotation and the concentrates shipped to smelters. Approximately one third of the total was from zinc flotation concentrates produced in the Tybo district in 1931 but not marketed until 1933.

MINE PRODUCTION BY COUNTIES

Mine production of gold, silver, copper, lead, and zinc in Nevada in 1933, by counties, in terms of recovered metals

County	Gold					Silver (lode and placer)	
	Lode		Placer		Total value	Fine ounces	Value
	Fine ounces	Value	Fine ounces	Value			
Churchill.....	47.09	\$973			\$973	1,677	\$587
Clark.....	1,866.83	38,591	40.32	\$833	39,424	5,038	1,763
Douglas.....	92.19	1,906			1,906	231	81
Elko.....	2,933.40	60,639	18.35	379	61,018	46,949	16,432
Esmeralda.....	16,048.08	331,743	87.80	1,815	333,558	47,814	16,735
Eureka.....	230.02	4,755	521.50	10,780	15,535	21,892	7,662
Humboldt.....	1,132.08	23,402	84.66	1,750	25,152	6,137	2,148
Lander.....	3,565.68	73,709	1,441.17	29,792	103,501	16,569	5,799
Lincoln.....	2,753.10	56,912			56,912	219,100	76,685
Lyon.....	3,342.51	69,096	42.27	874	69,970	9,354	3,274
Mineral.....	1,897.39	39,223	74.61	1,542	40,765	11,837	4,143
Nye.....	31,428.58	649,686	2,762.34	57,103	706,789	491,592	172,057
Pershing.....	3,848.49	79,555	492.74	17,186	89,741	28,023	9,808
Storey.....	5,056.46	104,526	1.96	41	104,567	84,026	29,409
Washoe.....	451.00	9,323	27.85	576	9,899	229	80
White Pine.....	18,127.84	374,736	173.97	3,596	378,332	158,153	55,354
Total, 1932.....	92,820.74	1,918,775	5,769.54	119,267	2,038,042	1,148,621	402,017
	124,311.61	2,569,749	5,408.22	111,798	2,681,547	1,304,365	367,831

County	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
Churchill.....			8,820	\$326			\$1,886
Clark.....	4,201	\$269	75,631	2,798	23,346	\$981	45,235
Douglas.....	215	14	1,990	74			2,075
Elko.....	7,355	471	184,414	6,823			84,744
Esmeralda.....	2,385	153	3,474	129			350,575
Eureka.....	1,990	127	57,220	2,117			25,441
Humboldt.....	125	8	6,020	223			27,531
Lander.....	62,770	4,017	4,890	174			118,491
Lincoln.....	163,451	10,461	3,806,646	140,846	8,375,410	351,767	636,671
Lyon.....	32,820	2,100	1,267	47			75,391
Mineral.....	1,460	93	26,603	984			45,985
Nye.....	22,200	1,421	232,840	8,615	4,293,670	180,418	1,069,300
Pershing.....			22,980	850			100,399
Storey.....	580	37					134,013
Washoe.....							9,979
White Pine.....	28,190,058	1,804,164	174,137	6,443	80,124	3,365	2,247,658
Total, 1932.....	28,489,610	1,823,335	4,606,732	170,449	12,774,550	536,531	4,970,374
	31,487,606	1,983,719	880,986	26,430	254,795	7,644	5,067,171

Ore, old tailings, etc., sold or treated and lode mines producing in Nevada, 1932-33, by counties

County	Ore, old tailings, etc. (short tons)		Lode mines producing		County	Ore, old tailings, etc. (short tons)		Lode mines producing	
	1932	1933	1932	1933		1932	1933	1932	1933
Churchill.....	225	78	5	6	Mineral.....	2,511	2,035	39	40
Clark.....	7,237	5,381	23	23	Nye.....	95,942	102,135	63	63
Douglas.....	123	65	6	4	Ormsby.....	100		1	
Elko.....	51,139	4,355	26	35	Pershing.....	2,568	3,291	37	35
Esmeralda.....	283,652	242,461	22	38	Storey.....	5,788	32,193	28	22
Eureka.....	1,156	655	9	9	Washoe.....	487	335	17	11
Humboldt.....	1,542	2,281	16	21	White Pine.....	1,383,808	1,225,428	30	44
Lander.....	4,667	3,765	20	24					
Lincoln.....	5,869	47,137	10	18					
Lyon.....	3,217	6,859	30	29					
						1,855,031	1,678,454	382	422

MINING INDUSTRY

ORE CLASSIFICATION

Ore, old tailings, etc., sold or treated in Nevada in 1933, with content in terms of recovered metals¹

Source	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold ore.....	² 421, 754	72, 524. 35	204, 635	74, 316	20, 825	-----
Dry gold and silver ore.....	20, 549	2, 468. 92	106, 264	1, 165	4, 560	-----
Dry silver ore.....	³ 6, 681	4, 926. 07	469, 249	1, 898	27, 790	-----
Copper ore.....	1, 197, 498	11, 545. 65	69, 605	28, 226, 322	895	-----
Lead ore.....	1, 583	724. 99	33, 594	4, 476	628, 705	-----
Zinc ore.....	202	⁴ 198. 00	⁴ 60, 835	⁴ 18, 760	⁴ 213, 520	⁵ 4, 375, 794
Copper-lead ore.....	2, 885	32. 56	32, 345	151, 893	449, 050	-----
Lead-zinc ore.....	27, 302	410. 20	170, 103	10, 780	3, 261, 587	8, 398, 756
Total, lode mines.....	1, 678, 454	92, 820. 74	1, 146, 630	28, 489, 610	4, 606, 732	12, 774, 550
Total, placers.....	-----	5, 769. 54	1, 991	-----	-----	-----
	1, 678, 454	98, 590. 28	1, 148, 621	28, 489, 610	4, 606, 732	12, 774, 550
Total, 1932.....	1, 855, 031	129, 719. 83	1, 304, 365	31, 487, 606	880, 986	254, 795

¹ Totals for 1933 include gold, silver, copper, lead, and zinc recovered from zinc concentrates produced in 1931 but not marketed until 1933.

² Includes 270,105 tons of old tailings and 1 ton of mill cleanings cyanided; 1,200 tons of old tailings and 260 tons of mill cleanings amalgamated; and 127 tons of old tailings, 2 tons of mill cleanings, and 1 ton of slag smelted.

³ Includes 187 tons of mill cleanings smelted.

⁴ Figure represents metal recovered from zinc concentrates produced in 1931 but not marketed until 1933.

⁵ Figure includes metal recovered from zinc concentrates produced in 1931 but not marketed until 1933.

Value of metals from ore, old tailings, etc., sold or treated in Nevada in 1933, by classes of ore¹

Class	Ore, old tailings, etc. (short tons)	Gold	Silver	Copper	Lead	Zinc	Total value
Dry gold ore.....	421, 754	\$1, 499, 211	\$71, 622	\$4, 756	\$771	-----	\$1, 576, 360
Dry gold and silver ore.....	20, 549	50, 830	37, 192	75	161	-----	88, 258
Dry silver ore.....	6, 681	101, 831	164, 237	121	1, 028	-----	267, 217
Copper ore.....	1, 197, 498	238, 670	24, 362	1, 806, 485	33	-----	2, 069, 550
Lead ore.....	1, 583	14, 987	11, 758	286	23, 262	-----	50, 293
Zinc ore.....	202	² 4, 093	² 21, 292	² 1, 201	² 7, 900	³ \$183, 783	³ 218, 269
Copper-lead ore.....	2, 885	673	11, 321	9, 721	16, 615	-----	38, 330
Lead-zinc ore.....	27, 302	8, 480	59, 536	690	120, 679	352, 748	542, 133
	1, 678, 454	1, 918, 775	401, 320	1, 823, 335	170, 449	536, 531	4, 850, 410
Total, 1932.....	1, 855, 031	2, 569, 749	367, 339	1, 983, 719	26, 430	7, 644	4, 954, 881

¹ Totals for 1933 include value of gold, silver, copper, lead, and zinc recovered from zinc concentrates produced in 1931 but not marketed until 1933.

² Figure represents value of metal recovered from zinc concentrates produced in 1931 but not marketed until 1933.

³ Figure includes value of metal recovered from zinc concentrates produced in 1931 but not marketed until 1933.

Ore, old tailings, etc., sold or treated in Nevada in 1933, by counties, with content in terms of recovered metals¹

DRY GOLD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Churchill.....	15	24.22	146			
Clark.....	2 5, 186	1,798.93	3,727	2,391	7,782	
Douglas.....	46	41.19	31			
Elko.....	3 3, 886	2,916.06	37,474	6,030		
Esmeralda.....	4 242,064	15,868.56	28,183	2,385	2,915	
Eureka.....	129	80.07	1,294	100	3,280	
Humboldt.....	2, 189	1,051.32	3,696			
Lander.....	3, 698	3,553.43	10,669	60,830	2,847	
Lincoln.....	5 16, 766	2,219.03	10,136	830	1,341	
Lyon.....	6 6, 704	3,334.98	9,280		127	
Mineral.....	7 1, 940	1,697.63	2,844		270	
Nye.....	8 97, 250	26,542.80	28,194	1,330	945	
Pershing.....	2, 784	3,709.26	4,804		1,248	
Storey.....	9 15, 283	3,073.53	20,539	180		
Washoe.....	335	451.00	218			
White Pine.....	10 23, 479	5,562.34	43,100	240	70	
Total, 1932.....	421,754 481,080	72,524.35 98,732.26	204,635 520,666	74,316 66,929	20,825 28,867	

DRY GOLD AND SILVER ORE

Churchill.....	22	8.47	445			
Elko.....	6	9.00	654			
Humboldt.....	76	35.00	2,132	125	4,360	
Storey.....	16,910	1,382.93	63,187	400		
White Pine.....	3,535	1,023.52	39,846	640		
Total, 1932.....	20,549 10,496	2,458.92 3,645.21	106,264 649,706	1,165 2,816	4,360 1,730	

DRY SILVER ORE

Churchill.....	2	1.40	443			
Clark.....	1		455			
Elko.....	2		95			
Esmeralda.....	392	173.52	19,481			
Eureka.....	320	33.62	18,363	1,368	25,260	
Lander.....	39	2.25	5,489	460	1,370	
Mineral.....	1	2.12	358			
Nye.....	11 4, 768	4,571.27	399,794	70	1,160	
Pershing.....	457	135.00	21,275			
White Pine.....	699	6.89	3,496			
Total, 1932.....	6,681 1,615	4,926.07 163.99	469,249 46,666	1,898 2,888	27,790 1,725	

COPPER ORE

Clark.....	16	8.62	16	1,690		
Lander.....	27	4.00	104	1,480	320	
Lyon.....	143			32,700		
Mineral.....	5	6.20	148	268		
Nye.....	15	5.40	805	1,790	575	
White Pine.....	1,197,292	11,521.43	68,532	28,188,394		
Total, 1932.....	1,197,498 1,357,464	11,545.65 13,459.14	69,605 42,553	28,226,322 31,383,875	895	

¹ Also 198.00 ounces of gold, 60,835 ounces of silver, 18,760 pounds of copper, 213,520 pounds of lead, and 4,295,670 pounds of zinc recovered from zinc concentrates produced in Nye County in 1931 but not marketed until 1933.

² Includes 1,595 tons of old tailings cyanided.

³ Includes 140 tons of old tailings cyanided and 100 tons of old tailings amalgamated.

⁴ Includes 234,024 tons of old tailings cyanided.

⁵ Includes 16,000 tons of old tailings cyanided and 127 tons of old tailings smelted.

⁶ Includes 836 tons of old tailings and 1 ton of mill cleanings cyanided and 2 tons of mill cleanings smelted.

⁷ Includes 620 tons of old tailings cyanided.

⁸ Includes 16,490 tons of old tailings cyanided and 10 tons of mill cleanings amalgamated.

⁹ Includes 1,100 tons of old tailings and 250 tons of mill cleanings amalgamated and 1 ton of slag smelted.

¹⁰ Includes 400 tons of old tailings cyanided.

¹¹ Includes 187 tons of mill cleanings smelted.

Ore, old tailings, etc., sold or treated in Nevada in 1933, by counties, with content in terms of recovered metals—Continued

LEAD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Churchill.....	39	13.00	643		8,820	
Clark.....	117	59.28	829	120	50,342	
Douglas.....	19	51.00	200	215	1,990	
Elko.....	435	7.90	8,567	665	177,784	
Esmeralda.....	5	6.00	117		559	
Eureka.....	206	116.33	2,191	522	28,680	
Humboldt.....	16	45.76	294		1,660	
Lander.....	1	6.00	73		153	
Lincoln.....	271	91.75	6,671	608	118,805	
Lyon.....	12	7.53	71	120	1,140	
Mineral.....	89	191.44	8,457	1,192	26,333	
Nye.....	102	111.11	477	250	16,640	
Pershing.....	50	4.23	1,856		21,732	
White Pine.....	221	13.66	3,148	784	174,067	
Total, 1932.....	1,583 3,262	724.99 2,303.46	33,594 37,338	4,476 8,738	628,705 725,843	

ZINC ORE

White Pine.....	202					80,124
Total, 1932.....	202 36					80,124 29,684

COPPER-LEAD ORE

Elko.....	26	0.44	155	660	6,630	
Lincoln.....	2,859	32.12	32,190	151,233	442,420	
Total, 1932.....	2,885 484	32.56 7.55	32,345 5,693	151,893 22,360	449,050 28,026	

LEAD-ZINC ORE

Clark.....	61				17,507	23,346
Lincoln.....	27,241	410.20	170,103	10,780	3,244,080	8,375,410
Total, 1932.....	27,302 594	410.20	170,103	10,780	3,261,587 94,795	8,398,756 225,111

METALLURGIC INDUSTRY

Mine production of metals in Nevada in 1933, by methods of recovery

Method of recovery	Material treated	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Ore, old tailings, etc., amalgamated.....	92,502	23,569.69	15,180			
Ore, old tailings, etc., cyanided.....	280,739	14,409.51	66,859	1,870		
Ore, old tailings, etc., smelted.....	159,180	38,326.66	713,018	574,046	1,146,732	103,470
Concentrates smelted:						
Flotation.....	63,696	13,578.12	335,740	27,913,304	3,457,600	12,671,080
Table.....	158	2,936.76	15,833	390	2,400	
Total, lode mines.....		92,820.74	1,146,630	28,489,610	4,606,732	12,774,550
Total, placers.....		5,769.54	1,991			
Total, 1932.....		98,590.28 129,719.83	1,148,621 1,304,365	28,489,610 31,487,606	4,606,732 880,986	12,774,550 254,795

¹ Includes 127 tons of old tailings, 189 tons of mill cleanings, and 1 ton of slag.

² Includes zinc concentrates produced in 1931 but not marketed until 1933.

Mine production of metals from gold and silver mills in Nevada in 1933, by counties, in terms of recovered metals

County	Ore, old tailings, etc., treated		Recovered in bullion			
			Amalgamation		Cyanidation	
	Ore	Old tailings, etc.	Gold	Silver	Gold	Silver
	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>
Churchill.....	9		5.29	4		
Clark.....	3,442	1,595	959.72	558	617.69	1,748
Douglas.....	30		8.88	3		
Elko.....	3,430	240	547.54	425	2,108.39	35,521
Esmeralda.....	3,750	1,234,024	2,013.71	644	5,127.10	2,512
Humboldt.....	2,003		773.26	299		
Lander.....	715		60.79	86	32.78	4
Lincoln.....		16,000			897.90	5,831
Lyon.....	4,921	2,837	1,909.73	1,358	117.68	709
Mineral.....	950	620	182.14	139	435.70	412
Nye.....	73,492	3,16,500	12,268.96	7,887	4,189.65	10,231
Pershing.....	1,350		2,301.15	1,808		
Storey.....	7,121	4,1,350	1,978.33	1,786	878.84	8,747
Washoe.....	332		434.85	145		
White Pine.....	130	400	125.34	38	3.78	1,144
Total, 1932.....	101,675 157,638	1,271,566 2,289,190	23,569.69 21,372.14	15,180 13,216	14,409.51 52,406.37	66,859 569,834

County	Concentrates and recovered metal				
	Concentrates produced	Gold	Silver	Copper	Lead
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Esmeralda.....	61	1,025.10	836	210	2,400
Humboldt.....	5	7.99			
Lyon.....	11	66.60	1,466		
Nye.....	2	41.30	64		
Pershing.....	1	5.01	50		
Total, 1932.....	80 72	1,146.00 1,436.31	2,416 1,218	210 120	2,400 8,303

- ¹ Yielded also 1,870 pounds of copper recovered from "cyanide" precipitates.
- ² Includes 1 ton of mill cleanings.
- ³ Includes 10 tons of mill cleanings.
- ⁴ Comprises 1,100 tons of old tailings and 250 tons of mill cleanings.
- ⁵ Yielded also 5,475 pounds of copper recovered from "cyanide" precipitates.

Gross metal content of concentrates from concentrating mills in Nevada in 1933, by classes of concentrates ¹

Class of concentrates	Concentrates produced ¹	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry and siliceous.....	262	3,323.28	76,740	652		
Copper.....	46,862	11,437.40	41,479	28,835,510		
Lead.....	3,163	242.39	127,577	3,065	3,195,106	
Zinc.....	1,13,487	365.81	103,361	31,003	446,759	14,290,487
Total, 1932.....	1,63,774 59,099	15,368.88 14,899.51	349,157 47,983	28,870,230 32,100,094	3,641,865 366,794	14,290,487

¹ Includes zinc concentrates produced in 1931 but not marketed until 1933.

Nevada ore concentrated in 1933, by methods of concentration

Method of concentration	Ore concentrated	Concentrates and metal content		
		Concentrates produced ¹	Gold	Silver
Flotation..... Table.....	<i>Short tons</i> 1, 237, 699	<i>Short tons</i> ¹ 63, 696 78	<i>Fine ounces</i> 13, 578. 12 1, 790. 76	<i>Fine ounces</i> 335, 740 13, 417
	1, 246, 033	¹ 63, 774	15, 368. 88	349, 157

Method of concentration	Concentrates and metal content—Continued					
	Copper		Lead		Zinc	
	Gross	Recovered	Gross	Recovered	Gross	Recovered
Flotation..... Table.....	<i>Pounds</i> 28, 870, 000 230	<i>Pounds</i> 27, 913, 304 180	<i>Pounds</i> 3, 641, 865	<i>Pounds</i> 3, 457, 600	<i>Pounds</i> 14, 290, 487	<i>Pounds</i> 12, 671, 080
	28, 870, 230	27, 913, 484	3, 641, 865	3, 457, 600	14, 290, 487	12, 671, 080

¹ Includes zinc concentrates produced in 1931 but not marketed until 1933.

Mine production of metals from concentrating mills in Nevada in 1933, in terms of recovered metals ¹

BY COUNTIES

	Ore and old tailings treated		Concentrates and recovered metal ¹					
	Ore	Old tailings	Concentrates produced ¹	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Lander.....	35	-----	4	36. 00	226	-----	-----	-----
Lincoln.....	27, 241	-----	11, 526	410. 20	170, 103	10, 780	3, 244, 080	8, 375, 410
Lyon.....	728	-----	12	241. 62	2, 692	-----	-----	-----
Nye.....	-----	-----	² 5, 124	198. 00	60, 835	18, 760	213, 520	4, 295, 670
Pershing.....	1, 000	-----	7	937. 00	1, 735	-----	-----	-----
Storey.....	23, 681	-----	239	2, 108. 66	72, 087	580	-----	-----
White Pine.....	1, 193, 348	-----	46, 862	11, 437. 40	41, 479	27, 893, 364	-----	-----
Total, 1932.....	1, 246, 033 1, 351, 955	----- 1, 500	¹ 63, 774 59, 099	15, 368. 88 14, 899. 51	349, 157 47, 983	27, 913, 484 30, 558, 546	3, 457, 600 352, 122	12, 671, 080 -----

BY CLASSES OF CONCENTRATES

Dry and siliceous.....	262	3, 323. 28	76, 740	580	-----	-----
Copper.....	46, 862	11, 437. 40	41, 479	27, 893, 364	-----	-----
Lead.....	3, 163	242. 39	127, 577	2, 605	3, 051, 330	-----
Zinc.....	¹ 13, 487	365. 81	103, 361	26, 935	406, 270	12, 671, 080
	¹ 63, 774	15, 368. 88	349, 157	27, 913, 484	3, 457, 600	12, 671, 080

¹ Totals for 1933 include zinc concentrates produced in Nye County in 1931 but not marketed until 1933.
² Figures represent zinc concentrates produced in 1931 but not marketed until 1933.

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Gross metal content of Nevada concentrates produced in 1933, by classes of concentrates ¹

Class of concentrates	Concentrates produced ¹	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry and siliceous.....	342	4,469.28	79,156	954	3,433	-----
Copper.....	46,862	11,437.40	41,479	28,835.510	-----	-----
Lead.....	3,163	242.39	127,577	3,065	3,195,106	-----
Zinc.....	¹ 13,487	365.81	103,361	31,003	446,759	14,290,487
Total, 1932.....	¹ 63,854	16,514.88	351,573	28,870,532	3,645,298	14,290,487
	59,171	16,335.82	49,201	32,100,278	375,494	-----

¹ Totals for 1933 include zinc concentrates produced in 1931 but not marketed until 1933.

Mine production of metals from Nevada concentrates in 1933, in terms of recovered metals ¹

BY COUNTIES

	Concentrates ¹	Gold	Silver	Copper	Lead	Zinc
		<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Esmeralda.....	61	1,025.10	836	210	2,400	-----
Humboldt.....	5	7.99	-----	-----	-----	-----
Lander.....	4	36.00	226	-----	-----	-----
Lincoln.....	11,526	410.20	170,103	10,780	3,244,080	8,375,410
Lyon.....	23	308.22	4,158	-----	-----	-----
Nye.....	¹ 5,126	239.30	60,899	18,760	213,520	4,295,670
Pershing.....	8	942.01	1,785	-----	-----	-----
Storey.....	239	2,108.66	72,087	580	-----	-----
White Pine.....	46,862	11,437.40	41,479	27,883,364	-----	-----
Total, 1932.....	¹ 63,854	16,514.88	351,573	27,913,694	3,460,000	12,671,080
	59,171	16,335.82	49,201	30,558,666	360,425	-----

BY CLASSES OF CONCENTRATES

Dry and siliceous.....	342	4,469.28	79,156	790	2,400	-----
Copper.....	46,862	11,437.40	41,479	27,883,364	-----	-----
Lead.....	3,163	242.39	127,577	2,605	3,051,330	-----
Zinc.....	¹ 13,487	365.81	103,361	26,935	406,270	12,671,080
Total, 1932.....	¹ 63,854	16,514.88	351,573	27,913,694	3,460,000	12,671,080

¹ Totals for 1933 include zinc concentrates produced in Nye County in 1931 but not marketed until 1933.

Gross metal content of Nevada crude ore shipped to smelters in 1933, by classes of ore

Class of ore	Ore	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry and siliceous.....	49,982	36,669.33	563,293	81,332	58,137	-----
Copper.....	4,150	108.25	28,126	355,438	1,614	-----
Lead.....	1,583	724.99	33,594	6,123	663,302	-----
Zinc.....	202	-----	-----	-----	-----	100,160
Copper-lead.....	2,885	32.56	32,345	186,317	474,685	-----
Lead-zinc.....	61	-----	-----	-----	25,010	26,840
Total, 1932.....	58,863	37,535.13	657,358	629,210	1,222,748	127,000
	51,194	33,356.87	638,567	962,312	608,094	292,868

Mine production of metals from Nevada crude ore shipped to smelters in 1933, in terms of recovered metals

BY COUNTIES

	Ore	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Churchill.....	69	41.80	1,673		8,820	
Clark.....	344	289.42	2,721	4,201	75,631	23,346
Douglas.....	35	83.31	228	215	1,990	
Elko.....	685	277.47	10,999	7,355	184,414	
Esmeralda.....	4,687	7,882.17	43,789	305	1,074	
Eureka.....	655	230.02	21,848	1,990	57,220	
Humboldt.....	278	350.83	5,823	125	6,020	
Lander.....	3,015	3,436.11	16,019	62,770	4,690	
Lincoln.....	3,769	1,358.00	43,037	152,671	562,566	
Lyon.....	371	981.62	2,985	32,820	1,140	
Mineral.....	465	1,279.55	11,256	1,460	26,603	
Nye.....	11,956	14,067.50	355,736	3,440	19,320	
Pershing.....	941	605.33	24,342		22,980	
Storey.....	40	74.53	1,368			
Washoe.....	3	16.15	73			
White Pine.....	31,550	6,561.32	115,461	306,694	174,137	80,124
Total, 1932.....	58,863	37,535.13	657,358	574,046	1,146,605	103,470
	51,194	33,356.87	638,567	923,465	520,561	254,795

BY CLASSES OF ORE

Dry and siliceous.....	49,982	36,669.33	563,293	74,719	50,448	
Copper.....	4,150	108.25	28,126	342,958	895	
Lead.....	1,583	724.99	33,594	4,476	628,705	
Zinc.....	202					80,124
Copper-lead.....	2,885	32.56	32,345	151,893	449,050	
Lead-zinc.....	61				17,507	23,346
	58,863	37,535.13	657,358	574,046	1,146,605	103,470

REVIEW BY COUNTIES AND DISTRICTS

Mine production of gold, silver, copper, lead, and zinc in Nevada in 1933, by counties and districts, in terms of recovered metals¹

County and district ¹	Mines producing		Ore, old tailings, etc.	Gold			Silver (lode and placer) ²	Copper	Lead	Zinc	Total value
	Lode	Placer		Lode	Placer	Total					
Churchill County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
Fairview.....	3		28	27.40		27.40	587				\$771
Jessup.....	1		9	5.29		5.29	4				110
Clark County:											
Eldorado Canyon.....	7	3	1,823	663.20	40.32	703.52	2,807	250	5,664		15,751
Searchlight.....	10		2,996	912.58		912.58	1,182	2,261	12,040		19,869
Douglas County: Gardnerville.....	2		16	32.31		32.31	28				678
Elko County:											
Charleston.....	3	(³)	31	48.42	(³)	48.42	445	560	230		4,062
Delano.....	2		202	1.00		1.00	7,629	443	94,400		6,212
Gold Circle.....	8		2,968	2,586.90		2,586.90	36,540				66,265
Jarbidge.....	4		306	142.24		142.24	621				3,157
Tecoma.....	3		67	1.00		1.00	474	117	26,546		1,176
Tuscarora.....	3	1	41	13.63	8.06	21.69	660				679
Esmeralda County:											
Desert.....	5		437	180.70		180.70	654				3,964
Divide.....	6		839	1,593.55		1,593.55	22,254		265		40,741
Goldfield.....	11		232,693	7,779.40		7,779.40	3,017	2,175			162,009
Lida.....	(³)	3	(³)	(³)	82.27	82.27	32		(³)		1,712
Palmetto.....	1	1	25	1.57	5.53	7.10	1				147
Silver Peak.....	10		7,369	6,177.19		6,177.19	3,184	210	2,820		128,925
Eureka County:											
Cortez.....	3		371	74.42		74.42	18,424	1,368	25,640		9,023
Eureka.....	5		283	154.60		154.60	3,408	622	31,300		5,587
Lynn.....		16			521.50	521.50	44				10,795
Humboldt County:											
Boyd Basin.....	1		5	3.95		3.95	1				82
Gold Run.....	(³)	1	(³)	(³)	22.44	22.44	4				465
Leonard Creek.....		1			8.23	8.23	1				170
Paradise Valley.....	1		12	4.77		4.77	2				100
Pronto.....		1			8.46	8.46	2				176
Winnemucca.....	10	4	226	200.39	21.77	222.16	3,216	125	6,020		5,949
Lander County:											
Battle Mountain.....	16	13	2,989	3,271.48	1,362.78	4,634.26	9,292	59,000	3,064		102,940
Reese River.....	3	(³)	7	12.25	(³)	12.25	223		56		4,333
Lincoln County:											
Caliente.....	3		135	146.99		146.99	2,071	720	621		3,833
Eagle Valley.....	3		164	146.40		146.40	392				3,163
Ferguson.....	4		16,467	1,925.64		1,925.64	7,673	110	720		42,527
Groom.....	3		76	5.58		5.58	1,573	268	81,342		3,693

Lyon County:									
Ramsey	1		7	2.23		2.23			46
Silver City	20		6,182	2,179.78		2,179.78	6,283	120	47,14
Talaposa	1		136	124.93		124.94	536		2,771
Yerington	4	(³)	308	867.41	(³)	867.41	2,390	32,700	20,861
Mineral County:									
Aurora	1		10	12.09		12.09	9		253
Bell	3		734	259.75		259.75	274		5,466
Hawthorne	5		84	176.98		176.98	148	270	3,721
Pilot Mountain	3		58	111.60		111.60	5,583	523	21,383
Rand	1		33	32.00		32.00	1,096		5,085
Regent	8	5	279	122.94	65.93	188.87	501		1,045
Silver Star	11		739	610.28		610.28	980	160	4,079
Sunnyside	1		35	180.30		180.30	2,949	669	12,969
Nye County:									
Bullfrog	9		762	547.58		547.58	6,235	1,580	4,985
Fairplay	1		2	4.87		4.87	37		14,188
Jackson	1		9	24.00		24.00	165	789	114
Johnnie	(³)	1	(³)	(³)	6.32	6.32	2		583
Lodi	1		49	41.54		41.54	27		132
Mammoth	4		281	173.98		173.98	983	1,790	868
Manhattan	18	17	25,537	11,910.97	221.55	12,132.52	1,153		4,109
Pablo Creek	1		45	40.00		40.00	29		251,205
Round Mountain	5	(³)	69,871	13,468.54	(³)	13,468.54	17,349		837
Silverbow	1		5	1.00		1.00	132		284,491
Tonopah ⁶	10		4,786	4,678.94		4,678.94	400,379	220	67
Union	(³)	1	(³)	(³)	1.71	1.71	(³)		236,863
Pershing County:									
Imlay	4	3	487	147.64	69.41	217.05	21,185		9
Lovelock	1		7	8.46		8.46	5		11,902
Placerites		4			31.39	31.39	4		177
Rochester	5	7	310	217.83		282.42	316	4,140	650
Rosebud	(³)	4	(³)	(³)	291.43	291.43	35		6,102
Seossa	1		139	204.89		204.89	207		6,036
Seven troughs	8		920	1,892.12		1,892.12	1,523		4,307
Sierra	6	3	314	375.98	17.95	393.93	679	1,248	39,647
Spring Valley		2			7.05	7.05	2		8,427
Storey County: Comstock	22	(³)	32,193	5,056.46	(³)	5,056.46	84,026	580	147
Washoe County: White Horse	11	(³)	335	451.00	(³)	451.00	218		133,972

¹ Only those districts shown separately for which Bureau of Mines is at liberty to publish figures; other producing districts listed in footnote 7 and output included under "Undistributed."

² Of the 1,148,621 fine ounces of silver produced, 1,146,630 ounces were from lode mines and 1,991 ounces from placers.

³ Included under "Undistributed."

⁴ Exclusive of placer output, which is included under "Undistributed."

⁵ Exclusive of lode output, which is included under "Undistributed."

⁶ Tonopah district lies in both Esmeralda and Nye Counties.

Mine production of gold, silver, copper, lead, and zinc in Nevada in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, etc.	Gold			Silver (lode and placer)	Copper	Lead	Zinc	Total value
	Lode	Placer		Lode	Placer	Total					
White Pine County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
Black Horn.....	1		4	0.03		0.03	66		3,610		\$158
Cherry Creek.....	10		3,961	1,146.76		1,146.76	43,265	640			38,890
Duck Creek.....	5		81	1.71		1.71	1,042	784	81,520		3,466
Granite.....	1		6	8.96		8.96	3				186
Kimberly.....	1		83	19.84		19.84	355				534
Osceola.....	3	9	120	152.69	173.97	326.66	70				6,778
Robinson.....	13		1,220,700	16,767.73		16,767.73	111,780	28,188,634	71,550	62,210	2,195,076
White Pine.....	3		431	30.12		30.12	1,568				1,801
Undistributed ^{7 8}	81	16	37,826	4,653.95	2,736.88	7,390.83	308,987	193,201	4,090,769	12,712,340	958,568
Total Nevada.....	422	116	1,678,454	92,820.74	5,769.54	98,590.28	1,148,621	28,489,610	4,606,732	12,774,550	4,970,374

⁷ Includes following districts: Sand Springs and Westgate, Churchill County; Crescent, Good Springs, Ivanpah, and Yellow Pine, Clark County; Mountain House and Red Canyon, Douglas County; Alder, Centennial, Charleston (placer), Coal Mine, Dolly Varden, Island Mountain, Lime Mountain, Rock Creek, Rowland, Spruce Mountain, Susie Creek, and Warm Creek, Elko County; Gold Mountain, Lida (lode), Oneota, Railroad Springs, and Tonopah, Esmeralda County; Spruce Mountain, Eureka County; Amos, Disaster, Golconda, Gold Run (lode), National, Platinum, Sawtooth, Sherman, Varyville, and Warm Springs, Humboldt County; Bullion, Hiltop, Lewis, McCoy, and Reese River (placer), Lander County; Comet, Jack Rabbit, and Pioche, Lincoln County; Palmyra, Red Mountain, and Yerington (placer), Lyon County; Broken Hills, Cedar Mountain, Fitting Garfield, Gold Range, Mountain View, and Pine Grove, Mineral County; Athens, Bellehellen, Bruner, Clarkdale, Clifford, Currant, Johnnie (lode), Round Mountain (placer), Tybo, Union (lode), and Wilsons, Nye County; Aldrich, Antelope, Box Canyon, Central Long Canyon, Mill City, Rosebud (lode), South American, Velvet, and Willard, Pershing County; Comstock (placer), Storey County; White Horse (placer), Washoe County; and Aurum, White Pine County.

⁸ Includes gold, silver, copper, lead, and zinc recovered from zinc concentrates produced in 1931 but not marketed until 1933.

Mine production of gold, silver, copper, and lead in the Goldfield district, Esmeralda County, Nev., 1903-33

Period	Ore and old tailings		Gold ¹	Silver ¹	Copper	Lead	Total value
	Ore	Old tailings					
	<i>Short tons</i>	<i>Short tons</i>		<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	
1903-10.....	893,334	-----	\$45,130,812	297,773	160,903	-----	\$45,323,025
1911-20.....	2,914,281	-----	37,300,661	1,045,780	7,391,660	27,540	39,406,548
1921-30.....	28,196	934,000	1,817,220	46,712	51,513	5,950	1,854,454
1931.....	586	274,000	267,071	6,359	10,537	-----	269,874
1932.....	834	281,700	361,933	9,282	5,475	-----	364,896
1933.....	1,693	231,000	160,814	3,017	2,175	-----	162,009
Total, 1903-33.....	3,838,924	1,720,700	85,038,511	1,408,923	7,622,263	33,490	\$87,380,806

¹ Includes placer production.

² Dividends paid by 9 companies to end of 1933 total \$33,294,125.

Mine production of gold, silver, copper, and lead in the Tonopah district, Esmeralda and Nye Counties, Nev., 1901-33

Period	Ore and old tailings	Gold	Silver	Copper	Lead	Total value
	<i>Short tons</i>		<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	
1901-10.....	1,359,321	\$10,681,687	49,443,336	2,726	8,390	\$38,856,109
1911-20.....	4,588,552	18,679,537	84,254,831	3,448	10,625	75,867,500
1921-30.....	2,287,933	7,281,421	33,356,493	164	389	32,501,331
1931.....	16,534	198,081	823,872	-----	-----	437,004
1932.....	10,604	181,728	646,687	1,611	-----	364,195
1933.....	5,130	100,130	419,008	-----	220	246,791
Total, 1901-33.....	8,268,074	37,122,584	168,944,227	7,949	19,624	\$148,272,930

¹ Dividends paid by 9 companies to end of 1933 total \$37,023,224. No dividends reported paid in 1933.

Mine production of gold, silver, copper, lead, and zinc in the Robinson district, White Pine County, Nev., 1908-33

Period	Ore	Gold	Silver	Copper	Lead	Zinc	Total value
	<i>Short tons</i>		<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
1908-10.....	4,476,288	\$888,237	217,868	136,193,007	707,300	-----	\$18,577,527
1911-20.....	33,109,972	5,242,356	854,309	697,386,163	2,051,135	4,962,652	144,230,352
1921-30.....	36,561,422	7,734,946	1,288,126	831,291,095	2,252,956	1,107,373	128,101,175
1931.....	2,945,270	768,578	164,871	71,333,607	-----	-----	7,307,749
1932.....	1,374,039	336,611	83,214	30,884,862	-----	-----	2,305,823
1933.....	1,220,700	346,620	111,780	28,188,634	71,550	62,210	2,195,076
Total, 1908-33.....	79,687,691	15,317,348	2,720,168	1,795,277,368	5,082,941	6,132,235	302,717,702

SAND AND GRAVEL

(DETAILED STATISTICS)

By H. H. HUGHES AND M. ALLAN ¹

SUMMARY OUTLINE

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The total sand and gravel reported as sold or used by nearly 2,000 commercial producers in the United States amounted to 66,106,472 short tons valued at \$39,395,027 in 1933, a decrease of 22.5 percent in quantity and 17 percent in value from 1932. In addition, production of sand and gravel from more than 550 State, county, and municipal operations was reported to the Bureau of Mines; the quantity of this material totaled 41,648,877 short tons and the value \$13,677,883, increases from 1932 of 19.9 and 36.3 percent, respectively. The total output of sand and gravel accounted for in the canvass by the Bureau of Mines for 1933 was therefore 107,755,349 short tons valued at \$53,072,910.

Because of the sharp increase in production reported by noncommercial agencies, this total is slightly higher than the preliminary figure of 104,000,000 short tons released by the Bureau early in 1934. The output reported by commercial plants, however, is 7 percent lower than that indicated by preliminary data.

Noncommercial production.—Complete statistical coverage of sand and gravel production by States, counties, and municipalities is impossible without large expenditures for field work. For 1933, however, a special attempt was made to canvass every local Government agency; as a result, returns from many additional counties or municipalities are included in the 41,648,877 short tons of material shown as noncommercial output. Returns from sources comparable with those covered for 1932 indicate that noncommercial production in 1933 virtually equaled that in 1932; therefore the apparent increase in 1933 can be attributed directly to a more nearly complete statistical coverage.

Less than one-third—8,057,448 short tons in 1932 and 13,645,409 tons in 1933—of the sand and gravel produced by Government agencies is washed, screened, or otherwise prepared to make it comparable in quality with the output of the average commercial plant. By far the larger part consists of pit-run material having a low unit value.

¹ Figures on imports and exports compiled by Claude Galihier, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

The average value of all noncommercial sand and gravel in 1933 was \$0.33 a ton contrasted with \$0.60 a ton for the commercial output.

Railroad ballast.—All railroad ballast is included in this report under commercial production. In 1933, 1,232,795 short tons of ballast gravel valued at \$0.20 a ton were produced by or directly for the railroads for their own use; this quantity is 26.4 percent of the total gravel used exclusively for ballast.

Preparation.—The percentage of prepared material included in the total for sand and gravel dropped to 66.9 percent in 1933, principally as a result of the increase in quantity of unprepared material reported by Government agencies. This prepared sand and gravel (72,058,631 short tons) includes only 13,645,409 tons from noncommercial sources. Prepared material in 1933 comprised 88.4 percent of the commercial production but only 32.8 percent of the noncommercial output.

Transportation.—Producers were asked to report the method of transporting their product during 1933. Replies received covered 98,482,383 short tons—91.4 percent of the total recorded production of sand and gravel; of this quantity 8 percent was transported by waterway, 32 percent by rail, and 60 percent by truck.

PRODUCTION

Sand and gravel sold or used by producers in the United States, 1929–33

Year	Sand		Gravel (including railroad ballast)		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1929.....	99,253,054	\$60,801,357	123,318,851	\$72,034,622	222,571,905	\$132,835,979
1930.....	83,658,618	49,721,553	113,393,108	65,454,990	197,051,726	115,176,543
1931.....	64,492,826	36,696,746	88,986,218	49,583,574	153,479,044	86,280,320
1932.....	42,794,875	22,497,074	77,243,022	35,925,002	120,037,897	57,522,076
1933.....	33,160,846	19,676,672	74,594,503	33,396,238	107,755,349	53,072,910

Sand and gravel sold or used by producers in the United States, 1929–33, by commercial and noncommercial operations

[Figures for "noncommercial operations" represent tonnages reported by States, counties, municipalities, and other Government agencies, produced either by themselves or by contractors expressly for their consumption, often with publicly owned equipment; they do not include purchases from commercial producers. Figures for "commercial operations" represent tonnages reported by all other producers, including relatively small amounts of railroad ballast and fill produced directly by railroad carriers for their own use]

Year	Commercial operations		Noncommercial operations ¹		Total accounted for	
	Short tons	Percent of change from preceding year	Short tons	Percent of change from preceding year	Short tons	Percent of change from preceding year
1929.....	206,218,734	+3.4	16,353,171	+70.4	222,571,905	+6.4
1930.....	176,880,106	-14.2	20,171,620	+23.3	197,051,726	-11.5
1931.....	128,938,689	-27.1	24,540,355	+21.7	153,479,044	-22.1
1932.....	85,289,076	-33.9	34,748,821	+41.6	120,037,897	-21.8
1933.....	66,106,472	-22.5	41,648,877	+19.9	107,755,349	-10.2

¹ Part of the apparently large increase in noncommercial production is due to more nearly complete reports in the later years.

Sand and gravel sold or used by producers in the United States, 1932-33, by commercial and noncommercial operations and by uses

	1932			1933				
	Short tons	Value		Short tons	Value		Percent of change in—	
		Total	Average		Total	Average	Tonnage	Total value
COMMERCIAL OPERATIONS								
Sand:								
Glass.....	1,370,255	\$2,266,564	\$1.65	1,781,423	\$3,011,023	\$1.69	+30.0	+32.8
Molding ¹	1,118,146	1,051,702	.94	1,718,251	1,558,738	.91	+53.7	+48.2
Building.....	14,597,631	7,507,700	.51	13,024,174	6,496,180	.50	-10.8	-13.5
Paving.....	17,194,553	7,622,597	.44	10,903,447	5,544,368	.51	-36.6	-27.3
Grinding and polishing.....	419,691	638,556	1.52	572,735	739,222	1.29	+36.5	+15.8
Fire or furnace ¹	36,698	54,371	1.48	106,133	121,149	1.14	+189.2	+122.8
Engine ¹	1,151,011	688,563	.60	1,051,695	623,285	.59	-8.6	-9.5
Filter.....	68,035	92,751	1.36	24,387	52,186	2.14	-64.2	-43.7
Other ^{1,2}	4,486,655	1,463,650	.33	1,842,652	695,189	.38	-58.9	-52.5
Total sand.....	40,442,675	21,386,454	.53	31,024,897	18,841,340	.61	-23.3	-11.9
Gravel:								
Building.....	13,064,368	9,549,698	.73	11,934,080	8,084,995	.68	-8.7	-15.3
Paving.....	25,137,550	14,728,893	.59	17,719,859	10,403,150	.59	-29.5	-29.4
Railroad ballast ³	6,644,483	1,823,993	.27	5,427,636	2,065,542	.38	-18.3	+13.2
Total gravel.....	44,846,401	26,102,584	.58	35,081,575	20,553,687	.59	-21.9	-21.3
Total sand and gravel.....	85,289,076	47,489,038	.56	66,106,472	39,395,027	.60	-22.5	-17.0
NONCOMMERCIAL OPERATIONS⁴								
Sand:								
Building.....	147,636	97,283	.66	163,257	84,131	.52	+10.6	-13.5
Paving.....	2,204,564	1,013,337	.46	1,972,692	751,201	.38	-10.5	-25.9
Total sand.....	2,352,200	1,110,620	.47	2,135,949	835,332	.39	-9.2	-24.8
Gravel:								
Building.....	1,000,702	253,931	.25	650,873	253,529	.39	-35.0	-.2
Paving.....	31,395,919	8,668,487	.28	35,862,055	12,589,022	.32	+23.8	+45.2
Total gravel.....	32,396,621	8,922,418	.28	39,512,928	12,842,551	.33	+22.0	+43.9
Total sand and gravel.....	34,748,821	10,033,038	.29	41,648,877	13,677,883	.33	+19.9	+36.3
COMMERCIAL AND NONCOMMERCIAL OPERATIONS								
Sand:								
.....	42,794,875	22,497,074	.53	33,160,846	19,676,672	.59	-22.5	-12.5
Gravel:								
.....	77,243,022	35,025,002	.45	74,594,508	33,396,238	.45	-3.4	-4.7
Grand total.....	120,037,897	57,522,076	.48	107,755,349	53,072,910	.49	-10.2	-7.7

¹ To avoid disclosing confidential figures for 1933, small amounts of molding, engine, and fire or furnace sands are included with building and "other" sands.

² Includes some sand used for railroad ballast and fills. The quantity of sand reported as used exclusively for railroad ballast was as follows: 1932, 995,783 tons valued at \$184,196; 1933, 500,137 tons valued at \$152,882.

³ Includes some gravel used for fills and other purposes. The quantity of gravel reported as used exclusively for railroad ballast was as follows: 1932, 5,113,862 tons valued at \$1,513,240; 1933, 4,668,597 tons valued at \$1,747,452. The foregoing figures for ballast include that produced by railroads for their own use, amounting in 1932 to 2,140,154 tons valued at \$293,328 and in 1933 to 1,232,795 tons valued at \$247,522.

⁴ By States, counties, municipalities, and other Government agencies, directly or under lease.

Sand and gravel sold or used by commercial and noncommercial producers in the United States in 1933, by States and uses

State	Sand													
	Glass		Molding		Building ¹		Paving ¹		Grinding and polishing		Fire or furnace		Engine	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama.....			11,991	\$7,627	133,457	\$47,903	188,032	\$94,293			(?)	(?)	(?)	(?)
Alaska.....														
Arizona.....					891,430	450,531	(?)	(?)					(?)	(?)
Arkansas.....					87,375	46,861	133,455	68,080					(?)	(?)
California.....	55,902	\$206,116	43,527	49,991	1,332,873	580,933	1,035,766	542,964	5,877	\$18,063	4,275	\$5,811	(?)	(?)
Colorado.....					87,890	44,214	193,822	60,346					(?)	(?)
Connecticut.....			290	360	86,752	43,317	222,059	61,503	(?)	(?)			(?)	(?)
Delaware.....			(?)	(?)	4,104	2,278	29,524	17,528	(?)	(?)			(?)	(?)
District of Columbia.....					(?)	(?)	(?)	(?)					(?)	(?)
Florida.....			(?)	(?)	67,392	40,668	113,170	74,779	(?)	(?)			4,668	\$2,204
Georgia.....	(?)	(?)			49,937	18,551	103,833	41,028	6,549	6,825			6,813	1,584
Hawaii.....														
Idaho.....					6,559	10,306	(?)	(?)					(?)	(?)
Illinois.....	402,240	403,578	223,241	209,272	724,368	325,852	1,109,710	503,952	99,135	275,294	(?)	(?)	44,503	22,048
Indiana.....	(?)	(?)	111,001	59,143	319,455	146,351	459,351	191,330			(?)	(?)	43,779	14,986
Iowa.....			(?)	(?)	228,170	115,182	420,607	117,451	(?)	(?)			26,896	12,735
Kansas.....					307,540	143,620	338,868	137,443					42,950	20,672
Kentucky.....	(?)	(?)	2,587	5,009	123,867	77,111	190,885	97,801					(?)	(?)
Louisiana.....					160,788	71,221	113,935	48,956	(?)	(?)			(?)	(?)
Maine.....					22,469	10,347	31,142	8,549	(?)	(?)			(?)	(?)
Maryland.....					³ 225,802	³ 182,103	545,095	362,437					(?)	(?)
Massachusetts.....	(?)	(?)	(?)	(?)	405,627	204,139	351,667	174,767	(?)	(?)	(?)	(?)	46,645	28,106
Michigan.....	(?)	(?)	416,704	128,111	175,950	62,938	529,253	172,344	(?)	(?)	(?)	(?)	2,449	1,650
Minnesota.....			6,887	10,509	289,734	87,894	267,996	74,826	(?)	(?)			17,525	4,068
Mississippi.....					85,046	8,487	130,237	50,574					(?)	(?)
Missouri.....	161,126	228,287	6,739	5,912	561,132	241,812	391,650	180,092	36,612	38,811	(?)	(?)	9,569	5,953
Montana.....			(?)	(?)	15,284	14,377	4,112	1,800						
Nebraska.....			(?)	(?)	179,697	67,069	204,509	67,845	(?)	(?)			31,218	9,464
Nevada.....	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)						
New Hampshire.....					(?)	(?)	37,152	16,502						
New Jersey.....	121,418	189,473	235,418	233,177	843,674	472,862	298,143	162,641	12,821	27,155	16,517	18,326	17,353	7,186
New Mexico.....					12,496	9,637	27,960	25,278	(?)	(?)			(?)	(?)
New York.....	(?)	(?)	209,711	271,729	2,634,217	1,263,082	984,726	555,369					31,610	9,449
North Carolina.....					50,962	12,576	283,306	81,430					(?)	(?)
North Dakota.....					10,706	7,079	(?)	(?)						
Ohio.....	(?)	(?)	210,673	292,559	481,078	279,290	692,884	392,230	38,891	66,837	14,400	35,972	56,252	46,322
Oklahoma.....	(?)	(?)			125,466	54,170	150,494	66,405	(?)	(?)			19,781	9,922

Oregon.....					96,028	67,785	53,010	36,734					(?)	(?)
Pennsylvania.....	388,365	714,965	145,466	192,526	845,765	491,929	702,367	539,099	(?)	(?)	31,649	40,854	195,837	192,273
Rhode Island.....			(?)	(?)	3,315	1,065	89,339	23,727					(?)	(?)
South Carolina.....					32,925	11,741	(?)	(?)					(?)	(?)
South Dakota.....					18,427	11,135	126,502	15,030					(?)	(?)
Tennessee.....			12,327	16,220	198,960	134,232	269,768	134,860	13,550	16,167			4,097	3,414
Texas.....			(?)	(?)	³ 386,401	³ 265,502	562,119	314,006					32,834	13,805
Utah.....			(?)	(?)	23,198	15,967	86,355	45,927					(?)	(?)
Vermont.....					(?)	(?)	20,393	8,577	(?)	(?)			(?)	(?)
Virginia.....	(?)	(?)	4,196	5,778	155,771	94,315	428,178	291,461			(?)	(?)	51,864	21,862
Washington.....			(?)	(?)	189,889	75,297	154,590	54,527					(?)	(?)
West Virginia.....	383,329	694,798	(?)	(?)	150,967	128,550	202,276	141,316	(?)	(?)	(?)	(?)	151,066	116,359
Wisconsin.....			40,332	23,206	260,807	102,922	479,782	168,504	16,996	24,461	(?)	(?)	27,062	3,789
Wyoming.....					(?)	(?)	(?)	(?)						
Undistributed ⁴	269,143	573,806	37,161	47,609	93,681	37,110	117,217	71,258	342,304	265,609	39,292	20,186	186,924	75,434
Average value.....	1,781,423	3,011,023 1.69	³ 1,718,251	³ 1,558,738 0.91	³ 13,187,431	³ 6,580,311 0.50	12,876,139	6,295,569 0.49	572,735	739,222 1.29	³ 106,133	³ 121,149 1.14	³ 1,051,695	³ 623,285 0.59

¹ Includes noncommercial production.

² Included under "Undistributed."

³ To avoid disclosing confidential figures, small amounts of molding, engine, and fire or furnace sands are included with building and "other" sands.

⁴ Includes items entered as "(?)."

Sand and gravel sold or used by commercial and noncommercial producers in the United States in 1933, by States and uses—Continued

State	Sand—Continued				Gravel						Total sand and gravel ¹	
	Filter		Other		Building ¹		Paving ¹		Railroad ballast			
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama.....			(²)	(²)	110,403	\$50,838	440,506	\$203,788	31,948	\$7,723	934,641	\$416,857
Alaska.....							(²)	(²)			(²)	(²)
Arizona.....			(²)	(²)	2,463,690	1,239,403	19,355	26,903	(²)	(²)	3,402,249	1,723,894
Arkansas.....			(²)	(²)	241,767	99,751	612,145	290,548	175,842	88,384	1,264,742	600,998
California.....	(²)	(²)	17,775	\$11,851	1,190,943	739,487	2,432,534	1,460,145	224,049	126,140	6,347,503	3,746,130
Colorado.....			36,456	19,335	49,298	45,869	1,002,614	378,309	(²)	(²)	1,395,524	564,677
Connecticut.....			2,244	1,118	19,082	13,516	121,799	9,332	4,131	1,457	458,944	133,418
Delaware.....	(²)	(²)	(²)	(²)							58,297	33,223
District of Columbia.....					(²)	(²)	(²)	(²)			(²)	(²)
Florida.....					95,304	74,591	10,000	5,000	(²)	(²)	299,365	202,679
Georgia.....	(²)	(²)	(²)	(²)	26,204	26,886	25,918	17,532			247,030	124,544
Hawaii.....							(²)	(²)			(²)	(²)
Idaho.....			(²)	(²)	14,259	12,330	223,138	122,487	(²)	(²)	304,266	151,011
Illinois.....	(²)	(²)	181,229	117,895	576,309	312,134	2,358,033	1,048,160	383,290	144,809	6,107,829	3,370,039
Indiana.....			57,805	11,596	332,108	181,066	1,628,499	667,941	1,015,063	423,625	3,996,248	1,706,309
Iowa.....	1,336	\$4,302	156,520	16,464	126,591	126,591	3,233,422	703,859	217,127	52,668	4,343,781	1,165,066
Kansas.....	(²)	(²)	13,627	6,197	36,439	20,194	1,245,922	400,188	(²)	(²)	2,015,799	734,343
Kentucky.....			(²)	(²)	92,218	64,684	678,910	338,272	29,509	8,023	1,173,727	679,641
Louisiana.....					246,781	193,112	340,159	233,046	150,565	85,106	1,018,588	633,395
Maine.....			(²)	(²)	28,944	22,480	2,512,210	256,224	224,926	60,542	2,822,330	359,315
Maryland.....					259,779	328,908	413,444	454,818			1,444,120	1,328,266
Massachusetts.....			9,416	7,316	305,986	232,223	2,152,732	543,099	124,751	21,159	3,420,096	1,233,153
Michigan.....			573,861	87,559	219,333	118,734	2,224,553	929,076	248,272	90,050	4,619,223	1,805,360
Minnesota.....	(²)	(²)	18,344	4,075	208,262	154,344	1,800,629	404,449	107,422	23,225	2,719,282	768,714
Mississippi.....			(²)	(²)	70,515	29,237	464,726	257,552	73,778	18,385	838,725	369,745
Missouri.....			(²)	(²)	327,533	146,775	1,809,194	764,590	111,891	48,049	3,434,540	1,668,048
Montana.....			(²)	(²)	38,899	31,996	1,970,168	1,250,552	267,734	78,065	2,317,758	1,379,831
Nebraska.....	(²)	(²)	18,873	4,454	150,239	72,477	855,443	393,918	117,466	40,987	1,560,589	656,906
Nevada.....			(²)	(²)	(²)	(²)	2,430,257	889,107	(²)	(²)	2,522,718	937,327
New Hampshire.....			(²)	(²)	(²)	(²)	2,343,639	716,568			2,414,637	744,712
New Jersey.....	8,395	23,153	47,956	52,482	324,726	353,004	120,724	78,831	17,115	18,116	2,064,260	1,636,406
New Mexico.....			(²)	(²)	(²)	(²)	714,251	720,779			777,086	776,936
New York.....			(²)	(²)	1,505,069	1,126,678	1,761,071	661,195	84,260	53,007	7,274,610	3,960,334
North Carolina.....			(²)	(²)	40,225	31,829	46,212	30,433	53,202	19,278	524,903	201,113
North Dakota.....			(²)	(²)	18,360	12,636	1,901,248	643,877	(²)	(²)	1,964,894	674,187
Ohio.....	(²)	(²)	74,341	44,291	348,762	241,419	1,679,058	816,860	472,813	209,251	4,071,808	2,672,052
Oklahoma.....			8,547	2,661	58,209	61,050	809,800	140,132			1,220,425	361,425
Oregon.....			(²)	(²)	199,332	123,674	1,230,195	613,685	41,782	18,233	1,636,476	863,671
Pennsylvania.....			88,562	98,044	966,019	894,398	1,515,537	853,038	(²)	(²)	5,044,179	4,212,866

Rhode Island.....			(2)	(2)	(2)	(2)	290,589	68,252	(2)	(2)	397,977	115,973
South Carolina.....			(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	119,567	59,163
South Dakota.....			(2)	(2)	8,288	8,502	3,034,495	579,986	33,210	6,767	3,238,940	624,428
Tennessee.....			130,576	47,713	170,755	88,342	509,111	284,088	54,169	27,039	1,363,313	752,075
Texas.....			116,743	28,050	404,935	309,444	2,210,148	1,080,241	604,132	253,857	4,317,312	2,264,905
Utah.....			(2)	(2)	30,107	21,696	1,373,467	532,521			1,552,690	629,680
Vermont.....					(2)	(2)	248,807	84,313	31,968	3,815	335,763	117,858
Virginia.....	(2)	(2)	67,378	42,440	244,234	245,773	474,116	428,013	12,825	6,848	1,461,059	1,168,234
Washington.....			5,769	1,009	315,932	106,646	1,486,456	618,586	107,466	13,826	2,278,097	873,111
West Virginia.....					119,367	106,283	459,382	310,968	15,325	9,153	1,493,483	1,529,031
Wisconsin.....	2,173	4,503	³ 65,174	³ 18,715	260,433	130,439	2,132,219	875,878	83,538	24,908	3,368,516	1,377,325
Wyoming.....					(2)	(2)	1,234,864	694,666	(2)	(2)	1,358,510	728,836
Undistributed ⁴	12,483	20,228	261,394	71,924	279,365	139,085	95,215	110,367	308,017	83,047	409,880	235,695
Average value.....	24,387	52,186	^{3 5} 1,842,652	^{3 5} 695,189	12,584,953	8,338,524	56,581,914	22,992,172	⁶ 5,427,636	⁶ 2,065,542	107,755,349	53,072,910
		2.14		0.38		0.66		0.41		0.38		0.49

¹ Includes noncommercial production.

² Included under "Undistributed."

³ To avoid disclosing confidential figures, small amounts of molding, engine, and fire or furnace sands are included with building and "other" sands.

⁴ Includes items entered as "(2)."

⁵ Includes 500,137 tons of sand valued at \$152,882 used for railroad ballast; some sand used by railroads and others for fills, bank widening, and stock-car bedding; and some miscellaneous material.

⁶ Includes some gravel used for fills and other purposes. The quantity of gravel reported as used exclusively for railroad ballast was 4,668,597 tons valued at \$1,747,462.

GLASS SAND

Glass sand sold or used by producers in the United States, 1929-33

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1929.....	2,219,677	\$3,788,471	\$1.71	1932.....	1,370,255	\$2,266,564	\$1.65
1930.....	1,849,101	3,210,973	1.74	1933.....	1,781,423	3,011,023	1.69
1931.....	1,677,882	2,779,245	1.66				

MOLDING SAND

Molding sand sold or used by producers in the United States, 1929-33

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1929.....	6,195,343	\$6,410,343	\$1.03	1932.....	1,118,146	\$1,051,702	\$0.94
1930.....	3,336,855	3,547,154	1.06	1933 ¹	1,718,251	1,558,738	.91
1931.....	2,138,305	2,122,049	.99				

¹ Exclusive of small quantity included with building sand to avoid disclosing confidential figures.

IMPORTS AND EXPORTS

Sand and gravel imported for consumption in the United States, 1929-33

Year	Short tons	Value	Year	Short tons	Value
1929.....	1,666,387	\$751,602	1932.....	212,458	\$164,461
1930.....	1,832,850	719,345	1933.....	120,566	109,544
1931.....	420,721	303,901			

Sand and gravel imported for consumption in the United States, 1931-33, by classes

Class	1931		1932		1933	
	Short tons	Value	Short tons	Value	Short tons	Value
Glass sand ¹	35,045	\$76,363	26,574	\$51,016	26,275	\$57,682
Other sand ²	262,198	164,238	140,793	94,728	61,597	42,155
Gravel.....	123,478	63,300	45,091	18,717	32,694	9,707
	420,721	303,901	212,458	164,461	120,566	109,544

¹ Classification reads "Sand containing 95 percent silica and not more than 0.6 percent oxide of iron and suitable for manufacture of glass."² Classification reads "Sand, n. s. p. f."

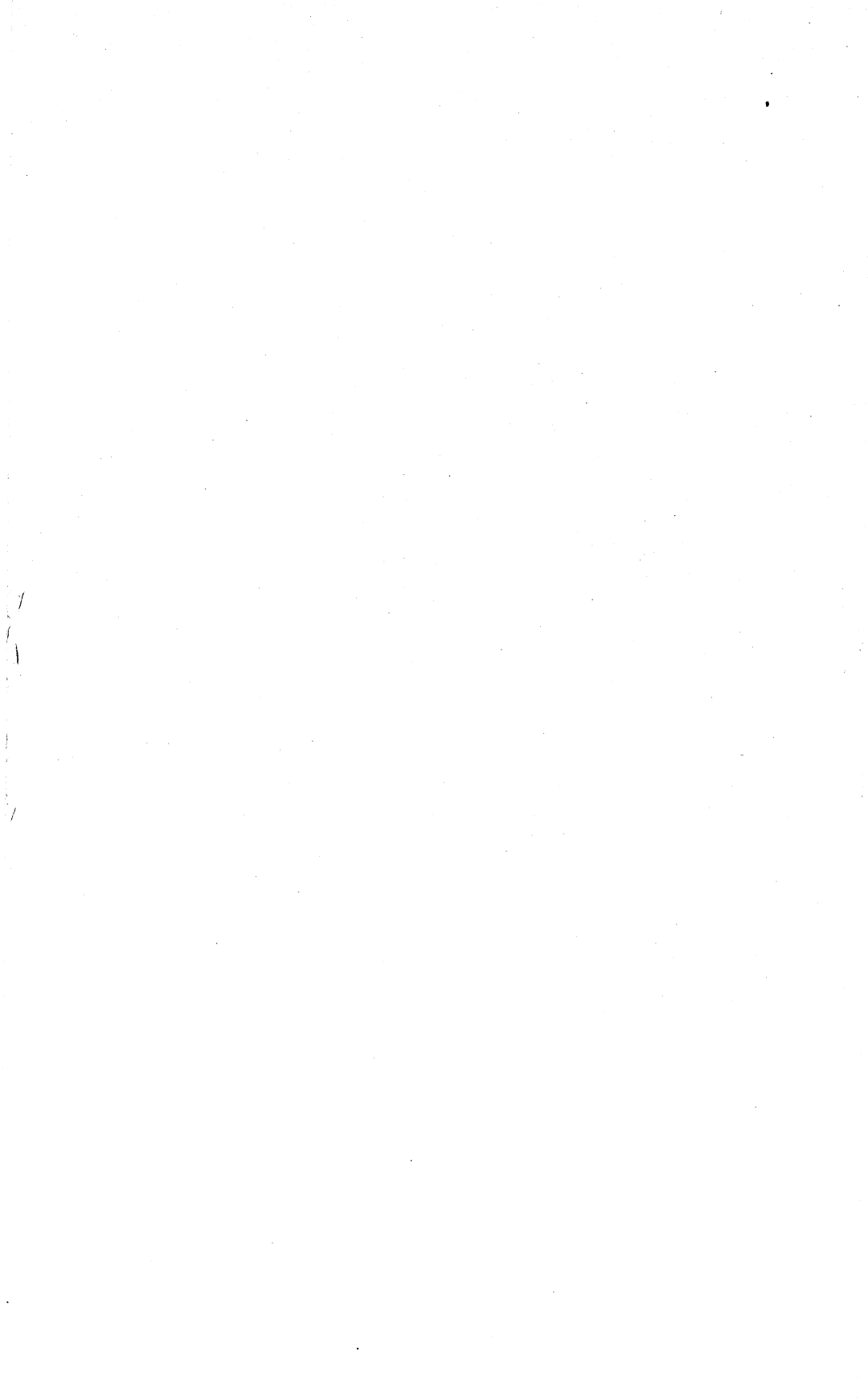
Sand and gravel imported into the United States, 1931-33, by countries

[General imports]

Country	1931		1932		1933	
	Short tons	Value	Short tons	Value	Short tons	Value
North America:						
Canada.....	371,475	\$185,305	166,768	\$65,447	85,728	\$27,244
Cuba.....	1	15				
Mexico.....	433	391	28	60	88	95
Nicaragua.....			2	8		
Europe:						
Belgium.....	46,849	99,863	35,238	77,249	26,446	58,180
Czechoslovakia.....					2	3
France.....	703	4,763	9,538	18,417	4,462	8,157
Germany.....	20	307	294	2,103	393	5,123
Irish Free State.....					728	650
Netherlands.....	449	4,885	57	602	238	2,937
United Kingdom.....	791	8,372	11	50	2,464	6,869
U. S. S. R. (Russia).....					16	272
Asia: China.....			522	525		
Oceania: Australia.....					1	14
	420,721	303,901	212,458	164,461	120,566	109,544

Sand and gravel exported from the United States, 1929-33

Year	Short tons	Value	Year	Short tons	Value
1929.....	486,378	\$809,831	1932.....	96,015	\$211,558
1930.....	323,690	570,107	1933.....	82,453	54,557
1931.....	217,870	418,441			



STONE

(DETAILED STATISTICS)

By A. T. Coons

SUMMARY OUTLINE

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SUMMARY OF PRODUCTION

Stone sold or used by producers in the United States, 1929-33, by kinds

[Quantities approximate]

Year	Granite		Basalt and related rocks (trap rock)		Marble		Limestone	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1929.....	10,826,730	\$34,225,110	14,871,780	\$18,946,197	553,660	\$16,545,312	100,686,960	\$113,906,071
1930.....	10,047,430	30,423,853	14,532,250	17,053,031	477,240	12,905,596	88,741,440	100,002,114
1931.....	8,068,470	25,973,510	12,552,880	13,822,835	350,420	10,419,834	66,751,040	71,875,886
1932.....	5,118,550	15,978,363	9,328,580	8,879,702	342,830	7,532,309	46,913,520	48,015,748
1933.....	4,422,250	11,327,371	7,394,290	6,596,248	224,670	6,399,004	45,922,280	44,499,311

Year	Sandstone		Other stone ¹		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1929.....	5,790,200	\$11,023,981	8,380,250	\$8,046,091	141,109,580	\$202,692,762
1930.....	4,594,310	10,285,391	8,603,670	8,278,626	126,996,340	178,948,611
1931.....	4,581,780	7,575,320	5,628,590	5,418,242	97,933,180	135,085,627
1932.....	2,973,040	4,081,804	5,967,790	4,575,682	70,644,310	89,063,608
1933.....	2,799,920	4,145,329	9,458,800	7,973,345	70,222,210	80,945,608

¹ Includes mica schist, conglomerate, argillite, various light-colored volcanic rocks, serpentine not used as marble, soapstone sold as dimension stone (1932 and 1933), and such other stone as cannot properly be classed in any main group.

Stone sold or used by producers in the United States, 1932-33, by uses

Use	1932		1933	
	Quantity	Value	Quantity	Value
Building stone.....cubic feet.....	16,624,000	\$20,184,566	11,512,490	\$15,337,939
Approximate equivalent in short tons.....	1,295,590	870,070	870,070	1,295,590
Monumental stone.....cubic feet.....	2,038,370	6,244,654	2,006,820	5,320,880
Approximate equivalent in short tons.....	168,050	166,260	166,260	168,050
Paving blocks.....number.....	7,583,490	620,178	5,921,580	585,708
Approximate equivalent in short tons.....	71,860	59,610	59,610	71,860
Curbing.....cubic feet.....	991,240	926,190	688,800	618,706
Approximate equivalent in short tons.....	79,840	55,780	55,780	79,840
Flagging.....cubic feet.....	320,470	206,552	181,070	133,827
Approximate equivalent in short tons.....	26,450	14,400	14,400	26,450
Rubble.....short tons.....	179,100	195,650	141,590	186,900
Riprap.....do.....	3,462,290	2,874,179	3,254,860	3,486,155
Crushed stone.....do.....	51,995,100	46,891,765	45,490,610	39,018,736
Furnace flux (limestone and marble).....do.....	3,991,160	2,929,116	7,984,710	5,512,533
Refractory stone ¹.....do.....	197,430	228,559	501,440	710,526
Agricultural ².....do.....	910,430	1,230,542	994,540	1,239,724
Manufacturing industries (limestone and marble).....				
short tons.....	4,369,210	3,926,882	5,637,900	4,533,465
do.....	3,897,800	2,604,775	5,050,440	4,260,509
Other uses ³.....do.....				
Total (quantities approximate, in short tons).....	70,644,310	89,063,608	70,222,210	80,945,608

¹ 1932: Ganister, mica schist, and dolomite; 1933: Ganister, mica schist, soapstone, and dolomite.

² 1932: Limestone and marble; 1933: Limestone.

³ 1932: Includes 3,192,520 tons of stone valued at \$869,585 used as road base (of which 3,074,360 tons valued at \$819,947 were from Pennsylvania) and 68,960 tons of roofing granules valued at \$458,795. There were also produced 174,140 tons of slate granules valued at \$1,058,713 used for roofing and included in the chapter on Slate in Statistical Appendix to Minerals Yearbook, 1932-33. 1933: Includes 4,402,870 tons of stone valued at \$2,611,569 used as road base (of which 4,127,380 tons valued at \$2,546,335 were from Pennsylvania) and 97,680 tons of roofing granules valued at \$720,356. There were also produced 146,880 tons of slate granules valued at \$1,024,917 used for roofing and included in the chapter on Slate in Minerals Yearbook, 1934.

Building stone sold or used by producers in the United States in 1933, by kinds

Kind	Rough			
	Constructional		Architectural	
	Cubic feet	Value	Cubic feet	Value
Granite.....	1,318,260	\$149,941	424,570	\$379,259
Basalt.....	72,000	6,777		
Marble.....			235,070	504,702
Limestone.....	961,800	108,100	2,298,620	902,911
Sandstone.....	158,330	42,705	312,320	180,490
Miscellaneous.....	130,000	41,175	(1)	(1)
	2,640,390	348,698	3,270,580	1,967,362

Kind	Finished				Total	
	Sawed ²		Cut ²		Cubic feet	Value
	Cubic feet	Value	Cubic feet	Value		
Granite.....	336,450	\$634,631	399,380	\$1,722,333	2,478,660	\$2,886,164
Basalt.....					72,000	6,777
Marble.....	104,090	284,394	1,005,150	4,088,642	1,344,310	4,877,738
Limestone.....	415,010	279,345	2,923,820	5,125,867	6,599,250	6,416,223
Sandstone.....	188,140	196,400	167,850	403,925	826,640	823,520
Miscellaneous.....			161,630	1286,342	191,630	327,517
	1,043,690	1,394,770	4,557,830	11,627,109	11,512,490	15,337,939

¹ A small amount of rough architectural included under cut stone.

² For granite, sawed stone corresponds to dressed stone for construction work (walls, foundations, bridges, and cut stone to be architectural stone for high-class buildings).

PRODUCTION BY STATES

Stone sold or used by producers in the United States in 1933, by States

State	Number of active plants	Short tons (approximate)	Value	State	Number of active plants	Short tons (approximate)	Value
Alabama.....	21	1 521,750	\$1,442,628	Nebraska.....	9	198,070	\$219,616
Alaska.....	1	19,930	16,078	Nevada.....	15	80,630	104,428
Arizona.....	17	124,540	102,219	New Hampshire.....	25	86,360	499,304
Arkansas.....	24	402,820	422,692	New Jersey.....	34	1,099,310	1,272,481
California.....	159	4,362,720	3,994,581	New Mexico.....	3	427,980	437,287
Colorado.....	34	1 599,970	1 506,118	New York.....	152	7,395,690	6,351,397
Connecticut.....	33	1 1,075,160	1 939,853	North Carolina.....	23	599,400	1,049,214
Delaware.....	2	62,380	78,856	Ohio.....	184	1 5,426,490	1 4,518,520
District of Columbia.....	1	(?)	(?)	Oklahoma.....	23	737,060	575,734
Florida.....	28	1 606,530	1 519,005	Oregon.....	62	1 1,341,660	1 1,328,940
Georgia.....	30	915,640	2,769,395	Pennsylvania.....	373	12,802,020	11,660,318
Hawaii.....	14	252,090	455,532	Puerto Rico.....	12	54,470	111,050
Idaho.....	36	1 536,410	1 440,969	Rhode Island.....	9	1 11,670	1 210,071
Illinois.....	92	1 2,433,940	1 1,735,420	South Carolina.....	7	354,140	659,443
Indiana.....	104	1 2,269,490	1 6,265,952	South Dakota.....	25	133,520	376,078
Iowa.....	67	1 1,050,190	920,532	Tennessee.....	56	1 1,227,420	1 2,450,188
Kansas.....	73	1 1,052,980	956,734	Texas.....	34	1 244,730	1 170,464
Kentucky.....	78	2 1,101,740	1 773,977	Utah.....	19	1 193,470	1 183,524
Louisiana.....	2	65,090	43,383	Vermont.....	38	186,930	4,312,441
Maine.....	40	186,870	1 114,184	Virginia.....	86	2 096,750	2 302,125
Maryland.....	44	1 690,160	1 778,792	Washington.....	82	1 1,393,670	1 1,162,323
Massachusetts.....	58	1 396,310	2 580,791	West Virginia.....	21	1 337,090	1 232,672
Michigan.....	33	5 702,000	3 094,912	Wisconsin.....	122	1 198,630	1 805,201
Minnesota.....	41	316,980	1 361,121	Wyoming.....	11	364,270	364,789
Mississippi.....	2	(?)	(?)	Undistributed.....		85,700	387,095
Missouri.....	166	2 860,590	3 509,248				
Montana.....	36	438,800	377,973		2,641	70,222,210	80,945,608

¹ To avoid disclosing confidential information, certain State totals are slightly incomplete, the figures not included being combined under "Undistributed."

² Included under "Undistributed."

EXPORTS AND IMPORTS ¹

[Figures on exports and imports compiled by Claude Galiher, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce]

Stone ¹ exported from the United States, 1929-33, by classes

Year	Marble in blocks, rough or dressed		Other building or monumental stone (including cement building blocks)		Value of other manufactures of stone (including other cement manufactures)	Total value
	Cubic feet	Value	Cubic feet	Value		
1929.....	98,478	\$394,654	825,254	\$682,632	\$1,487,993	\$2,565,279
1930.....	84,550	375,964	731,359	594,177	1,066,584	2,036,725
1931.....	32,443	141,216	284,050	209,353	627,771	978,340
1932.....	30,691	99,943	73,098	75,558	273,755	449,256
1933.....	11,585	46,031	29,933	35,588	244,875	326,494

¹ Figures not separately recorded for stone and for cement building blocks and for stone and for cement manufactures.

Stone¹ exported from the United States in 1933, by classes and countries

Country	Marble in blocks, rough or dressed		Other building or monumental stone (including cement building blocks)		Value of other man- ufactures of stone (in- cluding other cement manufac- tures)	Total value
	Cubic feet	Value	Cubic feet	Value		
North America:						
Bermudas.....	6	\$43			\$870	\$913
Canada.....	6,529	26,408	28,791	\$32,809	168,599	227,816
Central America:						
British Honduras.....					446	446
Costa Rica.....					204	204
Guatemala.....					179	179
Honduras.....					481	481
Nicaragua.....					29	29
Panama.....	1,088	5,946	601	824	3,853	10,623
Salvador.....					348	348
Mexico.....	4	100			5,303	5,403
Newfoundland and Labrador.....	451	2,676			2,117	4,793
West Indies:						
British:						
Barbados.....					25	25
Jamaica.....					2,925	2,925
Trinidad and Tobago.....					14	14
Other West Indies.....	2	23			337	360
Cuba.....					3,162	3,162
Dominican Republic.....					1,046	1,046
Haiti.....	20	67			284	351
Netherlands.....					754	754
Virgin Islands of the United States.....			8	35	432	467
South America:						
Argentina.....					1,498	1,498
Brazil.....					1,162	1,162
Chile.....					38	38
Colombia.....	3	106			3,007	3,113
Ecuador.....					135	135
Peru.....					169	169
Venezuela.....					466	466
Europe:						
Albania.....			50	120	83	203
Belgium.....			273	1,045	8	1,053
Czechoslovakia.....					261	261
Denmark.....					74	74
France.....					15,714	15,714
Germany.....	5	25			6,705	6,730
Italy.....					173	173
Netherlands.....					2,650	2,650
Norway.....					787	787
Portugal.....					16	16
Spain.....	2	16			1,163	1,163
Turkey.....					(?)	(?)
United Kingdom.....	3,360	9,603	60	170	5,781	15,554
Asia:						
China.....	107	963	150	585	2,338	3,886
East Indies:						
British:						
India.....					2,434	2,434
Malaya.....					14	14
Netherlands.....					810	810
Japan.....					3,675	3,675
Palestine.....					18	18
Philippine Islands.....					266	266
Turkey.....					250	250
Other Asia.....					370	370
Africa:						
Union of South Africa.....					698	698
Other.....					10	10
Oceania:						
British:						
Australia.....					1,970	1,970
New Zealand.....					647	647
Other British.....					93	93
French.....	8	55				55
	11,585	46,031	29,933	35,588	244,875	326,494

¹ Figures not separately recorded for stone and for cement building blocks and for stone and for cement manufactures.² Exports to Turkey in Europe included under Turkey in Asia.

Value of stone imported for consumption in the United States, 1929-33

1929	\$3, 589, 259	1932	\$766, 706
1930	3, 145, 861	1933	536, 643
1931	1, 497, 696		

Stone imported for consumption in the United States in 1933, by classes

Class	Quantity	Value	Class	Quantity	Value
Marble, breccia, and onyx: In blocks, rough, etc.			Quartzite.....short tons..	48, 259	\$77, 950
cubic feet.....	63, 239	\$196, 783	Travertine stone (unmanufactured).....cubic feet.....	13, 574	18, 133
Sawed.....do.....	243	689	Stone (other):		
Slabs or paving tiles			Dressed.....		5, 514
superficial feet.....	155, 492	66, 825	Rough (monumental or building stone).....cubic feet.....	8, 091	5, 876
All other manufactures.....		49, 769	Rough (other).....		15, 753
Mosaic cubes of marble or onyx:					
Loose.....		70			
Attached to paper.....		133			27, 143
		314, 269	Grand total.....		536, 643
Granite:					
Dressed.....cubic feet.....	14, 126	62, 803			
Rough.....do.....	35, 560	44, 345			
	49, 686	107, 148			

Stone imported into the United States in 1933, by classes and countries
[General imports]

Country	Marble, breccia, and onyx			Granite		Other building or monumental stone, (value)	Other stone n. e. s. (value)	Total value
	Rough		Manufactures (value)	Cubic feet	Value			
	Cubic feet	Value						
North America:								
Canada.....	767	\$2, 437	\$2, 604	10, 463	\$12, 426	\$12, 537	\$80, 771	\$110, 835
Cuba.....			48					48
Mexico.....			30					30
West Indies (British).....							250	250
Total North America.....	767	2, 437	2, 742	10, 463	12, 426	12, 537	81, 021	111, 163
South America:								
Argentina.....	2, 935	54, 306						54, 306
Brazil.....							1, 000	1, 000
Total South America.....	2, 935	54, 306					1, 000	55, 306
Europe:								
Austria.....			80			4		84
Belgium.....	4, 242	21, 975	12, 365			119		34, 459
Czechoslovakia.....			133	1, 098	4, 894	5, 718		10, 745
Finland.....				22, 664	55, 297			55, 297
France.....	7, 877	9, 062	8, 280			3, 768		21, 120
Germany.....	86	1, 912	5, 168	2, 018	9, 772	9, 303	9	26, 164
Greece.....			105					105
Italy.....	19, 382	50, 920	81, 291			146, 438		278, 649
Portugal.....	7, 806	17, 945						17, 945
Rumania.....			72			9, 953		9, 953
Spain.....	14, 062	21, 975						22, 047
Sweden.....	436	1, 963		13, 190	23, 562			25, 525
United Kingdom.....	1, 021	2, 328	4, 144	450	2, 091	4, 706	1, 227	14, 406
U. S. S. R.....						186		186
Other Europe ¹	10	37	8	31	68	986		1, 099
Total Europe.....	54, 922	128, 117	111, 656	39, 451	95, 684	181, 181	1, 236	517, 874
Algeria and Tunisia.....	772	3, 463						3, 463
China.....			704			39, 417		40, 121
Japan.....			360			8, 072		8, 432
Other countries ²			204			656		860
Grand total.....	59, 396	188, 323	115, 666	49, 914	108, 110	241, 863	83, 257	737, 219

¹ Includes Denmark, Irish Free State, Latvia, Netherlands, Norway, Poland and Danzig, and Switzerland.² Includes Australia, Egypt, Hong Kong, India (British), Persia, and Syria.

PRODUCTION BY KINDS AND STATES

GRANITE

Granite sold or used by producers in the United States in 1933, by uses

Use	Quantity	Value
Building stone (rough and dressed)..... cubic feet..	2, 478, 660	\$2, 886, 164
Approximate equivalent in short tons.....	205, 760	
Monumental stone..... cubic feet..	1, 580, 520	3, 962, 110
Approximate equivalent in short tons.....	130, 040	
Paving..... number of blocks..	5, 800, 680	577, 524
Approximate equivalent in short tons.....	58, 260	
Curbing..... linear feet..	724, 390	489, 006
Approximate equivalent in short tons.....	43, 640	
Rubble..... short tons..	39, 050	36, 052
Riprap..... do..	253, 400	198, 602
Crushed stone..... do..	3, 678, 190	3, 151, 968
Other uses..... do..	13, 910	25, 945
Total (quantity approximate, in short tons).....	4, 422, 250	11, 327, 371

Granite sold or used by producers in the United States in 1933, by States

[Quantities approximate]

State	Short tons	Value	State	Short tons	Value
Arizona.....	28, 440	\$8, 883	Oklahoma.....	11, 470	\$81, 579
California.....	971, 990	671, 279	Oregon.....	110	9, 749
Colorado.....	121, 409	138, 127	Pennsylvania.....	82, 590	236, 389
Connecticut.....	11, 600	60, 006	Rhode Island.....	11, 480	209, 611
Delaware.....	62, 389	78, 856	South Carolina.....	354, 140	659, 443
Georgia.....	554, 280	1, 099, 196	South Dakota.....	3, 380	230, 847
Maine.....	130, 010	1, 031, 840	Texas.....	37, 020	68, 260
Maryland.....	56, 100	86, 387	Vermont.....	66, 150	1, 643, 296
Massachusetts.....	446, 480	1, 630, 991	Virginia.....	263, 680	236, 778
Minnesota.....	27, 520	535, 354	Washington.....	81, 250	100, 840
Missouri.....	520	12, 480	Wisconsin.....	15, 910	621, 299
Montana.....	1, 690	15, 848	Undistributed †.....	48, 810	51, 228
New Hampshire.....	71, 570	461, 784			
New York.....	515, 820	559, 069		4, 422, 250	11, 327, 371
North Carolina.....	446, 520	737, 102			

† Includes District of Columbia and New Jersey.

Granite sold or used by producers in the United States in 1933, by States and uses

State	Number of active plants	Building						Monumental				Paving blocks		
		Rough				Dressed		Rough		Dressed				
		Construction		Architectural								Cubic feet	Value	Cubic feet	Value	Cubic feet	Value
		Short tons	Value	Cubic feet	Value									
Arizona.....	2													
California.....	38	4,460	\$9,027	(1)	(1)	23,790	\$102,833	11,350	\$22,947	10,990	\$68,259	(2)	(2)	
Colorado.....	10			300	\$600			4,490	\$27,875	(3)	(3)			
Connecticut.....	9	6,510	6,291	3,100	2,532	3,650	5,327	6,240	25,742	1,160	8,390	(2)	(2)	
Delaware.....	2	2,230	2,757											
District of Columbia.....	1													
Georgia.....	20	30,090	24,665	3,470	3,830	53,900	197,351	315,000	392,623	8,280	45,766	100,160	\$5,496	
Maine.....	30	15,850	10,650	112,400	112,835	107,590	296,811	48,740	48,242	1,190	4,049	4,684,950	455,301	
Maryland.....	12	14,620	22,666			(3)	(3)							
Massachusetts.....	31	14,380	33,590	44,620	46,546	230,220	629,342	43,900	82,825	12,730	88,119	687,800	88,485	
Minnesota.....	19			151,950	100,761	64,440	222,858	45,130	80,468	17,190	128,667			
Missouri.....	1							6,240	12,480					
Montana.....	9					(2)	(2)	620	868	1,660	13,508			
New Hampshire.....	22	2,250	951	46,810	41,818	106,850	321,355	7,880	13,284	3,380	13,190	97,350	5,338	
New Jersey.....	2													
New York.....	13	1,380	9,000	10,000	5,000	24,250	64,220							
North Carolina.....	16	9,940	7,477	(1)	(1)	60,880	168,086	25,250	63,759	(3)	(3)			
Oklahoma.....	6			(2)	(2)	(2)	(2)	7,100	16,350	8,220	55,151			
Oregon.....	2			(2)	(2)	(2)	(2)	400	1,000	(3)	8,749			
Pennsylvania.....	17	7,730	15,947	12,590	8,397	(2)	(2)	56,790	132,275	(3)	(3)			
Rhode Island.....	6							48,990	199,844	(3)	(3)			
South Carolina.....	7	170	600					190,000	295,000					
South Dakota.....	5	180	275					5,380	12,435	32,020	218,003			
Texas.....	9			(3)	(3)			14,430	36,130	(3)	(3)			
Vermont.....	14			(1)	(1)	45,850	143,733	603,960	1,480,561	(3)	(3)			
Virginia.....	7													
Washington.....	8	30	45			940	6,781	650	915	1,040	12,100			
Wisconsin.....	18			4,000	8,000	41,480	230,495	5,000	16,805	27,900	335,731	173,660	18,726	
Undistributed.....				6,730	8,737	590	7,975					56,700	4,178	
	336	109,820	149,941	424,570	379,259	735,830	2,356,964	1,409,850	2,770,943	170,670	1,191,167	5,800,680	577,524	

¹ Rough stone included under dressed stone.

² Included under "Undistributed."

³ Dressed stone included under rough stone.

STONE

Granite sold or used by producers in the United States in 1933, by States and uses—Continued

State	Curbing		Rubble		Riprap		Crushed stone				Other uses		Total	
	Linear feet	Value	Short tons	Value	Short tons	Value	Concrete and road metal		Railroad ballast		Short tons	Value	Short tons (approximate)	Value
							Short tons	Value	Short tons	Value				
Arizona.....					22,970	\$4,816	5,470	\$4,067					28,440	\$8,883
California.....	(?)	(?)	9,210	\$7,297	86,720	62,207	504,380	289,411	363,360	\$108,148			971,990	671,279
Colorado.....							120,990	109,652					121,400	138,127
Connecticut.....	3,860	\$2,178	740	3,594	(?)	(?)					(?)	(?)	11,600	60,006
Delaware.....					8,630	10,508	50,180	63,933	1,340	1,658			62,380	78,856
District of Columbia.....			(?)	(?)									(?)	(?)
Georgia.....	49,720	27,148	(?)	(?)	(?)	(?)	422,800	342,748	27,500	18,545	8,350	\$9,234	554,280	1,099,196
Maine.....	49,270	43,080	690	739	680	608	42,030	53,525					130,010	1,031,840
Maryland.....	20,000	5,820	(?)	(?)	(?)	(?)	36,070	48,060					56,100	86,387
Massachusetts.....	524,510	355,556	16,210	9,892	(?)	(?)	342,390	340,651			(?)	(?)	446,480	1,680,991
Minnesota.....					4,000	2,000	380	600					27,520	535,354
Missouri.....													520	12,480
Montana.....	(?)	(?)					(?)	(?)					1,690	15,848
New Hampshire.....	15,200	6,985	550	2,584	1,770	2,844	51,530	52,736			100	699	71,570	461,784
New Jersey.....								(?)	(?)				(?)	(?)
New York.....	16,000	6,000	(?)	(?)	(?)	(?)	374,820	353,466	101,400	89,583	700	700	515,820	559,969
North Carolina.....	41,170	39,073	(?)	(?)	(?)	(?)	313,190	352,164	112,010	97,143	1,530	8,802	446,520	737,102
Oklahoma.....			(?)	(?)	(?)	(?)	(?)	(?)					11,470	81,579
Oregon.....													110	9,749
Pennsylvania.....	(?)	(?)	5,980	5,199	8,540	6,833	24,320	27,238	(?)	(?)	30	101	82,530	236,339
Rhode Island.....	(?)	(?)	(?)	(?)			(?)	(?)					11,480	209,611
South Carolina.....	(?)	(?)			(?)	(?)	228,380	271,221	93,510	74,081			354,140	659,443
South Dakota.....			50	50	100	50					20	34	3,380	230,847
Texas.....					35,320	23,793					(?)	(?)	37,020	68,260
Vermont.....					(?)	(?)							66,150	1,643,296
Virginia.....							205,680	193,401	58,000	38,377			263,680	236,778
Washington.....							81,000	80,999					81,250	100,840
Wisconsin.....							7,080	9,305			390	2,237	15,910	621,299
Undistributed.....	4,660	3,166	5,620	6,697	84,670	84,943	50,380	56,256	60,000	70,000	2,790	4,138	48,810	51,228
	724,390	489,006	39,050	36,052	253,400	198,602	2,861,070	2,654,433	817,120	497,535	4 13,910	4 25,945	4,422,250	11,327,371

² Included under "Undistributed."

⁴ Includes 1,410 tons of Durax paving blocks valued at \$8,792 made in North Carolina and Wisconsin.

*Monumental granite sold by the quarrymen at Quincy, Mass., 1929-33*¹

Year	Number of active plants	Cubic feet	Value	Year	Number of active plants	Cubic feet	Value
1929-----	6	131, 380	\$288, 492	1932-----	4	51, 510	\$103, 091
1930-----	5	97, 280	224, 165	1933-----	3	41, 410	76, 972
1931-----	5	96, 522	192, 671				

¹ Quincy granite sold also for construction as follows: 1929, 15,000 tons valued at \$18,300; 1930, 14,410 tons, \$11,646; 1931, 14,620 tons, \$12,450; 1932, 12,610 tons, \$13,982; 1933, 18,025 tons, \$10,126.

*Monumental granite sold by the quarrymen in the Barre district, Vermont, 1929-33*¹

Year	Cubic feet	Value	Year	Cubic feet	Value
1929-----	1, 140, 540	\$3, 485, 191	1932-----	618, 890	\$1, 549, 113
1930-----	1, 024, 600	2, 996, 032	1933-----	563, 570	1, 405, 270
1931-----	823, 160	2, 295, 179			

¹ Barre granite is sold also for construction, paving blocks, and crushed stone.

*Estimated output of monumental granite in Barre district, Vermont, 1931-33*¹

	1931	1932	1933
Total quarry output, rough stock-----cubic feet--	842, 922	651, 401	575, 046
Shipped out of Barre district in rough-----do--	168, 534	130, 280	115, 009
Manufactured in Barre district-----do--	674, 338	521, 121	460, 037
Light stock consumed in district-----do--	421, 460	325, 701	287, 523
Dark stock consumed in district-----do--	252, 878	195, 420	172, 514
Number of cutters in district-----do--	900	900	900
Average daily wage-----	\$9. 00	\$8. 00	\$8. 00
Average number of days worked-----	200	200	200
Total pay roll for year-----	\$1, 620, 000	\$1, 440, 000	\$1, 440, 000
Estimated overhead-----	810, 000	720, 000	720, 000
Estimated value of light stock-----	1, 517, 256	1, 172, 523	898, 509
Estimated value of dark stock-----	1, 087, 367	840, 306	862, 568
Estimated polishing cost-----	533, 316	412, 140	363, 832
Output from saws-----	177, 772	137, 380	121, 277
Total value of granite-----	5, 745, 711	4, 722, 349	4, 406, 186

¹ Through the kindness of the Granite Manufacturers' Association, Barre, figures covering the entire granite industry of the Barre district are given in this table to supplement figures of sales reported by quarrymen.

BASALT AND RELATED ROCKS (TRAP ROCK)*Basalt and related rocks (trap rock) sold or used by producers in the United States in 1933, by uses*

Use	Quantity	Value
Building stone-----cubic feet--	72, 000	\$6, 777
Approximate equivalent in short tons-----	6, 090	
Rubble-----short tons	3, 800	4, 823
Riprap-----do--	357, 720	270, 905
Crushed stone-----do--	6, 969, 410	6, 291, 514
Other-----do--	57, 270	22, 229
Total (quantity approximate, in short tons)-----	7, 394, 290	6, 596, 248

*Basalt and related rocks (trap rock) sold or used by producers in the United States
in 1933, by States*

[Quantities approximate]

State	Short tons	Value	State	Short tons	Value
California.....	486,240	\$424,308	New York.....	492,500	\$448,772
Connecticut.....	1,021,430	788,782	Oregon.....	994,910	767,048
Hawaii.....	247,200	450,357	Pennsylvania.....	548,210	535,093
Idaho.....	305,210	292,473	South Dakota.....	1,000	1,000
Maine.....	10,980	14,988	Washington.....	1,123,200	782,262
Maryland.....	139,240	176,438	Wyoming.....	73,580	61,530
Massachusetts.....	791,920	594,926	Undistributed ¹	125,870	167,874
Michigan.....	33,150	34,627			
Montana.....	34,940	18,121			
New Jersey.....	964,760	1,037,649		7,394,290	6,596,248

¹ Includes Minnesota, New Hampshire, Texas, Virginia, and Wisconsin.

Basalt and related rocks (trap rock) sold or used by producers in the United States in 1933, by States and uses

State	Number of active plants	Building, rough construction		Rubble and riprap		Crushed stone				Other uses		Total	
		Short tons	Value	Short tons	Value	Concrete and road metal		Railroad ballast		Short tons	Value	Short tons	Value
						Short tons	Value	Short tons	Value				
California	15	(1)	(1)	49,980	\$45,487	434,110	\$377,112	(1)	(1)			486,240	\$424,308
Connecticut	18	1,280	\$1,276	500	282	872,130	689,041	147,520	\$98,183			1,021,430	788,782
Hawaii	12					246,830	449,547	90	139	280	\$671	247,200	450,357
Idaho	16			4,300	3,123	300,910	289,350					305,210	292,473
Maine	4					10,930	14,988					10,930	14,988
Maryland	5	(1)	(1)	(1)	(1)	67,130	86,167	(1)	(1)			139,240	176,438
Massachusetts	15	(1)	(1)	(1)	(1)	707,780	527,578	48,140	37,348			791,920	594,926
Michigan	11					33,150	34,627					33,150	34,627
Minnesota	1			(1)	(1)	(1)	(1)					(1)	(1)
Montana	7			9,940	10,121	25,000	8,000					34,940	18,121
New Hampshire	1					(1)	(1)					(1)	(1)
New Jersey	26			400	288	915,920	991,776	48,440	45,585			964,760	1,037,649
New York	3					(1)	(1)	(1)	(1)			492,500	448,772
Oregon	55	1,170	1,360	56,730	35,389	934,340	728,225	2,670	2,074			994,910	767,048
Pennsylvania	14	2,190	2,198	2,660	2,805	472,640	458,008	70,300	70,402	420	1,680	548,210	535,093
South Dakota	1					1,000	1,000					1,000	1,000
Texas	1					(1)	(1)	(1)	(1)			(1)	(1)
Virginia	2	(1)	(1)			(1)	(1)					(1)	(1)
Washington	60			198,980	145,747	834,380	605,516	33,270	11,121	56,570	19,878	1,123,200	782,262
Wisconsin	1			(1)	(1)	(1)	(1)					(1)	(1)
Wyoming	2					73,580	61,530					73,580	61,530
Undistributed		1,450	1,943	38,030	32,486	509,690	489,697	179,460	214,500			125,870	167,874
	270	6,090	6,777	361,520	275,728	6,439,520	5,812,162	529,890	479,352	57,270	22,229	7,394,290	6,596,248

¹ Included under "Undistributed"

STONE

MARBLE

Marble sold by producers in the United States in 1933, by uses

Use	Quantity	Value
Building stone:		
Rough:		
Exterior.....cubic feet..	32,250	\$59,930
Interior.....do.....	202,820	444,772
Finished:		
Exterior.....do.....	728,170	2,336,641
Interior.....do.....	381,070	2,036,395
Total exterior.....do.....	760,420	2,396,571
Total interior.....do.....	583,890	2,481,167
Total building stone.....do.....	1,344,310	4,877,738
Monumental stone:		
Rough.....do.....	89,250	96,573
Finished.....do.....	337,050	1,262,197
Total monumental stone.....do.....	426,300	1,358,770
Total building and monumental.....do.....	1,770,610	6,236,508
Marble for other uses (byproducts).....do.....	150,070	162,496
Total marble, approximate short tons.....do.....	224,670	6,399,004

Marble sold by producers in the United States in 1933, by States and uses

State	Building and monumental (rough and finished)		Other uses		Total	
	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
Alabama.....	119,770	\$339,232	19,130	\$24,523	29,300	\$363,755
Arkansas.....	11,720	27,436	2,090	2,599	3,090	30,085
California.....	7,040	21,518	1,560	11,784	2,160	33,302
Georgia.....	311,250	1,379,220	22,500	25,655	48,950	1,404,875
Massachusetts.....	10,030	36,782	730	629	1,570	37,411
Missouri.....	94,140	248,665	20	157	7,850	248,822
New York.....	20,130	60,300	9,110	45,675	10,810	105,975
Tennessee.....	311,110	1,280,279	9,620	12,078	35,860	1,292,357
Vermont.....	832,240	2,593,901	6,520	8,837	77,250	2,602,738
Other States ¹	53,180	249,175	3,320	30,559	7,830	279,734
	1,770,610	6,236,508	74,600	162,496	224,670	6,399,004

¹ Arizona, Colorado, Maryland, New Jersey, North Carolina, Utah, Virginia, and Washington.

SERPENTINE

Serpentine ¹ (verde antique) sold by producers in the United States in 1933, by uses

Use	Quantity	Value
Building and ornamental stone.....cubic feet..	29,950	\$187,558
Rough construction, crushed, etc.....short tons..	125,590	136,972
		324,530

¹ Serpentine sold from dimension-stone quarries is included in the figures for marble; serpentine sold for road work and other low-grade material is included in the figures for "miscellaneous" stone.

LIMESTONE

Limestone sold or used by producers in the United States in 1933, by uses

Use	Quantity	Value
Building stone ¹.....cubic feet.....	6,599,250	\$6,416,223
Approximate equivalent in short tons.....	465,480	-----
Curbing, flagging, and paving.....cubic feet.....	78,610	32,134
Approximate equivalent in short tons.....	6,310	-----
Rubble.....short tons.....	79,060	94,046
Riprap.....do.....	1,566,560	1,767,541
Crushed stone.....do.....	28,606,690	24,136,006
Fluxing stone.....do.....	7,982,560	5,510,445
Sugar factories.....do.....	607,990	887,630
Glass factories.....do.....	199,720	245,835
Paper mills.....do.....	196,440	285,850
Agriculture.....do.....	994,540	1,239,724
Other uses ².....do.....	5,216,930	3,883,877
Total (quantity approximate, in short tons).....	45,922,280	44,499,311

¹ Figures for building stone include small amounts of monumental stone.

² See table on p. 54 for further distribution of limestone products.

Limestone sold or used by producers in the United States in 1933, by States

[Quantities approximate]

State	Short tons	Value	State	Short tons	Value
Alabama.....	396,700	\$1,043,560	Nebraska.....	198,070	\$219,616
Arizona.....	17,250	26,714	Nevada.....	69,140	83,008
Arkansas.....	207,410	227,744	New York.....	6,062,190	4,774,400
California.....	200,670	436,056	North Carolina.....	56,580	52,000
Colorado.....	189,560	276,446	Ohio.....	5,281,900	3,763,070
Connecticut.....	42,130	91,065	Oklahoma.....	700,790	486,427
Florida.....	606,530	519,005	Pennsylvania.....	6,852,560	6,611,916
Georgia.....	312,410	265,324	Puerto Rico.....	40,770	83,650
Hawaii.....	90	315	Rhode Island.....	190	460
Idaho.....	15,690	27,867	South Dakota.....	10,280	13,914
Illinois.....	2,397,400	1,709,250	Tennessee.....	1,191,560	1,157,811
Indiana.....	2,269,490	6,265,952	Texas.....	687,710	850,904
Iowa.....	1,031,290	909,192	Utah.....	127,550	147,480
Kansas.....	1,022,240	941,437	Vermont.....	42,550	65,780
Kentucky.....	2,100,080	1,761,441	Virginia.....	1,691,200	1,520,321
Louisiana.....	65,090	43,333	Washington.....	89,150	123,705
Maine.....	24,130	39,958	West Virginia.....	1,279,160	921,266
Maryland.....	349,500	343,351	Wisconsin.....	1,091,730	1,036,320
Massachusetts.....	47,640	168,693	Wyoming.....	290,350	302,667
Michigan.....	5,634,520	2,972,761	Undistributed ¹	94,130	187,358
Minnesota.....	263,230	714,549			
Missouri.....	2,794,820	3,194,792			
Montana.....	76,850	108,383			
				45,922,280	44,499,311

¹ Includes Mississippi, New Jersey, and Oregon.

Limestone sold or used by producers in the United States in 1933, by States and uses

State	Number of active plants	Building						Rubble		Riprap		Crushed stone			
		Rough construction		Rough architectural		Finished (cut and sawed)		Short tons	Value	Short tons	Value	Concrete and road metal		Railroad ballast	
		Short tons	Value	Cubic feet	Value	Cubic feet	Value					Short tons	Value	Short tons	Value
Alabama	14			(1)	(1)	(1)	(1)			86,720	\$67,233	49,160	\$37,182		
Arizona	5									7,600	6,011	9,590	20,583		
Arkansas	12									10,000	7,999	146,760	169,097	(1)	(1)
California	19	(1)	(1)					(1)	(1)	(1)	(1)	15,450	24,148	(1)	(1)
Colorado	11			(1)	(1)	(1)	(1)								
Connecticut	5														
Florida	26	(1)	(1)			(1)	(1)			(1)	(1)	500,910	411,048	79,240	\$57,639
Georgia	8											286,710	199,165		
Hawaii	1														
Idaho	6														
Illinois	88	(1)	(1)					(1)	(1)	113,830	116,584	1,759,490	1,191,538	126,220	85,447
Indiana	103	5,980	\$2,869	2,036,470	\$733,812	2,822,280	\$4,084,141	(1)	(1)	(1)	(1)	1,621,940	1,228,497	63,740	39,555
Iowa	65	4,270	4,402					11,620	\$9,484	9,690	8,830	861,550	781,750	46,640	21,485
Kansas	64	1,850	2,745			720	583	9,240	7,077	89,580	130,306	663,970	675,248	160,380	108,886
Kentucky	75	6,400	4,793	41,060	17,908			4,510	4,011	85,480	112,917	1,787,390	1,524,764	132,910	55,487
Louisiana	2									10,560	12,215	54,530	31,168		
Maine	3									3,110	4,750				
Maryland	15	(1)	(1)					(1)	(1)			334,040	317,504	5,040	3,903
Massachusetts	7											240	420		
Michigan	17	(1)	(1)							(1)	(1)	432,920	254,812	36,490	22,819
Minnesota	18	1,810	5,242	104,860	74,092	157,500	355,443	2,380	3,941	17,750	13,949	204,740	218,255		
Mississippi	2														
Missouri	155	3,590	4,224			3,480	2,533	25,540	43,714	845,720	1,048,172	1,751,200	1,880,678	31,210	25,910
Montana	9			(1)	(1)					2,030	1,461				
Nebraska	9									58,070	48,796	129,810	113,906	(1)	(1)
Nevada	6									2,330	1,185				
New Jersey	2									(1)	(1)				
New York	85	(1)	(1)					(1)	(1)	77,850	88,370	4,261,140	3,546,370	339,080	272,110
North Carolina	4											50,450	44,650	(1)	(1)
Ohio	151	7,180	6,500					2,460	3,770	35,630	32,850	3,022,100	2,204,310	432,870	273,240
Oklahoma	13	3,880	4,320							7,760	5,488	468,970	361,180	215,380	103,525
Oregon	2														
Pennsylvania	206	2,560	3,475												
Fuerto Rico	9							1,940	2,627	7,910	6,749	3,555,240	3,529,509	157,870	137,752
Rhode Island	1									36,280	72,740			3,600	1,360
South Dakota	6									1,780	2,225	4,610	5,610		
Tennessee	42							2,000	3,000	1,720	1,767	800,850	757,056	293,790	172,142

Texas.....	22			77,820	36,426	151,010	255,115			8,050	7,133	578,100	490,150	75,860	55,023	
Utah.....	9									650	480					
Vermont.....	13											27,790	30,570			
Virginia.....	57									(1)	(1)	973,600	829,144	296,110	226,542	
Washington.....	6											30,820	38,527			
West Virginia.....	17											241,860	200,564	225,610	137,043	
Wisconsin.....	91	6,390	19,368	25,900	18,597	(1)	(1)	3,350	7,874	24,660	26,178	1,001,600	887,101	300	240	
Wyoming.....	8									(1)	(1)	133,410	107,813	15,980	12,214	
Undistributed.....		34,880	50,162	12,510	22,076	203,840	707,397	16,020	8,548	76,110	35,504	59,920	66,198	53,200	52,828	
		1,489	78,790	108,100	2,298,620	902,911	3,338,830	5,405,212	79,060	94,046	1,566,560	1,767,541	25,820,640	22,239,698	2,786,050	1,896,308

¹ Included under "Undistributed."

Limestone sold or used by producers in the United States in 1933, by States and uses—Continued

State	Fluxing stone		Sugar factories		Glass factories		Paper mills		Agriculture		Other uses		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons (approximate)	Value
Alabama.....	236,070	\$250,553							7,140	\$9,471	3,190	\$9,497	396,700	\$1,043,560
Arizona.....											60	120	17,250	26,714
Arkansas.....											(1)	(1)	207,410	227,744
California.....	16,470	29,383	93,280	\$225,891	12,180	\$29,540			1,630	2,130	60,520	123,581	200,670	436,056
Colorado.....	91,530	128,993	86,910	122,378							(1)	(1)	189,560	276,446
Connecticut.....									16,990	54,119	(1)	(1)	42,130	91,065
Florida.....									(1)	(1)	20,730	18,000	606,530	519,005
Georgia.....									12,920	16,356	12,780	49,803	312,410	265,324
Hawaii.....									90	315			90	315
Idaho.....	2,120	3,175	13,370	23,692							200	1,000	15,690	27,867
Illinois.....	135,190	76,394							221,250	161,122	39,010	74,039	2,397,400	1,709,250
Indiana.....	55,440	17,678			(1)	(1)			58,230	61,674	58,390	54,698	2,269,490	6,265,952
Iowa.....	3,470	3,889	(1)	(1)					63,610	44,649	(1)	(1)	1,031,290	909,192
Kansas.....									6,110	4,416	91,050	12,176	1,022,240	941,437
Kentucky.....	20	40							69,630	31,858	10,270	9,663	2,100,080	1,761,441
Louisiana.....													65,090	43,383
Maine.....	780	1,399					18,340	\$28,590	1,900	5,219			24,130	39,958
Maryland.....											5,700	16,257	349,500	343,351
Massachusetts.....	7,070	8,555							28,970	114,213		45,505	47,640	168,693
Michigan.....	2,276,180	1,273,440	89,150	52,602	(1)	(1)	56,660	85,487	30,680	22,847	2,708,700	1,254,766	5,634,520	2,972,761
Minnesota.....	(1)	(1)					(1)	(1)	7,390	11,624	3,920	18,025	263,280	714,549
Mississippi.....									(1)	(1)			(1)	(1)
Missouri.....	7,590	9,071			27,560	23,146	220	1,354	35,490	25,907	66,400	130,083	2,794,820	3,194,792
Montana.....	(1)	(1)	50,100	67,097							160	80	76,850	108,383
Nebraska.....			(1)	(1)					2,130	1,957	6,710	53,322	198,070	219,616
Nevada.....	(1)	(1)	59,730	79,099							(1)	(1)	69,140	88,008
New Jersey.....	(1)	(1)							(1)	(1)			(1)	(1)
New York.....	61,770	55,350							46,340	116,750	1,229,530	644,570	6,062,190	4,774,400
North Carolina.....	(1)	(1)							(1)	(1)			56,580	52,000
Ohio.....	1,366,950	754,020			112,670	113,450	22,350	25,000	97,300	100,680	182,390	249,250	5,281,900	3,763,070
Oklahoma.....	(1)	(1)			(1)	(1)			1,010	618	1,090	2,680	700,790	486,427
Oregon.....									(1)	(1)			(1)	(1)
Pennsylvania.....	2,743,770	2,211,659			31,440	56,655	11,350	10,974	73,510	158,684	266,970	493,832	6,852,560	6,611,916
Puerto Rico.....			(1)	(1)					(1)	(1)	(1)	(1)	40,770	83,650
Rhode Island.....	190	460											190	460
South Dakota.....			(1)	(1)									10,280	13,914
Tennessee.....	10,730	12,501							110,920	129,836	31,550	81,509	1,191,560	1,157,811
Texas.....	(1)	(1)							(1)	(1)			687,710	850,904
Utah.....	71,820	42,610	52,280	89,500							2,800	14,890	127,550	147,480
Vermont.....	(1)	(1)							(1)	(1)	(1)	(1)	42,550	65,780

Virginia.....	(1)	(1)					(1)	(1)	55,410	71,474	323,660	362,097	1,691,200	1,520,321
Washington.....	14,260	9,981	2,410	3,009	(1)	(1)	39,880	70,029	(1)	(1)	1,330	6,190	89,150	123,705
West Virginia.....	801,320	552,126			(1)	(1)			3,070	8,621	(1)	(1)	1,279,160	921,266
Wisconsin.....	18,160	14,611							12,720	16,056	(1)	(1)	1,091,730	1,036,320
Wyoming.....	(1)	(1)	137,020	181,004					(1)	(1)			290,350	302,667
Undistributed.....	61,660	54,557	23,740	43,358	15,870	23,044	47,640	64,416	26,480	55,768	84,770	190,378	94,130	187,358
	7,982,560	5,510,445	607,990	887,630	199,720	245,835	196,440	285,850	994,540	1,239,724	5,223,240	3,916,011	45,922,280	44,499,311

1 Included under "Undistributed."

Limestone sold or used by producers in the United States for miscellaneous uses in 1933

Use	Short tons	Value	Use	Short tons	Value
Alkali works.....	4, 193, 650	\$2, 120, 908	Road base.....	119, 560	\$16, 935
Asphalt filler.....	126, 780	332, 159	Roofing.....	2, 140	10, 063
Calcium carbide works.....	117, 740	75, 077	Stucco, terrazzo, and artificial stone.....	15, 220	55, 119
Coal-mine dusting.....	34, 080	101, 605	Whiting substitute ¹	93, 070	481, 677
Filler (not whiting).....	13, 940	34, 781	Other ²	40, 810	51, 979
Magnesia works (dolomite).....	83, 640	99, 630	Unspecified.....	73, 190	61, 090
Mineral food.....	26, 860	115, 618			
Mineral (rock) wool.....	55, 160	42, 305			
Poultry grit.....	24, 550	104, 771		5, 216, 930	3, 883, 877
Refractory stone (dolomite).....	196, 540	180, 160			

¹ Includes stone for filler for calcimine, pigments (paint), polishes, pottery, putty, rubber, targets, wall board, and uses not specified.

² Includes stone for acid neutralization, bulb growing, carbolic acid, carbon dioxide, cesspool stones, chemicals (unspecified), dust, dye works, explosives, filter beds, lime burning, mosaics, oil refining, pipe manufacturing, salt refining, spalls, studio snow, and waste rock.

Dolomite and dolomitic lime sold or used by producers in the United States for specified purposes, 1929-33

	1929	1930	1931	1932	1933
Dolomite for—					
Basic magnesium carbonate:					
Short tons.....	84, 750	111, 740	80, 820	62, 930	83, 640
Value.....	\$129, 383	\$189, 219	\$122, 525	\$82, 822	\$99, 630
Carbon dioxide.....	(¹)	(¹)	(¹)	(¹)	(¹)
Dead-burned dolomite or refractory stone:					
Short tons.....	516, 400	453, 350	268, 500	72, 240	196, 540
Value.....	\$461, 444	\$356, 025	\$183, 020	\$45, 186	\$180, 160
Dolomitic lime for—					
Refractory (dead-burned dolomite):					
Short tons.....	1 488, 032	351, 740	243, 769	135, 733	261, 812
Value.....	\$4, 261, 942	\$3, 045, 032	\$1, 866, 971	\$1, 055, 339	\$2, 064, 869
Sulphite pulp:					
Short tons.....	51, 000	38, 400	32, 000	24, 000	25, 000
Value.....	\$398, 000	\$295, 000	\$253, 000	\$148, 000	\$144, 000
Total (calculated as raw stone)....short tons..	1, 654, 000	1, 360, 000	922, 000	472, 000	884, 000

¹ Bureau of Mines not at liberty to publish figures.

² Corrected figure.

Limestone used for all purposes in the United States, 1932-33, in short tons

Use	1932	1933
Limestone (as given in this report).....	46, 913, 520	45, 922, 280
Portland cement (including "cement rock") ¹	} 19, 400, 000	} 16, 117, 000
Natural cement ("cement rock") ¹		
Lime?.....	4, 000, 000	4, 450, 000
	70, 313, 520	66, 489, 280

¹ Value reported as cement in the chapter on Cement.

² Value reported as lime in the chapter on Lime.

LIMESTONE FOR CONSTRUCTION

Limestone sold by producers in the Indiana oolitic limestone district, 1929-33

Year	Construction		Other		Total	
	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1929.....	14, 009, 850	\$17, 419, 183	414, 140	\$250, 578	1, 429, 840	\$17, 669, 761
1930.....	12, 303, 340	15, 276, 487	538, 490	354, 365	1, 430, 840	15, 640, 852
1931.....	7, 865, 210	8, 570, 563	313, 100	200, 754	883, 330	8, 771, 317
1932.....	5, 927, 350	5, 491, 276	136, 130	85, 957	565, 860	5, 577, 233
1933.....	4, 858, 660	4, 817, 822	150, 140	80, 961	502, 400	4, 898, 783

Limestone sold by producers in the Indiana oolitic limestone district in 1933, by classes

Class	Quantity	Value
Construction:		
Rough blocks.....cubic feet.....	2, 036, 460	\$733, 804
Sawed.....do.....	369, 230	239, 229
Semifinished.....do.....		
Cut.....do.....	2, 452, 970	3, 844, 789
Total construction.....do.....	4, 858, 660	4, 817, 822
Other stone.....short tons.....	150, 140	80, 961
Grand total (quantity approximate, in short tons).....	502, 400	4, 898, 783

Indiana limestone sold by mills not operated by quarry companies and by mills of quarry companies from stock obtained at quarries other than their own, 1929-33

Year	Cubic feet	Value	Year	Cubic feet	Value
1929.....	1, 370, 200	\$3, 374, 490	1932.....	1, 404, 310	\$2, 375, 274
1930.....	1, 991, 000	4, 645, 824	1933.....	1, 198, 430	1, 900, 414
1931.....	1, 394, 130	2, 930, 978			

Indiana limestone sold by mills not operated by quarry companies and by mills of quarry companies from stock obtained at quarries other than their own, 1932-33, by classes

Sales by mills—	1932						1933 ¹	
	Sawed		Cut		Total		Cubic feet	Value
	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value		
Not operated by quarry companies.....	1, 340	\$700	617, 500	\$1, 100, 319	618, 840	\$1, 101, 019	431, 970	\$776, 078
Of quarry companies from stock obtained at quarries other than their own.....	26, 100	21, 538	759, 370	1, 252, 717	785, 470	1, 274, 255	716, 460	1, 124, 336
	27, 440	22, 238	1, 376, 870	2, 353, 036	1, 404, 310	2, 375, 274	1, 198, 430	1, 900, 414

¹ All cut stone; no sawed stone reported for 1933.

Limestone sold by producers at Mankato and Kasota, Minn., 1929-33

Year	Building stone (rough and dressed)		Other		Total	
	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1929.....	230,290	\$495,895	38,410	\$22,962	56,590	\$518,857
1930.....	241,400	451,683	50,170	42,193	68,420	493,876
1931.....	216,720	469,684	74,150	65,659	90,420	535,343
1932.....	157,110	246,434	70,800	49,464	82,730	295,898
1933.....	266,860	402,225	45,050	34,859	65,340	437,084

Limestone and marble sold by producers in the Carthage district, Jasper County, Mo., 1929-33, by classes

Year	Building stone (rough and dressed)		Monumental stone (rough and dressed)		Other		Total	
	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1929.....	278,340	\$553,468	21,610	\$43,202	174,810	\$228,941	199,860	\$825,611
1930.....	158,270	436,593	8,200	14,253	133,830	109,912	147,730	560,738
1931.....	105,310	305,810	6,140	11,228	91,850	110,192	101,150	427,230
1932.....	139,720	286,849	9,600	12,874	72,520	53,588	84,990	353,311
1933.....	63,570	175,545	5,750	8,421	48,840	56,684	54,630	240,660

SANDSTONE*Sandstone sold or used by producers in the United States in 1933, by uses*

Use	Quantity	Value
Building stone..... cubic feet.....	826,640	\$823,520
Approximate equivalent in short tons.....	62,800	-----
Paving blocks..... number.....	120,900	8,184
Approximate equivalent in short tons.....	1,350	-----
Curbing..... cubic feet.....	159,980	129,700
Approximate equivalent in short tons.....	12,140	-----
Flagging..... cubic feet.....	102,460	101,693
Approximate equivalent in short tons.....	8,090	-----
Crushed stone..... short tons.....	1,710,860	1,851,006
Rubble..... do.....	5,830	10,917
Riprap..... do.....	557,740	728,264
Refractory stone (ganister)..... do.....	289,020	359,688
Other uses..... do.....	152,090	132,357
Total (quantity approximate, in short tons).....	2,799,920	4,145,329

Sandstone sold or used by producers in the United States in 1933, by States

[Quantities approximate]

State	Short tons	Value	State	Short tons	Value
Arkansas.....	5,100	\$4,200	Pennsylvania.....	1,985,560	\$1,120,730
California.....	346,890	257,793	South Dakota.....	102,990	117,027
Colorado.....	29,340	37,447	Utah.....	3,310	5,290
Iowa.....	18,900	11,340	Vermont.....	460	293
Kansas.....	10,390	7,513	Virginia.....	63,900	42,984
Kentucky.....	1,660	12,536	Washington.....	17,470	74,485
Maryland.....	14,230	16,984	West Virginia.....	157,930	311,406
Missouri.....	14,160	21,477	Wisconsin.....	45,100	74,702
Montana.....	12,160	6,261	Wyoming.....	340	572
New York.....	1,240,940	1,391,219	Undistributed ²	237,860	323,477
Ohio.....	144,590	755,450			
Oregon.....	346,640	552,143			
				2,799,920	4,145,329

¹ Includes bluestone.² Includes Alabama, Arizona, Connecticut, Idaho, Illinois, Minnesota, New Jersey, New Mexico, Tennessee, and Texas.

Sandstone sold or used by producers in the United States in 1933, by States and uses

State	Number of active plants	Building						Refractory stone (ganister)		Paving blocks		Curbing	
		Rough construction		Rough architectural		Dressed (sawed and cut)		Short tons	Value	Number	Value	Cubic feet	Value
		Short tons	Value	Cubic feet	Value	Cubic feet	Value						
Alabama	2							(1)	(1)				
Arizona	1												
Arkansas	2												
California	12	(1)	(1)					(1)	(1)				
Colorado	5	(1)	(1)					5,010	\$6,331				
Connecticut	1	(1)	(1)	(1)	(1)	(1)	(1)						
Idaho	2					(1)	(1)						
Illinois	2							(1)	(1)				
Iowa	2												
Kansas	4												
Kentucky	3					(1)	(1)	(1)	(1)				
Maryland	5	(1)	(1)										
Minnesota	2			(1)	(1)								
Missouri	3	(1)	(1)										
Montana	3												
New Jersey	2	(1)	(1)										
New Mexico	1												
New York	41	780	\$5,198	3,700	\$3,053	10,770	\$37,657	2,000	2,700	120,900	\$8,184	47,280	\$49,908
Ohio	11	1,080	4,002	267,780	143,333	282,930	414,905	5,780	15,429			102,440	69,730
Oregon	3												
Pennsylvania	61	1,050	1,867	8,490	6,920	11,960	43,690	213,190	253,183			10,260	10,062
South Dakota	6					(1)	(1)	(1)	(1)				
Tennessee	2	(1)	(1)	(1)	(1)								
Texas	3												
Utah	2							(1)	(1)				
Vermont	1												
Virginia	5												
Washington	3	1,060	1,058	24,580	19,200	9,490	42,402						
West Virginia	4	(1)	(1)	(1)	(1)			(1)	(1)				
Wisconsin	10			(1)	(1)	290	643	(1)	(1)				
Wyoming	1												
Undistributed		8,730	30,580	7,770	7,984	40,550	61,028	63,040	82,045				
	205	12,700	42,705	312,320	180,490	355,990	600,325	289,020	359,688	120,900	8,184	159,980	129,700

STONE

¹ Included under "Undistributed."

Sandstone sold or used by producers in the United States in 1933, by States and uses—Continued

State	Flagging		Rubble		Riprap		Crushed stone				Other uses		Total	
	Cubic feet	Value	Short tons	Value	Short tons	Value	Concrete and road metal		Railroad ballast		Short tons	Value	Short tons (approximate)	Value
							Short tons	Value	Short tons	Value				
Alabama.....							(1)	(1)					(1)	(1)
Arizona.....					(1)	(1)							(1)	(1)
Arkansas.....							5,100	\$4,200					5,100	\$4,200
California.....	(1)	(1)	(1)	(1)	(1)	(1)	265,480	190,420	(1)	(1)	12,810	\$4,833	346,890	257,793
Colorado.....	350	\$221	370	\$861			21,430	21,034			(1)	(1)	29,340	37,447
Connecticut.....	(1)	(1)	(1)	(1)							(1)	(1)	(1)	(1)
Idaho.....											(1)	(1)	(1)	(1)
Illinois.....											(1)	(1)	(1)	(1)
Iowa.....							18,900	11,340					18,900	11,340
Kansas.....	(1)	(1)					(1)	(1)					10,390	7,513
Kentucky.....							(1)	(1)			(1)	(1)	1,660	12,536
Maryland.....	(1)	(1)	(1)	(1)			(1)	(1)					14,230	16,984
Minnesota.....											(1)	(1)	(1)	(1)
Missouri.....					(1)	(1)							14,160	21,477
Montana.....					9,180	\$3,506							12,160	6,261
New Jersey.....							2,700	2,700			280	55	(1)	(1)
New Mexico.....									(1)	(1)			(1)	(1)
New York.....	27,000	13,475	680	527	1,280	871	219,480	264,846			8,000	4,800	240,940	391,219
Ohio.....	34,600	22,642	380	1,192	39,600	37,013	47,520	47,140			70	64	144,590	755,450
Oregon.....					339,560	548,383	7,080	3,760					346,640	552,143
Pennsylvania.....	26,540	14,212	1,960	3,742	47,100	37,656	581,670	626,007	71,280	\$70,518	64,530	52,873	985,560	1,120,730
South Dakota.....					39,850	28,544	52,570	65,601					102,990	117,027
Tennessee.....	(1)	(1)									(1)	(1)	(1)	(1)
Texas.....							(1)	(1)			(1)	(1)	(1)	(1)
Utah.....							(1)	(1)					3,310	5,290
Vermont.....							460	293					460	293
Virginia.....							19,300	16,321	44,600	26,663			63,900	42,984
Washington.....	440	489			(1)	(1)	(1)	(1)					17,470	74,485
West Virginia.....					(1)	(1)	150,390	301,156					157,930	311,406
Wisconsin.....			1,360	2,015	1,190	978	(1)	(1)			(1)	(1)	45,100	74,702
Wyoming.....							340	572					340	572
Undistributed.....	13,530	50,654	1,080	2,580	79,980	71,313	121,180	153,403	81,380	45,032	66,400	69,732	237,860	323,477
	102,460	101,693	5,830	10,917	557,740	728,264	1,513,600	1,708,793	197,260	142,213	152,090	132,357	2,799,920	4,145,329

1 Included under "Undistributed"

BLUESTONE

*Bluestone sold in New York and Pennsylvania in 1933, by uses*¹

State	Building stone		Curbing		Flagging		Other		Total	
	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
New York.....	14,470	\$40,710	44,450	\$47,108	22,336	\$10,364	96,220	\$101,150	104,090	\$199,332
Pennsylvania.....	10,430	10,731	1,320	1,590	23,240	13,364	40	248	34,990	25,933
	24,900	51,441	45,770	48,698	45,576	23,728	96,260	101,398	139,080	225,265

¹ Figures included in foregoing for sandstone

MISCELLANEOUS STONE

*Miscellaneous varieties of stone*¹ *sold or used by producers in the United States in 1933, by uses*

Use	Quantity	Value
Building stone.....cubic feet.....	191,630	\$327,517
Approximate equivalent in short tons.....	16,090	-----
Riprap and rubble.....short tons.....	533,290	561,905
Crushed stone.....do.....	4,525,460	3,588,242
Refractory stone (mica schist and soapstone).....do.....	15,880	170,678
Other uses.....do.....	4,368,080	3,330,003
Total (quantity approximate, in short tons).....	9,458,800	7,978,345

¹ Includes mica schist, conglomerate, argillite, various light-colored volcanic rocks, serpentine not used as marble, soapstone used as dimension stone, and such other stone as cannot properly be classed in any main group.

² Includes 4,127,380 tons of road-base material valued at \$2,546,335 produced by the State of Pennsylvania and used on roads.

Miscellaneous varieties of stone sold or used by producers in the United States in 1933, by States

(Quantities approximate)

State	Short tons	Value	State	Short tons	Value
Alabama.....	95,750	\$35,313	Montana.....	313,160	\$229,360
Alaska.....	19,930	16,078	Nevada.....	11,490	16,420
Arizona.....	76,780	64,394	New York.....	73,430	71,062
Arkansas.....	187,220	160,713	Oklahoma.....	24,800	7,728
California.....	2,354,779	2,171,843	Pennsylvania.....	4,333,160	3,156,240
Colorado.....	259,670	54,098	Puerto Rico.....	13,700	27,400
Hawaii.....	4,800	4,860	South Dakota.....	15,870	13,290
Idaho.....	215,510	120,629	Texas.....	383,490	122,319
Illinois.....	36,540	26,170	Utah.....	62,610	30,754
Kansas.....	20,350	7,784	Vermont.....	520	334
Maine.....	21,800	27,398	Virginia.....	42,540	454,987
Maryland.....	131,090	155,632	Washington.....	82,600	76,031
Massachusetts.....	108,700	98,770	Undistributed ²	490,950	709,537
Michigan.....	34,330	87,524			
Missouri.....	43,240	31,677			
				9,458,800	7,978,345

¹ Includes 4,127,380 tons of road-base material valued at \$2,546,335 produced by the State of Pennsylvania and used on roads.

² Includes Florida, Indiana, Minnesota, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Rhode Island, and Wisconsin.

Miscellaneous varieties of stone sold or used by producers in the United States in 1933, by States and uses

State	Number of active plants	Building		Riprap and rubble		Crushed stone				Other uses		Total	
		Short tons	Value	Short tons	Value	Concrete and road metal		Railroad ballast		Short tons	Value	Short tons (approximate)	Value
						Short tons	Value	Short tons	Value				
Alabama.....	2	2,000	\$2,500			93,750	\$32,813					93,750	\$35,313
Alaska.....	1					19,930	16,078					19,930	16,078
Arizona.....	8	320	2,346	(1)	(1)	71,950	60,392			(1)	(1)	76,780	64,394
Arkansas.....	5			(1)	(1)	156,280	139,676	(1)	(1)	(1)	(1)	160,713	160,713
California.....	70	3,370	25,485	459,330	\$485,184	1,836,070	1,527,496	3,800	\$3,393	52,200	\$130,285	2,354,770	2,171,843
Colorado.....	7					67,100	32,998	(1)	(1)	(1)	(1)	259,670	54,098
Florida.....	2					(1)	(1)			(1)	(1)	(1)	(1)
Hawaii.....	1					4,800	4,860					4,800	4,860
Idaho.....	12	(1)	(1)			215,210	120,302			(1)	(1)	215,510	120,629
Illinois.....	2					36,540	26,170					36,540	26,170
Indiana.....	1					(1)	(1)					(1)	(1)
Kansas.....	5					20,350	7,784					20,350	7,784
Maine.....	3					21,800	27,398					21,800	27,398
Maryland.....	5	(1)	(1)	1,700	2,736	(1)	(1)	(1)	(1)	(1)	(1)	131,090	155,632
Massachusetts.....	3					(1)	(1)	(1)	(1)			108,700	98,770
Michigan.....	5					(1)	(1)			(1)	(1)	34,330	87,524
Minnesota.....	1											(1)	(1)
Missouri.....	3			(1)	(1)	38,230	29,076	(1)	(1)			43,240	31,677
Montana.....	8					313,160	229,360					313,160	229,360
Nevada.....	9			11,490	16,420							11,490	16,420
New Hampshire.....	2	(1)	(1)							(1)	(1)	(1)	(1)
New Jersey.....	1	(1)	(1)									(1)	(1)
New Mexico.....	2					(1)	(1)					(1)	(1)
New York.....	6	800	4,800	2,000	500	70,630	65,762					73,430	71,062
North Carolina.....	2					(1)	(1)					(1)	(1)
Ohio.....	2									(1)	(1)	(1)	(1)
Oklahoma.....	4					2,000	3,000	(1)	(1)			24,800	7,728
Pennsylvania.....	75	(1)	(1)	(1)	(1)	127,050	115,724			² 4,203,020	² 3,038,438	² 4,333,160	² 3,156,240
Puerto Rico.....	3					13,700	27,400					13,700	27,400
Rhode Island.....	2					(1)	(1)					(1)	(1)
South Dakota.....	3					13,370	12,790			2,500	500	15,870	13,290
Texas.....	3					(1)	(1)	(1)	(1)			383,490	122,319
Utah.....	7					58,480	29,242					62,610	30,754
Vermont.....	1									4,130	1,512	520	334
Virginia.....	13	(1)	(1)			34,520	44,204			(1)	(1)	42,540	454,987
Washington.....	3			(1)	(1)	(1)	(1)					82,600	76,061
Wisconsin.....	3					(1)	(1)					(1)	(1)
Undistributed.....	2	9,600	292,386	58,770	57,065	1,007,370	875,707	299,370	156,617	121,590	329,612	490,950	709,537
	284	16,090	327,517	533,290	561,905	4,222,290	3,428,232	303,170	160,010	² 4,383,960	² 3,500,681	² 9,458,800	² 7,978,345

¹ Included under "Undistributed."

² Includes 4,127,380 tons of road-base material valued at \$2,546,335 produced by the State of Pennsylvania and used on roads.

CRUSHED STONE (CONCRETE AND ROAD METAL AND RAILROAD BALLAST)*Crushed stone sold or used by producers in the United States in 1933, by kinds and uses*

Kind	Concrete and road metal		Railroad ballast		Total		
	Short tons	Value	Short tons	Value	Short tons	Value	
						Total	Average
Granite.....	2,861,070	\$2,654,433	817,120	\$497,535	3,678,190	\$3,151,968	\$0.86
Basalt and related rocks (trap rock).....	6,439,520	5,812,162	529,890	479,352	6,969,410	6,291,514	.90
Limestone.....	25,820,640	22,239,698	2,786,050	1,896,306	28,606,690	24,136,006	.84
Sandstone.....	1,513,600	1,708,793	197,260	142,213	1,710,860	1,851,006	1.08
Miscellaneous.....	4,222,290	3,428,232	303,170	160,010	4,525,460	3,588,242	.79
Average value per ton.....	40,857,120	35,843,318 \$0.88	4,633,490	3,175,418 \$0.69	45,490,610	39,018,736 \$0.86	-----

Crushed stone sold or used by producers in the United States, 1929-33, by uses

Year	Concrete and road metal		Railroad ballast		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1929.....	76,174,770	\$80,685,493	16,546,490	\$13,702,385	92,721,260	\$94,387,878
1930.....	74,293,090	77,347,379	12,817,800	10,206,975	87,110,890	87,554,354
1931.....	65,811,520	64,908,509	6,812,890	5,496,455	72,624,410	70,404,964
1932.....	48,020,560	43,651,774	3,974,540	3,239,991	51,995,100	46,891,765
1933.....	40,857,120	35,843,318	4,633,490	3,175,418	45,490,610	39,018,736

Crushed stone sold or used by commercial and noncommercial operators in the United States, 1929-33¹

[Figures for "noncommercial operations" represent tonnages reported by States, counties, municipalities, and other Government agencies, produced either by themselves or by contractors expressly for their consumption, often with publicly owned equipment; they do not include purchases from commercial producers. Figures for "commercial operations" represent tonnages reported by all other producers, including relatively small quantities of railroad ballast and fill produced directly by railroad carriers for their own use]

Year	Commercial operations			Noncommercial operations			Total	
	Short tons	Percent of change from preceding year	Percent of total	Short tons	Percent of change from preceding year	Percent of total	Short tons	Percent of change from preceding year
1929.....	85,409,260	(?)	92.1	7,312,000	(?)	7.9	92,721,260	+1.6
1930.....	79,560,890	-6.8	91.3	7,550,000	+3.3	8.7	87,110,890	-6.1
1931.....	64,818,410	-18.5	89.3	7,806,000	+3.4	10.7	72,624,410	-16.6
1932.....	43,284,190	-33.2	83.2	8,710,910	+11.6	16.8	51,995,100	-23.4
1933.....	37,839,200	-12.6	83.2	7,651,410	-12.2	16.8	45,490,610	-12.5

¹ Includes stone for concrete and road metal and railroad ballast.² Separate figures for commercial and noncommercial for earlier years not available.

Crushed stone aggregates (concrete and road metal) shipped by commercial and noncommercial operators in the United States, 1932-33, by methods of transport¹

Method of transport	Commercial operations		Noncommercial operations		Total	
	Short tons	Percent of total	Short tons	Percent of total	Short tons	Percent of total
1932						
Railroad.....	12,268,670	31.2	200,240	2.3	12,468,910	26.0
Water.....	3,509,880	8.9			3,509,880	7.3
Truck.....	19,769,350	50.3	8,271,510	95.0	28,040,860	58.4
Unspecified.....	3,761,750	9.6	239,160	2.7	4,000,910	8.3
Total quantity.....	39,309,650	100.0	8,710,910	100.0	48,020,560	100.0
Total value.....	(?)		(?)		\$43,651,774	
1933						
Railroad.....	9,883,870	29.8	105,320	1.4	9,989,190	24.4
Water.....	2,479,240	7.5			2,479,240	6.1
Truck.....	17,146,120	51.6	7,546,090	98.6	24,692,210	60.4
Unspecified.....	3,696,480	11.1			3,696,480	9.1
Total quantity.....	33,205,710	100.0	7,651,410	100.0	40,857,120	100.0
Total value.....	\$23,570,039		\$7,273,279		\$35,843,318	

¹ Exclusive of railroad ballast, virtually all of which is shipped by rail.

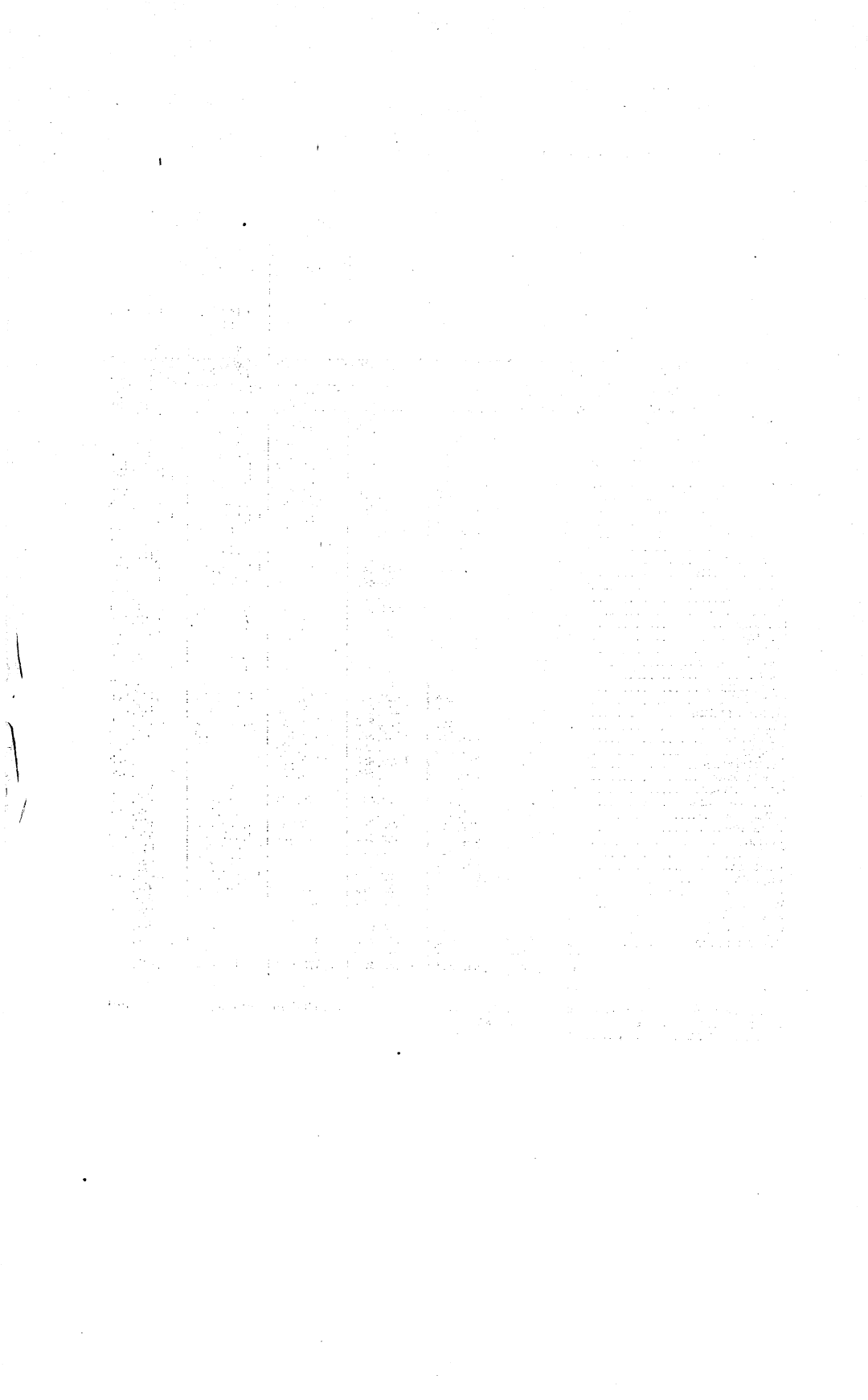
² Separate figures for commercial and noncommercial value not available.

Crushed stone sold or used by producers in the United States in 1933, by States and uses

State	Concrete and road metal		Railroad ballast		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
Alabama.....	1 142,910	1 \$69,995			1 142,910	1 \$69,995
Alaska.....	19,930	16,078			19,930	16,078
Arizona.....	87,010	85,042			87,010	85,042
Arkansas.....	308,140	312,973	71,590	\$61,685	379,730	374,658
California.....	3,055,490	2,408,587	375,110	118,368	3,430,600	2,526,955
Colorado.....	209,520	163,684	(?)	(?)	1 209,520	1 163,684
Connecticut.....	1 872,130	1 689,041	147,520	98,183	1 1,019,650	1 787,224
Delaware.....	50,180	63,933	1,340	1,658	51,520	65,591
Florida.....	1 500,910	1 411,048	79,240	57,639	1 580,150	1 468,687
Georgia.....	709,510	541,913	27,500	18,545	737,010	560,458
Hawaii.....	251,630	454,407	90	139	251,720	454,546
Idaho.....	516,120	409,652			516,120	409,652
Illinois.....	1 796,030	1 217,708	126,220	85,447	1 922,250	1 303,155
Indiana.....	1 1,621,940	1 1,228,497	63,740	39,555	1 1,685,680	1 1,268,052
Iowa.....	880,450	793,090	46,640	21,485	927,090	814,575
Kansas.....	1 684,320	1 683,032	160,380	108,886	1 844,700	1 791,918
Kentucky.....	1 1,787,390	1 1,524,764	132,910	55,487	1 1,920,300	1 1,680,251
Louisiana.....	10,560	12,215	54,530	31,168	65,090	43,383
Maine.....	77,870	100,661			77,870	100,661
Maryland.....	517,580	541,419	127,200	143,950	644,780	685,369
Massachusetts.....	1 1,050,410	1 868,649	1 48,140	137,348	1 1,098,550	1 905,997
Michigan.....	1 466,070	1 239,439	36,490	22,819	1 502,560	1 312,258
Minnesota.....	1 205,120	1 218,855			1 205,120	1 218,855
Missouri.....	1 789,430	1 909,754	1 31,210	1 25,910	1 1,820,640	1 1,935,664
Montana.....	1 342,890	1 241,521			1 342,890	1 241,521
Nebraska.....	129,810	113,906	(?)	(?)	1 129,810	1 113,906
Nevada.....	2,330	1,185			2,330	1,185
New Hampshire.....	1 51,530	1 52,736			1 51,530	1 52,736
New Jersey.....	1 915,920	1 991,776	1 48,440	1 45,585	1 964,360	1 1,037,361
New Mexico.....	(?)	(?)	440,480	(?)	427,980	437,287
New York.....	1 4,926,070	1 4,230,444	(?)	1 361,693	5 3,569,050	5 5,040,909
North Carolina.....	1 863,640	1 396,814	1 112,010	1 97,143	571,140	650,317
Ohio.....	3 089,620	2 251,450	432,870	273,240	3 502,490	2 524,690
Oklahoma.....	1 470,970	1 364,180	1 215,380	1 103,525	708,730	477,463
Oregon.....	941,420	731,985	2,670	2,074	944,090	734,059
Pennsylvania.....	4 760,920	4 756,486	1 299,450	1 278,672	1 5,060,370	1 5,035,158
Puerto Rico.....	49,980	100,140	3,600	1,350	53,580	101,490
Rhode Island.....	(?)	(?)			(?)	(?)
South Carolina.....	228,380	271,221	93,510	74,081	321,890	345,302
South Dakota.....	71,550	85,001			71,550	85,001
Tennessee.....	800,850	757,056	233,790	172,142	1 034,640	929,198
Texas.....	1 006,610	691,115	106,150	78,152	1 112,760	769,267
Utah.....	1 58,480	1 29,242			1 58,480	1 29,242
Vermont.....	1 28,250	1 30,863			1 28,250	1 30,863
Virginia.....	1 1,233,100	1 1,088,070	398,710	291,582	1 1,631,810	1 1,379,652
Washington.....	995,160	767,413	33,270	11,121	1 028,430	778,534
West Virginia.....	392,250	501,720	225,610	137,043	617,860	638,763
Wisconsin.....	1 057,850	975,985	300	240	1 058,150	976,225
Wyoming.....	207,330	169,915	15,980	12,214	223,310	182,129
Undistributed.....	1 141,560	1 228,658	441,420	307,289	544,630	483,780
	40,857,120	35,843,318	4,633,490	3,175,418	45,490,610	39,018,736

¹ To avoid disclosing confidential information certain totals are somewhat incomplete, the figures not included being combined under "Undistributed."

² Included under "Undistributed."



CEMENT

(DETAILED STATISTICS)

By B. W. BAGLEY

SUMMARY OUTLINE

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GENERAL REVIEW

The production of portland cement in 1933 amounted to 63,473,189 barrels, a decline of 17 percent compared with 1932. Shipments were 64,282,756 barrels valued at \$85,600,717, a decrease of 20 percent in quantity but an increase of more than 4 percent in gross value compared with the preceding year. The average factory value per barrel, in bulk, was \$1.33, 32 cents higher than in 1932. Preliminary figures of production and shipments of portland cement in 1933, published by the Bureau of Mines in January 1934, were within 0.2 and 0.3 percent, respectively, of the final figures for the year.

Producers' stocks of finished portland cement at the mills reached a total of 19,541,491 barrels on December 31, 1933, 4 percent less than at the end of 1932. According to estimates by the manufacturers, 5,717,000 barrels of clinker or unground cement were also on hand at the mills compared with 5,995,000 barrels at the end of 1932.

Production of natural and puzzolan cements, including masonry cements of the natural-cement class, increased in 1933, exceeding that in 1932 by 2.2 percent. Shipments of these cements decreased 17.6 percent in quantity and 17.9 percent in gross value in 1933 compared with 1932.

CHIEF HYDRAULIC CEMENTS

The accompanying table gives statistics of output of portland and other (natural and puzzolan) hydraulic cements from 1929 to 1933. Statistics of the output of alumina cement, representing the operations of only one manufacturer in the United States, are not included in this or other tables of this report.

Principal hydraulic cements produced and shipped in the United States, 1929-33

Year	Number of active plants	Production				
		Portland cement (barrels)	Masonry, natural, and puzzolan cements		Total	
			Number of active plants	Barrels	Number of active plants	Barrels
1929.....	163	170,646,036	11	2,209,465	174	172,855,501
1930.....	163	161,197,228	11	1,792,083	174	162,989,311
1931.....	160	125,429,071	12	1,241,803	172	126,670,874
1932.....	160	76,740,945	15	456,785	175	77,197,730
1933.....	152	63,473,189	13	466,632	165	63,939,821

Year	Shipments					
	Portland cement		Masonry, natural, and puzzolan cements		Total	
	Barrels	Value	Barrels	Value	Barrels	Value
1929.....	169,868,322	\$252,153,789	2,159,130	\$2,950,717	172,027,452	\$255,104,506
1930.....	159,059,354	228,778,756	1,787,016	2,469,531	160,846,350	231,249,287
1931.....	127,150,534	140,959,906	1,226,850	1,619,920	128,377,334	142,579,826
1932.....	80,843,187	82,021,723	524,844	696,474	81,368,031	82,718,197
1933.....	64,282,756	85,600,717	432,415	571,648	64,715,171	86,172,365

PORTLAND CEMENT**PRODUCTION, SHIPMENTS, AND STOCKS**

The total production of portland cement in the United States in 1933 decreased 17 percent from that in 1932. Shipments from the mills decreased 20 percent in quantity but increased over 4 percent in gross value. The average factory value increased 32 cents a barrel (nearly 32 percent).

The production—63,473,189 barrels of 376 pounds net—is equivalent to 253,892,756 sacks, 10,654,428 long tons, or 11,932,960 short tons. In 1933, for the third consecutive year, shipments exceeded production.

In the following table the statistics are arranged by States, so far as permissible, and by districts. The term "active plant" is applied to a mill or group of mills situated at one place and operated by one company. If a company has establishments at different places its mill or group of mills at each place is counted as a plant. The districts are groups of States related geographically and commercially.

Portland cement produced, shipped, and in stock in the United States, 1932-33, by States and districts

	Active plants		Production			Shipments						Stock at mills (Dec. 31)			
			Barrels		In-crease or de-crease, 1933 (per-cent)	1932		1933		Average factory value per barrel		In-crease or de-crease in quantity, 1933 (per-cent)	Barrels		In-crease or de-crease, 1933 (per-cent)
	1932	1933	1932	1933		Barrels	Value	Barrels	Value	1932	1933		1932 (revised)	1933	
STATE															
Alabama	6	6	1,453,374	1,968,513	+35	1,591,166	\$1,807,088	1,999,412	\$2,536,121	\$1.14	\$1.27	+26	486,610	455,711	-6
California	11	11	5,481,942	7,165,430	+31	5,729,705	8,485,537	7,168,835	10,530,698	1.48	1.47	+25	1,022,014	1,018,609	-3
Illinois	4	4	5,480,813	3,973,853	-27	5,829,687	3,446,482	4,193,048	4,607,335	.59	1.10	-28	817,440	598,245	-27
Iowa	5	5	4,270,739	3,044,008	-29	4,373,642	3,907,427	2,770,656	3,651,921	.89	1.32	-37	1,311,533	1,584,935	+21
Kansas	7	6	2,295,541	2,201,182	-4	2,224,079	1,880,583	2,189,137	2,881,978	.85	1.32	-2	907,902	919,947	+1
Michigan	13	10	4,295,610	3,632,843	-15	4,886,928	4,442,666	3,447,867	4,128,082	.91	1.20	-29	1,493,778	1,678,754	+12
Missouri	5	5	4,238,461	3,798,662	-10	4,846,871	3,666,220	3,994,690	4,722,441	.76	1.18	-18	759,016	562,988	-26
New York	10	10	6,013,582	4,204,730	-30	5,993,374	6,317,269	3,966,696	5,274,593	1.05	1.33	-34	1,295,216	1,533,250	+18
Ohio	10	10	4,002,123	2,781,008	-31	4,225,601	3,719,250	3,042,645	3,662,733	.88	1.20	-28	1,422,731	1,161,094	-18
Pennsylvania	27	24	15,798,724	12,294,374	-22	16,937,209	16,670,336	12,486,585	15,696,852	.98	1.26	-26	4,857,278	4,665,067	-4
Tennessee	6	6	1,546,569	1,347,528	-13	1,551,750	1,644,446	1,468,860	2,044,970	1.06	1.39	-5	535,591	414,259	-23
Texas	9	9	3,748,167	2,970,070	-21	3,797,559	4,862,416	3,091,071	5,268,605	1.28	1.70	-19	676,721	555,720	-18
Other States ¹	47	46	18,115,300	14,090,988	-22	18,855,616	21,172,003	14,463,254	20,594,388	1.12	1.42	-23	4,765,178	4,392,912	-8
	160	152	76,740,945	63,473,189	-17	80,843,187	82,021,723	64,282,756	85,600,717	1.01	1.33	-20	20,351,058	19,541,491	-4
DISTRICT															
Eastern Pennsylvania, New Jersey, and Mary- land	25	22	16,192,503	11,813,561	-27	17,311,844	17,147,815	11,946,187	15,159,197	.99	1.27	-31	3,719,635	3,587,009	-4
New York and Maine	11	11	6,612,996	4,580,651	-31	6,522,130	6,932,898	4,341,747	5,843,118	1.07	1.35	-33	1,415,335	1,654,239	+17
Ohio, western Pennsylv- ania, and West Virginia	19	19	6,695,307	5,328,747	-20	7,211,150	6,672,272	5,815,717	7,039,172	.93	1.21	-19	3,121,288	2,634,318	-16
Michigan	13	10	4,295,610	3,632,843	-15	4,886,928	4,442,666	3,447,867	4,128,082	.91	1.20	-29	1,493,778	1,678,754	+12
Wisconsin, Illinois, Indiana, and Kentucky	11	11	10,611,127	7,908,137	-25	11,287,069	7,973,228	8,189,896	9,600,985	.71	1.17	-27	2,191,188	1,909,429	-13

¹ Arkansas, Colorado, Florida, Georgia, Idaho, Indiana, Kentucky, Louisiana, Maine, Maryland, Minnesota, Montana, Nebraska, New Jersey, Oklahoma, Oregon, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Portland cement produced, shipped, and in stock in the United States, 1932-33, by States and districts—Continued

	Active plants		Production			Shipments						Stock at mills (Dec. 31)			
			Barrels		In-crease or de-crease, 1933 (per-cent)	1932		1933		Average factory value per barrel		In-crease or de-crease in quantity, 1933 (per-cent)	Barrels		In-crease or de-crease, 1933 (per-cent)
	1932	1933	1932	1933		Barrels	Value	Barrels	Value	1932	1933		1932 (revised)	1933	
DISTRICT—continued															
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	19	19	5,596,854	5,669,497	+1	5,821,055	\$6,667,974	5,809,792	\$7,981,912	\$1.15	\$1.37	-0.2	1,569,200	1,428,905	-9
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	11	11	9,000,553	7,317,163	-19	9,848,761	8,488,201	7,093,411	8,891,961	.86	1.25	-28	2,250,205	2,473,957	+10
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	13	12	5,651,142	4,936,477	-13	5,522,372	5,090,127	4,996,109	6,792,160	.92	1.36	-10	1,761,810	1,702,178	-3
Texas.....	9	9	3,748,167	2,970,070	-21	3,797,559	4,862,416	3,091,071	5,268,605	1.28	1.70	-19	676,721	555,720	-18
Colorado, Montana, Utah, Wyoming, and Idaho.....	9	8	1,270,750	1,243,188	-2	1,238,446	1,884,532	1,420,538	2,327,123	1.52	1.64	+15	542,588	365,238	-33
California.....	11	11	5,481,042	7,165,430	+31	5,729,705	8,485,537	7,168,835	10,530,698	1.48	1.47	+25	1,022,014	1,018,609	-1
Oregon and Washington.....	9	9	1,583,994	907,425	-43	1,666,168	3,354,057	961,586	2,037,704	2.01	2.12	-42	587,296	533,135	-9
	160	152	76,740,945	63,473,189	-17	80,843,187	82,021,723	64,282,756	85,600,717	1.01	1.33	-20	20,351,058	19,541,491	-4

The following table of production, shipments, and stocks of finished portland cement by districts and by months for 1933 has been compiled from monthly reports on the operation of all but 2 plants in October, November, and December; 4 plants in February, April, and May; and 3 in the other months of the year; estimates have been included for these plants. The table also gives totals for the United States in 1932 compiled from reports for all but 4 plants in February, April, May, and June and all but 3 in the other months of the year; estimates have also been included for these plants. Although the figures may differ slightly from the totals in other tables, which are based on final annual reports from the producers, they reflect accurately fluctuations in the industry during the year. In December, January, and February, in the colder part of the United States, the production of portland cement necessarily is curtailed somewhat by the weather, as are also demand and hence shipments from the mills. Moreover, mills often close for repairs during the winter when the demand is lowest. As the quantity of clinker or unground cement produced and in reserve at the mills awaiting manufacture into finished cement is of interest, a table is given showing these statistics, compiled from the manufacturers' estimates.

Summary of monthly estimates of portland cement produced, shipped, and in stock at mills in the United States in 1933, by districts, in thousands of barrels

District	January	February	March	April	May	June	July	August	September	October	November	December
PRODUCTION												
Eastern Pennsylvania, New Jersey, and Maryland.....	416	449	631	1,027	1,579	1,635	1,674	1,669	988	674	613	383
New York and Maine.....	217	184	99	195	430	573	784	706	614	427	296	56
Ohio, western Pennsylvania, and West Virginia.....	214	166	93	218	642	839	1,063	941	527	371	246	97
Michigan.....	105	85	101	161	454	651	490	585	422	342	169	151
Wisconsin, Illinois, Indiana, and Kentucky.....	613	319	177	276	377	1,016	1,147	1,332	581	836	679	518
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	340	436	676	493	560	547	718	525	282	175	447	464
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	242	328	553	389	440	805	964	976	669	695	747	507
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	217	195	249	386	567	487	618	577	445	373	358	345
Texas.....	255	197	375	372	333	347	274	153	271	113	132	151
Colorado, Montana, Utah, Wyoming, and Idaho.....	.....	.....	54	114	181	231	116	89	78	182	149	40
California.....	339	395	661	500	644	602	643	590	683	757	629	699
Oregon and Washington.....	.....	23	15	52	55	71	118	80	78	92	207	115
United States, 1933.....	2,958	2,777	3,684	4,183	6,262	7,804	8,609	8,223	5,638	5,037	4,672	3,526
1932.....	5,026	3,971	4,847	5,478	6,913	7,921	7,659	7,835	8,210	7,939	6,462	4,248
SHIPMENTS												
Eastern Pennsylvania, New Jersey, and Maryland.....	532	403	634	1,058	1,465	1,525	1,656	912	1,183	1,129	815	566
New York and Maine.....	122	88	135	271	548	675	744	402	480	463	278	137
Ohio, western Pennsylvania, and West Virginia.....	191	190	225	417	638	862	946	531	549	641	321	281
Michigan.....	64	48	79	149	410	738	614	408	398	366	144	148
Wisconsin, Illinois, Indiana, and Kentucky.....	147	148	235	386	548	1,020	1,632	1,077	1,041	943	520	471
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	414	335	605	589	625	602	555	322	320	423	497	514
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	110	154	206	403	657	811	968	916	1,050	1,043	462	291
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	245	246	341	548	629	564	532	256	333	511	387	294
Texas.....	285	203	375	347	320	298	237	198	183	205	218	222
Colorado, Montana, Utah, Wyoming, and Idaho.....	79	61	69	134	142	137	134	153	162	164	95	84
California.....	281	368	547	547	644	658	593	712	708	725	654	678
Oregon and Washington.....	32	34	59	100	83	89	86	107	110	137	72	52
United States, 1933.....	2,502	2,278	3,510	4,949	6,709	7,979	8,697	5,994	6,517	6,750	4,463	3,738
1932.....	3,393	3,118	3,973	6,536	8,020	9,264	9,218	10,968	9,729	8,743	4,782	2,835

STOCKS (END OF MONTH)

Eastern Pennsylvania, New Jersey, and Maryland.....	3, 599	3, 645	3, 643	3, 612	3, 746	3, 858	3, 877	4, 636	4, 445	3, 990	3, 787	3, 600
New York and Maine.....	1, 529	1, 625	1, 590	1, 514	1, 396	1, 293	1, 334	1, 633	1, 771	1, 735	1, 754	1, 683
Ohio, western Pennsylvania, and West Virginia.....	3, 029	3, 006	2, 874	2, 676	2, 680	2, 640	2, 757	3, 167	3, 162	2, 893	2, 816	2, 674
Michigan.....	1, 529	1, 567	1, 589	1, 602	1, 654	1, 567	1, 443	1, 621	1, 641	1, 616	1, 641	1, 644
Wisconsin, Illinois, Indiana, and Kentucky.....	2, 633	2, 804	2, 745	2, 635	2, 463	2, 459	1, 974	2, 229	1, 770	1, 662	1, 820	1, 867
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	1, 497	1, 597	1, 667	1, 571	1, 506	1, 451	1, 612	1, 816	1, 778	1, 530	1, 481	1, 433
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	2, 383	2, 557	2, 903	2, 888	2, 672	2, 665	2, 661	2, 721	2, 341	1, 993	2, 278	2, 494
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	1, 738	1, 687	1, 595	1, 432	1, 370	1, 294	1, 379	1, 700	1, 811	1, 674	1, 644	1, 691
Texas.....	646	639	640	666	678	728	765	719	807	714	628	553
Colorado, Montana, Utah, Wyoming, and Idaho.....	446	387	371	352	391	495	477	412	328	346	400	357
California.....	1, 040	1, 067	1, 182	1, 142	1, 138	1, 081	1, 132	1, 010	984	1, 016	991	1, 012
Oregon and Washington.....	555	544	499	452	423	405	437	409	378	333	469	533
United States, 1933.....	20, 624	21, 125	21, 298	20, 542	20, 117	19, 936	19, 848	22, 078	21, 216	19, 502	19, 709	19, 541
1932.....	25, 778	26, 657	27, 545	26, 496	25, 394	24, 043	22, 512	19, 398	17, 878	17, 084	18, 788	20, 351

¹ Revised figures.

Summary of monthly estimates of clinker (unground portland cement) produced and in stock at mills in the United States in 1933, by districts, in thousands of barrels

District	January	February	March	April	May	June	July	August	September	October	November	December
PRODUCTION												
Eastern Pennsylvania, New Jersey, and Maryland.....	455	556	831	1, 119	1, 448	1, 691	1, 677	1, 581	1, 050	617	482	361
New York and Maine.....	271	217	97	144	345	583	796	773	571	324	266	97
Ohio, western Pennsylvania, and West Virginia.....	234	238	197	313	675	860	975	853	507	341	208	89
Michigan.....	130	118	132	224	456	628	518	521	299	309	97	179
Wisconsin, Illinois, Indiana, and Kentucky.....	571	363	381	399	360	988	1, 168	1, 039	599	778	657	488
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	305	397	618	522	577	588	713	524	268	216	417	421
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	288	359	514	363	450	780	971	952	680	712	693	520
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	220	260	297	360	386	410	584	628	536	361	421	360
Texas.....	209	219	328	379	328	361	255	151	300	115	168	94
Colorado, Montana, Utah, Wyoming, and Idaho.....	353	383	67	61	163	188	124	88	48	117	110	39
California.....	353	383	685	636	609	621	629	578	670	803	688	646
Oregon and Washington.....					51	138	159	147	72	52	122	96
United States, 1933.....	3, 036	3, 110	4, 147	4, 520	5, 848	7, 836	8, 569	7, 835	5, 600	4, 745	4, 329	3, 390
1932.....	6, 107	5, 176	5, 443	5, 924	6, 273	6, 803	6, 613	7, 078	7, 703	7, 259	6, 290	4, 335
STOCKS (END OF MONTH)												
Eastern Pennsylvania, New Jersey, and Maryland.....	596	702	911	1, 010	889	957	971	894	967	913	789	773
New York and Maine.....	391	425	423	373	291	306	325	397	359	253	226	269
Ohio, western Pennsylvania, and West Virginia.....	412	487	591	689	728	755	673	593	624	593	552	535
Michigan.....	802	834	865	929	997	921	960	910	797	770	718	746
Wisconsin, Illinois, Indiana, and Kentucky.....	490	534	739	861	845	817	838	545	563	505	484	454
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	446	408	353	385	408	454	452	451	439	481	454	416
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	404	438	406	384	395	376	390	374	392	416	371	388
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	433	498	547	523	343	264	232	279	365	348	412	431
Texas.....	179	202	157	170	169	187	163	163	194	197	234	178
Colorado, Montana, Utah, Wyoming, and Idaho.....	339	339	353	300	281	238	247	246	217	153	113	112
California.....	1, 345	1, 322	1, 327	1, 355	1, 318	1, 332	1, 306	1, 280	1, 253	1, 277	1, 314	1, 220
Oregon and Washington.....	255	233	218	167	165	233	275	342	337	298	210	195
United States, 1933.....	6, 092	6, 422	6, 890	7, 146	6, 760	6, 840	6, 832	6, 474	6, 507	6, 204	5, 877	5, 717
1932.....	8, 184	9, 375	10, 025	10, 511	9, 922	8, 877	7, 889	7, 175	6, 708	6, 093	5, 938	5, 995

Producers' stocks of portland cement reported on hand at the mills decreased each month through July in 1933 compared with the corresponding month in 1932. At the end of each month following July an increase was recorded until the end of the year, when reserves were 4 percent less than at the end of 1932. Stocks at the end of 1933 were more than 16 percent below the average for the 5 preceding years (23,410,552 barrels). The totals by States and districts appear in the preceding tables.

Producers' stocks of finished portland cement on hand at mills in the United States, Dec. 31, 1929-33, in barrels

1929	23, 700, 533	1932	20, 351, 058
1930	25, 898, 622	1933	19, 541, 491
1931	24, 342, 446		

DOMESTIC CONSUMPTION

The total consumption of portland cement in the United States may be estimated by adding the imports to the shipments and subtracting the exports from the sum. Of course, at any time a variable but considerable quantity of cement is in transit, in warehouses at distributing points, and awaiting use at jobs, so that the estimate thus made is at best only approximate. Another fact requiring careful interpretation is that the cement imported and exported is classed as hydraulic cement; hence, the records do not discriminate between portland and other cements and probably include some plaster also. Portland cement, however, constitutes by far the greater part of the exports. The apparent domestic consumption in 1933 dropped nearly 21 percent compared with 1932. Since 1918 the other decreases recorded in apparent domestic consumption have been as follows: 1929 from 1928, nearly 4 percent; 1930 from 1929, 7 percent; 1931 from 1930, more than 20 percent; and 1932 from 1931, more than 36 percent.

Portland cement available for consumption in the United States, 1929-33, in barrels

Year	Shipments	Imports	Exports	Available for consumption
1929	169, 868, 322	1, 727, 900	885, 321	170, 710, 901
1930	159, 059, 334	975, 546	755, 778	159, 279, 102
1931	127, 150, 534	457, 238	429, 653	127, 178, 119
1932	80, 843, 187	462, 496	374, 581	80, 931, 102
1933	64, 282, 756	472, 550	680, 307	64, 074, 999

The only available gage of consumption of portland cement by States is the record of shipments into the several States by the manufacturers; it is therefore merely approximate. The shipments of cement into a State in a year do not equal the consumption in the State during that year, but shipments over a long period should afford a fair index of consumption. The simplest available common unit is the estimated consumption in barrels per capita, which is ascertained by comparing the shipments into the several States with their population. The following table offers such figures for 1932 and

¹ Revised figures.

1933. The estimates of population used in calculating the per-capita consumption are those of the Bureau of the Census.

The official figures for exports of cement on pages 86 and 87 differ from those reported by manufacturers in the following table, because cement forwarded from mills and destined for foreign countries and for Alaska, Hawaii, and Puerto Rico is reported by shippers as exported, whether or not it leaves the country during the calendar year, whereas the Bureau of Foreign and Domestic Commerce export figures record the cement that actually leaves the country during the period specified. (Shipments to Alaska, Hawaii, and Puerto Rico appear on p. 89.) The exports for 1933 recorded by that Bureau include all other hydraulic cement exported, whereas the table of per-capita consumption relates only to portland cement.

The per-capita consumption indicated by the table necessarily falls short of the total apparent consumption by the quantity of the imports. These increase the consumption in certain States near the Canadian border and the seaboard; in 1933 they increased the general average per-capita consumption about 0.004 barrel.

In Delaware, the District of Columbia, and Nevada only was the 1933 per-capita consumption 1 barrel or more. Of these, only Nevada, where large quantities of cement were used in connection with the Boulder Dam project, increased its per-capita consumption.

All the States except Wyoming showed changes in per-capita consumption—14 were increases and 34, including the District of Columbia, decreases. The increases in per-capita consumption in 1933 ranged from 0.01 barrel to 8.45 barrels and the decreases from 0.01 to 0.65 barrel. The general average per-capita consumption for the United States was 0.50 barrel in 1933 compared with 0.64 barrel in 1932. From 1914 to 1933 the average per-capita consumption for the country ranged from a low of 0.50 barrel (in 1933) to a high of 1.46 barrels (in 1928).

*Shipments of domestic portland cement from mills into States and per capita, 1932-33, in barrels*¹

State	1932		1933	
	Total	Per capita ¹	Total	Per capita ¹
Alabama.....	391, 813	0.15	926, 199	0.34
Arizona ²	161, 230	.36	125, 512	.28
Arkansas.....	269, 691	.14	673, 394	.36
California.....	4, 683, 906	.79	4, 966, 717	.82
Colorado.....	492, 484	.47	430, 248	.41
Connecticut ²	807, 686	.49	736, 736	.45
Delaware ²	297, 959	1.24	252, 231	1.05
District of Columbia ²	1, 070, 092	2.17	942, 601	1.90
Florida.....	428, 020	.28	597, 776	.38
Georgia.....	1, 128, 505	.39	728, 503	.25
Idaho.....	103, 017	.23	118, 811	.27
Illinois.....	5, 826, 307	.75	5, 295, 165	.68
Indiana.....	3, 014, 646	.92	1, 986, 509	.60
Iowa.....	2, 592, 470	1.05	1, 502, 613	.61
Kansas.....	1, 044, 983	.55	945, 388	.50
Kentucky.....	1, 306, 388	.50	1, 244, 560	.47
Louisiana.....	1, 287, 738	.60	756, 252	.35
Maine.....	409, 836	.51	312, 182	.39
Maryland.....	1, 556, 646	.94	835, 241	.50
Massachusetts ²	2, 125, 962	.49	1, 474, 000	.34
Michigan.....	3, 476, 020	.70	2, 465, 262	.49
Minnesota.....	3, 147, 533	1.22	1, 469, 078	.57

¹ Per-capita figures based on latest available estimates of population made by the Bureau of the Census.

² Non-cement-producing State.

Shipments of domestic portland cement from mills into States and per capita, 1932-33,
in barrels—Continued

State	1932		1933	
	Total	Per capita	Total	Per capita
Mississippi ²	467,017	0.23	686,650	0.34
Missouri.....	3,455,236	.95	2,548,680	.69
Montana.....	150,370	.28	162,318	.30
Nebraska.....	771,144	.56	1,025,869	.74
Nevada ²	648,003	6.97	1,435,214	15.43
New Hampshire ²	266,917	.57	261,686	.56
New Jersey.....	2,855,266	.69	2,026,606	.48
New Mexico ²	173,853	.40	193,681	.45
New York.....	11,057,189	.86	7,177,654	.55
North Carolina ²	434,454	.13	484,405	.15
North Dakota ²	175,886	.26	132,761	.19
Ohio.....	4,812,502	.71	2,738,270	.40
Oklahoma.....	1,238,287	.51	1,415,678	.58
Oregon.....	522,909	.54	330,294	.34
Pennsylvania.....	4,712,366	.48	4,128,354	.42
Rhode Island ²	305,359	.44	282,078	.40
South Carolina ²	367,951	.21	217,155	.12
South Dakota.....	333,836	.48	240,893	.34
Tennessee.....	1,176,655	.44	957,390	.36
Texas.....	3,961,891	.66	3,211,166	.53
Utah.....	164,305	.32	242,514	.47
Vermont ²	260,191	.72	140,289	.39
Virginia.....	905,663	.37	921,463	.38
Washington.....	1,289,210	.81	687,439	.43
West Virginia.....	861,200	.49	642,998	.36
Wisconsin.....	2,951,291	.99	1,836,251	.61
Wyoming.....	82,368	.36	82,499	.36
Unspecified.....	159,388	-----	309,193	-----
Exports reported by manufacturers but not included above ³	80,183,671	.64	63,305,426	.50
Total shipped from cement plants.....	659,516	-----	977,330	-----
	80,843,187	-----	64,282,756	-----

² Non-cement-producing State.

³ Includes shipments to Alaska, Hawaii, and Puerto Rico.

The following table of monthly shipments from portland-cement mills into States in 1933 has been compiled from monthly reports of producers but includes estimates of the distribution of shipments from 2 to 4 plants each month. Although the figures vary slightly from the totals shown in the other tables, which are based on final annual reports from the producers, they reflect the fluctuations in shipments during the year.

Portland cement shipped from mills into States in 1933, by months, in barrels¹

Shipped to—	January	February	March	April	May	June	July	August	September	October	November	December
Alabama.....	65,810	44,645	102,982	117,113	130,896	128,627	64,120	43,833	37,662	32,561	57,406	100,482
Alaska.....			396	1,074	903	924	1,959	1,153	870	660	396	
Arizona.....	5,758	6,404	11,215	10,305	13,226	10,014	7,364	7,173	9,568	12,902	11,354	20,199
Arkansas.....	28,702	20,009	40,750	77,517	83,686	84,181	41,330	37,875	36,334	75,907	88,694	58,402
California.....	248,865	300,772	408,287	410,282	489,827	473,303	396,165	467,953	465,552	463,481	419,096	373,141
Colorado.....	10,805	28,097	21,589	35,589	30,148	34,690	41,755	62,639	59,528	53,800	27,782	24,420
Connecticut.....	26,209	15,195	31,371	45,492	128,156	104,706	112,051	52,886	64,110	63,147	71,218	25,078
Delaware.....	8,899	3,544	11,927	32,078	47,636	31,197	15,933	3,729	24,153	39,731	18,440	13,800
District of Columbia.....	76,511	63,020	74,034	58,331	91,904	94,539	97,056	92,921	82,678	80,248	75,016	36,781
Florida.....	35,070	38,447	56,114	58,331	73,109	54,942	50,788	40,668	33,952	39,827	52,151	63,941
Georgia.....	92,250	63,004	89,630	64,568	53,172	37,634	63,813	29,751	27,079	68,424	88,522	50,585
Hawaii.....	12,946	18,175	16,515	14,145	11,044	12,717	12,794	9,728	13,299	15,662	10,745	11,989
Idaho.....	2,524	3,157	7,930	10,062	11,455	11,586	10,144	12,859	15,348	16,063	10,378	7,355
Illinois.....	71,367	115,629	125,464	171,203	177,861	347,314	1,124,429	996,408	881,269	665,137	295,027	309,726
Indiana.....	37,033	29,925	53,239	108,666	172,464	350,728	357,953	238,572	218,104	238,322	119,603	94,689
Iowa.....	22,087	27,479	40,268	97,511	193,695	187,840	210,017	142,845	223,434	254,923	62,921	40,874
Kansas.....	55,891	50,436	90,814	90,448	81,970	92,726	123,059	60,913	56,824	90,896	85,377	69,184
Kentucky.....	30,128	29,884	60,412	113,952	149,151	179,813	152,711	135,378	122,957	129,734	93,265	73,566
Louisiana.....	93,341	45,045	72,703	48,230	64,344	50,178	47,917	35,378	28,325	40,683	85,479	96,800
Maine.....	3,893	5,164	5,992	15,658	33,625	60,431	71,464	35,521	26,253	32,294	12,816	6,692
Maryland.....	35,046	27,201	50,895	81,995	78,427	78,709	93,838	74,145	84,291	80,195	70,027	64,611
Massachusetts.....	28,508	36,663	51,791	94,101	193,170	220,410	223,632	121,269	176,491	148,456	106,951	70,212
Michigan.....	38,780	28,049	58,309	98,938	295,721	514,119	419,326	287,724	294,624	295,558	106,952	120,573
Minnesota.....	7,518	36,103	24,962	108,377	210,463	235,967	192,668	137,415	67,327	195,647	51,638	36,845
Mississippi.....	27,456	20,639	68,898	45,380	50,862	89,633	72,004	60,345	67,327	70,440	63,345	49,759
Missouri.....	72,845	62,781	102,698	140,758	227,115	317,173	369,385	230,012	229,929	339,099	299,324	157,835
Montana.....	6,082	5,377	10,991	14,012	20,183	23,086	18,330	12,275	15,255	14,894	11,216	10,743
Nebraska.....	10,799	18,787	31,797	173,435	225,751	135,231	78,106	33,921	36,104	56,758	22,509	22,041
Nevada.....	54,662	25,640	28,198	41,035	51,316	61,124	136,152	184,288	210,456	227,551	18,790	7,448
New Hampshire.....	4,512	4,187	9,842	14,736	26,225	27,171	57,774	31,659	27,240	34,121	44,302	45,077
New Jersey.....	92,250	74,419	105,287	184,998	252,625	243,872	262,251	136,598	208,873	194,234	148,810	109,049
New Mexico.....	10,604	10,675	32,000	39,006	11,972	7,737	15,563	10,334	10,141	14,286	14,856	16,139
New York.....	299,193	186,135	279,633	503,554	874,417	1,070,796	1,161,461	671,520	755,060	707,697	401,337	232,319
North Carolina.....	20,527	25,735	37,203	39,612	41,121	46,758	64,219	28,750	38,023	53,953	44,302	45,077
North Dakota.....	3,041	3,640	3,399	12,777	17,159	24,427	23,618	8,634	15,346	14,299	2,410	3,978
Ohio.....	82,682	79,452	100,985	200,272	292,022	389,377	445,180	224,994	252,557	329,330	168,128	140,350
Oklahoma.....	105,220	122,392	135,761	170,719	155,381	150,303	122,487	65,182	75,504	109,035	104,154	100,657
Oregon.....	17,283	13,731	18,857	35,296	44,353	43,263	22,860	29,112	27,519	37,122	19,693	19,686
Pennsylvania.....	156,684	148,368	196,020	353,170	498,529	659,913	687,614	365,210	390,921	337,743	216,593	162,376
Puerto Rico.....	2,588	3,315	1,725	9,613	7,191	6,250	15,645	7,088	12,125	6,566	7,808	11,605
Rhode Island.....	5,636	4,455	10,927	20,577	47,818	56,332	51,412	11,673	19,214	26,359	16,662	9,852
South Carolina.....	7,520	14,063	23,202	26,801	26,530	17,301	27,886	10,640	11,846	12,232	19,739	17,848
South Dakota.....	7,068	6,580	11,375	17,808	34,370	19,494	34,892	11,546	28,590	45,885	16,238	9,320

Tennessee.....	38,976	34,645	112,589	136,572	128,277	107,669	86,048	39,283	42,073	77,433	70,401	82,777
Texas.....	286,316	202,585	365,234	354,811	360,532	339,004	248,184	210,589	189,125	214,451	224,131	217,494
Utah.....	3,281	2,341	10,608	16,320	15,926	17,867	26,258	38,615	41,750	37,359	23,162	7,313
Vermont.....	2,259	1,439	2,111	10,431	13,794	18,735	26,815	12,785	20,088	17,524	10,846	3,461
Virginia.....	34,550	42,103	80,244	91,407	100,649	117,078	133,612	56,154	61,636	65,255	64,199	68,082
Washington.....	18,587	23,426	40,943	67,365	52,800	58,175	66,370	84,254	84,053	100,952	53,916	36,412
West Virginia.....	32,661	35,426	38,733	59,766	54,844	59,554	74,336	49,891	60,768	103,055	45,933	42,747
Wisconsin.....	22,811	18,124	43,856	90,703	178,181	328,486	370,525	176,011	256,521	213,054	75,277	64,003
Wyoming.....	3,008	6,896	4,840	5,608	8,131	8,377	9,904	5,924	7,619	8,587	7,166	6,348
Unspecified.....	6,802		5,514	11,306	5,235	30,745			8,680		5,314	1,115
Foreign countries.....	2,473,844	2,233,403	3,422,341	4,866,087	6,634,362	7,881,231	8,641,177	5,928,970	6,487,113	6,727,741	4,418,776	3,653,348
	28,156	44,597	87,659	82,913	74,638	97,769	55,823	65,030	29,887	22,259	44,224	84,652
Total shipped from cement plants.....	2,502,000	2,278,000	3,510,000	4,949,000	6,709,000	7,979,000	8,697,000	5,994,000	6,517,000	6,750,000	4,463,000	3,738,000

¹ Includes estimated distribution from 2 plants for October to December, from 3 plants for January to March and May to September, and from 4 plants for April.

LOCAL SUPPLIES

The following table compares the shipments from the mills within a State or group of States with the estimated consumption (State receipts of mill shipments) and indicates the surplus or deficiency in the supply of cement locally available. Consumption in the States that do not produce cement is also indicated in the table on page 78. Data for 1916 to 1931 will be found in the annual volumes of Mineral Resources of the United States from 1917 to 1931.

The surplus in the following table was distributed by years as follows: In 1932, to noncement-producing States, 7,562,560 barrels; to foreign countries and to Alaska, Hawaii, and Puerto Rico, 659,516 barrels; and unspecified, 159,388 barrels. In 1933, to noncement-producing States, 7,364,999 barrels; to foreign countries and to Alaska, Hawaii, and Puerto Rico, 977,330 barrels; and unspecified, 309,193 barrels.

Estimated surplus or deficiency in local supply of portland cement in cement-producing States, 1932-33, in barrels

State or division	1932			1933		
	Shipments from mills	Estimated consumption	Surplus or deficiency	Shipments from mills	Estimated consumption	Surplus or deficiency
Alabama.....	1,591,166	391,813	+1,199,353	1,999,412	926,199	+1,073,213
California.....	5,729,705	4,683,906	+1,045,799	7,168,835	4,966,717	+2,202,118
Illinois.....	5,829,687	5,826,307	+3,380	4,193,048	5,295,165	-1,102,117
Iowa.....	4,373,642	2,592,470	+1,781,172	2,770,656	1,502,613	+1,268,043
Kansas.....	2,224,079	1,044,983	+1,179,096	2,189,137	946,388	+1,242,749
Michigan.....	4,886,928	3,476,002	+1,410,926	3,447,867	2,465,262	+982,605
Missouri.....	4,846,871	3,455,236	+1,391,635	3,994,690	2,548,680	+1,446,010
Ohio.....	4,225,601	4,812,502	-586,901	3,042,645	2,738,270	+304,375
Pennsylvania.....	16,937,209	4,712,366	+12,224,843	12,486,585	4,128,354	+8,358,231
Tennessee.....	1,551,750	1,176,655	+375,095	1,468,860	957,390	+511,470
Texas.....	3,797,559	3,961,891	-164,332	3,091,071	3,211,166	-120,095
Colorado, Montana, Utah, Wyoming, and Idaho.....	1,238,446	992,544	+245,902	1,420,538	1,036,390	+384,148
Oregon and Washington.....	1,666,168	1,812,119	-145,951	961,586	1,017,733	-56,147
Georgia, Kentucky, Virginia, Florida, and Louisiana.....	3,263,828	5,056,314	-1,792,486	2,908,533	4,248,554	-1,340,021
Indiana, Wisconsin, Minne- sota, Nebraska, Oklahoma, South Dakota, and Arkan- sas.....	8,798,234	11,726,478	-2,928,244	6,564,872	8,647,672	-2,082,800
Maryland, New Jersey, and West Virginia.....	3,360,184	5,273,112	-1,912,928	2,232,674	3,504,845	-1,272,171
New York and Maine.....	6,522,130	11,467,025	-4,944,895	4,341,747	7,489,836	-3,148,089
	80,843,187	72,461,723	+8,381,464	64,282,756	55,631,234	+8,651,522

PRICES

At factories.—The average selling value of portland cement f. o. b. at the factories, with the price of containers not included and with cash discounts deducted where allowed, as reported to the Bureau of Mines is stated in the table of shipments by States and districts during 1932 and 1933 on page 67. The averages by districts ranged from \$1.17 a barrel in the Wisconsin-Illinois-Indiana-Kentucky district to \$2.12 in the Oregon-Washington district in 1933 compared with a range from \$0.71 a barrel in the Wisconsin-Illinois-Indiana-Kentucky district to \$2.01 in the Oregon-Washington district in 1932. The general average value for the country as a whole increased 32 cents per barrel (32 percent) in 1933 compared with 1932, the

first increase recorded in the average for the whole country since 1923. Averages were higher in all the States shown in the table and in all the districts except California, where the price decreased 1 cent per barrel.

The average factory value of portland cement may be higher in certain States than if ordinary structural cement were the only kind considered. For these States the average includes certain special cements that command higher prices. These special cements include the white portland cement made in Pennsylvania and the high-early-strength portland cements now manufactured in many States. Statistics of output of high-early-strength portland cement, so-called "Super" cement, masonry cements of the portland-cement class, and other special cements appear on page 82.

Average factory value per barrel in bulk of portland cement, 1929-33

1929.....	\$1.48	1932.....	\$1.01
1930.....	1.44	1933.....	1.33
1931.....	1.11		

At markets.—Considerable information is now available to show the position of cement prices among those of other structural materials and to explain the economic conditions that determine them. Data of interest in this connection are now compiled and published by the Bureau of Labor Statistics, United States Department of Labor.

*Comparative prices of building materials in December 1932-33*¹

[Percentage of increase or decrease from 1926 average]

	1932	1933
Building materials in general.....	-29.2	-14.4
Lime, building, at plant (composite price).....	-24.4	-16.6
Plate glass, 3 to 5 feet, New York.....	-17.1	-13.4
Turpentine, New York.....	-54.9	-49.4
Brick, common, building, at plant (composite price).....	-22.9	-15.8
Linseed oil, raw, New York.....	-37.9	-15.2
Douglas fir, No. 1, common, at mills.....	-45.6	+12.2
Yellow pine, flooring, at mills.....	-62.5	-17.1
Oak, plain, white, No. 1, common, Cincinnati.....	-39.4	-15.2
Portland cement, at plant (composite price).....	-18.9	-8.8

¹ Bureau of Labor Statistics, U. S. Department of Labor, Wholesale Prices of Commodities: Rept. for December and year 1933, pp. 24-26.

RAW MATERIALS

In the following table the production of portland cement in the United States is classified according to the kinds of raw materials from which the cement is manufactured. The production is grouped as follows:

Type 1 includes cement produced from argillaceous limestone ("cement rock") or from a mixture of cement rock with pure limestone. This type comprises all the cement from plants of the Lehigh district of Pennsylvania and New Jersey and a few plants in certain other States.

Type 2 includes cement made from a mixture of comparatively pure limestone with clay or shale, which is used at the majority of plants in the United States. In 1933 three plants reported the use

of oyster shells and clay; the output of these plants is included in type 2.

Type 3 includes cement manufactured from a mixture of marl and clay. This type of mixture has been used in certain plants in Michigan, Ohio, Indiana, New York, and Virginia.

Type 4 includes cement manufactured from a mixture of limestone and blast-furnace slag.

Production and percent of total output of portland cement in the United States, 1898-1914, 1926, 1929, and 1933, according to type of material used

Year	Type 1. Cement rock and pure limestone		Type 2. Limestone and clay or shale		Type 3. Marl and clay		Type 4. Blast-furnace slag and limestone	
	Barrels	Percent	Barrels	Percent	Barrels	Percent	Barrels	Percent
1898.....	2,764,694	74.9	365,408	9.9	562,092	15.2	-----	-----
1899.....	4,010,132	70.9	546,200	9.7	1,095,934	19.4	-----	-----
1900.....	5,960,739	70.3	1,034,041	12.2	1,454,797	17.1	32,443	0.4
1901.....	8,503,500	66.9	2,042,209	16.1	2,001,200	15.7	164,316	1.3
1902.....	10,953,178	63.6	3,738,303	21.7	2,220,453	12.9	318,710	1.8
1903.....	12,493,694	55.9	6,333,403	28.3	3,052,946	13.7	462,930	2.1
1904.....	15,173,391	57.2	7,526,323	28.4	3,332,873	12.6	473,294	1.8
1905.....	18,454,902	52.4	11,172,389	31.7	3,884,178	11.0	1,735,343	4.9
1906.....	23,896,951	51.4	16,532,212	35.6	3,958,201	8.5	2,076,000	4.5
1907.....	25,859,095	53.0	17,190,697	35.2	3,606,598	7.4	2,129,000	4.4
1908.....	20,678,693	40.6	23,047,707	45.0	2,811,212	5.5	4,535,300	8.9
1909.....	24,274,047	37.3	32,219,365	49.6	2,711,219	4.2	5,786,800	8.9
1910.....	26,520,911	34.6	39,720,320	51.9	3,307,220	4.3	7,001,500	9.2
1911.....	26,812,129	34.1	40,665,332	51.8	3,314,176	4.2	7,737,000	9.9
1912.....	24,712,780	30.0	44,007,776	54.1	2,467,368	3.0	10,650,172	12.9
1913.....	29,333,490	31.8	47,831,863	51.9	3,734,778	4.1	11,197,000	12.2
1914.....	24,907,047	28.2	50,168,813	56.9	4,038,310	4.6	9,116,000	10.3
1926.....	44,090,657	26.8	101,637,866	61.8	3,324,408	2.0	15,477,239	9.4
1929.....	51,077,034	29.9	197,623,502	57.2	4,832,700	2.9	17,112,300	10.0
1933.....	14,135,171	22.3	43,638,023	68.7	1,402,744	2.2	4,297,251	6.8

¹ Includes output of 2 plants in 1926 and 3 plants in 1929 and 1933 using oyster shells and clay.

The producers reported that approximately 19,923,000 short tons of raw materials (exclusive of fuels and explosives) entered into the manufacture of 63,473,189 barrels (11,932,960 short tons) of portland cement in the United States in 1933—an average of about 628 pounds to a barrel of finished cement (376 pounds). The totals were as follows: 16,117,000 tons of limestone and cement rock, 2,151,000 tons of clay and shale, 261,000 tons of blast-furnace slag, 416,000 tons of marl, 417,000 tons of gypsum (equivalent to more than 31 percent of the gypsum output of the United States in 1933), and 561,000 tons of other materials such as oyster shells, iron ore, sand, cinders, fluorspar, and ashes.

CAPACITY

At the end of 1933 the capacity for producing finished portland cement of the 152 shipping plants in 1933 and 13 plants inactive in 1933 but producing within the 5 previous years was 269,387,000 barrels per year, according to manufacturers' reports supplemented by a few estimates. No new plants were reported producing in 1933. The total output for 1933 was 23.6 percent of the indicated capacity at the close of the year, based on producers' reports; the corresponding figure for 1932 was 28.3 percent.

Portland cement-manufacturing capacity of the United States, 1932-33, by commercial districts

District	Estimated capacity (barrels)		Percent of capacity utilized	
	1932	1933	1932	1933
Eastern Pennsylvania, New Jersey, and Maryland.....	56,702,000	56,399,000	28.6	20.9
New York and Maine.....	18,820,000	18,622,000	35.1	24.6
Ohio, western Pennsylvania, and West Virginia.....	28,765,000	23,725,000	23.3	18.6
Michigan.....	19,145,000	19,044,000	22.4	19.1
Wisconsin, Illinois, Indiana, and Kentucky.....	31,861,000	31,836,000	33.3	24.8
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana.....	25,660,000	25,473,000	21.8	22.3
Eastern Missouri, Iowa, Minnesota, and South Dakota.....	24,197,000	24,014,000	37.2	30.5
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas.....	18,110,000	17,938,000	31.2	27.5
Texas.....	10,724,000	10,725,000	35.0	27.7
Colorado, Montana, Utah, Wyoming, and Idaho.....	6,812,000	6,207,000	18.7	20.0
California.....	22,903,000	22,830,000	23.9	31.4
Oregon and Washington.....	7,609,000	7,574,000	20.8	12.0
	271,308,000	269,387,000	28.3	23.6

The following estimates, based on the monthly reports of the producers, of the relation between the production of finished portland cement and the manufacturing capacity of the industry for each month in 1933 and for the 12 months ended with each month indicate the seasonal changes in utilizing capacity.

Ratio (percent) of finished portland cement produced to manufacturing capacity of the United States, 1932-33

	Monthly		12 months ended—			Monthly		12 months ended—	
	1932	1933	1932	1933		1932	1933	1932	1933
January.....	22.0	12.9	45.9	27.6	July.....	33.4	37.6	34.2	26.3
February.....	18.7	13.4	45.2	27.1	August.....	34.2	35.9	32.1	26.5
March.....	21.3	16.1	43.8	28.7	September.....	36.9	25.5	30.6	25.5
April.....	24.8	18.9	41.7	28.2	October.....	34.6	22.1	29.6	24.5
May.....	30.2	27.4	38.9	28.0	November.....	29.1	21.2	29.0	23.9
June.....	35.7	35.2	36.5	26.0	December.....	18.5	15.5	28.3	23.6

The following table gives statistics of capacity by the two general methods—the “wet” and the “dry”—used in manufacturing portland cement at plants in the United States. The figures are based on the estimated capacity of the wet- and dry-process plants for the manufacture of finished cement. Statistics of production of both clinker and finished cement, by processes, appear on page 85.

Portland cement-manufacturing capacity of the United States, 1932-33, by processes

Process	Estimated capacity				Percent of capacity utilized		Percent of total finished cement produced	
	Barrels		Percent of total		1932	1933	1932	1933
	1932	1933	1932	1933				
Wet.....	125,449,000	124,962,000	46.2	46.4	29.9	24.2	48.9	47.6
Dry.....	145,859,000	144,425,000	53.8	53.6	26.9	23.0	51.1	52.4
	271,308,000	269,387,000	100.0	100.0	28.3	23.6	100.0	100.0

SPECIAL CEMENTS

A number of types of cement are being manufactured and marketed in the United States in addition to the standard or "ordinary" portland cement. These have been developed in response to a demand for cement of certain pronounced qualities or characteristics, such as greater plasticity, high early strength, low heat of hardening, impermeability, and resistance to chemical action. Such special cements as the white portland cement and plastic portland cement have long been produced and marketed in the United States and have been included in the statistics in this series of reports. The Bureau of Mines is not at liberty to publish separately either the figures on white portland cement or those on alumina cement, a hydraulic cement noted especially for its attainment of high strength at early periods. The latter also has been manufactured in the United States for some years.

For some time the producers have reported "mixed" and "improved" cements among the natural cements noted for their plasticity and much used in masonry.

Figures on special cements in the United States in 1933, as reported to the Bureau of Mines by producers, show the following:

High-early-strength portland cement produced in the United States in 1933, as reported by producers, totaled 1,087,602 barrels and shipments from the mills 1,111,005 barrels valued at \$2,214,478, an average of \$1.99 per barrel; these figures represent the output of 34 plants in 18 States. Corresponding data for 1932, which represent the output of 19 plants in 12 States, are: Production 1,287,586 barrels; shipments, 1,105,191 barrels valued at \$1,915,215, an average of \$1.73 per barrel.

Miscellaneous special cements (including so-called "low-heat", "temperature-resisting", "sea-water", "high-silica", "tufa", and "oil-well" portland cements) produced in 1933 totaled 680,187 barrels and shipments 584,852 barrels valued at \$1,010,372, an average of \$1.73 per barrel. Corresponding data for 1932 are: Miscellaneous cement (including "Super" cement) production, 413,644 barrels; shipments, 340,494 barrels valued at \$577,175, an average of \$1.70 per barrel.

Cement manufactured in 1933 under the trade name "Super", which is also high-early-strength cement, as reported by producers, totaled 119,957 barrels and shipments from the mills 165,115 barrels valued at \$295,295, an average of \$1.79 per barrel; these figures represent the output of 12 plants in 11 States. For 1932, figures on "Super" cement were not shown separately but were included under "Miscellaneous."

Masonry cement of the portland-cement class produced in 1933, as reported by producers, totaled 398,289 barrels and shipments from the mills 405,814 barrels valued at \$545,393, an average of \$1.34 per barrel; these figures represent the output of 34 plants in 14 States. Corresponding data for 1932, which represent the output of 25 plants in 12 States, are: Production, 433,332 barrels; shipments, 442,038 barrels valued at \$581,255, an average of \$1.31 per barrel.

MANUFACTURING CONDITIONS

Plants.—In 1933 portland cement was manufactured at 143 plants and shipments were made from 152 plants compared with 150 producing and 160 shipping plants in 1932.

Additional plants were reported to be under construction but not completed in Arkansas and Pennsylvania.

*Fuels.*²—Compared with 1932 the proportion of cement burned by coal alone and by natural gas alone decreased in 1933, and the proportion burned by oil alone increased. Of the portland cement produced in 1933, 62.4 percent was burned with coal alone compared with 71.6 percent in 1932, 8 percent was burned with oil alone compared with 5.5 percent in 1932, and 6.7 percent was burned with natural gas alone compared with 10 percent in 1932.

As compiled from monthly estimates of the cement producers, supplemented by a few estimates by the Bureau of Mines (there was no annual canvass on fuel consumption for 1933), the following quantities of fuel were consumed at the portland-cement plants of the United States in 1933 in producing 63,473,189 barrels of finished cement: Coal, 2,863,654 short tons; oil, 1,555,451 barrels (65,328,942 gallons); and natural gas, 22,000,951,600 cubic feet. Corresponding figures for 1932, compiled from annual reports of the producers, are: Finished cement produced, 76,740,945 barrels; fuels consumed in its manufacture—coal 3,769,994 short tons, oil 1,214,809 barrels (51,021,978 gallons), and natural gas 21,439,812,288 cubic feet.

In the estimates of consumption of fuel per barrel of cement the production of finished cement alone is considered. In this connection it is of interest that the stock of clinker or unground cement at the mills at the end of 1933 (5,717,000 barrels, as shown in the tables on pages 72 and 85) is about 5 percent less than the stock of clinker at the mills at the end of 1932 (5,995,000 barrels).

Coal was reported as the only fuel used at 96 plants in the United States in 1933 compared with 106 plants in 1932. The apparent average consumption of coal per barrel of finished cement was 130.1 pounds in 1933 compared with 125.9 pounds in 1932. The 45 dry-process plants using coal as the only fuel in 1933 reported a total consumption of 1,399,370 short tons of coal in the manufacture of 21,047,534 barrels of finished cement, an average of 133.0 pounds per barrel, compared with a consumption in 1932 at 49 dry-process plants (where coal was reported as the only fuel used) of 1,838,009 short tons of coal in the manufacture of 29,010,863 barrels of finished cement, an average of 126.7 pounds per barrel. The 51 wet-process plants using coal alone as fuel in 1933 reported a total consumption of 1,176,108 short tons in the manufacture of 18,548,351 barrels of finished cement, an average of 126.8 pounds per barrel. In 1932, 57 wet-process plants using coal alone as fuel reported a total consumption of 1,619,910 short tons in the manufacture of 25,932,854 barrels of finished cement, an average of 124.9 pounds per barrel.

The 11 plants (in 4 States) using oil alone as fuel in 1933 reported a total consumption of 1,133,375 barrels of oil in the manufacture of 5,071,987 barrels of finished cement, an average of 0.2235 barrel (9.4 gallons) of oil per barrel of finished cement; in other words, 1 barrel of oil burned 4.5 barrels of cement. The average consumption of oil by the dry-process plants was 0.2272 barrel (9.5 gallons) per barrel of finished cement and by the wet-process plants 0.2199 barrel (9.2 gallons) per barrel of finished cement. The use of oil in 1933 was reported at 13 additional plants which also used other fuel; 5 of these plants were east and 8 west of the Mississippi River.

² Data on fuels for 1932 include a few estimates; data for 1933, compiled from monthly estimates of the producers, include some revisions.

Nine plants reported natural gas as the only fuel used in 1933, compared with 15 plants in 1932. The average consumption in 1933 was 1,655 cubic feet of gas per barrel of finished cement; the corresponding figure for 1932 was 1,740 cubic feet. The use of natural gas was reported by 22 additional plants, which also used other fuel in 1933, compared with 14 additional plants which also used other fuel in 1932.

The accompanying table shows the quantity of natural gas used at portland-cement plants in the United States in 1932 and 1933; so far as permissible the statistics are arranged by States. Natural gas was used as fuel at 31 plants in 11 States in 1933, compared with 29 plants in 12 States in 1932, and despite a decrease in total production of portland cement in 1933 there was an increase of nearly 3 percent in the total quantity of natural gas consumed at cement plants. Fifteen plants in 5 States reported the use of natural gas in 1927.

In addition to the foregoing fuels, 1 plant reported the use of manufactured gas with coal in 1932 and 1933, and 5 plants in 1932 and 4 plants in 1933 reported the use of petroleum coke with other fuels.

Natural gas used at portland-cement plants in the United States, 1932-33, by States, in cubic feet

State	1932	1933 ¹
Kansas.....	2,958,030,394	3,863,783,304
Texas.....	4,755,307,000	3,623,040,008
Other States ²	13,726,474,894	14,514,128,288
	21,439,812,288	22,000,951,600

¹ Compiled from monthly estimates of the producers.

² 1932: Alabama, Arkansas, California, Colorado, Iowa, Missouri, Nebraska, Oklahoma, Pennsylvania, and South Dakota, 1933: Same States as in 1932, except Alabama.

Portland cement burned in the United States, 1932-33, by kinds of fuel

Fuel	Finished cement produced			Fuel consumed ¹		
	Number of plants	Barrels of 376 pounds	Percent of total	Coal (short tons)	Oil (barrels of 42 gallons)	Natural gas (cubic feet)
1932						
Coal ²	106	³ 54,943,717	71.6	3,457,919	956,148	13,395,474,870
Oil.....	12	³ 4,239,733	5.5			
Natural gas.....	15	³ 7,696,460	10.0			
Coal and oil ⁴	3	9,861,035	12.9	312,075	258,661	8,044,337,418
Coal and natural gas ⁵	7					
Oil and natural gas ⁶	3					
Coal, oil, and natural gas.....	4					
	150	76,740,945	100.0	⁷ 3,769,994	1,214,809	21,439,812,288
1933						
Coal ²	96	³ 39,595,885	62.4	2,575,478	1,133,375	7,039,660,640
Oil.....	11	³ 5,071,987	8.0			
Natural gas.....	9	³ 4,252,520	6.7			
Coal and oil ⁴	5	14,552,797	22.9	288,176	422,076	14,961,290,960
Coal and natural gas ⁵	14					
Oil and natural gas ⁶	3					
Coal, oil, and natural gas.....	5					
	143	63,473,189	100.0	⁸ 2,863,654	1,555,451	22,000,951,600

¹ Figures for 1933 compiled from monthly estimates of the producers.

² In addition to the coal shown for this group 1 plant reported the use of petroleum coke with coal and 1 plant the use of manufactured gas with coal.

³ Average consumption of fuel per barrel of cement produced was as follows: 1932—coal, 125.9 pounds; oil, 0.2255 barrel; natural gas, 1,740 cubic feet. 1933—coal, 130.1 pounds; oil, 0.2235 barrel; natural gas, 1,655 cubic feet.

⁴ In addition to the coal and oil included for this group 1 plant reported the use of petroleum coke with coal and oil.

⁵ In addition to the coal and natural gas included for this group 1 plant reported the use of petroleum coke with coal and natural gas.

⁶ In addition to the oil and natural gas included for this group 1 plant reported the use of petroleum coke with oil and natural gas.

⁷ Includes 61,191 short tons of anthracite and 3,708,803 short tons of bituminous coal.

⁸ Includes 72,323 short tons of anthracite and 2,791,331 short tons of bituminous coal.

Portland cement burned and fuels used in the United States, 1932-33, by processes

Process	Finished cement produced			Fuel consumed ¹		
	Number of plants	Barrels	Percent of total	Coal (short tons)	Oil (barrels)	Natural gas (cubic feet)
1932						
Wet.....	83	37,510,373	48.9	² 1,678,186	826,042	12,984,225,813
Dry.....	67	39,230,572	51.1	² 2,091,808	388,767	8,455,586,475
	150	76,740,945	100.0	³ 3,769,994	1,214,809	21,439,812,288
1933						
Wet.....	80	30,226,531	47.6	⁴ 1,195,764	939,672	14,150,106,692
Dry.....	63	33,246,658	52.4	⁵ 1,667,890	615,779	7,850,844,908
	143	63,473,189	100.0	⁶ 2,863,654	1,555,451	22,000,951,600

¹ Figures for 1933 compiled from monthly estimates of the producers.

² In addition to the coal shown for this group, 1 plant reported the use of petroleum coke with coal and 1 plant the use of manufactured gas with coal.

³ Includes 61,191 short tons of anthracite and 3,708,803 short tons of bituminous coal.

⁴ In addition to the coal shown for this group 1 plant reported the use of manufactured gas with coal.

⁵ In addition to the coal shown for this group 1 plant reported the use of petroleum coke with coal.

⁶ Includes 72,323 short tons of anthracite and 2,791,331 short tons of bituminous coal.

Estimated clinker (unground cement) produced and in stock at mills in the United States, 1932-33, by processes, in barrels

Process	Number of plants		Production		Stock (Dec. 31)	
	1932	1933	1932	1933	1932	1933
Wet.....	83	80	36,472,000	30,382,000	2,960,000	3,215,000
Dry.....	74	61	38,532,000	32,583,000	3,035,000	2,502,000
	157	141	75,004,000	62,965,000	5,995,000	5,717,000

NATURAL, MASONRY (NATURAL), AND PUZZOLAN CEMENTS

The term "masonry cement" is used here to designate certain cements made, like natural cements, by grinding calcined calcareous rock and used largely in mortar for laying brick and stone, although other hydraulic cements are also suitable for masonry and are being manufactured for this purpose in increasing quantities.

Natural cement (including masonry cement of the natural-cement class) was produced at 9 plants in 1933, and shipments were made from 10 plants. The plants engaged in the manufacture of these types of cement are situated at Utica, Ill.; Speed, Ind.; Fort Scott, Kans.; Kosmosdale, Ky.; Austin and Mankato, Minn.; Brixment and Rosendale, N.Y.; Lisbon, Ohio; and Siegfried, Pa.

Three manufacturers (with one plant each, located, respectively, at Birmingham and Graystone, Ala., and Bessemer, Pa.) reported an output of puzzolan or slag-lime cement in 1933.

The following table on natural, masonry (natural), and puzzolan cements from 1929 to 1933 shows a production of 466,632 barrels in 1933, an increase of 2.2 percent over 1932. Shipments from mills decreased 17.6 percent in quantity and 17.9 percent in gross value in 1933. Stocks at the mills increased and were 22.8 percent higher at the end of 1933 than at the end of 1932. The average factory value per barrel of the cement shipped from the mills was \$1.32 in 1933 and

\$1.33 in 1932. Like portland cement, these cements are packed four sacks to the barrel and each sack holds about 1 cubic foot. The lower specific gravity of the nonportland cements accounts for their lighter weight per barrel, ordinarily 240 to 320 pounds. For statistical purposes, however, the output has been expressed in terms of 376-pound barrels to correspond with the figures for portland cement.

Producers reported that 6,288 short tons of coal were consumed in 1933 in manufacturing these cements; they also reported the use of small quantities of coke and gas having a total fuel value equivalent to about 1,518 short tons of coal. The fuel consumption in 1932 was 6,720 short tons of coal, 1,025 short tons of coke, and a small quantity of gas having a fuel value equivalent to about 11 short tons of coal.

At natural-cement plants in the United States where coal was reported as the only fuel used the average consumption of coal per barrel (376 pounds) of cement was 49 pounds in 1933 compared with 48 pounds in 1932.

Natural, masonry (natural), and puzzolan cements produced, shipped, and in stock at mills in the United States, 1929-33

Year	Production		Shipments		Stock ¹ (Dec. 31)
	Active plants	Barrels (376 pounds)	Barrels (376 pounds)	Value	Barrels (376 pounds)
1929.....	11	2,209,465	2,159,130	\$2,950,717	194,207
1930.....	11	1,792,083	1,787,016	2,469,531	202,416
1931.....	12	1,241,803	1,226,850	1,619,920	224,100
1932.....	15	456,785	524,844	696,474	¹ 150,164
1933.....	13	466,632	432,415	571,648	184,381

¹ Revised figures.

FOREIGN TRADE IN CEMENT³

Imports.—The figures in the following tables cover imports of hydraulic cement of all kinds. General imports in 1933 totaled 472,550 barrels, an increase of 2.2 percent compared with 1932.

The average of the values assigned to the imports, supposed to represent the values in the foreign countries from which the material is exported, including the cost of the containers or coverings, was \$0.82 per barrel, an increase of 6 cents over 1932.

Denmark, Belgium, the United Kingdom, and Japan, representing more than 94 percent of the total imports in 1933, were again the leading sources; imports from the United Kingdom and Japan, however, decreased 76 and 45 percent, respectively. In 1933, as in 1931 and 1932, there were only two districts—New York and Puerto Rico—into which more than 100,000 barrels were imported.

³ Figures on imports and exports compiled by Claude Gaiher, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Roman, portland, and other hydraulic cements imported into the United States, 1932-33, by countries and districts

[General imports]

COUNTRY	1932		1933	
	Barrels	Value	Barrels	Value
Belgium.....	73, 519	\$63, 533	154, 953	\$111, 707
Canada.....	251	763	857	2, 665
Cuba.....	10, 612	15, 510	1, 516	2, 589
Denmark.....	124, 513	92, 469	221, 071	188, 673
France.....	411	1, 118	1, 032	2, 555
Germany.....	1, 594	2, 129	15, 188	12, 559
Japan.....	34, 693	21, 818	19, 092	17, 782
Netherlands.....			588	536
Norway.....			3, 004	2, 540
Poland and Danzig.....			3, 417	3, 015
Spain.....	6	19		
Sweden.....			607	474
United Kingdom.....	216, 897	153, 674	51, 225	43, 365
	462, 496	351, 033	472, 550	388, 460
DISTRICT				
Dakota.....			3	11
Florida.....			1, 849	1, 511
Hawaii.....	34, 693	21, 818	16, 818	15, 557
Los Angeles.....	1, 351	2, 030	3, 805	4, 758
Maine and New Hampshire.....	241	734	1, 403	2, 800
Maryland.....			426	375
Massachusetts.....	43, 893	40, 001	79, 012	55, 169
Mobile.....			498	313
New York.....	240, 933	173, 564	205, 614	182, 778
Oregon.....	604	407	10, 202	7, 207
Philadelphia.....	293	149	3, 487	2, 725
Puerto Rico.....	130, 414	102, 937	140, 471	108, 356
Sabine.....			5, 050	3, 775
St. Lawrence.....			178	418
San Diego.....			2, 451	1, 382
San Francisco.....	10, 064	9, 364	263	149
Vermont.....	9	24	23	56
Washington.....	1	5	997	1, 120
	462, 496	351, 033	472, 550	388, 460

In addition to the imports listed in the preceding table "white nonstaining portland cement" was reported "imported for consumption", as follows: 1933, 5,244 barrels valued at \$12,162, of which 4,508 barrels valued at \$9,450 came from France; 1932, 5,643 barrels valued at \$12,214, of which 3,659 barrels valued at \$6,398 came from France and 1,415 barrels valued at \$3,820 from the United Kingdom.

Hydraulic cement imported for consumption in the United States, 1929-33

Year	Barrels	Value	Year	Barrels	Value
1929.....	1, 745, 345	\$1, 983, 974	1932.....	468, 139	\$363, 247
1930.....	984, 807	1, 154, 562	1933.....	477, 193	400, 153
1931.....	469, 598	535, 773			

Exports.—In 1933 exports of hydraulic cement to foreign countries and to the Philippine Islands and the Virgin Islands of the United States (mostly portland cement) increased nearly 82 per cent in quantity and more than 85 percent in value compared with 1932. The quantity exported in 1933 was nearly 1.1 percent of the total shipments of hydraulic cement from mills during the year and was the largest since 1930.

The value of exports of domestic cement is their actual cost, when exported, at United States ports of export, as declared by the shipper on the export declarations. The average value at the ports was \$2.19 a barrel in 1933 compared with \$2.14 in 1932.

The destinations of exports were approximately as follows: South America, 103,000 barrels; Central America, 495,000 barrels (of which 466,000 barrels went to Panama); Mexico, 44,000 barrels; Cuba, 3,000 barrels; other West Indies and Bermudas, 14,000 barrels; Canada, 4,000 barrels; and other countries, 17,000 barrels.

Although the United States is the major cement-producing country of the world, its export trade has never attained large proportions; since 1925 it has been under 1,000,000 barrels.

Hydraulic cement exported from the United States, 1932-33, by countries

Country	1932		1933	
	Barrels	Value	Barrels	Value
North America:				
Bermudas.....	3	\$20	97	\$274
Canada.....	9,141	35,003	3,841	18,726
Central America:				
British Honduras.....	7	28	270	445
Costa Rica.....	585	1,404	1,430	1,936
Guatemala.....	273	1,602	451	1,763
Honduras.....	18,453	31,827	25,846	34,298
Nicaragua.....	449	1,613	598	1,384
Panama.....	176,080	238,854	466,243	917,290
Salvador.....	301	1,716	199	877
Mexico.....	28,227	83,634	44,468	120,822
Newfoundland and Labrador.....	41	218	420	778
West Indies:				
British:				
Jamaica.....	17	96	62	208
Trinidad and Tobago.....	11	68	25	147
Other British.....	2,040	5,628	2,136	4,177
Cuba.....	7,810	20,016	2,784	5,913
Dominican Republic.....	1,365	2,225	1,816	2,965
French.....	151	330	426	969
Haiti.....	259	617	2,279	3,664
Netherlands.....	4,647	8,212	6,230	8,433
Virgin Islands of the United States.....	104	245	787	1,715
	249,944	433,356	560,208	1,126,784
South America:				
Argentina.....	19,501	89,751	19,103	80,651
Bolivia.....	50	293	96	503
Brazil.....	6,235	33,909	8,783	46,174
Chile.....	207	1,076	952	5,600
Colombia.....	10,071	26,874	14,741	38,613
Ecuador.....	586	1,969	774	3,310
Guiana: French.....	165	355	330	710
Peru.....	392	2,196	365	1,704
Uruguay.....	3,858	18,965	3,399	16,127
Venezuela.....	65,610	110,378	54,805	91,444
	106,675	285,796	103,348	284,836
Europe:				
Azores and Madeira Islands.....	30	195		
Belgium.....	1,638	7,630	1,466	6,455
France.....	8	60	38	81
Greece.....	250	1,543		
Irish Free State.....	133	640		
Italy.....	1	8		
Netherlands.....	230	1,257	354	1,882
Norway.....	220	1,430	150	848
Portugal.....			20	56
Spain.....	2	13		
Sweden.....	21	127	16	88
Turkey.....	13	122		
United Kingdom.....	11,260	47,939	6,672	26,489
	13,796	60,864	8,716	35,899

¹ Turkey in Asia included for 1932 with Turkey in Europe; none recorded from Turkey in 1933.

Hydraulic cement exported from the United States, 1932-33, by countries—Continued

Country	1932		1933	
	Barrels	Value	Barrels	Value
Asia:				
Aden.....			15	\$79
China.....	427	\$2,564	810	4,602
East Indies:				
British:				
India.....	1,264	6,444	1,737	8,317
Malaya.....	330	1,557	165	734
Netherland.....	276	1,551		
Hong Kong.....	280	1,671	30	179
Japan.....	7	47		
Palestine.....	695	3,842	2,743	13,340
Philippine Islands.....	147	765	524	3,182
Other Asia ¹	1,430	12,092	775	3,779
	13,856	120,533	6,799	34,212
Africa:				
British:				
Union of South.....	137	895	664	3,495
Other South.....			4	24
Portuguese:				
Mozambique.....	30	174	125	597
Other Portuguese.....	55	146	67	142
	222	1,215	860	4,258
Oceania:				
British:				
Australia.....	40	251	105	436
New Zealand.....			250	1,230
Other British.....	47	180	21	52
French.....	1	10		
	88	441	376	1,718
	374,581	802,205	680,307	1,487,707

¹ Turkey in Asia included for 1932 with Turkey in Europe; none recorded from Turkey in 1933.

Domestic hydraulic cement shipped to Alaska, Hawaii, and Puerto Rico, 1932-33

	1932		1933	
	Barrels	Value	Barrels	Value
Alaska.....	12,936	\$31,082	14,037	\$37,679
Hawaii.....	226,367	506,449	152,560	339,103
Puerto Rico.....	57,259	76,804	99,001	118,363
	296,562	614,335	265,598	495,135

Hydraulic cement exported from the United States, 1929-33

Year	Barrels	Value	Percent of total shipments from mills	Year	Barrels	Value	Percent of total shipments from mills
1929.....	885,321	\$3,083,217	0.5	1932.....	374,581	\$802,205	0.5
1930.....	755,778	2,454,515	.5	1933.....	680,307	1,487,707	1.1
1931.....	429,653	1,220,600	.3				

WORLD PRODUCTION

The accompanying table, copied from the Statistical Year Book of the League of Nations, 1933-34,⁴ gives data on the cement output of the world from 1929 to 1933. The figures are in thousands of metric tons (1 metric ton equals 2,204.6 pounds). The following statement prefaces the year book:

Throughout this volume the sign “—” indicates that the figure is nil or negligible, “...” indicates that the figures are not yet published, and “.” that information is not available or is nonexistent. Decimal figures are preceded in the tables by a full stop and not a comma. World and continental totals contain, as a rule, estimated figures for countries for which information was not available.

Cement production, in thousands of metric tons

Country	1929	1930	1931	1932	1933 ¹
Africa	746	1 860	...	...	...
Algeria.....	58	68	77	...	...
Belgian Congo.....	60	64	45	16	...
Egypt.....	180	300	245	243	250
Morocco (French).....	65	74	150	220	201
Mozambique.....	21	23	24	25	...
Union of South Africa ¹	362	...	...	...	...
North America	31,426	29,670	23,223	13,903	11,283
Canada.....	1,945	1,872	1,619	737	383
United States.....	29,481	27,798	21,604	13,166	10,900
Central America (Mexico)	225	...	...	...	...
South America¹	640	657	833	800	...
Argentina.....	350	384	536	501	...
Brazil.....	96	87	167	149	...
Chile.....	145	161	102	112	139
Peru.....	49	25	28	...	...
Asia (excluding U. S. S. R.)²	5,560	5,000	4,950	5,000	6,100
China ³	185	178	235	192	...
French Indo-China.....	184	168	152	171	113
India.....	570	573	588	592	623
Japan ⁴	4,274	3,748	3,615	3,731	4,781
Netherland Indies.....	149	143	131	80	...
Philippines.....	76	100	95	...	...
Turkey.....	65	57	100	108	...
U. S. S. R.	2,367	3,115	3,332	3,489	2,749
Europe (excluding U. S. S. R.)⁵	32,850	30,650	26,700	23,500	...
Austria.....	582	602	500	350	...
Belgium ⁶	3,248	3,050	2,000	...	...
Bulgaria.....	151	174	104	139	121
Denmark.....	799	779	509	415	554
Estonia.....	62	47	41	30	...
Finland.....	278	203	162	154	...
France.....	5,787	4,989	4,908	5,028	...
Germany ⁷	7,039	5,511	3,711	2,795	...
Greece.....	155	180	195	196	200
Hungary.....	403	329	296	197	...
Italy.....	3,497	3,482	3,077	3,177	3,535
Latvia.....	40	70	71	50	...
Netherlands.....	210	224	200	254	360
Norway.....	319	321	220	235	220
Poland.....	1,008	832	546	354	411
Portugal.....	88	99	95	121	164
Rumania.....	317	396	196	213	...
Saar.....	167	161	126	93	111
Spain.....	1,820	1,839	1,630	1,425	...
Sweden.....	570	611	518	484	...
United Kingdom.....	4,766	5,111	5,986	4,320	4,470
Other countries.....	1,500	1,640	1,610	1,500	...
Oceania²	920	900	550	400	...
Australia ⁸	720	708	396	251	...
Total	74,700	71,100	60,700	48,300	...

¹ Estimated.

² Asia, Oceania: Total includes estimate for other countries not mentioned.

³ China: Total shipments from “Customs ports” in China excluding Manchuria.

⁴ Japan: Including Korea, Formosa, and Kwantung.

⁵ Europe: Excluding the production of Czechoslovakia which was estimated at 1,500,000 tons in 1927.

⁶ Belgium: Artificial cement.

⁷ Germany: Works affiliated to the German Cement Association. The number of works not affiliated has considerably increased since 1929.

⁸ 12 months ended June 30.

NOTE.—The table covers, as far as possible, the total of natural cements and artificial cements, portland or other.

SOURCES.—National official statistics. U. S. Department of Commerce, Commerce Reports.

⁴ League of Nations Statistical Year Book, 1933-34: Geneva, 1934, p. 118.

Cement production in Canada.—According to the Dominion Bureau of Statistics the mill shipments of portland cement from plants in Canada in 1933 were 3,007,432 barrels valued at \$4,536,935 compared with 4,498,721 barrels valued at \$6,930,721 in 1932, a decrease of 33.1 percent in quantity and 34.5 percent in value. The average selling price over the whole Dominion, computed from the total quantity sold and the total value as given, was \$1.51 per barrel in 1933 and \$1.54 per barrel in 1932.

Imports of portland cement into Canada totaled 19,119 barrels (estimated at 350 pounds each) having an average value of \$1.97 per barrel in 1933 compared with 21,350 barrels averaging \$2.72 per barrel in 1932 and 38,392 barrels averaging \$3.74 per barrel in 1931.

Exports of portland cement amounted to 52,531 barrels valued at \$47,369 in 1933 compared with 53,333 barrels valued at \$38,921 in 1932.

*Summary statistics of the cement industry in Canada, 1932-33*¹

	1932		1933	
	Barrels	Value	Barrels	Value
Output.....	4,643,675		2,410,518	
Sold or used.....	4,498,721	\$6,930,721	3,007,432	\$4,536,935
Stocks, Dec. 31.....	2,431,881		1,830,928	
Imports.....				
Portland.....	21,350	58,092	19,119	37,768
Manufactures.....		6,883		4,971
Exports.....	53,333	38,921	52,531	47,369
Apparent consumption.....	4,466,738		2,974,020	

¹ Dominion Bureau of Statistics.

² Includes hydraulic or water lime.

The selling prices per barrel in both 1932 and 1933, f.o.b. Canadian works, ranged from a low of \$1.25 to a high of \$2.55.

Cement is produced in the Provinces of Quebec, Ontario, Manitoba, Alberta, and British Columbia. Twelve plants were represented in the output in both 1932 and 1933. In 1933 Quebec mills produced 51 percent of the total Canadian shipments; Ontario, 36 percent; Manitoba, 4 percent; Alberta, 5 percent; and British Columbia, 4 percent.

Canadian cement plants used 41 rotary kilns in both 1932 and 1933; these had a total daily output capacity of 43,622 barrels. The industry consumed 13,319 tons of gypsum and 616,364 tons of limestone in 1933. Both wet and dry processes were used by the Canadian cement industry in 1933.

In 1933 the Canadian cement industry consumed for all purposes 48,905 short tons of Canadian bituminous coal valued at \$236,947 and 46,955 short tons of imported bituminous coal valued at \$229,399. The industry also used 39,178 gallons of gasoline valued at \$6,793; 581 gallons of kerosene valued at \$102; and 37 gallons of fuel oil valued at \$5. Purchased electricity totaled 48,160,143 kw.-hr. valued at \$508,841, including service charge.

The annual report of one of Canada's largest cement producers contains the following information relating to the industry in 1933:

The volume of building, including engineering projects, according to published statistics, fell to a lower level in Canada in 1933 than any year since 1915, but due also to the lack of purchasing power of the farmer and small user the demand

for cement was less than in any year since 1906. However, the extreme low point of the decline in cement consumption would appear to have been reached in February 1933. After that month the decline, while still very severe, was of less intensity each month thereafter until October when for the first time in practically 3 years there was a cessation of the downward trend. * * * Business generally in Canada has shown slow but steady improvement over a period of several months, and the prospects for construction work during the coming year are more favourable than at this time last year. There is reason for hope, therefore, that your company has passed through the worst of the depression period and may look forward with some confidence to an increased volume of business.

In addition to the standard first-quality products of Canadian cement plants, a high-early-strength cement has recently been manufactured; the development of this material was due largely to research work in Canadian plants, and it is reported that this particular type of cement is being employed rather extensively in the mining industry, especially for underground guniting, foundations, and cementing diamond-drill holes. Another new product of the Canadian cement industry resulting from Canadian research is an alkali-resisting cement which, it is stated, is particularly suitable for construction in certain parts of the Prairie Provinces.

The following table shows sales from mills in 1932 and 1933, by Provinces:

*Cement sold by Canadian mills, 1932-33, by Provinces*¹

Province	1932		1933	
	Barrels	Value	Barrels	Value
Quebec.....	2, 210, 584	\$3, 155, 702	1, 517, 555	\$2, 128, 900
Ontario.....	1, 599, 342	2, 288, 975	1, 095, 845	1, 587, 812
Manitoba.....	242, 112	549, 594	129, 540	295, 351
Alberta.....	193, 571	399, 922	149, 206	299, 530
British Columbia.....	253, 112	536, 528	115, 286	225, 342
Canada.....	4, 498, 721	6, 930, 721	3, 007, 432	4, 536, 935

¹ Dominion Bureau of Statistics.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN IDAHO

(DETAILED STATISTICS—MINE REPORT)

By C. N. GERRY AND T. H. MILLER¹

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The output of gold, silver, copper, lead, and zinc from mines in Idaho in 1933, in terms of recovered metals, was 64,592.23 fine ounces of gold, 6,987,960 fine ounces of silver, 1,562,234 pounds of copper, 148,726,701 pounds of lead, and 41,935,977 pounds of zinc. There were 188 lode mines and 334 placers producing in 1933 compared with 178 lode mines and 280 placers in 1932.

Since 1863 the output of the five metals in Idaho has been as follows: Gold, 6,781,894.73 fine ounces; silver, 347,373,869 fine ounces; copper, 161,223,204 pounds; lead, 9,559,508,245 pounds; and zinc, 945,904,074 pounds. The total value of this output has been \$990,442,858,² of which \$140,194,209² represents the value of gold.

Premium on newly mined gold.—There were four epochs of gold prices for newly mined gold in the United States in 1933: (1) The period of the legal coinage value of \$20.671835, from January 1 to August 9 to all producers; (2) that of (a) \$20.671835 to the majority of producers and (b) the fluctuating world price as secured by export by some producers, to August 29; (3) the period of fluctuating world price as secured through the agency of the Federal Reserve Banks, to October 25 (period of actual Bank sales, from September 8 to November 1); and (4) the period of the Reconstruction Finance Corporation arbitrarily fixed, gradually rising price (generally above the world price), from October 25 to December 31, 1933. For further details

¹ Assisted by Paul Luff and LaRu Shepherd.

² Value of gold calculated at \$20.671835 per ounce.

see chapter of Minerals Yearbook, 1934, on Gold and Silver (pp. 25 to 52), by Chas. W. Henderson.

Following is a table on mine production of gold in Idaho, 1929-33, in terms of recovered metal; two values are given for 1933—(1) at legal coinage value (\$20.67+ per ounce) and (2) at average weighted price (\$25.56 per ounce).

Mine production of gold in Idaho, 1929-33, in terms of recovered metal

Year	Fine ounces	Value ¹	Year	Fine ounces	Value ¹
1929.....	20,247.11	\$418,545	1932.....	46,885.39	\$969,207
1930.....	21,445.07	443,309	1933.....	64,592.23	² 1,335,240
1931.....	18,361.36	379,563			³ 1,650,977

¹ 1929-32: At legal value (\$20.67+ per ounce); 1933: At both legal coinage value (\$20.67+ per ounce) and average weighted price (\$25.56 per ounce).

² At legal coinage value (\$20.67+ per ounce).

³ At average weighted price (\$25.56 per ounce).

Calculation of value of metal production.—The value of metal production hereinafter reported has been calculated at the figures given in the table that follows. Gold is figured at the mint value for fine gold, that is, \$20.671835 an ounce. The silver price is the average New York price for bar silver. The copper, lead, and zinc prices are weighted averages, for each year, of all grades of primary metal sold by producers.

Prices of silver, copper, lead, and zinc, 1929-33

Year	Silver	Copper	Lead	Zinc	Year	Silver	Copper	Lead	Zinc
	<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>		<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>
1929.....	\$0.533	\$0.176	\$0.063	\$0.066	1932.....	\$0.282	\$0.063	\$0.030	\$0.030
1930.....	.385	.130	.050	.048	1933.....	.350 ¹	.064	.037	.042
1931.....	.290	.091	.037	.038					

Mine production of gold, silver, copper, lead, and zinc in Idaho, 1929-33, in terms of recovered metals

Year	Mines producing		Ore, old tailings, etc. (short tons)	Gold		Silver	
	Lode	Placer		Fine ounces	Value	Fine ounces	Value
1929.....	147	51	2,174,125	20,247.11	\$418,545	9,414,403	\$5,017,877
1930.....	131	61	1,944,900	21,445.07	443,309	9,420,639	3,626,946
1931.....	136	160	1,299,927	18,361.36	379,563	7,220,923	2,094,068
1932.....	178	280	1,032,853	46,885.39	969,207	6,716,968	1,894,185
1933.....	188	334	1,190,851	64,592.23	1,335,240	6,987,960	2,445,785

Year	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
1929.....	5,131,438	\$903,133	297,389,488	\$18,735,538	91,350,807	\$6,029,153	\$31,104,246
1930.....	3,111,555	404,502	268,115,963	13,405,798	75,298,172	3,614,312	21,494,867
1931.....	1,144,915	104,187	198,729,228	7,352,981	39,137,212	1,487,214	11,418,013
1932.....	1,143,381	72,033	144,235,067	4,327,052	20,504,234	615,127	7,877,604
1933.....	1,562,234	99,983	148,726,701	5,502,888	41,935,977	1,761,311	11,145,208

Gold and silver produced at placer mines in Idaho, 1929-33

Year	Gold		Silver		Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value		Fine ounces	Value	Fine ounces	Value
1929-----	4, 129. 92	\$85, 373	1, 419	\$756	1932-----	12, 439. 68	\$257, 151	3, 826	\$1, 079
1930-----	3, 987. 45	82, 428	1, 355	522	1933-----	23, 289. 90	481, 445	7, 243	2, 535
1931-----	5, 213. 52	107, 773	1, 848	536					

Gold.—The output of gold in Idaho in 1933 was 64,592.23 fine ounces, an increase of nearly 38 percent from 46,885.39 ounces in 1932. Gold recovered at placers amounted to 23,289.90 ounces (10,850.22 ounces more than in 1932) and accounted for 36.06 percent of the State total; most of the increase in gold from placers came from the Warren Creek Dredging Co. and the Idaho Gold Dredging Co., both near Warren. Siliceous ore, old tailings, etc., yielded 40,554.12 ounces of gold (an increase of 6,339.30 ounces) and accounted for 62.78 percent of the total gold. The other classes of ore (copper, lead, copper-lead, and lead-zinc) yielded only 1.16 percent of the total. Most of the increase in gold from siliceous material came from the Gnome, Yellow Pine, Lone Pine, Hand, and Sherman Howe properties, but these gains were partly offset by decreases from the Boise-Rochester and Golden Anchor mines. The Boise-Rochester property of the St. Joseph Lead Co. at Atlanta was again the largest producer of gold in Idaho, followed by the Meadow Creek mine of the Yellow Pine Co. at Stibnite; the Idaho Gold Dredging Co. near Warren; the Warren Creek Dredging Co. near Warren; the Gnome Gold Mining Co. near Elk City; the Lone Pine mine at Golden; the Gold Dredging, Inc., near Pierce; the Hand property of The Golden Hand, Inc., near Warren; the Mountain Chief property of the National Mining & Development Co. near Placerville; and the Wharton placer near Placerville.

Silver.—The output of silver in Idaho in 1933 was 6,987,960 fine ounces compared with 6,716,968 ounces in 1932, an increase of 4 percent but considerably less than the average annual output (8,075,367 ounces) for the decade 1924-33. As a result of the decrease of nearly 1,300,000 ounces in silver from Utah mines in 1933, Idaho became the largest producer of silver in the United States. Copper-lead ore yielded 48.85 percent of the silver from Idaho in 1933, lead ore 35.48 percent, and lead-zinc ore 13.41 percent; only 2.26 percent came from siliceous material, copper ore, and placers. There was a decrease of nearly 168,400 ounces in silver from lead ore, but this loss was more than offset by increases of nearly 319,400 ounces from lead-zinc ore, more than 74,000 ounces from copper-lead ore, and nearly 42,500 ounces from siliceous ore. The large decrease in silver output at the Bunker Hill & Sullivan property and smaller decreases at the Golconda, Hecla, and Crescent mines were more than offset by the unusually large increase (more than 316,000 ounces) at the Morning mine and the increase of about 112,000 ounces at the Sunshine (Yankee Boy) mine; good increases were also reported by the Gold Hunter and Frisco mines. The Yankee Boy mine of the Sunshine Mining Co. was again the largest producer of silver in Idaho, followed by the Bunker Hill & Sullivan, Hecla, Morning, and Crescent mines,

all in the Coeur d'Alene region, Shoshone County; these five mines produced 92.11 percent of the State total. Other large producers of silver were the Boise-Rochester mine of the St. Joseph Lead Co. in Elmore County and the Page (operated by the Federal Mining & Smelting Co.), Golconda, Frisco, and Gold Hunter mines in Shoshone County, each of which produced more than 50,000 ounces.

Copper.—The output of copper in Idaho in 1933 was 1,562,234 pounds compared with 1,143,381 pounds in 1932, an increase of nearly 37 percent; the average annual output for the decade 1924-33 was 2,371,256 pounds. Copper-lead ore yielded 56.04 percent of the copper in 1933, lead ore 28.81 percent, and lead-zinc ore 14.19 percent; less than 1 percent came from copper ore and siliceous ore. There were increases of nearly 234,300 pounds in copper from copper-lead ore and about 105,000 pounds from lead-zinc ore. Substantial increases in copper output were reported at the Sunshine (Yankee Boy), Bunker Hill & Sullivan, Morning, and Frisco properties. The Sunshine Mining Co. was the largest producer of copper in Idaho in 1933, followed by the Bunker Hill & Sullivan, Hecla, Morning, Crescent, Frisco, Page, and Golconda mines.

Lead.—The output of lead in Idaho in 1933 was 148,726,701 pounds compared with 144,235,067 pounds in 1932, an increase of 3.11 percent but only 61.33 percent of the average annual output (242,485,307 pounds) for the decade 1924-33. Lead ore yielded 70.39 percent of the lead in 1933 and lead-zinc ore 29.32 percent. There was a decrease of more than 11,248,000 pounds in lead from lead ore but an increase of nearly 15,990,000 pounds from lead-zinc ore. The decrease of more than 10,100,000 pounds in the output of lead at the Bunker Hill & Sullivan mine and large decreases at the Hecla, Sidney, Whitdelf, Golconda, Tamarack & Custer, and Sunshine (Yankee Boy) properties were more than offset by an increase of nearly 15,000,000 pounds at the Morning mine; substantial increases also were recorded at the Frisco, Gold Hunter, Star, Page, Jack Waite, Hope, and Blackhawk properties. The Bunker Hill & Sullivan Mining & Concentrating Co. was in 1933, as usual, the largest producer of lead in Idaho, followed by the Hecla, Morning, Page, Golconda, Frisco, Star, Gold Hunter, and Blackhawk properties, all in the Coeur d'Alene region, Shoshone County; these nine leading producers accounted for 98.85 percent of the State total.

Zinc.—The output of zinc in Idaho in 1933 (41,935,977 pounds) was more than double that in 1932 and was 86.73 percent of the average annual output (48,350,182 pounds) for the decade 1924-33. Lead-zinc ore yielded 72.12 percent of the zinc in 1933 and lead ore 27.88 percent. There were increases of nearly 14,923,000 pounds in zinc from lead-zinc ore and nearly 6,509,000 pounds from lead ore. An increase of nearly 11,900,000 pounds in zinc was recorded at the Morning mine and an increase of about 6,450,000 pounds at the Bunker Hill & Sullivan property; large increases also were recorded at the Frisco, Golconda, and Star mines. The Sidney mine, which produced nearly 2,000,000 pounds of zinc in 1932, was idle in 1933. The Morning mine of the Federal Mining & Smelting Co. was the largest producer of zinc in Idaho in 1933, followed by the Bunker Hill & Sullivan, Frisco, Golconda, Star, Hecla, Page, and Blackhawk properties.

MINE PRODUCTION BY COUNTIES

Mine production of gold, silver, copper, lead, and zinc in Idaho in 1933, by counties, in terms of recovered metals

County	Gold				Silver (lode and placer)		
	Lode		Placer		Total value	Fine ounces	Value
	Fine ounces	Value	Fine ounces	Value			
Ada	3.87	\$80	101.64	\$2,101.29	\$2,181.29	23	\$8
Adams			1.40				
Bear Lake						54	19
Beneviah			16.16	334	334		
Bingham			6.14	127	127		
Blaine	277.82	5,743			5,743	37,557	13,145
Boise	1,508.14	31,176	1,728.39	35,729	66,905	7,134	2,487
Bonner	6.87	142			142	24,300	8,505
Bonneville	2.27	47	57.81	1,195	1,242		
Butte						203	71
Camas	171.68	3,549	7.79	161	3,710	146	51
Canyon			16.64	344	344		
Clearwater	32.75	677	1,370.61	28,333	29,010	423	148
Custer	199.11	4,116	107.78	2,228	6,344	7,277	2,547
Elmore	17,596.02	363,742	420.62	8,095	372,437	99,194	34,718
Gem	76.00	1,571	68.21	1,410	2,981	1,520	532
Gooding			89.76	822	822		
Idaho	8,211.22	169,741	17,431.98	360,351	530,092	9,363	3,277
Jefferson			2.03	42	42	6	2
Jerome			161.67	3,342	3,342	6	2
Latah			79.86	1,653	1,653	6	2
Lemhi	1,144.94	23,668	395.95	8,185	31,853	1,806	632
Lewis			6.58	136	136		
Minidoka			22.16	458	458		
Nez Perce	2.13	44	36.67	758	802	23	8
Owyhee	310.76	6,424	397.16	8,210	14,634	5,434	1,902
Payette			6.77	140	140		
Power			36.18	748	748	3	1
Shoshone	997.49	20,620	586.84	12,131	32,751	6,762,537	2,366,888
Twin Falls			114.02	2,357	2,357	14	5
Valley	10,760.73	222,444	48.05	1,014	223,458	30,037	10,513
Washington	.53	11	19.93	412	423	900	315
Total, 1932	41,302.33	853,705	23,289.90	481,445	1,335,240	6,987,960	2,445,786
	34,445.71	712,056	12,439.68	257,151	969,207	6,716,988	1,894,185

County	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
Ada							\$2,189
Adams							29
Bear Lake			40,946	\$1,515			1,534
Beneviah							334
Bingham							127
Blaine	1,532	\$98	110,135	4,075	19,810	\$832	23,893
Boise	250	18	3,297	122			69,540
Bonner	687	44	617,162	22,835			31,526
Bonneville							1,242
Butte			13,784	510			581
Camas	141	9	1,054	39			3,809
Canyon							344
Clearwater			351	13			29,171
Custer	1,437	92	40,540	1,500			10,483
Elmore	3,219	206	1,271	47			407,408
Gem	187	12	3,513	130			3,655
Gooding							822
Idaho	578	37	2,270	84			533,490
Jefferson							42
Jerome							3,344
Latah							1,655
Lemhi	8,438	540	35,837	1,326			34,351
Lewis							136
Minidoka							458
Nez Perce	125	8					818
Owyhee	94	6	432	16			16,558
Payette							140
Power							749
Shoshone	1,544,343	98,838	147,851,459	5,470,504	41,916,167	1,760,479	9,729,460
Twin Falls							2,362
Valley	484	31	3,920	145			234,147
Washington	719	46	730	27			811
Total, 1932	1,562,234	99,983	148,726,701	5,502,888	41,935,977	1,761,311	11,145,208
	1,143,381	72,033	144,235,067	4,327,052	20,504,234	615,127	7,877,604

Ore, old tailings, etc., sold or treated and lode mines producing in Idaho, 1932-33, by counties

County	Ore, old tailings, etc. (short tons)		Lode mines producing		County	Ore, old tailings, etc. (short tons)		Lode mines producing	
	1932	1933	1932	1933		1932	1933	1932	1933
Adams.....	65		1		Gem.....	1,701	245	2	2
Bear Lake.....		29			Idaho.....	8,104	13,533	33	38
Blaine.....	448	2,908	5	13	Lemhi.....	6,166	2,335	25	27
Boise.....	3,491	3,311	16	22	Nez Perce.....		4		1
Bonner.....	12,065	6,464	6	5	Owyhee.....	221	544	16	16
Bonneville.....		5		1	Shoshone.....	912,664	1,052,889	21	24
Butte.....	2	26	1	1	Valley.....	35,864	47,350	6	4
Camas.....	47	125	5	5	Washington.....		24		1
Clearwater.....	212	87	5	3					
Custer.....	20	1,088	10	9					
						1,032,853	1,190,851	178	188

Gold and silver produced at placer mines in Idaho in 1933, by counties

County	Mines			Gold (fine ounces)	Silver (fine ounces)	Total value
	Drift	Dredge	Hydraulic and sluicing			
Ada.....	1		8	101.64	23	\$2,109
Adams.....			1	1.40		29
Benewah.....			2	16.16		334
Bingham.....			1	6.14		127
Boise.....	3		47	1,728.39	374	35,860
Bonneville.....			4	57.81		1,195
Camas.....			2	7.79		161
Canyon.....			2	16.64		344
Clearwater.....		1	19	1,370.61	363	28,460
Custer.....			14	107.78	60	2,249
Elmore.....			25	420.62	74	8,721
Gem.....			8	68.21	17	1,416
Gooding.....			4	39.76		822
Idaho.....	1	2	73	17,431.98	5,800	362,381
Jefferson.....			1	2.03		42
Jerome.....			7	161.67	6	3,344
Latah.....			14	79.96	6	1,655
Lemhi.....			26	395.95	43	8,200
Lewis.....			1	6.58		136
Minidoka.....			3	22.16		458
Nez Perce.....			3	36.67	6	760
Owyhee.....	1	1	15	397.16	354	8,334
Payette.....			2	6.77		140
Power.....			3	36.18	3	749
Shoshone.....		5	12	586.84	77	12,158
Twin Falls.....			10	114.02	14	2,362
Valley.....			10	49.05	20	1,021
Washington.....			2	19.93	3	413
Total, 1932.....	11	4	319	23,289.90	7,243	483,980
	11	5	264	12,439.68	3,826	258,230

MINING INDUSTRY

The outstanding feature of the mining industry of Idaho in 1933 was the increased output of lead-zinc ore from properties in Shoshone County, especially from the Morning mine of the Federal Mining & Smelting Co. The increase in value of metals recovered from lead-zinc ore accounted for nearly 54 percent of the total increase in value of the State output. The improvement in price of silver contributed materially to the increase in the State total, chiefly noticeable in the rise in value of copper-lead ore and lead ore in 1933.

There were important increases in the output of gold from both lode mines and placers. Most of the interest in placer mining was centered on the two dredging operations—the Idaho Gold Dredging Co. and the Warren Creek Dredging Co.—at Warren, Idaho County, but there were also increases in placer output from other sections of the State. Considerable new work was done on mining and milling plants at lode-gold mines, and important increases in gold output were recorded at several properties, especially at the Gnome, Meadow Creek (Yellow Pine Co.), and Lone Pine mines.

ORE CLASSIFICATION

Ore, old tailings, etc., sold or treated in Idaho in 1933, with content in terms of recovered metals

Source	Mines producing	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
		<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold ore.....	137	¹ 131, 052	40, 463. 41	144, 976	10, 744	27, 986	-----
Dry gold and silver ore.....	2	75	85. 19	3, 498	-----	-----	-----
Dry silver ore.....	5	60	5. 52	2, 269	774	758	-----
Copper ore.....	3	17	12. 53	80	3, 407	81	-----
Lead ore.....	35	² 630, 305	428. 15	2, 479, 659	450, 151	104, 688, 631	11, 690, 950
Copper-lead ore.....	2	121, 769	50. 02	3, 413, 255	875, 539	399, 573	-----
Lead-zinc ore.....	9	307, 573	257. 51	936, 980	221, 619	43, 609, 672	30, 245, 027
Total, lode mines.....	³ 188	1, 190, 851	41, 302. 33	6, 980, 717	1, 562, 234	148, 726, 701	41, 935, 977
Total, placers.....	334	-----	23, 289. 90	7, 243	-----	-----	-----
Total, 1932.....	522	1, 190, 851	64, 592. 23	6, 987, 960	1, 562, 234	148, 726, 701	41, 935, 977
	458	1, 032, 853	46, 885. 39	6, 716, 968	1, 143, 381	144, 235, 067	20, 504, 234

¹ Includes 75 tons of old tailings and 100 tons of old mill cleanings treated by amalgamation; 1,210 tons of old tailings treated by cyanidation; and 17 tons of old mill cleanings, 255 tons of old calcines, and 665 tons of old tailings sold to a smelter.

² Includes 23 tons of old mill cleanings sold to a smelter.

³ A mine producing more than one class of ore is counted but once in arriving at total for all classes.

Value of metals from ore, old tailings, etc., sold or treated in Idaho in 1933, by classes of ore

Class	Ore, old tailings, etc. (short tons)	Gold	Silver	Copper	Lead	Zinc	Total value
Dry gold ore.....	131, 052	\$836, 453	\$50, 742	\$688	\$1, 036	-----	\$888, 919
Dry gold and silver ore.....	75	1, 761	1, 224	-----	-----	-----	2, 985
Dry silver ore.....	60	114	794	49	28	-----	985
Copper ore.....	17	259	28	218	3	-----	508
Lead ore.....	630, 305	8, 851	867, 851	28, 510	3, 873, 479	\$491, 020	5, 270, 041
Copper-lead ore.....	121, 769	1, 034	1, 194, 639	56, 034	14, 784	-----	1, 266, 491
Lead-zinc ore.....	307, 573	5, 323	327, 943	14, 184	1, 613, 558	1, 270, 291	3, 231, 299
Total, 1932.....	1, 190, 851	853, 795	2, 443, 251	99, 983	5, 502, 888	1, 761, 311	10, 661, 228
	1, 032, 853	712, 066	1, 893, 106	72, 033	4, 327, 052	615, 127	7, 619, 374

Gold ore.—The output of gold ore, old tailings, etc., was 131,052 tons from 137 properties in 1933 compared with 107,946 tons from 142 properties in 1932; it represented 11 percent of the total output of ore, old tailings, etc., in the State in 1933. Most of the increase in output of gold ore came from the Meadow Creek and Boise-Rochester mines, and substantial increases were reported at the

Gnome, Lone Pine, Golden Chest, Sherman Howe, Hand, and Mountain Chief mines; decreases were reported at the Grunter, War Eagle, Lincoln, Mayflower, Golden Anchor, and Prince properties. The leading producers of gold ore were the Boise-Rochester mine of the St. Joseph Lead Co. at Atlanta, Elmore County; the Meadow Creek mine of the Yellow Pine Co. at Stibnite, Valley County; the Lone Pine and Gnome properties in Idaho County; the Golden Chest mine in Shoshone County; the Mountain Chief property in Boise County; the Sunnyside mine in Valley County; the Sherman Howe property in Idaho County; and the Hand property in Idaho County.

Gold and silver ore.—Siliceous gold and silver ore was produced at the Monarch mine in Elmore County and the Florence mine in Owyhee County.

Silver ore.—Silver ore from the Silver Still mine in Washington County and from prospects in Bonner and Owyhee Counties was shipped to smelters, and silver ore from the Flint mine in Owyhee County was treated in a small concentration plant.

Copper ore.—Small lots of copper ore of smelting grade were shipped from three properties in Lemhi County.

Lead ore.—The output of lead ore (including 23 tons of mill clean-up) was 630,305 tons from 35 properties in 1933 compared with 585,841 tons from 23 properties in 1932; it represented nearly 53 percent of the total output of ore, etc., in the State in 1933, and more than 98 percent of it was treated at concentration plants. The Bunker Hill & Sullivan mine, by far the largest producer of lead ore in the State, increased its output nearly 29,400 tons; the Hecla mine ranked second and produced about 1,400 tons more than in 1932; and the Gold Hunter mine ranked third.

Copper-lead ore.—The Yankee Boy mine of the Sunshine Mining Co. and the Crescent property of the Bunker Hill & Sullivan Mining & Concentrating Co. were the only producers of copper-lead ore in Idaho in 1933, as in 1932. The output declined from 165,490 tons in 1932 to 121,769 tons in 1933, as the result largely of a decrease of nearly 42,900 tons in the output from the Yankee Boy mine. All the copper-lead ore was treated at flotation plants; it represented 10 percent of the total output of ore, etc., in the State in 1933.

Lead-zinc ore.—The output of lead-zinc ore increased from 173,388 tons from 8 properties in 1932 to 307,573 tons from 9 properties in 1933. All of it was treated by flotation, and it represented nearly 26 percent of the total ore, etc., produced in the State in 1933. The Morning mine of the Federal Mining & Smelting Co., by far the largest producer of lead-zinc ore in Idaho in 1933, produced nearly 95,000 tons more than in 1932; other important producers, each with increased output, were the Frisco, Golconda, Page, Star, and Blackhawk mines. The Sidney mine, which produced nearly 11,500 tons in 1932, was idle in 1933.

Ore, old tailings, etc., sold or treated in Idaho in 1933, by counties, with content in terms of recovered metals

DRY GOLD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Ada.....	2	3.87				
Blaine.....	140	46.66	136	55	518	
Boise.....	1 3,311	1,508.14	6,760	250	3,297	
Bonner.....	8	6.13	10			
Bonneville.....	5	2.27				
Camas.....	125	171.68	146	141	1,054	
Clearwater.....	87	32.75	60		351	
Custer.....	1 1,007	185.51	2,243	159	71	
Elmore.....	3 59,840	17,539.15	96,936	3,219	1,271	
Gem.....	240	68.00	1,418	187	2,065	
Idaho.....	4 13,533	8,211.22	3,563	578	2,270	
Lemhi.....	5 2,285	1,090.98	969	4,973	8,764	
Nez Perce.....	4	2.13	17	125		
Owyhee.....	476	277.59	2,465	78	432	
Shoshone.....	6 2,639	556.60	236	495	3,973	
Valley.....	47,350	10,760.73	30,017	484	3,920	
Total, 1932.....	131,052 107,946	40,463.41 34,190.69	144,976 103,683	10,744 8,291	27,986 46,430	

DRY GOLD AND SILVER ORE

Elmore.....	42	56.87	2,184			
Owyhee.....	33	28.32	1,314			
Total, 1932.....	75 135	85.19 9.62	3,498 628			

DRY SILVER ORE

Bonner.....	1	0.14	71	39	28	
Owyhee.....	35	4.85	1,301	16		
Washington.....	24	.53	897	719	730	
Total, 1932.....	60 41	5.52 14.51	2,269 3,946	774 32	758 1,300	

COPPER ORE

Lemhi.....	17	12.53	80	3,407	81	
Total, 1932.....	17 12	12.53 10.53	80 34	3,407 3,367	81	

LEAD ORE

Bear Lake.....	29		54		40,946	
Blaine.....	2,727	230.94	36,890	1,477	101,725	
Bonner.....	6,455	30	24,219	648	617,134	
Butte.....	26		203		13,784	
Custer.....	81	13.60	4,974	1,278	40,469	
Gem.....	5	8.00	85		1,448	
Lemhi.....	7 33	41.43	714	58	26,992	
Shoshone.....	620,949	133.58	2,412,520	446,690	103,846,133	11,690,950
Total, 1932.....	630,305 585,841	428.15 112.95	2,479,659 2,648,034	450,151 373,842	104,688,631 115,936,875	11,690,950 5,182,074

¹ Includes 100 tons of old mill cleanings treated by amalgamation and 1 ton of old mill cleanings sold to a smelter.

² Includes 900 tons of old tailings treated by cyanidation and 1 ton of old mill cleanings sold to a smelter.

³ Includes 255 tons of old calcines sold to a smelter.

⁴ Includes 190 tons of old tailings treated by cyanidation and 1 ton of old mill cleanings sold to a smelter.

⁵ Includes 75 tons of old tailings treated by amalgamation and 565 tons of old tailings and 14 tons of old mill cleanings sold to a smelter.

⁶ Includes 120 tons of old tailings treated by cyanidation.

⁷ Includes 23 tons of old mill cleanings sold to a smelter.

Ore, old tailings, etc., sold or treated in Idaho in 1933, by counties, with content in terms of recovered metals—Continued

COPPER-LEAD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Shoshone.....	121, 769	50. 02	3, 413, 255	875, 539	399, 573	-----
Total, 1932.....	121, 769 165, 490	50. 02	3, 413, 255 3, 339, 227	875, 539 641, 245	399, 573 630, 696	-----

LEAD-ZINC ORE

Blaine.....	41	0. 22	531	-----	7, 892	19, 810
Shoshone.....	307, 532	257. 29	936, 449	221, 619	43, 601, 780	30, 225, 217
Total, 1932.....	307, 573 173, 388	257. 51 107. 41	936, 980 617, 590	221, 619 116, 604	43, 609, 672 27, 619, 766	30, 245, 027 15, 322, 160

Zinc products (as marketed from Idaho mines and mills) sold to smelters and electrolytic plants in 1933

Classification	County	Quantity (dry weight)	Gross zinc	Average assay of concentrates	Recovered zinc
		<i>Short tons</i>	<i>Pounds</i>	<i>Percent</i>	<i>Pounds</i>
Zinc concentrates.....	Blaine and Shoshone.....	43, 134	46, 308, 699	53. 68	41, 935, 977
Total, 1932.....	-----	43, 134 20, 700	46, 308, 699 22, 600, 450	53. 68 54. 59	41, 935, 977 20, 504, 234

METALLURGIC INDUSTRY

Of the 1,190,851 tons of ore, old tailings, etc., produced in 1933 in Idaho, 79,605 tons (6.69 percent) were treated at gold and silver mills; 1,097,413 tons (92.15 percent) were treated at concentration plants; and 13,833 tons (1.16 percent) were shipped to smelters.

There were 62 gold and silver mills in operation in Idaho in 1933—42 straight amalgamation plants, 6 straight cyanidation plants, 11 combined amalgamation and gravity concentration plants, and 3 combined amalgamation and flotation concentration plants. There were 29 concentration plants in operation—19 straight flotation plants (6 treating gold ore, 2 copper-lead ore, 5 lead ore, and 6 lead-zinc ore); 2 combined gravity and flotation plants (both treating lead ore); and 8 straight gravity concentration plants (7 treating gold ore and 1 lead ore). Lead-zinc ore was also shipped to a custom plant in Utah for milling. In addition to the 91 milling plants of all classes the lead smelter near Kellogg and the electrolytic zinc plant at Silver King were in operation.

Of the total material treated at gold and silver mills, 14.37 percent (11,266 tons of ore, 75 tons of old tailings, and 100 tons of mill clean-up) was treated at straight amalgamation plants; 78.46 percent (62,456 tons of ore) was treated by combined amalgamation and concentration; and 7.17 percent (4,498 tons of ore and 1,210 tons of old tailings) was treated at straight cyanidation plants. Compared with 1932 there were good increases in the quantity of material treated by straight amalgamation and straight cyanidation, and the material treated by combined amalgamation and concentration was also con-

siderably larger, due chiefly to the increased output from the Boise-Rochester property. On the other hand, the change in classification of the Yellow Pine Co. mill at Stibnite from combined concentration and cyanidation in 1932 to straight flotation in 1933 has resulted in a marked decrease in the quantity of ore credited as treated at plants having cyanidation equipment. The following table gives data for operations at gold and silver mills in 1933, by counties.

Mine production of metals from gold and silver mills in Idaho in 1933, by counties, in terms of recovered metals

County	Ore, old tailings, etc., treated (dry weight)		Recovered in bullion			
	Ore	Old tailings, etc.	Amalgamation		Cyanidation	
			Gold	Silver	Gold	Silver
	Short tons	Short tons	Fine ounces	Fine ounces	Fine ounces	Fine ounces
Ada.....	2		3.87			
Blaine.....	35		8.66	4		
Boise.....	3,158	1 100	1,046.21	960		
Bonneville.....	5		2.27			
Camas.....	1		1.27			
Clearwater.....	65		21.45	11		
Custer.....	95	2 900	41.70	57	78.28	994
Elmore.....	59,361		9,041.74	9,487		
Idaho.....	12,681	2 190	3,727.57	1,461	4,030.44	973
Lemhi.....	746	3 75	188.19	14		
Owyhee.....	416		212.88	241		
Shoshone.....	15	2 120	49.66	16	21.96	6
Valley.....	1,640		348.88	200		
Total, 1932.....	78,220	1,385	14,694.35	12,421	4,130.68	1,973
	96,434	225	14,325.17	9,501	1,719.61	1,031

County	Concentrates and recovered metal				
	Concentrates produced	Gold	Silver	Copper	Lead
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds
Blaine.....	4	12.00	32	32	221
Boise.....	115	157.79	1,434	30	1,023
Custer.....	7	25.95	1,129	159	71
Elmore.....	823	7,957.61	81,360	2,910	460
Idaho.....	19	188.91	145	229	79
Lemhi.....	9	13.92	27	17	
Owyhee.....	3	19.67	686		135
Total, 1932.....	980	8,375.85	84,813	3,377	1,989
	3,798	15,448.85	74,586	1,107	3,331

¹ Old mill cleanings amalgamated.

² Old tailings cyanided.

³ Old tailings amalgamated.

Material treated at straight concentration plants increased from 922,698 tons of ore and old tailings in 1932 to 1,097,413 tons of ore in 1933. Siliceous material treated at concentration plants increased nearly 39,400 tons, due chiefly to the change in classification of the mill of the Yellow Pine Co. Copper-lead ore concentrated decreased from 165,490 tons in 1932 to 121,769 tons in 1933, due largely to the lower output from the Sunshine (Yankee Boy) mine; lead ore increased nearly 45,000 tons and lead-zinc ore nearly 134,200 tons, due to increased production from mines in the Coeur d'Alene region. The following tables present ore-concentration data for 1933.

Idaho ore¹ concentrated in 1933, by classes of ore, methods of concentration, and classes of concentrates

Class of ore concentrated	Method of concentration	Ore concentrated	Gross content of mill feed				
			Gold	Silver	Copper	Lead	Zinc
Siliceous gold ²	Flotation.....	<i>Short tons</i> ² 49, 580	<i>Fine ounces</i> 12, 781. 00	<i>Fine ounces</i> 37, 385	<i>Pounds</i> 2, 380	<i>Pounds</i> 17, 985	<i>Pounds</i> -----
Copper-lead sulphide.....	do.....	121, 769	55. 00	3, 595, 570	1, 062, 170	545, 480	-----
Lead sulphide and oxide.....	do.....	28, 445	229. 00	138, 741	7, 250	2, 469, 980	-----
Lead-zinc sulphide.....	do.....	307, 573	341. 96	1, 007, 988	305, 485	48, 004, 055	40, 610, 298
Lead sulphide.....	Gravity and flotation ³	507, 367	13, 406. 96	4, 779, 684	1, 367, 285	51, 037, 500	40, 610, 298
Siliceous gold.....	Gravity.....	³ 589, 738	205. 00	2, 263, 662	584, 260	104, 452, 553	34, 717, 387
		308	242. 00	1, 027	340	1, 270	-----
		⁴ 1, 097, 413	13, 853. 96	7, 044, 373	1, 951, 885	155, 491, 323	75, 327, 685

Class of ore concentrated	Method of concentration	Concentrates produced		Gross content of concentrates				
		Class	Quantity	Gold	Silver	Copper	Lead	Zinc
Siliceous gold ⁵	Flotation.....	Siliceous gold ⁵	<i>Short tons</i> ⁵ 3, 691	<i>Fine ounces</i> 11, 157. 39	<i>Fine ounces</i> 32, 199	<i>Pounds</i> 1, 374	<i>Pounds</i> 14, 362	<i>Pounds</i> -----
Copper-lead sulphide.....	do.....	Copper-lead sulphide.....	4, 129	50. 02	3, 413, 255	978, 918	502, 580	-----
Lead sulphide and oxide.....	do.....	Lead sulphide and oxide.....	2, 280	200. 97	118, 922	6, 014	2, 148, 391	-----
Lead-zinc sulphide.....	do.....	Lead sulphide.....	30, 219	47. 03	811, 632	151, 280	43, 816, 270	-----
		Zinc sulphide.....	29, 803	210. 48	125, 348	107, 099	1, 741, 993	33, 330, 291
			60, 022	257. 51	938, 980	258, 379	45, 658, 263	33, 330, 291
			70, 122	11, 665. 89	4, 501, 456	1, 245, 185	48, 323, 596	33, 330, 291
Lead sulphide.....	Gravity and flotation ⁶	Lead sulphide.....	⁶ 88, 504	-----	2, 027, 506	500, 276	94, 636, 251	-----
		Zinc sulphide.....	13, 331	131. 58	39, 390	43, 400	972, 597	12, 978, 408
		Siliceous silver.....	2, 115	-----	6, 831	-----	58, 797	-----
Siliceous gold.....	Gravity.....	Siliceous gold.....	103, 950	131. 58	2, 073, 727	543, 736	95, 667, 645	12, 978, 408
			44	193. 43	789	249	973	-----
			⁷ 174, 116	11, 990. 90	6, 577, 472	1, 789, 170	143, 992, 214	46, 308, 699

¹ No old tailings reconcentrated in Idaho in 1933.

² Includes 30 tons of silver ore.

³ Includes 15 tons of lead ore treated by straight gravity concentration.

⁴ Figures do not include ore and old tailings treated at gold and silver mills.

⁵ Includes 1 ton of silver concentrates from silver ore.

⁶ Includes 3 tons of lead concentrates from lead ore treated by straight gravity concentration.

⁷ Figures do not include concentrates from ore and old tailings treated at gold and silver mills.

Mine production of metals from concentrating mills in Idaho in 1933, by counties, in terms of recovered metals

County	Ore and old tailings treated (dry weight)		Concentrates and recovered metal					
	Ore	Old tailings	Concentrates produced	Gold	Silver	Copper	Lead	Zinc
	Short tons	Short tons	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Blaine	2,756		328	219.59	33,401	1,096	71,018	19,810
Bonner	6,400		414	.60	23,241	596	543,892	
Camas	100		10	113.72	58		378	
Custer	7		2	5.70	21			
Elmore	10		1	3.71	4		54	
Gem	240		40	68.00	1,418		187	2,065
Idaho	590		21	113.25	417		208	1,733
Lemhi	555		19	112.42	118		78	425
Nez Perce	4		11	2.13	17		125	
Owyhee	72		1	20.20	841			297
Shoshone	1,040,969		169,735	919.73	6,486,519	1,514,669	137,289,114	41,916,167
Valley	45,710		3,534	10,411.85	29,817	484	3,920	
Total, 1932	1,097,413		174,116	11,990.90	6,575,872	1,517,443	137,912,895	41,935,977
	917,696	5,002	143,987	1,758.72	6,306,581	1,103,189	132,493,760	20,504,234

Gross metal content of Idaho concentrates produced in 1933, by classes of concentrates

Class of concentrates	Concentrates produced (dry weight)	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Dry and siliceous	6,824	19,710.88	124,552	5,728	75,694	
Lead	121,009	263.79	2,958,140	657,620	140,701,979	
Zinc	43,134	342.06	164,738	150,559	2,714,590	46,308,699
Copper-lead	4,129	50.02	3,413,255	978,619	502,580	
Total, 1932	175,096	20,366.75	6,660,685	1,792,825	143,994,843	46,308,699
	152,785	17,207.57	6,381,167	1,505,626	138,241,844	22,600,450

Mine production of metals from Idaho concentrates in 1933, in terms of recovered metals

BY COUNTIES

	Concentrates	Gold	Silver	Copper	Lead	Zinc
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Blaine	332	231.59	33,433	1,128	71,239	19,810
Boise	115	157.79	1,434	30	1,023	
Bonner	414	.60	23,241	596	543,892	
Camas	10	113.72	58		378	
Custer	9	31.65	1,150	159	71	
Elmore	824	7,961.32	81,364	2,910	514	
Gem	40	68.00	1,418	187	2,065	
Idaho	40	302.16	562	437	1,812	
Lemhi	28	126.34	145	95	425	
Nez Perce	1	2.13	17	125		
Owyhee	14	39.87	1,527		432	
Shoshone	169,735	919.73	6,486,519	1,514,669	137,289,114	41,916,167
Valley	3,534	10,411.85	29,817	484	3,920	
Total, 1932	175,096	20,366.75	6,660,685	1,520,820	137,914,885	41,935,977
	152,785	17,207.57	6,381,167	1,104,296	132,497,091	20,504,234

BY CLASSES OF CONCENTRATES

Dry and siliceous	6,824	19,710.88	124,552	4,924	70,268	
Lead	121,009	263.79	2,958,140	500,505	134,857,840	
Zinc	43,134	342.06	164,738	139,852	2,587,204	41,935,977
Copper-lead	4,129	50.02	3,413,255	875,539	399,573	

The quantity of ore from mines in Idaho shipped crude to smelters in 1933 was about the same as in 1932. The following tables give the contents of the crude ore smelted in 1933, by classes and by counties.

Gross metal content of Idaho crude ore shipped to smelters in 1933, by classes of ore

Class of ore	Quantity (dry weight)	Gross metal content			
		Gold	Silver	Copper	Lead
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Dry and siliceous.....	857	1,341.66	12,869	4,421	14,846
Copper.....	17	12.53	80	3,549	84
Lead.....	12,099	94.15	286,370	41,917	11,223,436
Total, 1932.....	12,973	1,448.34	299,319	49,887	11,238,366
	12,969	699.87	320,915	47,403	12,291,976

Mine production of metals from Idaho crude ore shipped to smelters in 1933, in terms of recovered metals

BY COUNTIES

	Ore	Gold	Silver	Copper	Lead
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Bear Lake.....	29		54		40,946
Blaine.....	117	37.57	4,120	404	38,896
Boise.....	52	274.75	4,886	220	2,274
Bonner.....	64	6.27	1,059	91	73,270
Butte.....	26		203		13,784
Camas.....	24	56.69	88	141	676
Clearwater.....	22	11.30	49		351
Custer.....	85	34.60	4,998	1,278	40,469
Elmore.....	256	301.95	3,387	188	757
Gem.....	5	8.00	85		1,448
Idaho.....	71	118.05	164	125	403
Lemhi.....	357	534.43	598	5,306	9,198
Owyhee.....	56	58.01	3,312	94	
Shoshone.....	11,785	6.14	275,919	29,674	10,562,345
Washington.....	24	.53	897	719	730
Total, 1932.....	12,973	1,448.34	299,319	38,240	10,785,547
	12,969	699.87	320,915	36,207	11,737,976

BY CLASSES OF ORE

Dry and siliceous.....	857	1,341.66	12,869	3,390	13,405
Copper.....	17	12.53	80	3,407	81
Lead.....	12,099	94.15	286,370	31,443	10,772,061

Miscellaneous material treated in Idaho in 1933, not included in the tables under "Metallurgic Industry", consisted of 565 tons of old tailings, 255 tons of old calcines, and 40 tons of mill clean-up, all shipped to smelters.

REVIEW BY COUNTIES AND DISTRICTS

Mine production of gold, silver, copper, lead, and zinc in Idaho in 1933, by counties and districts, in terms of recovered metals

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Ada County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
Black Hornet.....	1		2	3.87					\$80
Boise.....		4		18.38	3				381
Boise River.....		4		40.59	3				840
Highland.....		1		42.67	17				888
Adams County:									
Snake River.....		1		1.40					29
Bear Lake County:									
St. Charles.....	1		29		54		40,946		1,534
Benewah County:									
Tyson Creek.....		2		16.16					334
Bingham County:									
Snake River.....		1		6.14					127
Blaine County:									
Mineral Hill.....	7		174	60.23	897	188	8,270		1,877
Vienna.....	1		2,600	200.37	32,563	1,073	60,378		17,842
Warm Springs.....	5		134	17.22	4,097	266	41,437	19,810	4,174
Boise County:									
Banner.....		1		10.01	3				208
Boise Basin.....	14	36	3,240	3,052.56	7,060	250	3,297		65,711
Boise River.....		1		19.98	3				414
Garden Valley.....		4		44.31	14				921
Payette River.....		7		42.86	17				892
Shafer Creek.....		1		3.00					62
Shaw Mountain.....	3		45	24.43	17				511
Summit Flat.....	3		24	36.38	17				758
West View.....	2		2	3.00	3				63
Bonner County:									
Pend d'Oreille.....	5		6,464	6.87	24,300	687	617,162		31,526
Bonneville County:									
Mount Pisgah.....	1	4	5	60.08					1,242
Butte County: Hamilton.....	1		26		203		13,734		581
Camas County:									
Gold Belt.....	1		3	2.32	3				49
Little Smoky.....	1	2	16	22.16	60	141	676		513
Skeleton Creek.....	3		106	154.99	83		378		3,247
Canyon County:									
Boise River.....		1		8.66					179
Snake River.....		1		7.98					165
Clearwater County:									
Ahsahka.....		2		14.66	3				304
Burnt Creek.....		3		49.34	17				1,026
Moose Creek.....		3		24.09	3				499
Pierce.....	3	12	87	1,315.27	400		351		27,342
Custer County:									
Bay Horse.....	1	1	23	8.66	3,286	1,250	21,838		2,217
East Fork.....	1		5	4.11					85
Loon Creek.....		1		2.71					56
Salmon River.....		2		3.82					79
Seafoam.....	1		56	13.11	1,557		17,270		1,455
Stanley Basin.....		6		50.41	23				1,050
Yankee Fork.....	6	4	1,004	224.07	2,411	187	1,432		5,541
Elmore County:									
Bear Creek.....	7	4	206	244.97	117		54		5,107
Black Warrior.....		2		5.90					122
Boise River.....		7		119.39	34				2,430
Highland Valley.....		1		7.26					150
Middle Boise.....	3	3	59,463	17,200.65	97,843	3,031	460		390,025
Neal.....	2		38	13.01	20		54		278
Pine Grove.....	2	2	175	218.61	1,166	188	703		4,965
Snake River.....		6		206.85	14				4,281
Gem County:									
Payette River.....		2		18.58					384
West View.....	2	6	245	125.63	1,520	187	3,513		3,271
Gooding County:									
Snake River.....		4		39.76					822
Idaho County:									
Blacktail.....		2		11.08					229
Camp Howard.....		13		216.19	40				4,433
Dewey.....	1		16	24.24	17				507
Dixie.....	7	1	269	162.15	123	62	378		3,413
Elk City.....	4	13	31	314.10	86	16	27		6,525

Mine production of gold, silver, copper, lead, and zinc in Idaho in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Idaho County—Con.			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
Florence	4	1	27	20.56	17				\$431
Keuterville		1		42.23	17				879
Kooskia		2		7.64					158
Lower Salmon River		1		17.90	3				371
Maggie Creek		3		5.13					106
Marshall Lake	6		1,494	615.62	757	16	162		12,998
Newsome	3	4	102	119.44	37				2,482
Oro Grande	3	3	4,500	4,023.83	943	47	27		83,514
Pardee		1		5.37					111
Ramey Ridge		1	1,138	853.14	180				17,699
Robbins	3		980	225.96	540	437	1,676		4,950
Salmon River		3		40.88	3				846
Selway		3		7.16					148
Simpson		12		166.94	34				3,463
South Fork of Clearwater River		1		14.51	3				301
Ten Mile	6	4	4,976	2,388.90	946				49,714
Warren		8		16,360.23	5,617				340,162
Jefferson County:									
Snake River		1		2.03					42
Jerome County:									
Snake Creek		7		161.67	6				3,344
Latah County:									
Gold Creek		3		13.69					283
Hoodoo		6		25.59					529
Moscow Mountain		5		40.68	6				843
Lemhi County:									
Blue Wing	1		1	1.50	20	94	81		47
Carmen Creek	1		12	10.16	14		432		231
Eldorado	1		75	32.75	6				679
Eureka	1	5	12	93.17	17				1,932
Gibbonsville	9	4	1,000	550.56	640	4,875	6,351		12,152
Indian Creek	2	1	16	29.07					601
Kirtley Creek		1		4.98					103
Mackinaw	1	12	500	334.03	20				6,912
Mineral Hill	4		651	368.86	297	78	730		7,761
Pratt Creek	3		28	55.00	40		2,351		1,245
Salmon River		2		43.49	6				901
Spring Mountain							922		59
Texas	2		24	1.45	686		25,892		1,228
Yellow Jacket	1	1	14	15.87	60	2,391			502
Lewis County:									
Clearwater River		1		6.58					136
Minidoka County:									
Snake River		3		22.16					458
Nez Perce County:									
Clearwater River		1		10.98	3				228
Deer Creek	1		4	2.13	17	125			58
Salmon River		1		5.03					104
Snake River		1		20.66	3				428
Owyhee County:									
Carson	12	6	428	354.01	2,714	16	135		8,274
Castle Creek	2		43	16.30	1,043		297		713
Flint	1		30	58	243				97
Snake River		9		171.88	14				3,558
Steele	1	2	43	165.15	1,420	78			3,916
Payette County:									
Payette River		1		3.77					78
Snake River		1		3.00					62
Power County:									
Snake River		3		36.18	3				749
Shoshone County:									
Beaver		5		48.42	14				1,006
Coeur d'Alene		4		248.02	23				5,135
Eagle	1	1	1,020	13.40	963	484	194,649	13,167	8,400
Evolution	1		109,010	50,023	127,780	793,984	252,567		1,155,917
Hunter	4		261,094	217.30	829,340	153,062	37,690,919	26,012,500	2,791,646
Leland	7		179,206	25.64	947,960	179,688	35,884,297	4,235,286	1,849,417
St. Joe		2		44.12					912
Summit	7	5	2,701	793.69	460	625	47,730	8,714	18,740
Yreka	4		499,858	143.72	1,855,997	416,500	73,781,297	11,646,500	3,898,287

Mine production of gold, silver, copper, lead, and zinc in Idaho in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Twin Falls County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
Snake River		10		114.02	14				\$2,362
Valley County:									
Big Creek		1		3.63					75
Deadwood Basin	}	4	2	47,350	10,790.72	30,037	484	3,920	233,753
Thunder Mountain									
Yellow Pine									
Lake City									
Payette River		3		5.90					*80
Seafoam		1		3.39					122
Seesh		1		2.27					70
Washington County:									47
Snake River		2		19.93	3				413
Washington		1	24	.53	897	719	730		398
Total Idaho	188	334	1,190,861	64,592.23	6,987,960	1,562,234	148,726,701	41,935,977	11,145,208

ADA COUNTY

Black Hornet district.—A test lot of gold ore from the Montana property east of Boise was treated in 1933 by amalgamation.

Boise district.—Placer bullion was marketed in 1933 from the Cut Bank and Boise placers and from two other small operations in the Boise district.

Boise River district.—The entire output of the Boise River district in 1933 was placer bullion from several small operations on the Boise River.

Highland district.—The Pinto placer on the Boise River was the only producer in the Highland district in 1933.

ADAMS COUNTY

A little placer gold was marketed in 1933 from the Gold Bar placer on the Snake River in Idaho, 6 miles from Homestead, Oreg.

BEAR LAKE COUNTY

One car of lead ore was shipped in 1933 by the Sunset Mining Co. from a property in the St. Charles district to Midvale, Utah, for smelting.

BENEWAH COUNTY

Placer gold was marketed in 1933 from two placers in the Tyson Creek district.

BINGHAM COUNTY

Placer gold was marketed in 1933 from a property along the Snake River.

BLAINE COUNTY

Mineral Hill district (Hailey).—Gold ore from the Croesus mine was treated in 1933 in a small amalgamation and concentration mill, and gold ore and lead ore from this property were shipped to plants in

Utah for smelting. About 100 tons of gold ore from the Liberty mine were treated in a small concentration mill, and a little lead ore from the Jay Gould mine also was concentrated. The remainder of the district output consisted of lead ore of smelting grade from the Jennie R. and Nay Aug mines and from two prospects.

Vienna district.—The Idaho Mineral Products Co., Ltd., operated the Vienna mine in 1933 and treated about 2,600 tons of lead ore in a flotation mill; lead concentrates rich in silver and gold were shipped to Midvale, Utah, for smelting.

Warm Springs district (Ketchum).—One car of lead-zinc ore from the Triumph mine was shipped in 1933 to a custom milling plant at Bauer, Utah. Lead ore from the Tip Top, Boyle Mountain, and Independence mines and from a prospect was shipped to smelters.

BOISE COUNTY

Banner district.—Placer bullion was marketed in 1933 from a prospect in the Banner district.

Boise Basin district (Centerville, Placerville, Idaho City, Pioneer-ville).—The entire output from lode mines in the Boise Basin district in 1933 was siliceous gold ore and mill clean-up—2,250 tons of ore treated by amalgamation and concentration, 843 tons of ore and 100 tons of mill clean-up amalgamated, and 46 tons of ore and 1 ton of mill clean-up shipped to smelters. The ore and mill clean-up yielded 1,444.33 ounces of gold, 6,723 ounces of silver, 250 pounds of copper, and 3,297 pounds of lead. The National Mining & Development Co. treated 2,200 tons of ore from the Mountain Chief mine by amalgamation and flotation. The Oro Mining Co. treated 50 tons of ore by amalgamation and gravity concentration. The Talache Mines, Inc., built a new 25-ton milling plant at the Gold Hill property in 1933 and treated by amalgamation 512 tons of ore and 100 tons of clean-up from the old mill site. Ore from the K. C., Twin Sister, Gold Bug, Come Back, Mammoth, Hill Top, and Accident mines and from two prospects was treated by amalgamation; and ore from the Come Back, Oro Mining Co., and Cleveland-Pioneer mines and a little mill clean-up from the Belshazzar property were shipped for smelting.

The output from placers in the Boise Basin district in 1933 was 1,608.23 ounces of gold and 337 ounces of silver. By far the largest placer operation in the district was the Wharton property near Placerville. Other important placer producers were the Leary & Brogan, Garden Gulch, R. N. Bell, Golden Age, Gold Hill, Virgin Hope, and Confederate. Numerous smaller placer operations accounted for the remainder of the district output.

Garden Valley district.—Placer bullion was marketed in 1933 from the Wash Creek, Horseshoe, Wakeland, and McCubbin placers.

Payette River (Little Falls, Lowman, Horseshoe Bend) district.—The Russell, Mina C., Depression, Gold Nugget, and three small placers, all on the Payette River, were active in 1933.

Shaw Mountain district.—Gold ore from the Skyline and Honey Bee mines was treated in 1933 by amalgamation, and a little gold ore from the McCarty property was shipped to a smelter.

Summit Flat district.—Gold ore from the Mademoiselle and Golden Dividend mines and from a prospect was treated in 1933 by amalgamation.

BONNER COUNTY

Pend d'Oreille district.—The Hope Mining & Milling Co. continued operations in 1933 at the Hope (Elsie K.) property and treated 5,500 tons of lead ore in the company flotation plant—the concentrates, with a little first-class lead ore, going to East Helena, Mont., for smelting; lead ore from the Whitedelf mine also was concentrated. A little gold ore from the Syringa mine, a test lot of silver ore from the Armstead mine, and one car of lead ore from the Lawrence Consolidated Mining Co. were shipped to smelters.

BONNEVILLE COUNTY

Mount Pisgah district.—A test lot of gold ore from the Nola B. claim of the Mount Pisgah Mining Co. was amalgamated in 1933. The placer output (57.81 ounces of gold) of the Mount Pisgah district came chiefly from the property of the Idaho Consolidated Placer Mining Co., the Caribou Gold Mining Co., and the Lucky Strike group.

BUTTE COUNTY

Hamilton district.—One car of lead ore was shipped in 1933 by the Richmond Developing Co. from the Metta group to Murray, Utah, for smelting.

CAMAS COUNTY

Gold Belt district.—A test lot of gold ore from the Yellow Jacket mine was shipped in 1933 by the Gold Blossom Mining & Development Co. to Midvale, Utah, for smelting.

Little Smoky district.—Siliceous gold ore from the Five Points (Happy Bill) property of the Smoky Mountain Gold Mines, Inc., was shipped in 1933 to a smelter. The placer output (7.79 ounces of gold) of the Little Smoky district came chiefly from the Axolotl placer on Bear Creek.

Skeleton Creek district.—Gold ore from the El Oro mine was treated in 1933 in a small concentration plant; 5 tons of gold ore from the Red Horse mine were shipped to a smelter; and a test lot of gold ore from the Snowslide mine was amalgamated.

CANYON COUNTY

Placer gold was marketed in 1933 from small operations on the Boise and Snake Rivers.

CLEARWATER COUNTY

Ahsahka district.—The Jumbo placer and a prospect, both on the North Fork of Clearwater River, produced placer bullion in 1933.

Burnt Creek district.—The McGann and Sunshine placers and a prospect on Burnt Creek and Swamp Creek were operated in 1933.

Moose Creek district.—The Rookey, Pioneer, and Monty placers on Moose Creek produced placer bullion in 1933.

Pierce district.—Three lode mines in the Pierce district produced 87 tons of gold ore yielding 32.75 ounces of gold, 60 ounces of silver, and 351 pounds of lead in 1933. Gold ore from the Democrat, Idaho Queen, and Od properties was amalgamated, and one car of gold ore from the Od mine was shipped for smelting.

The output in 1933 from 12 placers in the Pierce district was 1,282.52 ounces of gold and 340 ounces of silver. The Gold Dredging, Inc., was by far the largest producer in the district. The company operated its dredge on the Home property from May 26 to September 16 and treated about 100,000 cubic yards of gravel, from which about 1,250 crude ounces of bullion were marketed, having a net value of \$21,381.53. The remainder of the district placer output came from the Gold Creek, Hay Creek, Snake Creek, Meadow, Small, and other properties.

CUSTER COUNTY

Bay Horse district.—One car of lead ore from the Ramshorn & Beardsley property was shipped in 1933 to Utah for smelting, and 8.27 ounces of gold from the Ideal placer were marketed.

Seafoam district.—Lead ore from the old Burns property was shipped in 1933 to Utah for smelting.

Stanley Basin district.—The entire output of the Stanley Basin district in 1933 was placer bullion, chiefly from the Golden Rule & Hot Stuff property in Joe's Gulch. Among other operating placers were the W. K. Lynch, Hohmann, and Enterprise.

Yankee Fork district.—Six lode properties in the Yankee Fork district produced 1,004 tons of ore, old tailings, and mill clean-up yielding 181.50 ounces of gold, 2,374 ounces of silver, 187 pounds of copper, and 1,432 pounds of lead in 1933. Most of the output was old tailings from the Sunbeam dumps, treated by cyanidation. Gold ore from the Gray Eagle mine was amalgamated, and gold ore from the Snowdrift mine was treated by amalgamation and concentration. The remainder of the lode output consisted of a little gold ore concentrated and of one test lot of gold ore, one of lead ore, and a little mill clean-up shipped for smelting. The placer output (42.57 ounces of gold and 37 ounces of silver) came chiefly from the Gold Nugget, Rough Creek, and Pilot placers.

ELMORE COUNTY

Bear Creek district.—Seven lode mines in the Bear Creek district produced 206 tons of gold ore (194 tons amalgamated and 12 tons smelted) yielding 198.05 ounces of gold, 97 ounces of silver, and 54 pounds of lead in 1933. Most of the lode output came from the Morning Star mine, which produced 130 tons of ore treated by amalgamation and 10 tons sent to a smelter; gold ore from the Major, Rocky Bar, Antonette & Teckla, and Commonwealth mines and from a prospect was amalgamated, and a test lot of ore from the Ophir No. 2 was smelted. The placer output (46.92 ounces of gold and 20 ounces of silver) came from the Little Fiddler, Tempest, Poorman, and Donna placers.

Black Warrior district.—The output of the Black Warrior district in 1933 came from the Lillian and Black Warrior placer properties.

Boise River (Twin Springs) district.—Most of the output of the Boise River district in 1933 came from the Bonanza, Sunflower, Gordon, Alert, Modern Forty-niner, and Side Water placers.

Middle Boise district.—The Boise-Rochester property of the St. Joseph Lead Co. at Atlanta was by far the largest producer of gold in Idaho in 1933. The mine and 200-ton amalgamation and flotation mill were operated continuously during the year, and amalgamation

bullion, rich gold concentrates, and old gold calcines were marketed; the output of gold decreased about 10 percent from that in 1932, but there was a marked increase in the output of silver. The Monarch mine produced gold ore (treated by amalgamation) and gold and silver ore (shipped to a smelter). Gold ore from the Winner & Little Queen group was amalgamated. The placer output of the Middle Boise district came from small operations on the Middle Boise River.

Neal district.—The Free Gold Mining Co. operated the Sunset mine in 1933, treated a little gold ore in a new 40-ton concentration plant, and shipped one car of gold ore to a smelter. A small lot of gold ore from a prospect was amalgamated.

Pine Grove district.—Two lode mines (the Jingo & Hornet and President) in the Pine Grove district produced 175 tons of gold ore of smelting grade yielding 214.01 ounces of gold, 1,166 ounces of silver, 188 pounds of copper, and 703 pounds of lead in 1933. Most (153 tons) of the ore came from the Jingo & Hornet mine. Two small placers were operated.

Snake River district.—Six placers on the Snake River near King Hill and Hammett, including the Cutts, Bryant, King Hill, and Rocky properties, were operated in 1933.

GEM COUNTY

Payette River district.—Two placers on the Payette River were operated in 1933.

West View district (Emmet, Eagle).—Gold ore from the Lincoln mine was treated in 1933 in a small flotation plant by the Ojus Mining Co., and a test lot of lead ore from the Hecla Checkmate property was shipped to a smelter. The placer output (49.63 ounces of gold and 17 ounces of silver) of the West View district came chiefly from the Last Chance, Lucky Strike, McKinney, and Blue Bell properties.

GOODING COUNTY

Placer bullion was marketed in 1933 from several small operations on the Snake River near Hagerman.

IDAHO COUNTY

Camp Howard (Salmon River) district (White Bird).—The output of the Camp Howard district in 1933 came from 13 placers on the Salmon River near White Bird, including the Thompson, Island, Clark, Dickerson, Furchner, Olney, Sprague, New, Loster, Marlott, Swartz, and Klondike properties.

Dewey (Harpster) district (Grangeville).—One car of gold ore from the Dewey mine was shipped to a smelter in 1933.

Dixie district.—The output from lode mines in the Dixie district in 1933 consisted of 40 tons of gold ore of smelting grade from the Tiawaka and Gold Leaf mines, 40 tons of gold ore from the Hart mine treated by concentration, 25 tons of gold ore from the L. & L. and Surprise mines amalgamated, 160 tons of old tailings from the L. & L. and a prospect cyanided, and 4 tons of gold ore from the Slip Easy mine treated by amalgamation and concentration—a total of 269 tons of ore and old tailings yielding 130.66 ounces of gold, 120 ounces of silver, 62 pounds of copper, and 378 pounds of lead. The

placer output (31.49 ounces of gold and 3 ounces of silver) came from the Salmon River near Dixie.

Elk City district.—Four lode mines in the Elk City district produced 31 tons of gold ore yielding 55.10 ounces of gold, 46 ounces of silver, 16 pounds of copper, and 27 pounds of lead in 1933. Gold ore (26 tons) from the Stickner, Madre d'Oro and Center Star mines was amalgamated, and 5 tons of ore from the Gold Lode and Center Star mines were sent to a smelter. The placer output (259.00 ounces of gold and 40 ounces of silver) came chiefly from the Gold Hill & American Hill property of the Cal-Idaho Mining Co. and the Little Million placer. Other placer producers included the Idaho, Columbus, Deadwood, Ryan Creek, Prezel, Orofino, Red Horse, and Dick Boyd.

Florence district.—Gold ore from the Waverly and Sunshine mines and from two prospects was amalgamated in 1933, and gold (3.05 ounces) from the Irene placer was marketed.

Keuterville district.—Placer bullion was marketed in 1933 from the Malone property.

Marshall Lake district (Burgdorf).—The Sherman Howe Mining Co., Inc., treated 1,450 tons of gold ore from the Walker-Wilcox group in 1933 in a 100-ton amalgamation plant. The War Eagle Mining & Milling Co., operating the Polaris property, treated a test lot of gold ore in a small amalgamation plant erected in 1933 and also shipped crude ore for smelting. The Golden Anchor mill was idle, but a small clean-up from former operations was sent to a smelter. Gold ore from the Leadville mine was treated by amalgamation and concentration, gold ore of smelting grade from the Blue Eagle property was shipped, and a little ore from a prospect was amalgamated.

Newsome district.—The Imogene, Red Monarch, and Easter mines produced 102 tons of gold ore (all amalgamated) yielding 76.00 ounces of gold and 23 ounces of silver in 1933. The placer output (43.44 ounces of gold and 14 ounces of silver) of the Newsome district came chiefly from the White, Hayfork, and Zeidrick properties.

Orogrande district.—The Gnome Gold Mining Co. operated its mine and 25-ton cyanide plant nearly 10 months during 1933 and treated 4,498 tons of gold ore yielding bullion containing 3,996.90 fine ounces of gold and 929 ounces of silver; the property ranked fifth in output of gold in Idaho. A test lot of gold ore from the Homestake mine was shipped to a smelter, and a little ore from a prospect was amalgamated. The placer output (23.51 ounces of gold and 3 ounces of silver) of the Orogrande district came from the Baker Gulch, Ruth Elder, and Gold Rim properties.

Ramey Ridge district.—The Hand property of The Golden Hand, Inc., was the only producer in the Ramey Ridge district in 1933. The company treated 1,138 tons of gold ore in a small amalgamation plant.

Robbins district.—Gold ore from the Venture mine was treated by amalgamation and concentration in 1933, and ore from the War Eagle group was treated in a 25-ton flotation plant. Old tailings (30 tons) from the Big Buffalo property were cyanided.

Simpson (Salmon River) district (Lucile).—Placers along the Salmon River near Lucile yielded 166.94* ounces of gold and 34 ounces of silver. The producers included the Butcher Bar, Katie B., Slate Creek, Ledford, Hill, Squaw Bar, Lime Point, and Tipton placers.

Ten Mile district (Golden).—Six lode mines in the Ten Mile district produced 4,976 tons of ore yielding 2,212.67 ounces of gold and 923 ounces of silver in 1933. The Lone Pine mine was by far the largest producer in the district; 4,500 tons of gold ore from the mine were treated in a 40-ton amalgamation plant, and bullion containing 1,848.12 ounces of gold and 808 ounces of silver was marketed. Gold ore from the Gilt Edge mine was treated by amalgamation and concentration, and ore from the New York, Mackey, and McAdoo mines and from a prospect was amalgamated. The placer output (176.23 ounces of gold and 23 ounces of silver) came chiefly from the Key, Moose Creek, and Last Chance placers.

Warren district.—The output of the Warren district in 1933 was 16,360.23 ounces of gold and 5,617 ounces of silver, a marked increase from 7,951.11 ounces of gold and 2,809 ounces of silver in 1932. The Warren Meadows placer of the Idaho Gold Dredging Co. was the largest placer producer in Idaho in 1933 and ranked third in the State as a gold producer; its output of gold was nearly 9,500 ounces, or about 2,300 ounces more than in 1932. The company was active the entire year and treated 1,000,000 cubic yards of gravel in the 3,000-cubic-yard dredge. The Warren Creek Dredging Co. operated the Morning Star & Laura Queen placer ground the entire year also and treated 1,000,000 cubic yards of gravel in the rebuilt 3,000-cubic-yard electric dredge; its output of gold exceeded 6,800 ounces and was about 6,200 ounces greater than in 1932. Most of the remainder of the district output came from the Golden Rule, Laughing Water, Canaday, Four-in-One, and Caryl placers.

JEFFERSON COUNTY

A little placer gold was marketed in 1933 from a property on the Snake River.

JEROME COUNTY

Snake River district.—Most of the output of Jerome County in 1933 came from the Yellow Metal, Ray, High Lake, Lilley, Purple Sage, and Ellison placers, all on the Snake River.

LATAH COUNTY

Gold Creek district.—Most of the output of the Gold Creek district in 1933 came from the Bonanza and Lead To placers.

Hoodoo district (Harvard).—Most of the output of the Hoodoo district in 1933 came from the Parker, Mary Lee, Al Smith, Annie, and Rex placer properties.

Moscow Mountain district.—The entire output of the Moscow Mountain district in 1933 was placer bullion, chiefly from the Hart, Spray, Howard Creek, and Bowers properties.

LEMHI COUNTY

Eldorado district (Salmon).—Lessees treated 75 tons of old tailings from the Ranger property in 1933 in a small amalgamation plant.

Eureka district.—The placer output (88.62 ounces of gold and 17 ounces of silver) of the Eureka district in 1933 came chiefly from the Blue Ribbon, Moose Creek, Aurora, and Greenhorn placers. A little gold ore from the Lost Wife mine was amalgamated.

Gibbonsville district.—Nine lode properties in the Gibbonsville district produced 435 tons of ore and 565 tons of old tailings yielding 511.47 ounces of gold, 637 ounces of silver, 4,875 pounds of copper, and 6,351 pounds of lead in 1933. The old tailings came from the Rescue and Twin Brothers properties and were shipped for smelting. Gold ore (215 tons) of smelting grade was shipped from the Lamoreaux, Hope, Moore, Clara Morris, and Golden Reward mines and from a prospect, and gold ore (220 tons) from the Big Four and Golden Reward mines was treated by amalgamation and concentration. The placer output (39.09 ounces of gold and 3 ounces of silver) came chiefly from the Sundown, Jordan, and Gold Nugget properties.

Mackinaw district (Leesburg).—Gold ore from the Shoo Fly mine was treated in 1933 by amalgamation. Most of the placer output of the Mackinaw district came from the Hockensmith, Richardson, Big Jureano, Arnett Creek, Indian, Klondike, Red, Boulder Pit, and Camp Creek properties.

Mineral Hill district.—Gold ore (84 tons) of smelting grade was shipped in 1933 from the Gold Hill group (formerly the Kentuck & Speculator group); 555 tons of gold ore from the Grunter and Gold Bug mines were concentrated; and a little ore from the Monolith mine was amalgamated.

Pratt Creek district.—Some lead ore of smelting grade was shipped in 1933 from the War Eagle group, and small lots of gold ore were shipped from the Clearwater and Lone Star properties.

Texas district (Gilmore).—Most of the output of the Texas district in 1933 was clean-up material from the old Pittsburgh-Idaho mill shipped to a lead smelter. A little lead ore of smelting grade was shipped from the War Eagle group.

Yellow Jacket district.—One car of copper ore (14 tons yielding 11.03 ounces of gold, 60 ounces of silver, and 2,391 pounds of copper) was shipped in 1933 from the Steen (Continental) group. A little placer gold was marketed from the High Bar property.

LEWIS COUNTY

Gold was marketed in 1933 from a placer operation on the Clearwater River near Greer.

MINIDOKA COUNTY

The output from Minidoka County in 1933 was placer gold from the Snake River near Rupert, chiefly from the Depression and Morning Side properties.

NEZ PERCE COUNTY

Placer bullion was marketed in 1933 from operations on the Clearwater, Salmon, and Snake Rivers in Nez Perce County. A small lot of gold concentrates from the Deer Creek mine was shipped to a smelter.

OWYHEE COUNTY

Carson or French district (Silver City).—Twelve lode mines in the Carson district produced 428 tons of ore yielding 262.63 ounces of gold, 2,437 ounces of silver, 16 pounds of copper, and 135 pounds of lead in 1933. More than half (246 tons) of the output was gold ore treated by amalgamation; it came from the Shannon, Empire State,

Ida Bell, Pauper, and Never Sweat mines and from a prospect. Gold ore from the Sunnyside and Gold Bug mines and gold and silver ore from the Florence property were treated by amalgamation and concentration; small lots of gold ore from the Never Sweat and Poorman mines, gold and silver ore from the Florence mine, and silver ore from the Idawa property were shipped to smelters; and a little gold ore from the Red Jacket mine was concentrated. The placer output (91.38 ounces of gold and 277 ounces of silver) came chiefly from the Wilson (Jordan Creek), Boulder, Chicago mill site, Gold Bug, and Hope properties.

Castle Creek district.—Gold ore from the Little Amie mine was treated in 1933 by concentration, and a test lot of silver ore from a prospect was sent to a smelter.

Snake River district.—Bullion was marketed in 1933 from placers on the Snake River in Owyhee County, including the Comet, Winters, Valley Pride, Dollar, Degen, Zimmerman, September Morn, and Wonder.

Steele district.—Placer bullion (133.90 ounces of gold and 63 ounces of silver) was marketed in 1933 from two properties in the Steele district. Most of the output came from the Meadow Creek dredge of the American Gold Dredging Corporation which was operated a short time by lessees; a little bullion was also produced at the Juniper placer on Meadow Creek. One car of gold ore from the Demming mine was shipped to a smelter.

PAYETTE COUNTY

Placer gold (6.77 ounces) was marketed in 1933 from operations on the Payette and Snake Rivers in Payette County.

POWER COUNTY

The placer bullion marketed in 1933 from operations on the Snake River in Power County came chiefly from the Big Bend and Bonanza Bar placers near American Falls.

SHOSHONE COUNTY

COEUR D'ALENE REGION

Mine production of gold, silver, copper, lead, and zinc in the Coeur d'Alene region, Shoshone County, Idaho, 1932-33, and total, 1884-1933, in terms of recovered metals

Year	Lode mines	Placers	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
1932.....	21	15	¹ 912, 664	² 394. 45	² 6, 547, 674	1, 129, 952	143, 010, 500	20, 502, 267	\$6, 831, 168
1933.....	24	17	¹ 1, 052, 889	² 1, 584. 33	² 6, 762, 537	1, 544, 343	147, 851, 459	41, 916, 167	9, 729, 460
Total, 1884-1933..			(³)	349, 318. 58	275, 587, 589	85, 351, 273	4, 452, 118	915, 549, 186	747, 935, 043

¹ Includes old tailings, etc., as follows: 1932, 135 tons of old tailings cyanided and 8 tons of old mill cleanings sold to a smelter; 1933, 120 tons of old tailings cyanided.
² Includes placer production as follows: 1932, 174.63 ounces of gold and 32 ounces of silver; 1933, 586.84 ounces of gold and 77 ounces of silver.
³ Figures not available.
⁴ Short tons.

Beaver district.—The output of the Beaver district in 1933 came chiefly from the Accident, Otto, Blue Eagle, and Rich Man & Poor Man placers.

Coeur d'Alene district.—Lessees operating the Nugget Gulch placer in the Coeur d'Alene district near Murray shipped bullion in 1933 yielding more than 210 fine ounces of gold. Most of the remainder of the district output came from the Coeur d'Alene Placer Co. and Grove & Walker placers in Daisy Gulch.

Eagle district (Murray).—The Jack Waite Mining Co. operated its mine near Duthie from July 15 to December 23, 1933, and produced lead ore and lead-zinc ore from both the Idaho and Montana sections of the mine. The lead-zinc ore was treated in the 500-ton flotation plant after damage done by a snowslide early in the year had been repaired. Lead concentrates and rich lead ore of smelting grade were shipped to the Bunker Hill smelter, and zinc concentrates were sent to the zinc plant at Silver King. Most of the output in 1933 came from the Montana section of the mine and is credited to Sanders County, Mont. A little placer gold also was produced in 1933 in the Eagle district in Idaho.

Evolution district.—The Sunshine Mining Co. continued operations at the Yankee Boy mine and treated 109,010 tons of copper-lead ore rich in silver in the 500-ton flotation plant in 1933 compared with 151,883 tons in 1932. Despite the large decrease in quantity of ore milled in 1933, the output of silver increased nearly 4 percent and the property was again the largest producer of silver in Idaho. Dividends of \$372,205.50 were paid during the year, and the surplus at the end of the year was \$289,351.

Hunter district (Mullan).—The Federal Mining & Smelting Co. increased the rate of operation at the Morning mine during the last 4 months of 1933, and its output of lead-zinc ore during the year was 197,257 tons, or 94,905 tons more than in 1932. The ore was treated in the 1,200-ton flotation plant, and there were marked increases in output of silver, lead, and zinc. The mine was the largest producer of zinc in Idaho in 1933 and ranked third in lead and fourth in silver. No dividends were paid in 1933, but the net earnings were \$264,083 compared with a loss of \$318,977 in 1932. Golconda Lead Mines produced 33,641 tons of lead-zinc ore treated in the 225-ton flotation mill and 117 tons of lead ore of smelting grade. Nearly 11,800 tons of lead-zinc ore from the Star mine of the Sullivan Mining Co. were treated in the Star mill at Kellogg, and lessees produced oxidized lead ore at the Gold Hunter mine treated by flotation in the Gold Hunter mill.

Lelande district (Burke, Mace, Frisco).—The operations of the Hecla Mining Co. in 1933 were at approximately the same rate as in 1932. The company milled 131,158 tons of lead ore in the 750-ton combined gravity and flotation concentrator and shipped 10,854 tons of crude lead ore to a smelter; there were slight decreases in output of silver and lead but an increase in zinc compared with 1932. The company ranked second in output of lead in Idaho in 1933 and third in silver. Dividends of \$100,000 were paid during 1933, and the net operating profit was \$143,275. Lessees continued operations at the Frisco property of the Federal Mining & Smelting Co., treating lead-zinc ore in the 75-ton flotation plant. The remainder of the output of the Lelande district consisted of crude lead ore (194 tons) of

smelting grade from the Mace, Black Bear, Hercules, Ajax, and Ambergris mines.

St. Joe district.—Most of the output of the St. Joe district in 1933 came from the Gold Producer placer property on Bostonian Creek, a tributary of the North Fork of Clearwater River.

Summit district (Murray).—Seven lode properties in the Summit district produced 2,581 tons of ore and 120 tons of old tailings yielding 557.33 ounces of gold, 420 ounces of silver, 625 pounds of copper, 47,730 pounds of lead, and 8,714 pounds of zinc in 1933. Most (2,500 tons) of the output was gold ore from the property of the Golden Chest Consolidated Gold Mining Co. treated in a 25-ton flotation plant; a little rich gold ore from this mine was amalgamated. The old tailings came from the Rockford property and were treated by cyanidation. A little lead-zinc ore from the Terrible Edith mine of the Pontiac Mining Co. was shipped to a custom milling plant in Utah, and a little gold ore from the Mountain Lion mine was amalgamated. The remainder of the lode output consisted of 1 car of rich lead ore from the Bear Top mine and test lots of lead ore and gold ore from two prospects sent to a smelter. The placer output (236.36 ounces of gold and 40 ounces of silver) came chiefly from the Alder Gulch property of the Big Mud Leasing Co. and the Jackson Bar placer on Prichard Creek.

Yreka district (Kellogg).—The Bunker Hill & Sullivan Mining & Concentrating Co. continued operations during 1933 at about the same rate as in 1932. The company produced 458,565 tons of ore of milling grade, a slight increase over 1932, and lessees produced 1,145 tons of lead ore sent to the Sweeny mill and 521 tons of crude lead ore sent to the smelter. The company was by far the largest producer of lead in Idaho in 1933 and ranked second in silver and zinc. Dividends of \$58,901 were paid during the year, and the operating profit before depletion was \$275,016. The Crescent mine, controlled by this company, continued to produce copper-lead ore treated in the 120-ton flotation plant. The Page and Blackhawk mines, operated by the Federal Mining & Smelting Co., produced 26,868 tons of lead-zinc ore, treated in the 300-ton Page flotation mill, a marked increase over the production in 1932.

TWIN FALLS COUNTY

Placer bullion was marketed in 1933 from several operations on the Snake River in Twin Falls County, including the Weasel, Hooper, Sandy Bar, Depression, Clear Water, and Lucky Strike properties.

VALLEY COUNTY

Deadwood Basin district (Cascade).—Gold ore from the Merry Blue and Long Chance mines was treated in 1933 by amalgamation, and a little placer gold was marketed from a prospect.

Thunder Mountain district.—Gold ore from the Sunnyside mine was amalgamated in 1933, and bullion from the Dewey placer was marketed.

Yellow Pine district.—The Yellow Pine Co. continued operations in 1933 at the Meadow Creek property at Stibnite and treated gold-antimony ore in the 200-ton flotation plant. Gold concentrates and antimony concentrates were produced and shipped to smelters. Some

gold concentrates were treated by cyanidation in 1932, but the cyanide equipment was not used in 1933. The company was the second largest producer of gold in Idaho in 1933.

WASHINGTON COUNTY

Placer bullion was marketed in 1933 from operations on the Snake River in Washington County, and one car of silver ore from the Silver Still mine in the Washington (Mineral Creek) district was shipped to a smelter.

NATURAL GAS

(DETAILED STATISTICS)

By G. R. HOPKINS AND H. BACKUS

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SUMMARY

Summary of statistics for natural gas in the United States, 1929-33

	1929	1930	1931	1932	1933
Natural gas:					
Production.....millions of cubic feet..	1,917,693	1,943,421	1,686,436	1,555,990	1,555,474
Exports:					
To Canada.....do.....	103	107	74	83	69
To Mexico.....do.....	139	1,691	2,157	1,610	2,089
Imports from Canada.....do.....		21	44	38	83
Consumption:					
Domestic.....do.....	359,853	295,700	294,406	298,520	283,197
Commercial.....do.....		80,707	86,491	87,367	85,577
Industrial:					
Field.....do.....	705,083	723,165	571,365	529,378	494,459
Carbon-black plants.....do.....	261,107	266,625	195,396	168,237	186,781
Petroleum refineries.....do.....	103,729	98,842	75,548	67,467	66,333
Electric public-utility power plants ¹.....do.....	112,707	120,290	138,343	107,239	102,601
Portland cement plants ².....do.....	41,643	41,256	31,381	21,440	22,001
Other industrial.....do.....	333,329	315,059	291,319	274,687	312,450
	1,917,451	1,941,644	1,684,249	1,554,335	1,553,399
Domestic.....percent.....	19	16	18	19	18
Commercial.....do.....		4	5	6	6
Industrial.....do.....		81	80	77	75	76
Number of consumers:					
Domestic.....thousands.....	5,098	5,085	6,443	6,506	6,629
Commercial.....do.....		413	518	531	537
Industrial.....do.....		(³) 421	428	430	436
Number of producing gas wells.....	53,545	55,020	55,756	54,160	53,640
Value (at wells) of gas produced:					
Total.....thousands of dollars.....	157,596	147,048	117,505	98,985	97,096
Average per M cubic feet.....cents.....	8.2	7.6	7.0	6.4	6.2
Value (at points of consumption) of gas consumed:					
Total.....thousands of dollars.....	413,153	415,519	392,156	384,123	368,119
Domestic.....do.....	223,172	200,615	208,262	223,377	209,699
Commercial.....do.....		38,558	41,347	44,000	42,582
Industrial.....do.....		189,981	176,346	142,547	116,746	115,838
Average per M cubic feet:					
Domestic.....cents.....	(³)	67.8	70.7	74.8	74.0
Commercial.....do.....	(³)	47.8	47.8	50.4	49.8
Industrial.....do.....	12.2	11.3	10.9	10.0	9.8
Domestic and commercial.....do.....	62.0	63.5	65.5	69.3	68.4
Domestic, commercial, and industrial.....cents.....	21.5	21.4	23.3	24.7	23.7
Treated for natural gasoline:					
Quantity.....millions of cubic feet.....	1,959,294	2,088,778	1,790,119	1,499,756	1,551,464
Percent of total consumption.....	⁴ 102	⁵ 108	⁵ 106	96	100

¹ U. S. Geological Survey.

² Bagley, B. W., Mineral Resources and Statistical Appendix to Minerals Yearbook, chapters on Cement.

³ Figures not available.

⁴ Exclusive of oil- and gas-field operators.

⁵ Exceeds 100 percent, as part of the natural gas treated for natural gasoline is blown to the air and not included in total consumption.

Summary of statistics for natural gas in the United States, 1929-33—Continued

	1929	1930	1931	1932	1933
Natural gasoline:					
Production.....thousands of gallons..	2, 233, 688	2, 210, 494	1, 831, 918	1, 523, 800	1, 420, 000
Value at plants:					
Total.....thousands of dollars..	158, 410	128, 160	63, 732	49, 244	54, 368
Average per gallon.....cents..	7. 1	5. 8	3. 5	3. 2	3. 8
Carbon black:					
Production.....thousands of pounds..	366, 442	379, 942	280, 907	242, 700	269, 325
Value at plants:					
Total.....thousands of dollars..	18, 720	14, 852	8, 621	6, 664	7, 449
Average per pound.....cents..	5. 1	3. 9	3. 1	2. 7	2. 8

PRODUCTION

Natural gas produced in the United States and delivered to consumers, 1923-33, by States, in millions of cubic feet

Year	Arkan- sas	Califor- nia	Illinois	Indi- ana	Kansas	Kent- ucky	Louisi- ana	Mont- ana	New York	Ohio
1924.....	36, 616	189, 692	4, 072	998	25, 580	12, 875	160, 945	1, 071	6, 196	47, 396
1925.....	41, 878	187, 789	4, 165	1, 168	26, 917	10, 770	152, 620	1, 496	6, 210	43, 235
1926.....	43, 566	204, 915	3, 808	901	33, 095	10, 410	157, 423	2, 283	7, 027	47, 363
1927.....	30, 450	212, 364	3, 741	1, 124	42, 646	10, 206	186, 961	4, 253	5, 908	51, 381
1928.....	20, 235	246, 215	3, 051	1, 290	45, 644	15, 383	227, 521	6, 277	7, 224	56, 341
1929.....	19, 928	342, 214	2, 983	1, 012	38, 460	27, 588	261, 138	9, 659	8, 387	57, 936
1930.....	18, 585	334, 789	2, 890	1, 217	37, 630	28, 023	278, 341	10, 060	9, 624	63, 394
1931.....	13, 300	305, 930	2, 130	1, 337	38, 742	37, 870	224, 155	10, 949	7, 868	56, 326
1932.....	10, 235	263, 484	1, 769	1, 349	40, 690	29, 005	201, 561	13, 285	8, 813	51, 466
1933.....	8, 288	259, 799	1, 631	1, 544	41, 596	31, 380	197, 826	14, 391	6, 865	47, 929

Year	Okla- homa	Pennsyl- vania	Texas	West Virginia	Wyo- ming	Others	Total	Value at points of consumption	
								Total (thou- sands of dollars)	Aver- age per M cubic feet (cents)
1923.....	203, 082	112, 562	74, 535	203, 867	35, 523	153	1, 006, 976	240, 001	23. 8
1924.....	214, 452	105, 863	107, 247	182, 285	46, 036	197	1, 141, 521	253, 856	22. 2
1925.....	249, 285	101, 632	134, 872	180, 345	45, 539	650	1, 188, 571	265, 271	22. 3
1926.....	286, 421	107, 089	175, 392	180, 223	46, 567	1, 536	1, 313, 019	300, 168	22. 9
1927.....	326, 864	105, 709	254, 063	162, 375	43, 582	3, 801	1, 445, 428	317, 930	22. 0
1928.....	320, 861	99, 466	301, 990	163, 018	47, 490	5, 833	1, 568, 139	363, 726	23. 2
1929.....	357, 893	101, 951	464, 928	167, 333	44, 648	11, 626	1, 917, 693	413, 276	21. 6
1930.....	348, 116	88, 706	517, 880	144, 180	43, 219	16, 767	1, 943, 421	416, 090	21. 4
1931.....	263, 685	74, 797	464, 580	124, 797	39, 770	30, 200	1, 686, 436	392, 816	23. 3
1932.....	255, 487	61, 611	456, 832	100, 540	28, 938	30, 915	1, 555, 990	384, 632	24. 7
1933.....	245, 759	63, 579	475, 691	100, 653	25, 830	32, 713	1, 555, 474	368, 540	23. 7

Natural gas produced and consumed in the United States in 1933, by States

State	Produced and delivered to consumers, including deliveries in other States					Consumed, including receipts from other States				
	Quantity		Estimated value at the wells		Value at points of consumption		Quantity		Value at points of consumption	
	M cubic feet	Per cent of total	Total	Average per M cubic feet (cents)	Total	Average per M cubic feet (cents)	M cubic feet	Per cent of total	Total	Average per M cubic feet (cents)
Ala.....										
Alaska.....	19,500	(1)	\$1,200	6.2	\$2,300	11.8	7,510,000	0.5	\$2,192,000	29.2
Ariz.....							19,500	(1)	2,300	11.8
Ark.....	8,288,000	0.5	458,000	5.5	1,812,000	21.9	2,513,000	.2	584,000	23.2
Calif.....	259,799,000	16.7	16,690,000	6.4	74,480,000	28.7	22,775,000	1.5	4,980,000	21.9
Colo.....	2,449,000	.2	79,000	3.2	671,000	27.4	259,799,000	16.7	74,480,000	28.7
D. C.....							15,862,000	1.0	5,461,000	34.4
Fla.....							2,046,000	.1	1,633,000	79.8
Ga.....							494,000	(1)	183,000	37.0
Ill.....	1,631,000	.1	130,000	8.0	951,000	58.3	4,450,000	.3	3,002,000	67.5
Ind.....	1,544,000	.1	418,000	27.1	899,000	58.2	33,341,000	2.1	26,813,000	80.4
Iowa.....							5,996,000	.4	2,579,000	43.0
Kans.....	41,596,000	2.7	2,502,000	6.0	13,179,000	31.7	11,408,000	.7	3,534,000	31.0
Ky.....	31,380,000	2.0	4,001,000	12.8	14,546,000	46.4	57,032,000	3.7	15,051,000	26.4
La.....	197,826,000	12.7	6,144,000	3.1	32,339,000	16.3	13,222,000	.8	5,813,000	44.0
Md.....							115,800,000	7.5	12,490,000	10.8
Mich.....	1,528,000	.1	219,000	14.3	635,000	41.6	667,000	(1)	528,000	79.2
Minn.....							1,528,000	.1	635,000	41.6
Miss.....	8,679,000	.6	359,000	4.1	2,171,000	25.0	3,547,000	.2	977,000	27.5
Mo.....	673,000	(1)	59,000	8.8	380,000	56.5	5,818,000	.4	1,752,000	30.1
Mont.....	14,391,000	.9	584,000	4.1	4,358,000	30.3	27,584,000	1.8	12,491,000	45.3
Nebr.....							12,222,000	.8	3,446,000	28.2
N. Mex.....	19,148,000	1.2	468,000	2.4	2,465,000	12.9	10,293,000	.7	3,590,000	34.9
N. Y.....	6,865,000	.4	1,926,000	28.1	4,838,000	70.5	13,400,000	.9	1,493,000	11.1
N. Dak.....							19,912,000	1.3	13,190,000	66.2
Ohio.....	47,929,000	3.1	8,215,000	17.1	25,103,000	52.4	1,020,000	.1	392,000	38.4
Okla.....	245,759,000	15.8	9,494,000	3.9	23,760,000	9.7	92,762,000	6.0	48,686,000	52.5
Pa.....	63,579,000	4.1	15,113,000	23.8	31,979,000	50.3	242,494,000	15.6	20,347,000	8.4
S. Dak.....	10,000	(1)	1,000	10.0	3,000	30.0	73,627,000	4.7	34,182,000	46.4
Tenn.....	48,000	(1)	3,000	6.3	8,000	16.7	3,264,000	.2	1,187,000	36.4
Tex.....	475,691,000	30.6	11,331,000	2.4	88,264,000	18.6	7,369,000	.5	2,788,000	37.8
Utah.....	48,000	(1)	2,000	4.2	13,000	27.1	412,428,000	26.5	46,053,000	11.2
Va.....							5,853,000	.4	1,577,000	26.9
Wash.....	110,500	(1)	8,800	8.0	76,700	69.4	213,000	(1)	237,000	111.3
W. Va.....	100,653,000	6.5	18,087,000	18.0	42,198,000	41.9	110,500	(1)	76,700	69.4
Wyo.....	25,830,000	1.7	803,000	3.1	3,409,000	13.2	46,933,000	3.0	13,704,000	29.2
							20,087,000	1.3	1,990,000	9.9
Total, 1933.....	1,555,474,000	100.0	97,096,000	6.2	368,540,000	23.7	1,553,399,000	100.0	368,119,000	23.7
Total, 1932.....	1,555,990,000	100.0	98,985,000	6.4	384,632,000	24.7	1,554,335,000	100.0	384,123,000	24.7

1 Less than 0.1 percent.
 2 Includes 83,000 M cubic feet piped from Canada.
 3 Includes 29,000 M cubic feet piped to Canada.
 4 Includes 40,000 M cubic feet piped to Canada.
 5 Includes 2,089,000 M cubic feet piped to Mexico.

CONSUMPTION

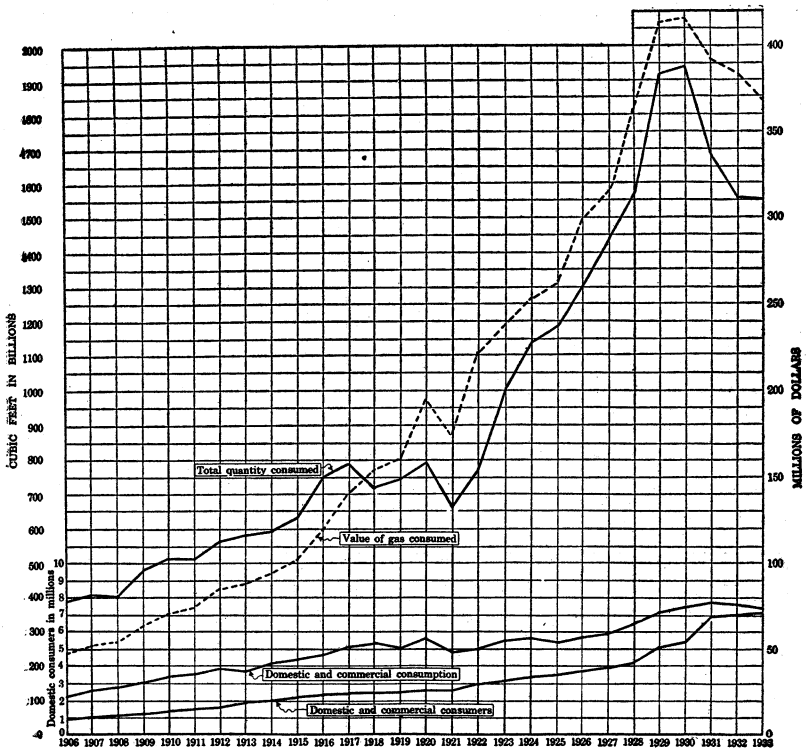


FIGURE 1.—Growth of natural-gas consumption in the United States, 1906-33.

Natural gas consumed in the United States, 1923-33

Year	Domestic and commercial consumption							Average number of M cubic feet used per domestic and commercial consumer	Average value at points of consumption per M cubic feet (cents)
	Consumers (thousands)			Billions of cubic feet					
	Domestic	Commercial	Total	Domestic	Commercial	Total			
1923.....	1,3, 234	(1)	3, 234	1,277	(1)	277	85.7	51.4	
1924.....	1,3, 443	(1)	3, 443	1,285	(1)	285	82.8	54.0	
1925.....	1,3, 508	(1)	3, 508	1,272	(1)	272	77.6	56.0	
1926.....	1,3, 731	(1)	3, 731	1,289	(1)	289	77.5	58.4	
1927.....	1,3, 984	(1)	3, 984	1,296	(1)	296	74.3	60.8	
1928.....	1,4, 344	(1)	4, 344	1,321	(1)	321	73.9	62.0	
1929.....	1,5, 098	(1)	5, 098	1,360	(1)	360	70.6	62.0	
1930.....	1,5, 035	1,413	1,5, 448	296	81	377	69.1	63.5	
1931.....	1,6, 443	1,518	1,6, 961	294	87	381	54.7	65.5	
1932.....	1,6, 506	1,531	1,7, 037	299	87	386	54.8	69.3	
1933.....	1,6, 629	1,537	1,7, 166	283	86	369	51.5	68.4	

Footnotes at end of table.

Natural gas consumed in the United States, 1923-33—Continued

Year	Industrial consumption							Total consumption		
	Billions of cubic feet							Average value at points of consumption per M cubic feet (cents)	Billions of cubic feet	Average value at points of consumption per M cubic feet (cents)
	Field	Carbon black	Petroleum refineries	Electric public-utility power plants ³	Portland cement plants ⁴	Other industrial	Total industrial			
1923	343	109	(⁵)	31	(⁵)	247	730	13.4	1,007	23.8
1924	393	157	(⁵)	48	(⁵)	258	856	11.6	1,141	22.2
1925	424	140	88	46	(⁵)	218	916	12.3	1,188	22.3
1926	478	131	122	53	(⁵)	240	1,024	12.8	1,313	22.9
1927	549	144	123	63	24	246	1,149	12.0	1,445	22.0
1928	574	175	115	77	31	275	1,247	13.2	1,568	23.2
1929	705	261	104	113	41	333	1,557	12.2	1,917	21.5
1930	723	267	99	120	41	315	1,565	11.3	1,942	21.4
1931	571	196	76	138	31	291	1,303	10.9	1,684	23.3
1932	529	168	68	107	21	275	1,168	10.0	1,554	24.7
1933	494	187	66	103	22	312	1,184	9.8	1,553	23.7

¹ Domestic includes commercial; separate figures not available.
² Includes consumers served with mixed gas; see following table.
³ U. S. Geological Survey.
⁴ Bagley, B. W., Mineral Resources and Statistical Appendix to Minerals Yearbook, chapters on Cement.
⁵ Included under "Other industrial"; separate figures not available.

Consumption of natural gas used with manufactured gas in the United States in 1933, by States

State	Domestic		Commercial		Industrial		Total	
	Consumers	M cubic feet	Consumers	M cubic feet	Field (M cubic feet)	Other (M cubic feet)	M cubic feet	Value at points of consumption
District of Columbia	110,510	1,580,000	6,340	214,000	-----	252,000	2,046,000	\$1,633,000
Illinois	925,400	11,944,000	54,030	2,375,000	-----	2,262,000	16,581,000	20,808,000
Indiana	28,850	320,000	1,390	51,000	-----	114,000	485,000	543,000
Iowa	47,140	752,000	3,580	135,000	-----	257,000	1,144,000	965,000
Kentucky	66,090	2,805,000	6,890	740,000	-----	499,000	4,044,000	1,804,000
Maryland	9,580	121,000	230	3,000	-----	4,000	128,000	118,000
Minnesota	2,190	7,000	260	5,000	-----	-----	12,000	18,000
Missouri	206,690	1,718,000	11,790	255,000	-----	225,000	2,198,000	2,377,000
Nebraska	2,000	3,000	100	1,000	-----	-----	4,000	5,000
New York	234,180	8,806,000	25,340	1,312,000	-----	945,000	11,063,000	8,575,000
Ohio	145,530	2,357,000	14,740	772,000	-----	379,000	3,508,000	2,233,000
Pennsylvania	46,580	942,000	4,010	221,000	138,000	78,000	1,379,000	1,113,000
Virginia	7,700	74,000	60	2,000	-----	2,000	78,000	95,000
Total, 1933	1,832,440	31,429,000	128,760	6,086,000	138,000	5,017,000	42,670,000	40,287,000
Total, 1932 ¹	1,853,170	33,489,000	129,620	6,556,000	215,000	14,125,000	54,385,000	48,933,000
1931 ¹	1,755,030	21,285,400	129,530	4,310,000	163,000	3,170,600	28,929,000	21,358,000
1930 ¹	450,140	18,068,000	50,580	3,472,000	193,000	2,165,000	23,898,000	4,881,000

¹ Revised figures.

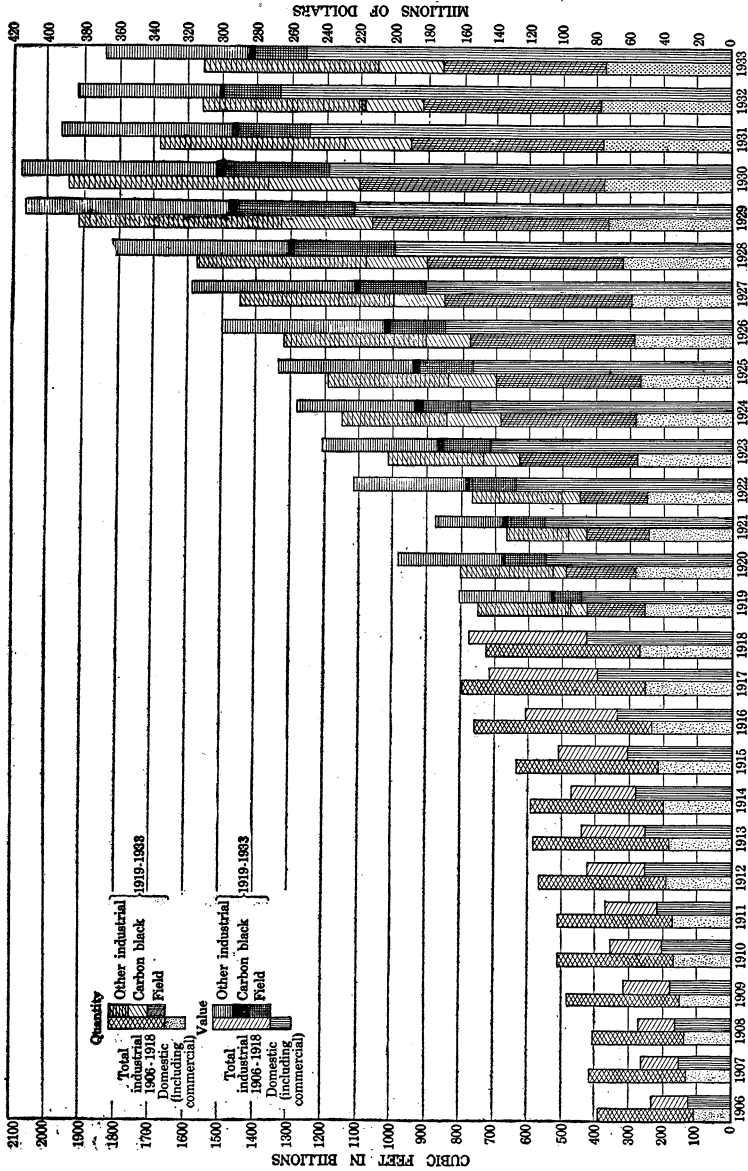


FIGURE 2.—Quantity and value of natural gas consumed in the United States, 1906-33.

Domestic and commercial consumption of natural gas in the United States in 1933, by States ¹

State	Domestic				Commercial				Total			
	Consumers	M cubic feet	Value at points of consumption		Consumers	M cubic feet	Value at points of consumption		Consumers	M cubic feet	Value at points of consumption	
			Total	Average (cents)			Total	Average (cents)			Total	Average (cents)
Alabama.....	19,830	751,000	\$977,000	130.1	2,010	208,000	\$114,000	54.8	21,840	959,000	\$1,091,000	113.8
Arizona.....	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Arkansas.....	54,090	4,561,000	2,526,000	55.4	8,180	1,983,000	794,000	40.0	62,270	6,544,000	3,320,000	50.7
California.....	1,277,980	51,814,000	47,819,000	92.3	75,330	12,939,000	7,756,000	59.9	1,353,310	64,753,000	55,575,000	85.8
Colorado.....	85,630	3,777,000	3,278,000	86.8	7,750	1,016,000	683,000	67.2	93,380	4,793,000	3,961,000	82.6
District of Columbia.....	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Florida.....	2,760	64,000	108,000	168.8	190	12,000	10,000	83.3	2,950	76,000	118,000	155.3
Georgia.....	56,060	1,831,000	2,268,000	123.9	3,570	677,000	352,000	52.0	59,630	2,508,000	2,620,000	104.5
Illinois.....	1,027,080	14,553,000	19,661,000	135.1	58,710	2,719,000	3,231,000	118.8	1,085,790	17,272,000	22,892,000	132.5
Indiana.....	60,430	1,147,000	1,232,000	107.4	2,790	139,000	125,000	89.9	63,220	1,286,000	1,357,000	105.5
Iowa.....	72,230	1,555,000	1,657,000	106.6	5,490	644,000	398,000	57.1	77,720	2,199,000	2,025,000	92.1
Kansas.....	172,040	11,632,000	7,692,000	66.1	16,130	6,849,000	2,388,000	34.9	188,170	18,481,000	10,080,000	54.5
Kentucky.....	145,550	7,715,000	3,949,000	51.2	16,160	1,813,000	874,000	48.2	161,710	9,528,000	4,823,000	50.6
Louisiana.....	126,060	5,935,000	4,049,000	68.2	15,200	2,798,000	1,161,000	41.5	141,260	8,733,000	5,210,000	59.7
Maryland.....	3 143,490	3 2,295,000	3 1,934,000	3 84.3	3 8,040	3 324,000	3 248,000	3 76.5	3 151,530	3 2,619,000	3 2,182,000	3 83.3
Michigan.....	26,420	331,000	369,000	111.5	1,420	102,000	44,000	43.1	27,840	433,000	413,000	95.4
Minnesota.....	11,940	280,000	317,000	113.2	1,040	118,000	75,000	63.6	12,980	398,000	392,000	98.5
Mississippi.....	22,930	1,471,000	1,016,000	69.1	3,270	1,081,000	306,000	28.3	26,200	2,552,000	1,322,000	51.8
Missouri.....	332,220	8,731,000	7,653,000	87.7	29,920	3,206,500	2,130,000	66.4	362,140	11,937,500	9,783,000	82.0
Montana.....	22,170	3,396,000	1,696,000	49.9	3,830	2,677,000	796,000	29.7	26,000	6,073,000	2,492,000	41.0
Nebraska.....	49,220	2,444,000	1,948,000	79.7	5,300	663,000	393,000	59.3	54,520	3,107,000	2,341,000	75.3
New Mexico.....	11,270	857,000	619,000	72.2	1,060	747,000	231,000	36.9	12,830	1,604,000	1,856,000	56.0
New York.....	312,260	13,474,000	10,323,000	76.6	30,490	1,337,000	1,333,000	72.6	342,750	15,311,000	11,656,000	76.1
North Dakota.....	4,160	468,000	4273,000	458.3	4 850	4 422,500	4 147,000	4 34.7	4 5,010	4 891,500	4 420,000	4 47.1
Ohio.....	1,064,450	51,529,000	31,996,000	62.1	97,130	10,514,000	6,083,000	57.9	1,161,580	62,043,000	38,079,000	61.4
Oklahoma.....	212,660	16,457,000	7,450,000	45.3	23,820	6,166,000	1,976,000	32.0	236,480	22,623,000	9,426,000	41.7
Pennsylvania.....	591,320	32,092,000	20,096,000	62.6	53,070	6,501,000	3,883,000	57.1	644,390	38,893,000	23,079,000	61.7
South Dakota.....	11,040	676,000	578,000	85.5	1,190	685,000	280,000	40.9	12,210	1,361,000	858,000	63.0
Tennessee.....	37,080	1,508,000	1,424,000	94.4	3,970	1,419,000	557,000	39.3	41,070	2,927,000	1,981,000	67.7
Texas.....	486,750	22,390,000	18,997,000	84.8	42,550	11,967,000	4,500,000	37.6	529,300	34,357,000	23,497,000	68.4
Utah.....	3 21,170	3 1,528,000	3 1,070,000	3 70.0	3 2,470	3 223,000	3 88,000	3 39.5	3 21,640	3 2,751,000	3 2,158,000	3 66.1
Virginia.....	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Washington.....	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
West Virginia.....	153,170	15,393,000	5,686,000	36.9	17,100	3,974,000	1,372,000	34.5	170,270	19,367,000	7,058,000	36.4
Wyoming.....	14,990	2,542,000	1,083,000	40.8	1,390	852,000	284,000	33.3	16,380	3,394,000	1,322,000	39.0
Total, 1933.....	6,628,450	283,197,000	209,699,000	74.0	537,420	85,577,000	42,582,000	49.8	7,165,870	368,774,000	252,281,000	68.4
Total, 1932.....	6,506,540	298,520,000	223,377,000	74.8	530,570	87,367,000	44,000,000	50.4	7,037,110	385,887,000	267,377,000	69.3

¹ Includes natural gas mixed with manufactured gas, as shown on p. 126.
² Utah includes Arizona.

³ Maryland includes District of Columbia and Virginia.
⁴ North Dakota includes Washington.

Industrial consumption of natural gas in the United States in 1933, by States and uses

State	Field (drilling, pumping, and operating gasoline recovery plants)		Manufacture of carbon black		Fuel at petroleum refineries, electric public-utility power plants, portland cement plants, and other industrial							Total industrial			
	M cubic feet (estimated)	Value at points of consumption (estimated)	M cubic feet	Value at points of consumption		M cubic feet					Value at points of consumption		M cubic feet	Value at points of consumption	
				Total	Average (cents)	Petroleum refineries	Electric public-utility power plants	Portland cement plants	Other industrial	Total	Average (cents)	Total		Average (cents)	
															Total	Average (cents)	Total	Average (cents)
Alabama									6,551,000	6,551,000	\$1,101,000	16.8	6,551,000	\$1,101,000	16.8
Alaska	(1)	(1)							(1)	(1)	(1)	(1)	(1)	(1)	(1)
Arizona									(2)	(2)	(2)	(2)	(2)	(2)	(2)
Arkansas	6,288,000	\$425,000			761,000	743,000	(5)	\$8,439,000	9,943,000	1,235,000	12.4	16,231,000	1,660,000	10.2	
California	113,107,000	7,392,000			17,519,000	15,682,000	(5)	\$48,738,000	81,939,000	11,513,000	14.1	195,046,000	18,905,000	9.7	
Colorado	727,000	25,000			5,000	420,000	(5)	\$9,917,000	10,342,000	1,475,000	14.3	11,059,000	1,500,000	13.6	
District of Columbia								(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Florida								418,000	418,000	65,000	15.6	418,000	65,000	15.6	
Georgia						411,000		1,531,000	1,942,000	382,000	19.7	1,942,000	382,000	19.7	
Illinois	1,537,000	123,000			179,000			14,353,000	14,532,000	3,798,000	26.1	16,068,000	3,921,000	24.4	
Indiana	8,000	1,000				2,315,000		\$2,387,000	4,702,000	1,321,000	26.0	4,710,000	1,222,000	25.9	
Iowa						2,259,000	(3)	\$6,950,000	9,209,000	1,509,000	16.4	9,209,000	1,509,000	16.4	
Kansas	7,930,000	683,000			953,000	10,800,000	3,864,000	15,004,000	30,621,000	4,283,000	14.0	38,551,000	4,971,000	12.9	
Kentucky	718,000	107,000				2,976,000		\$3,068,000	2,976,000	5,804,000	10.4	3,684,000	7,280,000	6.8	
Louisiana	10,145,000	426,000	40,865,000	\$1,050,000	2.6	7,339,000	18,050,000	30,668,000	56,057,000	4,216,000	7.0	4,307,000	4,216,000	47.0	
Maryland								498,000	498,000	159,000	29.6	1,095,000	222,000	20.3	
Michigan	557,000	63,000			40,000			2,139,000	3,149,000	585,000	18.6	3,149,000	585,000	18.6	
Minnesota						1,010,000		683,000	2,557,000	3,240,000	13.1	3,266,000	430,000	13.2	
Mississippi	26,000	4,000						5,000	2,218,000	(3)	\$13,405,000	15,628,000	2,704,900	17.3	
Missouri	18,500	3,100				5,000		603,000	4,612,000	5,282,000	16.5	6,149,000	954,000	15.5	
Montana	867,000	84,000				67,000			1,701,000	(3)	\$5,485,000	7,186,000	1,249,000	17.4	
Nebraska						601,000			2,133,000		2,734,000	14.3	11,796,000	643,000	5.5
New Mexico	9,062,060	253,000							3,153,000	3,063,000	1,352,000	34.1	4,601,000	1,534,000	33.3
New York	638,000	182,000			479,000	331,000		1,940,000	1,940,000	1,249,000	20.1	1,258,500	1,510,000	19.7	
North Dakota	19,500	1,900				155,000			22,301,000	27,435,000	9,772,000	35.6	30,719,000	10,607,000	34.5
Ohio	3,284,000	835,000				22,000			5,112,000			9.2	219,871,000	10,921,000	5.0
Oklahoma	178,531,000	7,105,000	(5)	(5)	(5)	7,565,000		6,470,000	\$527,305,000	\$41,340,000	\$3,816,000	9.2	34,734,000	10,203,000	29.4
Pennsylvania	4,261,000	1,229,000				783,000			\$29,669,000	30,473,000	8,974,000	29.4			

South Dakota.....						128,000	(3)	\$1,775,000	1,903,000	329,000	17.3	1,903,000	329,000	17.3	
Tennessee.....						3,201,000		1,241,000	4,442,000	807,000	18.2	4,442,000	807,000	18.2	
Texas.....	137,775,000	7,290,000	138,231,000	2,404,000	1.7	26,084,000	27,792,000	3,623,000	44,566,000	102,065,000	12,862,000	12.6	378,071,000	22,556,000	6.0
Utah.....						182,000			2 6,433,000	2 6,615,000	2 15.2	2 6,615,000	2 1,003,000	2 15.2	
Virginia.....									(4)	(4)	(4)	(4)	(4)	(4)	
Washington.....	(1)	(1)										(1)	(1)	(1)	
West Virginia.....	11,220,000	2,430,000				887,000	75,000		15,384,000	16,346,000	4,216,000	25.8	27,566,000	6,646,000	24.1
Wyoming.....	7,750,000	247,000			(5)	3,463,000	288,000		5 5,192,000	5 8,943,000	5 421,000	47.1	16,693,000	668,000	4.0
Miscellaneous.....			7,685,000	310,000	4.0			14,514,000							
Total, 1933.....	494,459,000	28,908,000	186,781,000	3,764,000	2.0	66,333,000	102,601,000	22,001,000	312,450,000	503,385,000	83,166,000	16.5	1,184,625,000	115,838,000	9.8
Total, 1932.....	529,378,000	32,585,000	168,237,000	2,893,000	1.7	67,467,000	107,239,000	21,440,000	274,687,000	470,833,000	81,268,000	17.3	1,168,448,000	116,746,000	10.0

¹ North Dakota includes Alaska and Washington.

² Utah includes Arizona.

³ Gas used at portland cement plants included under "Miscellaneous" for United States total and under "Other industrial" for State total to avoid disclosing figures of individual operators.

⁴ Maryland includes District of Columbia and Virginia.

⁵ Gas used in manufacture of carbon black included under "Miscellaneous" for United States total and under "Other industrial" for State total to avoid disclosing figures of individual operators.

INTERSTATE TRANSPORTATION

Interstate transportation of natural gas in 1933

State from which gas was transported	State through which gas was transported	State to which gas was transported	M cubic feet
Colorado.....	Wyoming.....	Utah.....	1,411,000
		Wyoming.....	271,000
			1,682,000
Illinois.....		Indiana.....	3,000
Indiana.....		Illinois.....	24,000
		Kentucky.....	278,000
		Ohio.....	1,000
			303,000
Kansas.....		Colorado.....	292,000
	Missouri.....	Illinois.....	974,000
	do.....	Indiana.....	416,000
	Illinois.....	Iowa.....	6,526,000
	Nebraska.....	Minnesota.....	2,338,000
	do.....	Missouri.....	3,731,200
	Iowa.....	Nebraska.....	6,212,000
		do.....	3,000
	Nebraska.....	Oklahoma.....	599,000
	Iowa.....	South Dakota.....	566,000
Kentucky.....	West Virginia.....	District of Columbia.....	1,702,000
	Virginia.....		
	Maryland.....	Illinois.....	67,000
	Indiana.....	Indiana.....	515,000
	West Virginia.....	Maryland.....	77,000
	do.....	do.....	106,000
	Virginia.....	Ohio.....	4,264,000
	Maryland.....	Pennsylvania.....	10,088,000
	District of Columbia.....	do.....	12,000
	West Virginia.....	Virginia.....	134,000
	do.....	do.....	65,000
	Virginia.....	West Virginia.....	5,304,000
	Maryland.....		22,334,000
	District of Columbia.....		
	Louisiana.....	Mississippi.....	Alabama.....	6,548,000
Mississippi.....		Arkansas.....	13,972,000
Alabama.....		Georgia.....	4,101,000
Arkansas.....		Illinois.....	10,704,000
Missouri.....		Mississippi.....	1,221,000
Arkansas.....		do.....	820,000
do.....		Missouri.....	8,279,000
do.....		Tennessee.....	7,321,000
Mississippi.....		Texas.....	33,628,000
			86,594,000
Mississippi.....	Alabama.....	Alabama.....	962,000
	do.....	Florida.....	494,000
		Georgia.....	349,000
		Louisiana.....	3,097,000
			4,902,000

Interstate transportation of natural gas in 1933—Continued

State from which gas was transported	State through which gas was transported	State to which gas was transported	M cubic feet	
Missouri.....	Illinois.....	Illinois.....	178,000	
		Indiana.....	75,000	
		Kansas.....	200	
			253,200	
Montana.....		North Dakota.....	1,020,000	
		South Dakota.....	2,397,000	
			3,417,000	
New Mexico.....	Texas.....	} Arizona.....	2,513,000	
	New Mexico.....		Colorado.....	112,000
			Texas.....	3,556,000
				6,181,000
New York.....		Canada.....	29,000	
		Pennsylvania.....	1,000	
			30,000	
Ohio.....		Indiana.....	652,000	
		Kentucky.....	98,000	
		West Virginia.....	433,000	
			1,183,000	
Oklahoma.....	Kansas..... do.....	Arkansas.....	515,000	
		Kansas.....	11,598,000	
		Missouri.....	2,516,000	
		Nebraska.....	89,000	
		Texas.....	1,090,000	
			15,808,000	
Pennsylvania.....	New York.....	Canada.....	40,000	
	Maryland.....	District of Columbia.....	344,000	
		Maryland.....	90,000	
	Maryland.....	do.....	22,000	
	District of Columbia.....	New York.....	13,077,000	
		Ohio.....	642,000	
	West Virginia.....	do.....	192,000	
	Maryland.....	Virginia.....	14,000	
	District of Columbia.....	West Virginia.....	341,000	
			14,762,000	
Texas.....	New Mexico.....	Colorado.....	14,638,000	
	Oklahoma.....	} Illinois.....	18,146,000	
	Kansas.....			
	Nebraska.....			
	Iowa.....			
	Oklahoma.....			
	Kansas.....	do.....	1,620,000	
	Missouri.....	} Indiana.....	2,404,000	
	Oklahoma.....			
	Kansas.....			
	Nebraska.....			
	Iowa.....			
	Illinois.....	} do.....	690,000	
	Oklahoma.....			
	Kansas.....			
	Missouri.....			
	Illinois.....			
	Oklahoma.....	Iowa.....	4,882,000	
	Kansas.....	} Kansas.....	25,495,000	
	Nebraska.....			
Oklahoma.....				
	Louisiana.....	1,471,000		
	Mexico.....	2,089,000		
Oklahoma.....	} Minnesota.....	1,209,000		
Kansas.....				
Nebraska.....				
Iowa.....				

Interstate transportation of natural gas in 1933—Continued

State from which gas was transported	State through which gas was transported	State to which gas was transported	M cubic feet
Texas (continued).....	Oklahoma.....	Missouri.....	12,638,000
	Kansas.....		
	Oklahoma.....	Nebraska.....	3,234,000
	Kansas.....		
	Oklahoma.....		
	Kansas.....	do.....	1,000
	Nebraska.....		
	Iowa.....	New Mexico.....	433,000
		Oklahoma.....	11,944,000
	Oklahoma.....	South Dakota.....	291,000
	Kansas.....		
	Nebraska.....		
	Iowa.....		
	New Mexico.....	Wyoming.....	352,000
	Colorado.....		
		101,537,000	
West Virginia.....		Kentucky.....	3,800,000
		Maryland.....	372,000
		Ohio.....	35,302,000
	Kentucky.....	do.....	5,615,000
		Pennsylvania.....	14,709,000
		59,798,000	
Wyoming.....		Colorado.....	53,000
		Montana.....	1,165,000
		Nebraska.....	754,000
		Utah.....	4,394,000
			6,366,000
		346,810,400	

NATURAL-GAS WELLS

Approximate number of gas wells operated in the United States, 1932-33

State	1932 ¹	1933	State	1932 ¹	1933
Arkansas.....	180	180	Montana.....	240	260
California.....	30	30	New York.....	2,190	2,040
Colorado, New Mexico, Utah, and Washington.....	60	60	Ohio.....	6,750	6,610
Illinois.....	100	100	Oklahoma.....	2,800	2,770
Indiana.....	1,030	1,030	Pennsylvania.....	19,710	19,620
Kansas.....	3,290	3,140	Texas.....	1,590	1,560
Kentucky and Tennessee.....	1,840	1,890	West Virginia.....	12,700	12,690
Louisiana and Mississippi.....	1,310	1,340	Wyoming.....	90	100
Michigan.....	30	40			
Missouri and South Dakota.....	220	180		54,160	53,640

¹ Figures rounded.

Gas wells drilled in the United States in 1933, by States and by counties or districts ¹

State and county or district	Number of gas wells	State and county or district	Number of gas wells	State and county or district	Number of gas wells
Arkansas, 1933.....	1	Louisiana—Continued.		Ohio—Continued.	
California, 1932.....	(*)	Northern—Contd.		Northwestern:	
Colorado:		Ouachita.....	16	Hardin.....	2
Las Animas.....	1	Richland.....	2	Logan.....	1
Moffat.....	3	Sabine.....	1	Mercer.....	1
Rio Blanco.....	1	Union.....	4	Seneca.....	23
Weld.....	1			Williams.....	1
		Total, 1932.....	38	Wyandot.....	14
Total, 1932.....	6			Total, 1932.....	42
	3	Total Louisiana, 1933-1932.....	50	Total Ohio, 1933-1932.....	287
Illinois:			39		267
Crawford.....	1	Michigan:		Oklahoma:	
		Isabella.....	6	Beckham.....	1
Total, 1932.....	1	Lenawee.....	1	Caddo.....	1
	6	Mecosta.....	4	Carter.....	1
Indiana:		Total, 1932.....	11	Creek.....	14
Allen.....	2		11	Hughes.....	4
Davless.....	1	Mississippi:		Jefferson.....	1
Delaware.....	1	Hinds.....	8	Kay.....	1
Gibson.....	10	Rankin.....	8	Kiowa.....	1
Hancock.....	1	Total, 1932.....	16	McIntosh.....	1
Harrison.....	4		16	Marshall.....	1
Henry.....	2	Montana:		Muskogee.....	2
Huntington.....	1	Glacier.....	7	Noble.....	1
Jay.....	2	Hill.....	1	Oktuskee.....	3
Knox.....	2	Phillips.....	1	Oklahoma.....	3
Monroe.....	1	Toole.....	3	Okmulgee.....	11
Perry.....	1	Total, 1932.....	12	Pawnee.....	2
Pike.....	23		6	Pittsburg.....	2
Sullivan.....	1	New Mexico:		Pontotoc.....	7
Vanderburg.....	1	Eddy.....	1	Stephens.....	1
Vigo.....	2			Tulsa.....	6
Total, 1932.....	55	Total, 1932.....	4	Wagoner.....	7
	55		1	Washita.....	1
Kansas:		Total, 1932.....	1	Total, 1932.....	72
Cowley.....	2		1	Total, 1932.....	106
Greenwood.....	2	Ohio:		Pennsylvania and New York:	
McPherson.....	8	Central and eastern:		Butler-Armstrong.....	6
Morris.....	3	Ashland.....	3	New York and Pennsylvania gas area.....	36
Reno.....	1	Athens.....	20	Southwest Pennsylvania.....	23
Total, 1932.....	16	Belmont.....	30	Venango-Clarion.....	16
	21	Columbiana.....	1		31
Kentucky:		Coshocton.....	3	Total, 1932.....	76
Allen.....	1	Fairfield.....	9		
Daviss.....	1	Guernsey.....	11	Texas:	
Hancock.....	1	Hocking.....	1	Gulf coast:	
Hart.....	1	Holmes.....	4	Conroe.....	6
Henderson.....	1	Knox.....	2	Greta.....	1
Muhlenberg.....	2	Licking.....	11	Humble.....	1
Ohio.....	3	Lorain.....	12	McFaddin.....	1
Total, 1932.....	10	Medina.....	1	Manvel.....	1
	58	Meigs.....	3	Saxet.....	4
Louisiana:		Monroe.....	6	Spurger.....	1
Gulf coast:		Morgan.....	1	Tomball.....	10
Hackberry (East).....	1	Muskingum.....	11	White Point.....	2
Iowa.....	1	Noble.....	5	Miscellaneous.....	5
		Perry.....	2		
Total, 1932.....	2	Stark.....	87	Total, 1932.....	32
	1	Summit.....	6		28
Northern:		Tuscarawas.....	2		
Bossier.....	6	Vinton.....	3		
Caddo.....	10	Washington.....	5		
Claiborne.....	2	Wayne.....	1		
DeSoto.....	2	Miscellaneous.....	5		
Morehouse.....	6	Total, 1932.....	245		
		Total, 1932.....	216		

¹ Oil and Gas Journal.

² California not reported.

Gas wells drilled in the United States in 1933, by States and by counties or districts—
Continued

State and county or district	Number of gas wells	State and county or district	Number of gas wells	State and county or district	Number of gas wells
Texas—Continued.		Texas—Continued.		West Virginia—Contd.	
Rest of State:		Rest of State—Contd.		Marshall.....	1
Northern, central, eastern, and southwestern:		Panhandle:		Mason.....	1
Adams.....	1	Carson.....	6	Monongalia.....	3
Callahan.....	9	Gray.....	8	Putnam.....	1
Carolina-Texas.....	1	Hutchinson.....	3	Ritchie.....	17
Coleman.....	1	Moore.....	2	Roane.....	9
Cuevitas.....	2	Wheeler.....	5	Wayne.....	4
Eagle Hill.....	1			Wetzel.....	2
Eastland.....	1	Total, 1932.....	24	Wirt.....	3
Erath.....	2		27	Wood.....	1
Escobas.....	2	West Texas:			
Jack.....	2	Ward.....	3	Total, 1932.....	160
Laurel.....	3				163
Los Olmos.....	2	Total, 1932.....	3	Wyoming:	
Martinez.....	2		4	Carbon.....	4
Moca.....	2	Total "Rest of State," 1933.....	108	Fremont.....	1
Montague.....	1	1932.....	139	Niobrara.....	3
North Government wells.....	10	Total Texas, 1933.....	140	Park.....	1
North Kohler.....	2	1932.....	167	Sweetwater.....	5
Palo Pinto.....	10			Total, 1932.....	6
Rusk.....	4	West Virginia:		United States, 1933.....	³ 932
Sarnosa.....	1	Boone.....	13	1932.....	³ 1,027
Shackelford.....	2	Cabell.....	21		
Stephens.....	2	Calhoun.....	51		
Throckmorton.....	1	Doddridge.....	3		
Tuleta.....	3	Gilmer.....	9		
Villa.....	1	Harrison.....	1		
Miscellaneous.....	13	Kanawha.....	6		
	81	Lincoln.....	10		
Total, 1932.....	108	Logan.....	2		
		Marion.....	2		

* Exclusive of California.

SUMMARY OF STATISTICS FOR NATURAL GASOLINE AND CARBON BLACK

Salient statistics for natural gasoline in the United States, 1929-33

	1929	1930	1931	1932	1933
Number of plants operating.....	1,087	1,035	937	830	779
Production:					
By States:					
California..... millions of gallons.....	840	830	680	552	496
Texas..... do.....	420	491	427	371	367
Oklahoma..... do.....	676	591	455	379	360
West Virginia..... do.....	73	63	53	44	40
Louisiana..... do.....	65	74	58	46	37
Other States..... do.....	160	161	159	132	120
	2,234	2,210	1,832	1,524	1,420
By processes:					
Compression process..... do.....	259	250	212	182	161
Absorption and combination processes..... do.....	1,950	1,942	1,609	1,333	1,251
Charcoal..... do.....	25	18	11	9	8
	2,234	2,210	1,832	1,524	1,420
Stocks at natural-gasoline plants Dec. 31.. do.....	26	24	27	19	28
Value:					
Total (at plants)..... millions of dollars.....	158	128	64	49	54
Average per gallon (at plants)..... cents.....	7.1	5.8	3.5	3.2	3.8
Average spot price, Oklahoma natural gasoline..... cents.....	17.1	15.4	13.2	12.3	12.9
Natural gas treated..... millions of cubic feet.....	1,959,294	2,088,778	1,790,119	1,499,756	1,551,464
Average yield per thousand cubic feet..... gallons.....	1.14	1.06	1.02	1.02	0.92

¹ Grade A.

² Grade 26-70.

Salient statistics for carbon black made from natural gas in the United States, 1929-33

	1929	1930	1931	1932	1933
Number of producers reporting.....	35	33	26	24	24
Number of plants.....	71	69	58	50	50
Quantity produced:					
By States and districts:					
Louisiana.....pounds..	127,345,000	96,729,000	57,485,000	42,260,000	54,470,000
Texas:					
Breckenridge district...do.....	29,079,000	16,905,000	13,332,000	123,071,000	124,499,000
Panhandle district...do.....	199,104,000	254,844,000	197,546,000	177,369,000	190,356,000
Total, Texas.....do.....	228,183,000	271,749,000	210,878,000	1200,440,000	1214,855,000
West Virginia.....do.....	578,000	(?)			
Other States.....do.....	10,336,000	11,464,000	12,544,000	(?)	(?)
Total, United States...do.....	366,442,000	379,942,000	280,907,000	242,700,000	269,325,000
By processes:					
Channel process.....do.....	327,552,000	350,254,000	255,322,000	224,536,000	234,226,000
Other processes ².....do.....	38,890,000	29,688,000	25,585,000	18,164,000	35,099,000
Stocks held by producers Dec. 31.....pounds..	132,203,000	259,245,000	{ 280,010,000 281,667,000 }	257,998,000	151,993,000
Losses.....do.....	673,000	1,361,000	1,716,000	4,814,000	686,000
Quantity sold:					
Domestic:					
To rubber companies...do.....	138,474,000	128,572,000	134,315,000	130,380,000	191,358,000
To ink companies.....do.....	27,350,000	19,220,000	15,184,000	18,341,000	18,539,000
To paint companies...do.....	17,257,000	11,922,000	6,760,000	7,636,000	6,260,000
For miscellaneous purposes pounds.....	8,896,000	7,565,000	5,453,000	5,126,000	6,201,000
Total domestic sold...do.....	191,977,000	167,279,000	161,712,000	161,483,000	222,358,000
Export.....do.....	91,829,000	84,260,000	96,714,000	100,072,000	152,286,000
Total sold.....do.....	283,806,000	251,539,000	258,426,000	261,555,000	374,644,000
Value (at plants) of carbon black produced:					
Total.....	\$18,720,000	\$14,852,000	\$8,621,000	\$6,664,000	\$7,449,000
Average per pound.....cents..	5.11	3.91	3.07	2.75	2.77
Estimated quantity of natural gas used.....M cubic feet..	261,107,000	266,625,000	195,396,000	168,237,000	186,781,000
Average yield per M cubic feet pounds.....	1.40	1.43	1.44	1.44	1.44

¹ Oklahoma and Wyoming included with Breckenridge district, Texas.

² Included under "Other States."

³ 1929-30 and 1932-33: Disk, Lewis, roller, "special", and thermatomic; 1931: Disk, roller, "special", and thermatomic.

⁴ For comparison with 1932.



ORE CONCENTRATION

(DETAILED STATISTICS)

METALLURGICAL RESULTS AND FLOTATION REAGENTS

By T. H. MILLER AND R. L. KIDD

SUMMARY OUTLINE

	Page		Page
Summary.....	137	Lead-zinc ores.....	146
Reagent consumption.....	138	Zinc ores.....	148
Copper ores.....	139	Gold and silver ores.....	150
Lead ores.....	144		

Summary.—The total production of nonferrous ore in 1933 was 24,712,694 tons, a decrease of 6 percent from 26,321,679 tons in 1932; the production in 1931 was 54,764,842 tons and in 1930 about 76,725,000 tons. There were decreases in 1933 in the output of copper ore, lead ore, and copper-lead ore but substantial gains in zinc ore, lead-zinc ore, and gold and silver ore. Of the total ore produced, 78.82 percent (19,478,258 tons) was treated by concentration; 4.96 percent was shipped direct to smelters; 12.95 percent was treated at gold and silver mills; and the remainder (3.27 percent) was treated at miscellaneous plants, including copper leaching plants, magnetic concentration plants, and a slag fuming plant. Nearly all the ore concentrated by wet methods was treated at plants using flotation equipment.

TABLE 1.—Total nonferrous ore produced in the United States in 1933, by classes of ore and methods of treatment, in dry tons

Method of treatment	Copper ore	Cop- per- lead ore	Lead ore	Lead- zinc ore	Zinc ore	Gold and silver ore	Total ore
Straight flotation concentration.....	7,006,906	121,769	34,167	1,287,198	290,963	868,451	9,609,454
Combined gravity and flotation concentration.....	816,364	-----	3,079,723	3,156,120	2,427,806	199,499	9,679,512
Straight gravity concentration.....	-----	-----	11,206	99,200	77,401	1,485	189,292
Total ore concentrated.....	7,823,270	121,769	3,125,096	4,542,518	2,796,170	1,069,435	19,478,258
Direct smelting.....	872,053	4,438	92,769	16,387	910	239,701	1,226,258
Amalgamation or cyanidation.....	-----	-----	-----	-----	-----	3,200,240	3,200,240
Miscellaneous methods.....	37,421	-----	-----	232,400	538,117	-----	807,938
Total ore, all methods:							
1933.....	8,732,744	126,207	3,217,865	4,791,305	3,335,197	4,509,376	24,712,694
1932.....	12,312,216	167,106	4,453,868	3,337,364	1,893,513	4,157,612	26,321,679

REAGENT CONSUMPTION

Table 2 gives the consumption of reagents in the treatment of all ores in 1933 and the per-ton consumption in 1932; table 3 gives a 5-year (1929-33) comparison of reagent consumption; and table 4 gives a summary of the consumption of reagents in 1933, by classes of ores treated. The marked increase in consumption of sulphuric acid was due to the operation in 1933 of mills treating copper-iron ores which were idle in 1932.

TABLE 2.—Consumption of reagents in the treatment of all ores in 1933

[142 plants treating 12,968,228 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers:					
Pine oils.....	110	7,647,672	745,954	0.098	0.105
Cresylic acid.....	61	7,430,534	1,023,568	.138	.165
Total frothers.....	142	12,968,228	1,769,522	.136	.147
II. Collectors:					
Distillation products:					
Coal-tar creosotes.....	29	3,891,938	641,937	.165	.190
Wood-tar creosotes.....	4	346,401	23,613	.068	.036
Petroleum products.....	3	8,271	1,968	.238	.001
Blast-furnace oils.....	2	603,490	91,463	.152	.122
Water-gas tars.....	1	15,195	960	.063	.....
Total distillation products.....	36	4,171,488	759,941	.182	.117
Synthetic products:					
Ethyl xanthates.....	88	5,648,288	597,305	.106	.085
Butyl xanthates.....	10	1,791,615	156,415	.087	.086
Amyl xanthates.....	45	1,206,691	118,422	.098	.035
Xanthate derivatives.....	3	312,446	31,345	.100	.011
Dicresol-dithiophosphoric acid.....	43	3,039,512	157,318	.052	.043
Sodium dicresol-dithiophosphate.....	25	3,534,003	124,382	.035	.044
Sodium diethyl-dithiophosphate.....	1	1,873,510	26,604	.014	.013
Thiocarbamide.....	1	58,540	2,600	.044	.091
Total synthetic products.....	140	12,826,476	1,214,391	.095	.085
Total collectors.....	142	12,968,228	1,974,332	.152	.115
III. Acids and alkalis:					
Acids: Sulphuric acid.....					
	3	232,279	2,168,650	9.336	.072
Alkalies:					
Sodium carbonate.....	31	1,312,145	500,450	.381	.559
Sodium hydroxide.....	3	132,780	81,170	.611	.391
Lime.....	37	9,095,441	35,177,434	3.868	3.512
Total alkalies.....	61	9,649,778	35,759,054	3.706	3.462
IV. Other inorganic reagents:					
Sulphidizing: Sodium sulphide.....					
	14	541,544	309,178	.571	.187
Activating: Copper sulphate.....	57	3,259,596	2,892,878	.887	.674
Depressing:					
Cyanides.....	23	6,634,574	388,294	.059	.033
Sodium sulphite.....	5	367,369	289,770	.789	1.092
Sodium silicate.....	6	616,535	192,806	.313	.310
Zinc sulphate.....	21	2,598,046	983,505	.379	.374
Sodium bichromate.....	2	248,540	9,990	.040	.206
Total depressing.....	35	7,228,719	1,864,365	.258	.217
Miscellaneous ¹	4	200,506	151,989	.758	.900
Total reagents.....	142	12,968,228	46,889,968	3.616	3.399

¹ Includes zinc chloride, calcium sulphate, starch, chlorine, and lead acetate.

TABLE 3.—Comparison of consumption of reagents, 1929-33

	1929	1930	1931	1932	1933
Ore treated..... thousands of tons..	65,405	47,259	35,956	16,124	12,968
Reagent consumption:					
Frothers..... thousands of pounds..	9,283	7,106	5,508	2,377	1,770
Collectors:					
Distillation..... do....	2,345	1,107	753	499	760
Synthetic..... do....	5,925	5,018	3,543	1,355	1,214
Acids..... do....	12,099	12,060	11,143	1,202	2,169
Alkalies..... do....	234,598	154,424	115,744	45,269	35,759
Sulphidizing..... do....	2,589	1,226	643	444	309
Activating..... do....	6,723	5,390	3,325	2,067	2,893
Depressing..... do....	6,050	4,393	2,409	1,585	2,016
Total reagents..... do....	279,612	190,724	143,068	54,798	46,890
Reagent consumption:					
Frothers..... pounds per ton of ore treated..	0.144	0.152	0.153	0.147	0.136
Collectors:					
Distillation..... do....	.124	.106	.126	.117	.182
Synthetic..... do....	.091	.107	.100	.085	.095
Acids..... do....	22.030	24.933	21.342	.072	9.336
Alkalies..... do....	3.735	3.560	3.852	3.462	3.706
Sulphidizing..... do....	.713	.154	.723	.187	.571
Activating..... do....	.627	.697	.593	.674	.887
Depressing..... do....	.213	.239	.174	.230	.271
Total reagents..... do....	4.275	4.036	3.979	3.399	3.616

TABLE 4.—Summary of reagent consumption in 1933, by classes of ores

	Copper	Copper-iron	Copper (native)	Lead and copper-lead	Lead-zinc	Zinc	Gold and silver
Number of plants.....	10	3	2	19	30	8	70
Total ore treated..... dry tons..	6,602,176	267,049	365,320	2,164,152	1,687,625	617,883	1,264,023
Reagents used per ton of ore treated:							
I. Frothers..... pounds..	0.134	0.127	0.124	0.112	0.198	0.131	0.118
II. Collectors:							
Distillation..... do....	.180	.011	-----	.140	.359	.103	.108
Synthetic..... do....	.047	.349	.110	.066	.275	.087	.099
Total collectors..... do....	.060	.352	.110	.198	.455	.159	.118
III. Acids and alkalies:							
Acids..... do....	-----	13.136	-----	-----	-----	-----	.200
Alkalies..... do....	4.723	3.687	.118	.343	1.916	4.180	1.171
IV. Other inorganic reagents:							
Sulphidizing..... pounds..	-----	-----	-----	.500	.839	-----	.278
Activating..... do....	-----	1.047	-----	.364	1.173	.868	.264
Depressing..... do....	.013	.104	-----	.172	.980	-----	.105
Miscellaneous..... do....	-----	-----	-----	-----	1.116	-----	.575
Total reagents..... do....	4.923	11.177	.289	.699	4.521	2.098	.677

COPPER ORES

Copper ores are divided into three groups—sulphide copper, copper-iron, and native copper; the flotation-reagent consumption and the metallurgical data are given in tables 5 to 13. The copper-iron tables were omitted from the 1932 report of this series as most of the plants treating that type of ore were closed; consequently, the comparisons in tables 8 to 10 are with 1931 instead of 1932. One plant treating copper-iron ore in 1932 was included with those treating sulphide ores; this fact explains the large consumption of sulphuric acid shown for copper plants on pages 227 and 238 of the 1932 report.

TABLE 5.—Consumption of reagents in the treatment of sulphide copper ores in 1933

[10 plants treating 6,602,176 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers:					
Pine oils.....	8	3,024,800	250,609	0.083	0.127
Cresylic acid.....	3	3,696,582	633,453	.171	.167
Total frothers.....	10	6,602,176	884,062	.134	.142
II. Collectors:					
Distillation products:					
Coal-tar creosotes.....	1	463,808	7,337	.016	.....
Blast-furnace oils.....	1	463,808	76,293	.164	.122
Total distillation products.....	1	463,808	83,630	.180	.038
Synthetic products:					
Ethyl xanthates.....	7	1,848,227	138,867	.075	.078
Butyl xanthates.....	3	1,288,115	85,965	.067	.071
Amyl xanthates.....	1	55,951	18,290	.327	.023
Dicresol-dithiophosphoric acid.....	1	119,206	9,703	.081	.053
Sodium dicresol-dithiophosphate.....	3	1,732,675	31,602	.018	.035
Sodium diethyl-dithiophosphate.....	1	1,873,510	26,604	.014	.013
Total synthetic products.....	10	6,602,176	311,031	.047	.060
Total collectors.....	10	6,602,176	394,661	.060	.068
III. Acids¹ and alkalis:					
Alkalis:					
Sodium carbonate.....	1	15,554	15,554	1.000	.124
Lime.....	10	6,602,176	31,164,179	4.720	4.368
Total alkalis.....	10	6,602,176	31,179,733	4.723	4.368
IV. Other inorganic reagents:					
Depressing: Cyanides.....	1	3,521,425	45,779	.013	.020
Total reagents.....	10	6,602,176	32,504,235	4.923	4.708

¹ No acids consumed.

TABLE 6.—Comparison of metallurgical results in the treatment of copper ores, 1932-33

	Method of concentration			
	Straight flotation		Combined gravity and flotation	
	1932	1933	1932	1933
Number of plants.....	12	7	3	3
Total ore treated..... dry tons.....	8,846,011	6,467,316	879,571	134,860
Gold content..... ounces.....	73,328.14	73,307.82	11,656.14	8,043.70
Do..... ounce per ton.....	0.008	0.011	0.013	0.060
Silver content..... ounces.....	2,126,492	2,111,444	406,063	439,286
Do..... ounces per ton.....	0.240	0.326	0.462	3.257
Copper content..... pounds.....	260,308,636	197,661,108	42,655,952	17,647,192
Do..... percent.....	1.471	1.528	2.425	6.543
Concentrates produced..... dry tons.....	415,245	315,663	107,868	56,328
Gold content..... ounces.....	51,486.00	51,249.84	10,569.80	7,307.67
Do..... ounce per ton.....	0.124	0.162	0.098	0.130
Silver content..... ounces.....	1,942,254	1,982,532	381,253	405,335
Do..... ounces per ton.....	4.677	6.281	3.534	7.196
Copper content..... pounds.....	234,413,749	181,144,231	39,983,124	16,927,161
Do..... percent.....	28.226	28.693	18.533	15.026
Ratio of concentration: Ore to concentrates.....	21.30:1	20.49:1	8.154:1	2.39:1
Recoveries:				
Gold..... percent.....	70.21	69.91	90.68	90.85
Silver..... do.....	91.34	93.89	93.89	92.27
Copper..... do.....	90.05	91.64	93.73	95.92

TABLE 7.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of copper ores, 1930-33

SCREEN ANALYSES OF FLOTATION FEED

	1930	1931	1932	1933
Number of plants.....	31	18	15	8
Ore treated..... dry tons..	33,967,845	25,973,225	9,725,582	6,601,816
+65 mesh..... percent..	7.80	6.70	6.54	5.37
-65+100 mesh..... do....	11.15	11.42	9.98	8.98
-100+150 mesh..... do....	10.42	11.20	10.78	11.72
-150+200 mesh..... do....	10.44	10.00	11.00	12.12
-200 mesh..... do....	60.19	60.68	61.70	61.81

ALKALINITY OF FLOTATION CIRCUIT

	1930	1931	1932	1933
Number of plants.....	18	9	10	3
Ore treated..... dry tons..	26,107,615	19,654,724	7,160,221	4,117,367
Alkalinity of copper circuit..... pH units..	9.50	9.73	9.66	9.17

PULP DENSITY OF FLOTATION CIRCUIT

	(¹)	15	12	7
Number of plants.....	(¹)	25,629,211	7,138,706	5,501,426
Ore treated..... dry tons..	(¹)	25.29	25.92	26.40
Pulp density..... percent solids..	(¹)			

¹ Figures not available.

TABLE 8.—Consumption of reagents in the treatment of copper-iron ores in 1933

[3 plants treating 267,049 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1931 ¹
I. Frothers:					
Pine oils.....	2	164,049	22,740	0.139	0.109
Cresylic acid.....	2	187,290	11,070	.059	
Total frothers.....	3	267,049	33,810	.127	.109
II. Collectors:					
Distillation products: Coal-tar creosotes....	1	84,290	920	.011	.009
Synthetic products:					
Ethyl xanthates.....	2	164,049	60,100	.366	.159
Dicresol-dithiophosphoric acid.....	2	182,759	33,000	.181	.166
Total synthetic products.....	3	267,049	93,100	.349	.333
Total collectors.....	3	267,049	94,020	.352	.338
III. Acids and alkalis:					
Acids: Sulphuric acid.....	2	164,049	2,155,000	13.136	26.292
Alkalis: Lime.....	2	164,049	604,900	3.687	1.473
IV. Other inorganic reagents:					
Activating: Copper sulphate.....	1	84,290	88,235	1.047	.454
Depressing: Cyanides.....	1	84,290	8,775	.104	.015
Total reagents.....	3	267,049	2,984,740	11.177	24.824

¹ Figures for 1932 not available.

TABLE 9.—Comparison of metallurgical results in the treatment of copper-iron ores, 1931 and 1933¹

	1931 ¹	1933
Number of plants.....	3	3
Total ore treated..... dry tons.....	579,647	511,339
Copper content..... pounds.....	13,195,089	6,616,798
Do..... percent.....	1.138	0.647
Zinc content..... pounds.....	5,995,038	1,904,954
Do..... percent.....	0.517	0.187
Iron content..... pounds.....	337,992,932	138,469,148
Do..... percent.....	29.155	13.540
Copper concentrates produced..... dry tons.....	30,104	11,476
Copper content..... pounds.....	10,889,990	5,277,731
Do..... percent.....	18.088	22.995
Zinc content..... pounds.....	1,357,650	572,448
Do..... percent.....	2.255	2.494
Iron content..... pounds.....	21,101,628	2,646,564
Do..... percent.....	35.048	11.531
Zinc concentrates produced..... dry tons.....	2,378	823
Copper content..... pounds.....	61,828	13,497
Do..... percent.....	1.300	0.820
Zinc content..... pounds.....	2,349,464	788,434
Do..... percent.....	49.400	47.900
Iron content..... pounds.....	642,060	235,378
Do..... percent.....	13.500	14.300
Iron concentrates produced..... dry tons.....	213,151	83,591
Copper content..... pounds.....	1,296,062	488,570
Do..... percent.....	0.304	0.276
Zinc content..... pounds.....	964,346	223,930
Do..... percent.....	0.226	0.127
Iron content..... pounds.....	220,929,022	93,664,490
Do..... percent.....	51.825	52.864
Ratio of concentration:		
Ore to copper concentrates.....	19.25:1	44.56:1
Ore to zinc concentrates.....	126.59:1	621.31:1
Ore to iron concentrates.....	2.72:1	5.77:1
Ore to all concentrates.....	2.36:1	5.07:1
Recoveries:		
Copper in copper concentrates..... percent.....	82.53	79.76
Copper in zinc concentrates..... do.....	.47	.21
Copper in iron concentrates..... do.....	9.82	7.38
Copper in all concentrates..... do.....	92.82	87.35
Zinc in copper concentrates..... do.....	22.65	30.05
Zinc in zinc concentrates..... do.....	39.19	41.39
Zinc in iron concentrates..... do.....	16.08	11.75
Zinc in all concentrates..... do.....	77.92	83.19
Iron in copper concentrates..... do.....	6.24	1.91
Iron in zinc concentrates..... do.....	.19	.17
Iron in iron concentrates..... do.....	65.37	67.64
Iron in all concentrates..... do.....	71.80	69.72

¹ Figures for 1932 not available.

TABLE 10.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of copper-iron ores, 1931 and 1933¹

SCREEN ANALYSES OF FLOTATION FEED

	1931 ¹	1933
Number of plants.....	3	3
Ore treated..... dry tons.....	579,647	267,049
+65 mesh..... percent.....	4.14	1.26
-65+100 mesh..... do.....	8.92	4.90
-100+150 mesh..... do.....	9.47	9.66
-150+200 mesh..... do.....	11.69	16.58
-200 mesh..... do.....	65.78	67.60

ALKALINITY OF FLOTATION CIRCUITS

	1931 ¹	1933
Number of plants.....	3	3
Ore treated..... dry tons.....	579,647	267,049
Alkalinity:		
Copper circuit..... pH units.....	9.30	8.81
Zinc circuit..... do.....	10.70	12.10
Iron circuit..... do.....	6.92	6.30

Footnotes at end of table.

TABLE 10.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of copper-iron ores, 1931 and 1933—Continued

PULP DENSITY OF FLOTATION FEED

	1931	1933
Number of plants.....	2	3
Ore treated.....dry tons..	423,587	267,049
Pulp density.....percent solids..	30.47	27.91

¹ Figures for 1932 not available.
² 1 plant treating 266,300 tons of ore.
³ 1 plant treating 84,290 tons of ore.

TABLE 11.—Consumption of reagents in the treatment of native copper ores in 1933

[2 plants treating 365,320 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers: Pine oils.....	2	365,320	45,200	0.124	0.096
II. Collectors: Ethyl xanthates.....	2	365,320	40,350	.110	.128
III. Acids ¹ and alkalies: Lime.....	1	170,000	20,000	.118	.357
Total reagents.....	2	365,320	105,550	.289	.308

¹ No acids consumed.

TABLE 12.—Comparison of metallurgical results in the treatment of native copper ores, 1931-33

	1931	1932	1933
Number of plants.....	6	5	2
Total ore treated.....dry tons..	3,570,748	1,142,775	697,158
Copper content.....pounds..	126,722,164	57,204,504	48,897,598
Do.....percent..	1.77	2.50	3.51
Gravity concentrates produced.....dry tons..	69,294	31,913	27,723
Copper content.....pounds..	102,464,095	46,583,678	38,846,574
Do.....percent..	73.93	72.99	70.06
Flotation concentrates produced.....dry tons..	14,052	5,763	3,796
Copper content.....pounds..	13,658,401	4,755,190	3,525,556
Do.....percent..	48.60	41.26	46.44
Ratio of concentration:			
Ore to gravity concentrates.....	51.53:1	35.81:1	25.15:1
Ore to flotation concentrates.....	254.11:1	198.30:1	183.66:1
Ore to all concentrates.....	42.84:1	30.33:1	22.12:1
Copper recoveries:			
In gravity concentrates.....percent..	80.86	81.43	79.44
In flotation concentrates.....do....	10.78	8.31	7.21
In all concentrates.....do....	91.64	89.74	86.65

TABLE 13.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of native copper ores, 1931-33

SCREEN ANALYSES OF FLOTATION FEED

	1931	1932	1933
Number of plants.....	5	5	2
Ore treated.....dry tons..	1,662,048	622,838	365,320
+65 mesh.....percent..	14.94	13.45	4.19
-65+100 mesh.....do....	14.00	11.25	5.79
-100+150 mesh.....do....	7.84	8.19	6.70
-150+200 mesh.....do....	6.02	6.42	10.48
-200 mesh.....do....	57.20	60.69	72.84

TABLE 13.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of native copper ores, 1931-33—Continued

ALKALINITY OF FLOTATION CIRCUIT				
		1931	1932	1933
Number of plants.....		5	5	2
Ore treated.....	dry tons..	1,662,048	622,838	365,320
Alkalinity of copper circuit.....	pH units..	8.47	8.59	7.89

PULP DENSITY OF FLOTATION CIRCUIT				
		1931	1932	1933
Number of plants.....		4	5	2
Ore treated.....	dry tons..	1,402,048	622,838	365,320
Pulp density.....	percent solids..	29.28	28.77	28.84

LEAD ORES

The production of lead ores, including copper-lead ores, continued to decrease in 1933, particularly at properties having straight flotation plants. Most of the lead ore milled in 1933 was treated by combined gravity and flotation concentration. Tables 14 to 16 summarize mill data for plants treating lead ores and copper-lead ores.

TABLE 14.—Consumption of reagents in the treatment of lead ores and copper-lead ores in 1933

[19 plants treating 2,164,152 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers:					
Pine oils.....	11	1,036,940	10,545	0.010	0.010
Cresylic acid.....	12	2,016,842	231,210	.115	.209
Total frothers.....	19	2,164,152	241,755	.112	.186
II. Collectors:					
Distillation products: Coal-tar creosotes.....					
	9	2,088,393	293,404	.140	.015
Synthetic products:					
Ethyl xanthates.....	12	1,527,728	69,136	.045	.053
Amyl xanthates.....	2	15,759	780	.049	.053
Dieresol-dithiophosphoric acid.....	11	2,012,797	62,175	.031	.026
Sodium dieresol-dithiophosphate.....	1	409,559	3,730	.009	.....
Total synthetic products.....	18	2,055,142	135,821	.066	.085
Total collectors.....	19	2,164,152	429,225	.198	.087
III. Acids¹ and alkalis:					
Alkalies:					
Sodium carbonate.....	4	509,564	62,252	.122	.237
Lime.....	3	734,203	237,176	.323	.124
Total alkalies.....	6	873,861	299,428	.343	.206
IV. Other inorganic reagents:					
Sulphidizing: Sodium sulphide.....	2	20,900	10,450	.500	.395
Activating: Copper sulphate.....	2	501,064	182,600	.364	.092
Depressing:					
Cyanides.....	8	1,889,839	79,401	.042	.014
Sodium silicate.....	1	369,906	110,500	.299	5.588
Zinc sulphate.....	6	1,470,785	160,356	.109	.152
Total depressing.....	10	2,039,297	350,257	.172	.142
Total reagents.....	19	2,164,152	1,513,715	.699	.577

¹ No acids consumed.

TABLE 15.—Comparison of metallurgical results in the treatment of lead ores and copper-lead ores, 1932-33

	Method of concentration			
	Straight flotation		Combined gravity and flotation	
	1932	1933	1932	1933
Number of plants	17	11	8	8
Total ore treated..... dry tons	200,842	155,914	4,229,314	3,079,723
Gold content..... ounces	3,671.63	1,116.00	60.00	205.00
Do..... ounce per ton	0.018	0.007	Trace	Trace
Silver content..... ounces	4,028,178	3,752,921	2,590,098	2,263,362
Do..... ounces per ton	20,056	24,070	0.612	0.735
Copper content..... pounds	1,039,347	1,062,615	562,319	584,230
Do..... percent	0.259	0.341	0.067	0.010
Lead content..... pounds	9,001,225	3,245,160	363,207,494	284,850,053
Do..... percent	2.241	1.041	4.294	4.625
Zinc content..... pounds			18,660,116	34,717,387
Lead concentrates produced..... dry tons	12,727	6,806	265,013	206,841
Gold content..... ounces	3,025.36	961.49		
Do..... ounce per ton	0.238	0.141		
Silver content..... ounces	3,756,337	3,548,510	2,264,050	2,034,097
Do..... ounces per ton	295.147	521.380	8.543	9.834
Copper content..... pounds	955,603	987,182	473,267	500,256
Do..... percent	3.754	7.252	0.893	0.121
Lead content..... pounds	8,153,676	2,848,449	342,807,795	266,009,398
Do..... percent	32.033	20.926	64.678	64.303
Other concentrates produced..... dry tons	355		5,294	13,331
Gold content..... ounces	18.48		37.43	131.58
Do..... ounce per ton	0.052		0.007	0.010
Silver content..... ounces	257		20,961	39,390
Do..... ounces per ton	0.724		3.959	2.955
Copper content..... pounds	876		17,996	43,460
Do..... percent	0.123		0.170	0.163
Lead content..... pounds	19,450		308,720	972,597
Do..... percent	2.740		2.916	3.648
Zinc content..... pounds			5,709,530	12,978,408
Do..... percent			53.925	43.676
Ratio of concentration: Ore to lead concentrates	15.78:1	22.91:1	15.96:1	14.89:1
Recoveries:				
Gold in lead concentrates..... percent	82.40	86.16		
Silver in lead concentrates..... do	93.25	94.55	87.41	89.87
Copper in lead concentrates..... do	91.94	92.90	84.16	85.63
Lead in lead concentrates..... do	90.58	87.78	94.38	93.39
Gold in all concentrates..... do	82.90	86.16	63.37	64.19
Silver in all concentrates..... do	93.26	94.55	88.22	91.61
Copper in all concentrates..... do	92.03	92.90	87.36	93.07
Lead in all concentrates..... do	90.80	87.78	94.47	93.73
Zinc in all concentrates..... do			30.60	66.89

TABLE 16.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of lead ores and copper-lead ores, 1931-33

SCREEN ANALYSES OF FLOTATION FEED

	1931	1932	1933
Number of plants	19	16	13
Ore treated..... dry tons	3,848,408	2,915,736	2,150,352
+65 mesh..... percent	5.33	4.47	4.90
-65+100 mesh..... do	9.30	9.10	9.17
-100+150 mesh..... do	10.79	11.33	12.18
-150+200 mesh..... do	11.70	12.35	11.73
-200 mesh..... do	62.88	62.75	62.02

ALKALINITY OF FLOTATION CIRCUITS

	1931	1932	1933
Number of plants	15	15	12
Ore treated..... dry tons	3,663,931	2,763,853	2,041,342
Alkalinity of lead circuit..... pH units	8.16	8.09	7.96
Alkalinity of zinc circuit..... do	8.68	8.26	7.60

1 4 plants treating 1,871,682 tons of ore.
 2 4 plants treating 862,815 tons of ore.
 3 2 plants treating 501,064 tons of ore.

TABLE 16.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of lead ores and copper-lead ores, 1931-33—Continued

		PULP DENSITY OF FLOTATION FEED		
		1931	1932	1933
Number of plants.....		11	15	12
Ore treated.....	dry tons..	2,517,841	2,763,853	2,041,342
Pulp density.....	percent solids..	28.75	28.64	30.41

LEAD-ZINC ORES

The output of lead-zinc ores increased substantially in 1933 but was considerably less than in 1930 or 1931. There were no marked changes in methods of treatment in 1933, and consumption of reagents, metallurgical data, etc., were about the same as in 1932.

TABLE 17.—Consumption of reagents in the treatment of lead-zinc ores in 1933

[30 plants treating 1,687,625 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers:					
Pine oils.....	21	1,329,315	241,163	0.181	0.121
Cresylic acid.....	20	1,094,600	93,593	.086	.062
Total frothers.....	30	1,687,625	334,756	.198	.160
II. Collectors:					
Distillation products:					
Coal-tar creosotes.....	9	630,980	274,796	.436	.675
Wood-tar creosotes.....	3	331,542	22,733	.069	.....
Blast-furnace oils.....	1	139,682	15,170	.109	.....
Total distillation products.....	11	872,205	312,699	.359	.675
Synthetic products:					
Ethyl xanthates.....	19	1,290,785	226,514	.175	.155
Butyl xanthates.....	1	191,905	52,750	.275	.252
Amyl xanthates.....	6	294,862	45,130	.153	.057
Xanthate derivatives.....	3	312,446	31,345	.100	.122
Dicresol-dithiophosphoric acid.....	11	426,456	35,991	.084	.056
Sodium dicresol-dithiophosphate.....	13	478,515	61,342	.128	.084
Thiocarbamilide.....	1	58,540	2,600	.044	.091
Total synthetic products.....	29	1,654,883	455,672	.275	.243
Total collectors.....	30	1,687,625	768,371	.455	.467
III. Acids¹ and alkalis:					
Alkalies:					
Sodium carbonate.....	8	632,375	221,010	.349	.848
Lime.....	14	1,222,643	2,563,429	2.097	1.097
Total alkalies.....	17	1,453,157	2,784,439	1.916	1.326
IV. Other inorganic reagents:					
Sulphidizing: Sodium sulphide.....	2	274,438	230,242	.839	.608
Activating: Copper sulphate.....	30	1,687,625	1,988,057	1.178	1.052
Depressing:					
Cyanides.....	11	1,076,363	253,280	.235	.142
Sodium sulphite.....	3	332,978	282,500	.848	1.092
Sodium silicate.....	3	239,429	81,906	.342	.023
Zinc sulphate.....	13	1,119,041	820,869	.734	.756
Sodium bichromate.....	2	248,540	9,990	.040	.206
Total depressing.....	16	1,478,359	1,448,545	.980	.953
Miscellaneous ²	1	67,726	75,610	1.116	1.070
Total reagents.....	30	1,687,625	7,630,020	4.521	3.746

¹ No acids consumed.² Includes zinc chloride and calcium sulphate.

TABLE 18.—Comparison of metallurgical results in the treatment of lead-zinc ores, 1932-33

	Method of concentration			
	Straight flotation		Combined gravity and flotation	
	1932	1933	1932	1933
Number of plants.....	15	15	21	15
Total ore treated..... dry tons.....	1, 139, 583	1, 288, 359	1, 422, 345	2, 219, 061
Gold content..... ounces.....	64, 676. 71	54, 280. 89	74. 60	-----
Do..... ounce per ton.....	0. 057	0. 042	Trace	-----
Silver content..... ounces.....	5, 866, 351	6, 851, 344	18, 915	-----
Do..... ounces per ton.....	5. 148	5. 318	0. 013	-----
Copper content..... pounds.....	11, 022, 668	11, 271, 686	4, 000	-----
Do..... percent.....	0. 486	0. 437	Trace	-----
Lead content..... pounds.....	157, 964, 737	194, 524, 825	22, 570, 380	35, 259, 074
Do..... percent.....	6. 931	7. 549	0. 793	0. 794
Zinc content..... pounds.....	226, 007, 996	274, 228, 940	128, 745, 420	203, 306, 605
Do..... percent.....	9. 916	10. 643	4. 526	4. 581
Lead concentrates produced..... dry tons.....	122, 558	149, 119	10, 811	17, 647
Gold content..... ounces.....	38, 036. 60	30, 616. 73	32. 69	-----
Do..... ounce per ton.....	0. 310	0. 205	0. 003	-----
Silver content..... ounces.....	4, 901, 447	4, 904, 846	14, 496	-----
Do..... ounces per ton.....	39. 993	32. 892	1. 341	-----
Copper content..... pounds.....	7, 225, 612	7, 051, 650	2, 164	-----
Do..... percent.....	2. 948	2. 364	0. 010	-----
Lead content..... pounds.....	138, 808, 392	168, 122, 020	16, 266, 548	27, 630, 571
Do..... percent.....	56. 630	56. 372	75. 232	78. 287
Zinc content..... pounds.....	16, 969, 011	21, 904, 824	539, 750	640, 243
Do..... percent.....	6. 923	7. 345	2. 496	1. 814
Zinc concentrates produced..... dry tons.....	161, 033	201, 173	90, 758	142, 849
Gold content..... ounces.....	5, 515. 95	6, 606. 18	14. 50	-----
Do..... ounce per ton.....	0. 034	0. 033	Trace	-----
Silver content..... ounces.....	475, 753	1, 265, 432	2, 200	-----
Do..... ounces per ton.....	2. 954	6. 290	0. 024	-----
Copper content..... pounds.....	2, 101, 412	2, 240, 372	-----	-----
Do..... percent.....	0. 652	0. 557	-----	-----
Lead content..... pounds.....	5, 662, 800	11, 937, 105	2, 903, 896	3, 514, 164
Do..... percent.....	1. 758	2. 967	1. 600	1. 230
Zinc content..... pounds.....	182, 292, 702	223, 278, 147	110, 617, 848	174, 608, 054
Do..... percent.....	56. 798	55. 494	60. 941	61. 116
Iron concentrates produced..... dry tons.....	75, 958	74, 752	-----	-----
Gold content..... ounces.....	9, 682. 08	6, 856. 03	-----	-----
Silver content..... do.....	71, 540	86, 920	-----	-----
Copper content..... pounds.....	233, 594	230, 787	-----	-----
Lead content..... do.....	2, 210, 887	2, 277, 379	-----	-----
Zinc content..... do.....	7, 683, 465	6, 878, 295	-----	-----
Ratio of concentration:				
Ore to lead concentrates.....	9. 30:1	8. 64:1	131. 56:1	125. 75:1
Ore to zinc concentrates.....	7. 08:1	6. 40:1	15. 67:1	15. 53:1
Ore to iron concentrates.....	15. 00:1	17. 24:1	-----	-----
Ore to all concentrates.....	3. 17:1	3. 03:1	14. 00:1	13. 83:1
Recoveries:				
Gold in lead concentrates..... percent.....	58. 81	56. 41	43. 82	-----
Gold in zinc concentrates..... do.....	8. 53	12. 17	19. 44	-----
Gold in iron concentrates..... do.....	14. 97	12. 63	-----	-----
Gold in all concentrates..... do.....	82. 31	81. 21	63. 26	-----
Silver in lead concentrates..... do.....	83. 55	71. 59	76. 64	-----
Silver in zinc concentrates..... do.....	8. 11	18. 47	11. 63	-----
Silver in iron concentrates..... do.....	1. 22	1. 27	-----	-----
Silver in all concentrates..... do.....	92. 88	91. 33	88. 27	-----
Copper in lead concentrates..... do.....	65. 55	62. 56	54. 10	-----
Copper in zinc concentrates..... do.....	19. 07	19. 88	-----	-----
Copper in iron concentrates..... do.....	2. 12	1. 96	-----	-----
Copper in all concentrates..... do.....	86. 74	84. 40	54. 10	-----
Lead in lead concentrates..... do.....	87. 87	86. 43	72. 07	78. 36
Lead in zinc concentrates..... do.....	3. 59	6. 13	12. 87	9. 97
Lead in iron concentrates..... do.....	1. 40	1. 17	-----	-----
Lead in all concentrates..... do.....	92. 86	93. 73	84. 94	88. 33
Zinc in lead concentrates..... do.....	7. 51	7. 99	. 42	. 32
Zinc in zinc concentrates..... do.....	80. 66	81. 42	85. 92	85. 88
Zinc in iron concentrates..... do.....	3. 40	2. 51	-----	-----
Zinc in all concentrates..... do.....	91. 57	91. 92	86. 34	86. 20

TABLE 19.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of lead-zinc ores, 1931-33

SCREEN ANALYSES OF FLOTATION FEED			
	1931	1932	1933
Number of plants.....	24	17	16
Ore treated..... dry tons..	1,675,424	1,206,843	1,273,128
+65 mesh..... percent..	4.68	5.23	4.72
-65+100 mesh..... do.....	8.55	8.08	6.80
-100+150 mesh..... do.....	8.88	9.34	8.38
-150+200 mesh..... do.....	12.91	16.24	12.99
-200 mesh..... do.....	64.98	61.11	67.11

ALKALINITY OF FLOTATION CIRCUITS			
	1931	1932	1933
Number of plants.....	20	17	16
Ore treated..... dry tons..	1,308,180	1,203,420	1,273,128
Alkalinity:			
Lead circuit..... pH units..	7.99	7.67	7.78
Zinc circuit..... do.....	8.23	8.25	8.45
Iron circuit..... do.....	1 8.07	2 8.12	3 8.09

PULP DENSITY OF FLOTATION FEED			
	1931	1932	1933
Number of plants.....	16	18	16
Ore treated..... dry tons..	1,052,663	1,236,843	1,273,128
Pulp density..... percent solids..	33.03	32.11	32.93

- 1 4 plants treating 486,682 tons of ore.
 2 2 plants treating 384,015 tons of ore.
 3 2 plants treating 394,327 tons of ore.

ZINC ORES

The output of zinc ores in 1933 was nearly double that in 1932 and only about 15 percent less than that in 1931. As in past years, nearly all the zinc ore was treated by combined gravity and flotation concentration.

TABLE 20.—Consumption of reagents in the treatment of zinc ores in 1933

[8 plants treating 617,883 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers:					
Pine oils.....	5	573,393	76,219	0.133	0.108
Cresylic acid.....	4	122,730	4,800	.039	.040
Total frothers.....	8	617,883	81,019	.131	.113
II. Collectors:					
Distillation products: Coal-tar creosotes.....	2	434,543	44,563	.103	.192
Synthetic products:					
Ethyl xanthates.....	4	99,100	16,660	.168	.141
Butyl xanthates.....	1	78,240	9,370	.120	.013
Dicresol-dithiophosphoric acid.....	1	6,000	900	.150	.188
Sodium dicresol-dithiophosphate.....	3	512,783	26,762	.052	.043
Total synthetic products.....	8	617,883	53,692	.087	.084
Total collectors.....	8	617,883	98,255	.159	.210
III. Acids ¹ and alkalis: Lime.....	3	138,850	580,450	4.180	3.720
IV. Other inorganic reagents:					
Activating: Copper sulphate.....	8	617,883	536,609	.868	.719
Total reagents.....	8	617,883	1,296,333	2.098	1.992

¹ No acids consumed.

TABLE 21.—Comparison of metallurgical results in the treatment of zinc ores, 1932–33

	Method of concentration			
	Straight flotation		Combined gravity and flotation	
	1932	1933	1932	1933
Number of plants.....	5	4	9	4
Total ore treated..... dry tons..	385,399	290,963	727,194	923,582
Lead content..... pounds..	75,000	19,965	441,040	428,400
Do..... percent..	0.010	0.003	0.030	0.023
Zinc content..... pounds..	44,664,513	57,474,333	39,910,730	36,270,493
Do..... percent..	5.795	9.877	2.744	1.964
Lead concentrates produced..... dry tons..			70,780	
Lead content..... pounds..			76,935	
Do..... percent..			1,920	
Zinc content..... pounds..			2,087	
Do..... percent..			46	
Zinc concentrates produced..... dry tons..	32,555	45,362	28,508	25,799
Lead content..... pounds..	59,870	18,200	271,760	289,580
Do..... percent..	0.920	0.020	0.477	0.581
Zinc content..... pounds..	39,698,868	51,768,563	34,618,446	31,085,504
Do..... percent..	60.972	57.062	60.728	60.246
Ratio of concentration:				
Ore to zinc concentrates.....	11.84:1	6.41:1	25.51:1	35.80:1
Ore to all concentrates.....	11.84:1	6.41:1	25.47:1	35.80:1
Recoveries:				
Lead in lead concentrates..... percent..			16.05	
Lead in zinc concentrates..... do..	79.83	91.07	49.37	67.60
Lead in all concentrates..... do..	79.83	91.07	65.42	67.60
Zinc in lead concentrates..... do..			01	
Zinc in zinc concentrates..... do..	88.88	90.07	86.74	85.70
Zinc in all concentrates..... do..	88.88	90.07	86.75	85.70

TABLE 22.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of zinc ores, 1931–33

SCREEN ANALYSES OF FLOTATION FEED

	1931	1932	1933
Number of plants.....	4		6
Ore treated..... dry tons..	620,673	503,645	576,883
+65 mesh..... percent..	8.36	11.89	6.25
—65+100 mesh..... do..	17.81	17.80	9.56
—100+150 mesh..... do..	12.02	11.51	11.98
—150+200 mesh..... do..	10.93	11.24	13.81
—200 mesh..... do..	50.88	47.56	58.40

ALKALINITY OF FLOTATION CIRCUITS

Lead circuit:			
Number of plants.....	3		
Ore treated..... dry tons..	68,249		
Alkalinity..... pH units..	7.34		
Zinc circuit:			
Number of plants.....	10	4	6
Ore treated..... dry tons..	505,884	503,645	576,883
Alkalinity..... pH units..	8.57	8.34	8.17

PULP DENSITY OF FLOTATION FEED

Number of plants.....	9	5	6
Ore treated..... dry tons..	734,401	509,865	576,883
Pulp density..... percent solids..	32.45	37.24	33.79

GOLD AND SILVER ORES

There were marked increases in the quantity of gold and silver ores produced in 1933 and in the number of mills treating such ore. Of the 4,509,376 tons of gold and silver ore produced, about 2,990,000 tons were treated at straight amalgamation or cyanidation plants; 239,701 tons were smelted; and the remainder was treated at concentration plants, most of which used some form of amalgamation or cyanidation in addition to the concentration equipment. Tables 23 to 25 summarize the concentration data for gold and silver ores.

TABLE 23.—Consumption of reagents in the treatment of gold and silver ores in 1933

[70 plants treating 1,264,023 tons of ore]

Reagent	Plants using	Ore treated (tons)	Consumption of reagents (pounds)		
			Total, 1933	Per ton	
				1933	1932
I. Frothers:					
Pine oils.....	61	1,153,855	99,478	0.086	0.079
Cresylic acid.....	20	312,490	49,442	.158	.184
Total frothers.....	70	1,264,023	148,920	.118	.116
II. Collectors:					
Distillation products:					
Coal-tar creosotes.....	7	189,924	20,917	.110	.140
Wood-tar creosotes.....	1	14,850	880	.059	.036
Petroleum products.....	3	8,271	1,968	.233	.....
Water-gas tars.....	1	15,195	960	.063	.....
Total distillation products.....	12	228,249	24,725	.108	.147
Synthetic products:					
Ethyl xanthates.....	42	353,079	45,678	.129	.129
Butyl xanthates.....	5	233,355	8,330	.036	.....
Amyl xanthates.....	36	840,119	54,222	.065	.040
Disoresol-dithiophosphoric acid.....	17	292,294	15,549	.053	.105
Sodium disoresol-dithiophosphate.....	5	350,471	946	.003	.005
Total synthetic products.....	70	1,264,023	124,725	.099	.072
Total collectors.....	70	1,264,023	149,450	.118	.083
III. Acids and alkalis:					
Acids: Sulphuric acid.....					
	1	68,230	13,650	.200	.139
Alkalis:					
Sodium carbonate.....	18	154,652	201,634	1.304	1.717
Sodium hydroxide.....	3	132,780	81,170	.611	.594
Lime.....	4	63,520	7,300	.115	.071
Total alkalis.....	22	247,685	290,104	1.171	.764
IV. Other inorganic reagents:					
Sulphidizing: Sodium sulphide.....					
	10	246,206	68,486	.278	.304
Activating: Copper sulphate.....					
	16	368,734	97,377	.264	.322
Depressing:					
Cyanides.....	2	62,657	1,059	.017	.011
Sodium silicate.....	2	7,200	400	.056	.135
Sodium sulphite.....	2	34,391	7,270	.211	.....
Zinc sulphate.....	2	8,220	2,280	.277	.200
Total depressing.....	7	105,348	11,009	.105	.053
Miscellaneous ¹					
	3	132,780	76,379	.575	.839
Total reagents.....	70	1,264,023	855,375	.677	.756

¹ Includes starch, chlorine, and lead acetate.

TABLE 24.—Comparison of metallurgical results in the treatment of gold and silver ores, 1932-33

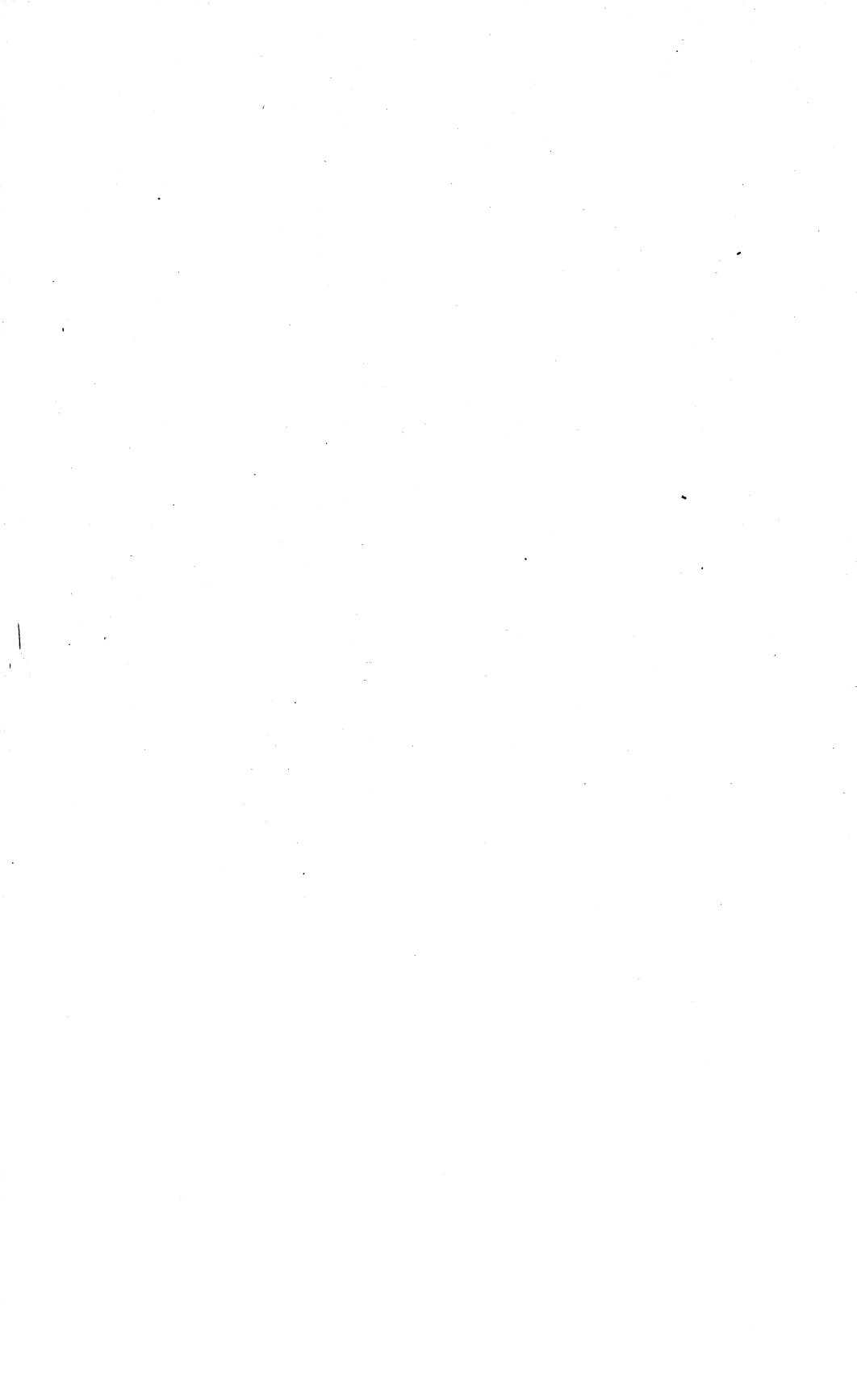
	Method of concentration			
	Straight concentration		Combined concentration and amalgamation or cyanidation	
	1932	1933	1932	1933
Number of plants.....	26	45	20	25
Total ore treated..... dry tons.....	302, 190	567, 034	498, 780	696, 993
Gold content..... ounces.....	61, 835. 56	133, 634. 94	235, 875. 07	247, 253. 55
Do..... ounce per ton.....	0. 205	0. 236	0. 473	0. 355
Silver content..... ounces.....	1, 056, 180	1, 032, 607	234, 418	356, 536
Do..... ounce per ton.....	3. 495	1. 821	0. 470	0. 512
Copper content..... pounds.....	2, 225, 075	2, 013, 532	172, 261	304, 695
Do..... per cent.....	0. 368	0. 178	0. 017	0. 022
Lead content..... pounds.....	2, 107, 730	3, 796, 969	543, 438	759, 700
Do..... percent.....	0. 349	0. 335	0. 054	0. 055
Zinc content..... pounds.....	14, 000	.....	.....	.....
Concentrates produced..... dry tons.....	13, 661	26, 744	13, 415	10, 326
Gold content..... ounces.....	55, 684. 02	115, 999. 46	64, 899. 86	45, 092. 71
Do..... ounce per ton.....	4. 075	4. 337	4. 838	4. 367
Silver content..... ounces.....	892, 001	831, 890	157, 600	185, 512
Do..... ounce per ton.....	65. 295	31. 106	11. 748	17. 966
Copper content..... pounds.....	1, 993, 887	1, 730, 842	134, 796	259, 438
Do..... percent.....	7. 298	3. 236	0. 502	1. 256
Lead content..... pounds.....	1, 777, 341	3, 237, 462	422, 682	660, 881
Do..... percent.....	6. 505	6. 053	1. 575	3. 200
Zinc content..... pounds.....	8, 000	.....	.....	.....
Bullion produced:				
Gold content..... fine ounces.....	.....	.....	152, 109. 67	187, 879. 25
Silver content..... do.....	.....	.....	33, 014	133, 604
Ratio of concentration: Ore to all concentrates.....	22.12 : 1	21.20 : 1	37.18 : 1	67.50 : 1
Recoveries:				
Gold in all concentrates..... percent.....	90. 02	86. 80	27. 51	18. 24
Gold in bullion..... do.....	.....	.....	64. 49	75. 98
Gold in all products..... do.....	90. 02	86. 80	92. 00	94. 22
Silver in all concentrates..... do.....	84. 46	80. 56	67. 23	52. 03
Silver in bullion..... do.....	.....	.....	14. 08	37. 47
Silver in all products..... do.....	84. 46	80. 56	81. 31	89. 50
Copper in all concentrates..... do.....	89. 61	85. 96	78. 25	85. 15
Lead in all concentrates..... do.....	84. 33	85. 26	77. 78	86. 99
Zinc in all concentrates..... do.....	57. 14	.....	.....	.....

TABLE 25.—Comparison of screen analyses, alkalinities, and pulp densities in the treatment of gold and silver ores, 1931-33

SCREEN ANALYSES OF FLOTATION FEED			
	1931	1932	1933
Number of plants.....	9	14	28
Ore treated..... dry tons.....	359, 919	450, 275	639, 579
+65 mesh..... percent.....	5. 58	4. 72	4. 98
-65+100 mesh..... do.....	9. 53	13. 38	9. 33
-100+150 mesh..... do.....	12. 52	12. 98	13. 11
-150+200 mesh..... do.....	16. 07	13. 84	14. 98
-200 mesh..... do.....	56. 30	55. 08	57. 60

ALKALINITY OF FLOTATION CIRCUIT			
	1931	1932	1933
Number of plants.....	8	11	18
Ore treated..... dry tons.....	259, 338	364, 588	498, 591
Alkalinity..... pH units.....	8. 57	8. 28	8. 15

PULP DENSITY OF FLOTATION FEED			
	1931	1932	1933
Number of plants.....	8	15	26
Ore treated..... dry tons.....	309, 466	386, 127	614, 891
Pulp density..... percent solids.....	32. 56	34. 83	26. 45



GOLD, SILVER, COPPER, LEAD, AND ZINC IN ARIZONA

(DETAILED STATISTICS—MINE REPORT)

By C. N. GERRY AND T. H. MILLER ¹

SUMMARY OUTLINE

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The output of gold, silver, copper, lead, and zinc from mines in Arizona in 1933, in terms of recovered metals, was 79,992.61 fine ounces of gold, 2,390,363 fine ounces of silver, 114,041,781 pounds of copper, 3,442,540 pounds of lead, and 11,024 pounds of zinc. There were 399 lode mines and 179 placers producing in 1933 compared with 341 lode mines and 179 placers in 1932.

From 1903 to the end of 1933 mines in Arizona have produced 348,825,575 tons of ore, old tailings, etc., 5,522,118.19 fine ounces of gold, 142,865,371 fine ounces of silver, 14,049,986,158 pounds of copper, 355,552,156 pounds of lead, and 137,944,286 pounds of zinc. The total value of the metal output for this period is \$2,532,688,034,² of which \$114,152,314² represents the value of gold.

Premium on newly mined gold.—There were four epochs of gold prices for newly mined gold in the United States in 1933: (1) The period of the legal coinage value of \$20.671835, from January 1 to August 9 to all producers; (2) that of (a) \$20.671835 to the majority of producers and (b) the fluctuating world price as secured by export by some producers, to August 29; (3) the period of fluctuating world price as secured through the agency of the Federal Reserve Banks, to October 25 (period of actual Bank sales, from September 8 to November 1); and (4) the period of the Reconstruction Finance Corporation arbitrarily fixed, gradually rising price (generally above the world price), from October 25 to December 31, 1933. For further details see chapter of Minerals Yearbook, 1934, on Gold and Silver (pp. 25 to 52), by Chas. W. Henderson.

Following is a table on mine production of gold in Arizona, 1929–33, in terms of recovered metal; two values are given for 1933—(1) at legal coinage value (\$20.67 + per ounce) and (2) at average weighted price (\$25.56 per ounce).

¹ Assisted by Paul Luff and LaRu Shepherd.
² Value of gold calculated at \$20.671835 per ounce.

Mine production of gold in Arizona, 1929-33, in terms of recovered metal

Year	Fine ounces	Value ¹	Year	Fine ounces	Value ¹
1929.....	202, 318. 14	\$4, 182, 287	1932.....	66, 789. 67	\$1, 380, 665
1930.....	169, 390. 38	3, 501, 610	1933.....	79, 992. 61	$\left\{ \begin{array}{l} 1, 653, 594 \\ 2, 044, 611 \end{array} \right.$
1931.....	126, 185. 94	2, 608, 495			

¹ 1929-32: At legal value (\$20.67+ per ounce); 1933: At both legal coinage value (\$20.67+ per ounce) and average weighted price (\$25.56 per ounce).

² At legal coinage value (\$20.67+ per ounce).

³ At average weighted price (\$25.56 per ounce).

Calculation of value of metal production.—The value of metal production hereinafter reported has been calculated at the figures given in the table that follows. Gold is figured at the mint value for fine gold, that is, \$20.671835 an ounce. The silver price is the average New York price for bar silver. The copper, lead, and zinc prices are weighted averages, for each year, of all grades of primary metal sold by producers.

Prices of silver, copper, lead, and zinc, 1929-33

Year	Silver	Copper	Lead	Zinc	Year	Silver	Copper	Lead	Zinc
	<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>		<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>
1929.....	\$0. 533	\$0. 176	\$0. 063	\$0. 066	1932.....	\$0. 282	\$0. 063	\$0. 030	\$0. 030
1930.....	. 385	. 130	. 050	. 048	1933.....	. 350	. 064	. 037	. 042
1931.....	. 290	. 091	. 037	. 038					

Mine production of gold, silver, copper, lead, and zinc in Arizona, 1929-33, in terms of recovered metals

Year	Mines producing		Ore, old tailings, etc. (short tons)	Gold		Silver	
	Lode	Placer		Fine ounces	Value	Fine ounces	Value
1929.....	390	22	25, 860, 772	202, 318. 14	\$4, 182, 287	7, 543, 283	\$4, 020, 570
1930.....	301	41	19, 802, 919	169, 390. 38	3, 501, 610	5, 540, 732	2, 133, 182
1931.....	252	68	13, 690, 610	126, 185. 94	2, 608, 495	3, 245, 311	941, 140
1932.....	341	179	4, 414, 579	66, 789. 67	1, 380, 665	2, 082, 823	587, 356
1933.....	399	179	995, 728	79, 992. 61	1, 653, 594	2, 390, 363	836, 627

Year	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
1929.....	830, 628, 411	\$146, 190, 600	16, 054, 122	\$1, 011, 410	2, 458, 580	\$162, 266	\$155, 567, 133
1930.....	576, 190, 607	74, 904, 779	8, 491, 623	424, 581	1, 630, 506	78, 264	81, 042, 416
1931.....	401, 344, 909	36, 522, 387	1, 964, 112	72, 672	-----	-----	40, 144, 694
1932.....	182, 491, 825	11, 496, 985	2, 364, 300	70, 929	-----	-----	13, 535, 935
1933.....	114, 041, 781	7, 298, 674	3, 442, 540	127, 374	11, 024	463	9, 916, 732

Gold and silver produced at placer mines in Arizona, 1929-33

Year	Gold		Silver		Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value		Fine ounces	Value	Fine ounces	Value
1929.....	273. 43	\$5, 652	42	\$22	1932.....	3, 479. 76	\$71, 933	454	\$128
1930.....	631. 63	13, 057	85	33	1933.....	5, 130. 12	106, 049	603	211
1931.....	1, 069. 23	22, 103	157	45					

Gold.—The output of gold in Arizona in 1933 was 79,992.61 fine ounces, an increase of nearly 20 percent over 66,789.67 ounces in 1932. Gold recovered at placers amounted to 5,130.12 ounces (1,650.36 ounces more than in 1932) and accounted for 6.41 percent of the State total; most of the increase in gold from placers resulted from operations of the Calari dredge on Lynx Creek, the Savoy property near Mayer, the King Tut mine in Mohave County, and claims at Octave in the Weaver district. More than half (59.27 percent) of the total gold came from copper ore, chiefly from the Copper Queen branch of the Phelps Dodge Corporation at Bisbee and the United Verde Extension mine at Jerome; the yield of gold from copper ore increased nearly 23 percent. Siliceous ore, old tailings, etc., yielded 24,657.81 ounces of gold (an increase of 5,052.93 ounces) and accounted for 30.83 percent of the total gold. Other classes of ore (lead and lead-zinc) yielded only 3.49 percent of the total. Most of the increase in gold from lode mines came from the Copper Queen branch at Bisbee, Lake Superior & Arizona at Superior, Big Jim at Oatman, United Verde Extension at Jerome, and Arabian and Roadside properties at Katherine. No gold was produced from copper ore at the New Cornelia mine at Ajo and the Morenci branch of the Phelps Dodge Corporation, as these mines were idle in 1933. Decreases were recorded in gold from gold ore at the Tom Reed mine at Oatman and the Katherine mine in Mohave County.

The largest producers of gold in Arizona in 1933, in order of output, were the Copper Queen branch of the Phelps Dodge Corporation at Bisbee, the United Verde Extension at Jerome, the Magma mine and the Lake Superior & Arizona Lease at Superior, the Big Jim mine at Oatman, the Roadside and Arabian groups at Katherine, the Vulture tailings dump near Wickenburg, and the Calari Dredging Co. near Prescott.

Silver.—The output of silver in Arizona in 1933 was 2,390,363 fine ounces compared with 2,082,823 ounces in 1932, an increase of nearly 15 percent but considerably less than the average annual output (5,572,971 ounces) for the decade 1924–33. Copper ore, etc., yielded 88.43 percent of the total silver, lead ore 5.85 percent, and siliceous ore, etc., 5.68 percent; the remainder (0.04 percent) came from placers and from lead-zinc ore. There were increases of 251,355 ounces in silver from copper ore, etc., 49,499 ounces from siliceous ore, etc., and 6,197 ounces from lead ore.

The largest silver producers in Arizona in 1933 were the Copper Queen branch of the Phelps Dodge Corporation at Bisbee, the Magma mine at Superior, and the United Verde Extension property at Jerome.

Copper.—The output of copper in Arizona in 1933 was 114,041,781 pounds compared with 182,491,825 pounds in 1932, a decrease of 37.5 percent; the average annual output for the decade 1924–33 was 563,356,808 pounds. More than 99 percent of the total copper came from copper ore, and most of the remainder was recovered from precipitates. The marked decrease in copper from copper ore was due to the fact that the Morenci branch of the Phelps Dodge Corporation and the Miami, Inspiration, and New Cornelia mines were idle throughout 1933 and that the Ray mines of the Nevada Consolidated Copper Co. were active only 3 months of the year. The United Verde Extension Mining Co. reported a decrease of about 2,600,000

pounds in copper, but the Copper Queen branch of the Phelps Dodge Corporation an increase of more than 8,000,000 pounds.

The largest producers of copper in Arizona in 1933 were the Copper Queen branch of the Phelps Dodge Corporation at Bisbee, the United Verde Extension mine at Jerome, the Magma Copper Co. at Superior, and the Ray mines of the Nevada Consolidated Copper Co.

Lead.—The output of lead in Arizona in 1933 was 3,442,540 pounds compared with 2,364,300 pounds in 1932, an increase of 45.6 percent but only about one fourth of the average annual output (13,234,023 pounds) for the decade 1924-33. Lead ore yielded 94 percent of the total lead and siliceous gold ore most of the remainder. There was an increase of 992,697 pounds in lead from lead ore, due chiefly to the shipments of lead ore from the "79" property near Winkelman. The output of lead from the Copper Queen branch of the Phelps Dodge Corporation decreased more than 600,000 pounds, but increases from the "79", Tombstone, and Tombstone Extension mines more than offset this decrease.

The largest producers of lead in Arizona in 1933 were the Tombstone Extension mine at Tombstone, the "79" mine near Winkelman, the Tombstone Development Co. at Tombstone, and the Copper Queen branch of the Phelps Dodge Corporation at Bisbee.

Zinc.—The output of zinc in Arizona in 1933 was 11,024 pounds; no zinc was produced in 1924, 1931, and 1932, but the average annual output for the decade 1924-33 was 2,792,625 pounds. The small production in 1933 came from lead-zinc ore of milling grade from a property near Kingman, Mohave County.

MINE PRODUCTION BY COUNTIES

Mine production of gold, silver, copper, lead, and zinc in Arizona in 1933, by counties, in terms of recovered metals

County	Gold				Silver (lode and placer)		
	Lode		Placer		Total value	Fine ounces	Value
	Fine ounces	Value	Fine ounces	Value			
Cochise.....	33, 298. 01	\$688, 331	37. 25	\$770	\$689, 101	1, 366, 703	\$478, 346
Gila.....	576. 10	11, 909	41. 02	848	12, 757	11, 023	3, 858
Graham.....	18. 43	381			381	2, 260	791
Greenlee.....	203. 90	4, 215	260. 55	5, 386	9, 601	8, 817	3, 086
Maricopa.....	3, 123. 14	64, 561	254. 60	5, 263	69, 824	4, 423	1, 548
Mohave.....	8, 054. 68	166, 505	193. 45	3, 999	170, 504	14, 697	5, 144
Pima.....	560. 52	11, 587	129. 16	2, 670	14, 257	5, 177	1, 812
Pinal.....	11, 529. 02	238, 326			238, 326	584, 063	204, 422
Santa Cruz.....	344. 72	7, 126	3. 58	74	7, 200	5, 540	1, 939
Yavapai.....	16, 443. 92	339, 926	3, 041. 77	62, 879	402, 805	383, 563	134, 247
Yuma.....	710. 05	14, 678	1, 168. 74	24, 160	38, 838	4, 097	1, 434
Total, 1932.....	74, 862. 49	1, 547, 545	5, 130. 12	106, 049	1, 653, 594	2, 390, 363	836, 627
	63, 309. 91	1, 308, 732	3, 479. 76	71, 933	1, 380, 665	2, 082, 823	587, 356

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Mine production of gold, silver, copper, lead, and zinc in Arizona in 1933, by counties, in terms of recovered metals—Continued

County	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
Cochise.....	55,827,547	\$3,572,963	2,015,027	\$74,556			\$4,814,966
Gila.....	299,875	19,192	826,946	30,597			66,404
Graham.....	4,000	256	67,784	2,508			3,936
Greenlee.....	7,219	462	378	14			13,163
Maricopa.....	4,391	281	12,000	444			72,097
Mohave.....	11,062	708	116,108	4,296	11,024	\$463	181,115
Pima.....	5,703	365	41,837	1,548			17,982
Pinal.....	24,598,250	1,574,288	33,703	1,247			2,018,283
Santa Cruz.....	20,156	1,290	53,054	1,963			12,392
Yavapai.....	33,257,843	2,128,502	195,838	7,246			2,672,800
Yuma.....	5,735	367	79,865	2,955			43,594
	114,041,781	7,298,674	3,442,540	127,374	11,024	463	9,916,732
Total, 1932.....	182,491,825	11,496,985	2,364,300	70,929			13,535,935

Ore, old tailings, etc., sold or treated and lode mines producing in Arizona, 1932-33, by counties

County	Ore, old tailings, etc. (short tons)		Lode mines producing		County	Ore, old tailings, etc. (short tons)		Lode mines producing	
	1932	1933	1932	1933		1932	1933	1932	1933
	Cochise.....	271,547	333,683	36		42	Pinal.....	742,728	331,423	35	39
Gila.....	1,999,698	2,653	26	25	Santa Cruz.....	291	502	13	33
Graham.....	71	204	2	6	Yavapai.....	264,213	257,125	90	108
Greenlee.....	751,483	320	3	3	Yuma.....	1,376	808	28	32
Maricopa.....	6,517	40,135	26	20					
Mohave.....	18,661	27,990	49	48		4,414,579	995,728	341	399
Pima.....	357,994	885	33	43					

Gold and silver produced at placer mines in Arizona in 1933, by counties

County	Mines				Gold (fine ounces)	Silver (fine ounces)	Total value
	Drift	Dredge	Hydraulic and sluicing	Dry methods			
Cochise.....			2	5	37.25	3	\$771
Gila.....				5	41.02	6	850
Greenlee.....			16		260.55	34	5,398
Maricopa.....			3	17	254.60	20	5,270
Mohave.....			4	9	193.45	20	4,006
Pima.....			2	5	129.16	20	2,677
Santa Cruz.....				1	3.58		74
Yavapai.....		1	63	19	3,041.77	383	63,013
Yuma.....			3	21	1,168.74	117	24,201
Total, 1932.....	3	1	93	82	5,130.12	603	106,260
	3		92	84	3,479.76	454	72,061

MINING INDUSTRY

The fact that the Arizona mining industry in general made no improvement during 1933 is shown clearly by the continued decrease in total value of the output of gold, silver, copper, lead, and zinc compared with that in 1932 and 1931. In 1931 the total value was about \$40,000,000; in 1932 it dropped to \$13,500,000; and in 1933 it was only about \$10,000,000, or less than one eighth of the annual average value for the decade 1924-33. The copper industry, which is of greatest importance to Arizona, continued to be affected by the low price of copper and the depressed condition of the industry; the average price

of the metal for the year was only 6.4 cents a pound. In consequence of these adverse conditions, four of the large copper mines that closed in 1932 were idle throughout 1933 and another large copper producer was active only a few months of the year. In spite of the fact that the production of copper decreased decidedly in 1933, the yield of both gold and silver from copper ore increased considerably, doubtless to the mining of ore richer in gold and silver. Encouraging features of the year were the improvement in production of gold from lode mines, chiefly in Cochise, Pinal, Yavapai, and Mohave Counties, and of placer gold from districts in Yavapai, Yuma, Maricopa, Mohave, and Greenlee Counties, due to the decided advance in the price paid for gold. All the large concentration plants except those at Hayden, Superior, and Clemenceau were idle, and only four smelting plants (those at Douglas, Clemenceau, Superior, and Hayden) were operated; the mill and smelter at Hayden closed in February.

ORE CLASSIFICATION

Ore, old tailings, etc., sold or treated in Arizona in 1933, with content in terms of recovered metals

Source	Mines producing	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
		<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold ore.....	310	¹ 93, 802	23, 819. 99	70, 015	130, 819	180, 930	-----
Dry gold and silver ore.....	10	² 1, 625	773. 36	36, 954	13, 132	1, 681	-----
Dry silver ore.....	11	663	64. 46	28, 914	4, 105	8, 200	-----
Copper ore.....	26	³ 888, 508	⁴ 47, 410. 62	⁵ 2, 113, 721	⁶ 113, 812, 633	91	-----
Lead ore.....	46	11, 029	2, 768. 43	139, 706	80, 547	3, 233, 182	-----
Lead-zinc ore.....	1	101	25. 63	450	545	18, 456	11, 024 ⁷
Total, lode mines.....	7 399	995, 728	⁴ 74, 862. 49	⁵ 2, 389, 760	⁶ 114, 041, 781	3, 442, 540	11, 024 ⁷
Total, placers.....	179	-----	5, 130. 12	603	-----	-----	-----
Total, 1932.....	578 520	995, 728 4, 414, 579	⁴ 79, 992. 61 ⁶ 66, 789. 67	⁵ 2, 390, 363 ⁸ 2, 082, 823	⁶ 114, 041, 781 ⁹ 182, 491, 825	3, 442, 540 2, 364, 300	11, 024 ⁷ -----

¹ Includes 33,300 tons of old tailings treated by cyanidation and 4 tons of old tailings, 12 tons of old mill cleanings, and 1 ton of old slag sold to a smelter.

² Includes 104 tons of old tailings sold to a smelter.

³ Includes 6 tons of copper matte sold to a smelter.

⁴ Includes 0.17 ounce of gold recovered from precipitates.

⁵ Includes 59 ounces of silver recovered from precipitates.

⁶ Includes 836,942 pounds of copper recovered from precipitates.

⁷ A mine producing more than one class of ore is counted but once in arriving at total for all classes.

⁸ Includes 50 ounces of silver recovered from precipitates.

⁹ Includes 957,136 pounds of copper recovered from precipitates.

Value of metals from ore, old tailings, etc., sold or treated in Arizona in 1933, by classes of ore

Class	Ore, old tailings, etc. (short tons)	Gold	Silver	Copper	Lead	Zinc	Total value
Dry gold ore.....	93, 802	\$492, 403	\$24, 505	\$8, 372	\$6, 695	-----	\$531, 975
Dry gold and silver ore.....	1, 625	15, 987	12, 934	840	62	-----	29, 823
Dry silver ore.....	663	1, 332	10, 120	263	303	-----	12, 018
Copper ore.....	888, 508	¹ 980, 064	¹ 739, 802	¹ 7, 284, 009	3	-----	9, 003, 878
Lead ore.....	11, 029	57, 229	48, 897	5, 155	119, 628	-----	230, 909
Lead-zinc ore.....	101	530	158	35	683	\$463	1, 869
Total, 1932.....	995, 728 4, 414, 579	¹ 1, 547, 545 1, 308, 732	¹ 836, 416 ² 587, 228	¹ 7, 298, 674 ² 11, 496, 985	127, 374 70, 929	463	9, 810, 472 13, 463, 874

¹ Includes value of 0.17 ounce of gold, 59 ounces of silver, and 836,942 pounds of copper recovered from precipitates.

² Includes value of 50 ounces of silver and 957,136 pounds of copper recovered from precipitates.

Gold ore.—The output of gold ore, old tailings, etc., was 93,802 tons from 310 properties in 1933 compared with 55,730 tons from 292 properties in 1932; it represented 9 percent of the State output of ore, old tailings, etc., in 1933. Most of the increase resulted from the treatment of old tailings from the Vulture property near Wickenburg in Maricopa County and from the production of gold ore from the Big Jim mine at Oatman, the Lake Superior & Arizona property at Superior, and the Roadside and Arabian groups at Katherine; the old tailings and most of the ore from these properties were treated by cyanidation.

Gold and silver ore.—The output of siliceous gold and silver ore and old tailings was 1,625 tons from 10 mines in 1933 compared with 4,095 tons from 8 mines in 1932. Nearly half of the total in 1933 was ore of smelting grade from the Belmont property at Superior, Pinal County.

Silver ore.—Eleven properties produced 663 tons of silver ore in 1933 compared with five properties producing 304 tons in 1932. The output in 1933 came chiefly from two mines at Tombstone, Cochise County.

Copper ore.—The output of copper ore and old matte was 888,508 tons from 26 properties in 1933 compared with 4,343,070 tons from 17 properties in 1932; it represented 89 percent of the State output of ore, etc., in 1933. The unusually large decrease in quantity of copper ore produced resulted chiefly from idleness at four of the producers of low-grade ore—the Inspiration, Miami, Morenci branch of the Phelps Dodge Corporation, and New Cornelia properties. There was also a large decrease in output of copper ore from the Ray mines of the Nevada Consolidated Copper Co., as the property was operated only 3 months. Nearly all the copper ore produced in Arizona during 1933 came from four properties—the Copper Queen branch of the Phelps Dodge Corporation at Bisbee, the United Verde Extension mine at Jerome, the Magma mine at Superior, and the Ray mines at Ray. More than 65 percent of the ore was shipped to smelters in Arizona, and nearly 35 percent was treated in concentration plants.

Lead ore.—The output of lead ore was 11,029 tons from 46 properties in 1933 compared with 11,362 tons from 26 properties in 1932; it represented 1 percent of the State output of ore, etc., in 1933. Nearly 80 percent of the total was lead ore of smelting grade from 4 properties—2 at Tombstone and 1 at Bisbee, Cochise County, and 1 near Winkelman, Gila County.

Lead-zinc ore.—There was one producer of lead-zinc ore in Arizona in 1933 and none in 1932. The output in 1933 (101 tons) came from a property near Kingman, Mohave County, and was shipped to a custom concentrator in Utah for milling.

Ore, old tailings, etc., sold or treated in Arizona in 1933, by counties, with content in terms of recovered metals

DRY GOLD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Cochise.....	1 3,097	1,872.01	17,392	10,132	59,953	-----
Gila.....	2 470	453.70	1,001	6,311	5,516	-----
Graham.....	36	13.83	28	-----	-----	-----
Greenlee.....	1	.63	-----	-----	-----	-----
Maricopa.....	3 40,086	3,122.66	3,303	297	27	-----
Mohave.....	4 27,650	7,864.38	8,767	6,443	7,621	-----
Pima.....	739	483.21	1,957	2,985	1,212	-----
Pinal.....	8,031	5,429.62	9,811	53,683	379	-----
Santa Cruz.....	272	330.80	533	234	486	-----
Yavapai.....	5 12,693	3,542.36	24,983	49,060	105,611	-----
Yuma.....	6 727	706.79	2,240	1,674	125	-----
Total, 1932.....	93,802 55,730	23,819.99 19,061.43	70,015 42,529	130,819 56,829	180,930 67,156	----- -----

DRY GOLD AND SILVER ORE

Cochise.....	7 357	61.45	3,420	359	724	-----
Graham.....	1	2.47	135	-----	-----	-----
Greenlee.....	298	202.07	8,723	140	378	-----
Mohave.....	41	18.19	931	185	579	-----
Pinal.....	864	468.38	22,082	10,587	-----	-----
Yavapai.....	64	20.80	1,663	-----	-----	-----
Total, 1932.....	1,625 4,095	773.36 487.06	36,954 26,886	13,132 15,533	1,681 43,751	----- -----

DRY SILVER ORE

Cochise.....	438	47.00	10,957	691	6,783	-----
Gila.....	43	6.70	3,046	721	175	-----
Mohave.....	4	2.13	2,857	-----	-----	-----
Pinal.....	101	7.24	7,143	1,943	-----	-----
Santa Cruz.....	17	.76	2,291	219	1,080	-----
Yavapai.....	60	.63	2,620	531	162	-----
Total, 1932.....	663 304	64.46 56.39	28,914 16,969	4,105 1,104	8,200 5,855	----- -----

COPPER ORE

Cochise.....	322,711	29,478.00	§ 1,227,788	§ 55,789,843	-----	-----
Gila.....	1	.71	3	§ 252,417	-----	-----
Greenlee.....	21	1.20	60	7,079	-----	-----
Maricopa.....	26	.29	1,057	4,078	-----	-----
Mohave.....	12	.05	26	3,453	-----	-----
Pima.....	13	2.11	820	1,670	91	-----
Pinal.....	322,372	§ 5,620.96	§ 544,036	§ 24,529,927	-----	-----
Santa Cruz.....	87	9.68	1,009	17,722	-----	-----
Yavapai.....	§ 243,252	12,294.96	338,902	33,202,463	-----	-----
Yuma.....	13	2.66	20	3,981	-----	-----
Total, 1932.....	888,508 4,343,070	§ 47,410.62 38,631.14	§ 2,113,721 § 1,862,366	§ 113,812,633 § 182,365,547	91	----- -----

¹ Includes 1 ton of old tailings sold to a smelter.

² Includes 1 ton of old mill cleanings sold to a smelter.

³ Includes 32,400 tons of old tailings treated by cyanidation and 1 ton of old mill cleanings sold to a smelter.

⁴ Includes 10 tons of old mill cleanings sold to a smelter.

⁵ Includes 900 tons of old tailings treated by cyanidation.

⁶ Includes 3 tons of old tailings and 1 ton of old slag sold to a smelter.

⁷ Includes 104 tons of old tailings sold to a smelter.

⁸ Includes metal recovered from precipitates.

⁹ Includes 6 tons of copper matte sold to a smelter.

Ore, old tailings, etc., sold or treated in Arizona in 1933, by counties, with content in terms of recovered metals—Continued

LEAD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
		<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Cochise.....	7,080	1,839.55	107,143	26,522	1,947,567	-----
Gila.....	2,139	114.99	6,967	40,426	821,255	-----
Graham.....	167	2.13	2,097	4,000	67,784	-----
Maricopa.....	23	.19	43	16	11,973	-----
Mohave.....	182	144.30	1,646	436	89,452	-----
Pima.....	133	75.20	2,380	1,048	40,534	-----
Pinal.....	55	2.82	991	2,110	33,324	-----
Santa Cruz.....	126	3.48	1,707	1,981	51,488	-----
Yavapai.....	1,056	585.17	15,012	3,928	90,065	-----
Yuma.....	68	.60	1,720	80	79,740	-----
Total, 1932.....	11,029 11,362	2,768.43 5,073.71	139,706 133,509	80,547 52,021	3,233,182 2,240,485	-----

LEAD-ZINC ORE

Mohave.....	101	25.63	450	545	18,456	11,024
Total, 1932.....	101 ⁽¹⁰⁾	25.63	450	545	18,456	11,024

¹⁰ None produced in 1932.

METALLURGIC INDUSTRY

Of the total ore, old tailings, etc., produced in 1933 in Arizona, 320,288 tons (32 percent) were treated at concentration plants, 607,531 tons (61 percent) represented crude ore smelted, and 67,782 tons (nearly 7 percent) were treated at gold and silver mills; no ore was treated by leaching.

The ore concentrated was treated in 19 plants—10 using straight flotation, 1 combined gravity and flotation, and 8 straight gravity concentration. There were 78 gold and silver mills in operation—62 amalgamation plants, 9 cyanide plants, 6 amalgamation and gravity concentration plants, and 1 amalgamation and cyanidation plant. In addition, 2 plants precipitated copper from mine waters. In all, 99 plants were active in 1933 compared with 100 in 1932; of these plants 78 in 1933 and 77 in 1932 were gold and silver mills. Of the 9 copper smelting plants in Arizona 2 were operated during part of 1933 and 2 the entire year.

Of the total material (34,482 tons of ore and 33,300 tons of old tailings) treated at gold and silver mills, 3.4 percent (2,279 tons of ore) was treated at straight amalgamation plants; 8.4 percent (5,722 tons of ore) was treated by combined amalgamation and concentration; 88 percent (26,361 tons of ore and 33,300 tons of old tailings) was treated at straight cyanidation plants; and 120 tons of ore were treated by combined amalgamation and cyanidation.

Mine production of metals from gold and silver mills in Arizona in 1933, by counties, in terms of recovered metals

County	Ore and old tailings treated (dry weight)		Recovered in bullion			
			Amalgamation		Cyanidation	
	Ore	Old tailings ¹	Gold	Silver	Gold	Silver
	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>
Cochise.....	295	-----	21. 72	21	34. 70	4, 003
Gila.....	96	-----	38. 67	17	3. 81	2
Graham.....	6	-----	3. 33	1	-----	-----
Maricopa.....	5, 692	32, 400	899. 54	225	1, 255. 46	2, 395
Mohave.....	26, 309	-----	150. 46	217	6, 474. 52	5, 528
Pima.....	241	-----	122. 55	56	-----	-----
Pinal.....	193	-----	92. 21	42	-----	-----
Santa Cruz.....	156	-----	155. 46	78	-----	-----
Yavapai.....	1, 118	900	539. 00	207	83. 75	105
Yuma.....	376	-----	233. 21	54	-----	-----
Total, 1932.....	34, 482	33, 300	2, 256. 15	918	7, 852. 24	12, 033
	25, 888	15, 065	3, 189. 82	1, 069	5, 499. 80	6, 912

County	Concentrates and recovered metal			
	Concentrates produced	Gold	Silver	Copper
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>
Maricopa.....	113	121. 31	361	-----
Pima.....	1	. 55	1	-----
Yavapai.....	14	73. 50	196	86
Yuma.....	1	8. 44	40	-----
Total, 1932.....	129	203. 80	598	86
	112	222. 97	217	1, 098

¹ All treated by cyanidation.

Ore treated at straight concentration plants decreased from 3,307,224 tons in 1932 to 320,288 tons in 1933. The decrease was notable in copper ore (from 3,303,109 tons in 1932 to 307,551 tons in 1933) and was due to the inactivity of the mines at Miami, Morenci, and Ajo and to the closing in March of the mines at Ray. Most of the ore concentrated in 1933 was copper ore mined in Pinal and Yavapai Counties. Siliceous gold ore treated at concentration plants increased from 2,063 tons in 1932 to 11,871 tons in 1933; nearly all of it was treated by flotation, and most of it came from mines in Yavapai County. The following tables present ore-concentration data for 1933.

Arizona ore¹ concentrated in 1933, by classes of ore, methods of concentration, and classes of concentrates

[Exclusive of ore treated at gold and silver mills and of 101 tons of lead-zinc ore treated at a custom flotation mill]

Class of ore concentrated	Method of concentration	Ore concentrated	Gross content of mill feed			
			Gold	Silver	Copper	Lead
		<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Siliceous gold.....	Flotation.....	11,741	2,896.00	25,485	53,790	125,470
Copper sulphide.....	do.....	² 307,551	7,773.05	496,895	24,884,753	-----
Lead sulphide.....	do.....	³ 765	277.50	5,320	1,720	40,850
		² ³ 320,057	10,946.55	527,700	24,940,263	166,320
Siliceous gold.....	Gravity ⁴	130	102.70	350	520	1,240
		⁴ 320,187	11,049.25	528,050	24,940,783	167,560

Class of ore concentrated	Method of concentration	Concentrates produced		Gross content of concentrates			
		Class	Quantity	Gold	Silver	Copper	Lead
			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Siliceous gold.....	Flotation.....	Siliceous gold.....	58	574.70	193	157	131
		Copper sulphide.....	230	192.46	8,459	38,344	-----
		Lead sulphide.....	539	1,742.54	13,555	6,306	112,140
			827	2,509.70	22,207	44,807	112,271
Copper sulphide.....	do.....	Copper sulphide.....	⁵ 85,229	6,768.61	449,904	23,604,986	-----
Lead sulphide.....	do.....	Lead sulphide.....	⁶ 140	237.55	4,746	1,354	34,196
			⁵ 86,196	9,515.86	476,857	23,651,147	146,467
Siliceous gold.....	Gravity ⁶	Siliceous gold.....	24	89.33	303	448	1,071
			⁷ 86,220	9,605.19	477,160	23,651,595	147,538

¹ No old tailings reconcentrated in Arizona in 1933.

² Includes 119,206 tons of copper ore treated by combined gravity and flotation concentration.

³ 165 tons of lead ore treated by gravity concentration included under flotation.

⁴ Figures do not include ore treated at gold and silver mills and 101 tons of lead-zinc ore treated at a custom flotation mill.

⁵ Includes concentrates from copper ore treated by combined gravity and flotation concentration.

⁶ Concentrates from lead ore treated by gravity concentration included under flotation.

⁷ Figures do not include concentrates from ore treated at gold and silver mills and from lead-zinc ore milled.

Mine production of metals from concentrating mills in Arizona in 1933, by counties, in terms of recovered metals

County	Ore treated	Concentrates and recovered metal					
		Concentrates produced	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Cochise.....	179	42	98.38	417	553	12,215	-----
Maricopa.....	1,641	30	504.74	96	47	27	-----
Mohave.....	701	64	174.27	2,219	748	20,942	11,024
Pima.....	35	9	19.94	283	136	787	-----
Pinal.....	251,603	62,644	4,363.73	399,930	19,192,051	-----	-----
Santa Cruz.....	3	1	1.87	6	-----	-----	-----
Yavapai.....	66,064	23,471	4,444.15	74,655	3,902,428	117,066	-----
Yuma.....	62	8	23.74	4	198	-----	-----
	320,288	86,269	9,630.82	477,610	23,096,161	151,037	11,024
Total, 1932.....	3,307,224	200,254	12,548.78	477,867	83,125,956	44,909	-----

Gross metal content of Arizona concentrates produced in 1933, by classes of concentrates

Class of concentrates	Concentrates produced (dry weight)	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry and siliceous.....	233	877.18	1,119	787	1,789	-----
Copper.....	85,459	6,961.07	458,363	23,643,330	-----	-----
Lead.....	695	1,994.55	18,702	8,041	164,570	-----
Zinc.....	11	1.82	24	221	630	12,397
Total, 1932.....	86,398 200,366	9,834.62 12,771.75	478,208 478,084	23,652,379 85,992,314	166,989 50,992	12,397

Mine production of metals from Arizona concentrates in 1933, in terms of recovered metals

BY COUNTIES

	Concentrates	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Cochise.....	42	98.38	417	553	12,215	-----
Maricopa.....	143	628.05	457	47	27	-----
Mohave.....	64	174.27	2,219	748	20,942	11,024
Pima.....	10	20.49	284	136	787	-----
Pinal.....	62,644	4,363.73	399,930	19,192,051	-----	-----
Santa Cruz.....	1	1.87	6	-----	-----	-----
Yavapai.....	23,485	4,517.65	74,851	3,902,514	117,066	-----
Yuma.....	9	32.18	44	198	-----	-----
Total, 1932.....	86,398 200,366	9,834.62 12,771.75	478,208 478,084	23,096,247 83,127,054	151,037 44,909	11,024

BY CLASSES OF CONCENTRATES

Dry and siliceous.....	233	877.18	1,119	726	1,103	-----
Copper.....	85,459	6,961.07	458,363	23,088,980	-----	-----
Lead.....	695	1,994.55	18,702	6,331	149,335	-----
Zinc.....	11	1.82	24	210	599	11,024

The quantity of ore from mines in Arizona shipped crude to smelters increased from 525,179 tons in 1932 to 607,531 tons in 1933. It was chiefly copper ore from mines in Cochise and Yavapai Counties, and the increase in 1933 was principally in copper ore from the Copper Queen branch of the Phelps Dodge Corporation at Bisbee. The following tables give the contents of the crude ore smelted in 1933, by classes and by counties.

Gross metal content of Arizona crude ore shipped to smelters in 1933, by classes of ore

Class of ore	Quantity (dry weight)	Gross metal content			
		Gold	Silver	Copper	Lead
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Dry and siliceous.....	16,316	11,457.47	99,435	110,914	170,543
Copper.....	580,951	40,626.57	1,663,351	92,990,458	99
Lead.....	10,264	2,530.88	134,960	99,210	3,475,412
Total, 1932.....	607,531 525,179	54,614.92 41,047.58	1,897,746 1,586,884	93,200,582 90,320,022	3,646,054 2,580,903

Mine production of metals from Arizona crude ore shipped to smelters in 1933, in terms of recovered metals

BY COUNTIES

	Ore		Gold	Silver	Copper	Lead
	Short tons	Fine ounces	Fine ounces	Fine ounces	Pounds	Pounds
Cochise.....	333, 104	33, 133. 50	1, 361, 990	55, 284, 985		2, 002, 712
Gila.....	2, 556	529. 32	10, 993	47, 570		826, 946
Graham.....	198	15. 10	2, 259	4, 000		67, 784
Greenlee.....	320	203. 90	8, 783	7, 219		378
Maricopa.....	401	290. 65	1, 319	4, 344		11, 973
Mohave.....	970	1, 056. 86	6, 568	10, 314		95, 166
Pima.....	609	417. 48	4, 817	5, 567		41, 050
Pinal.....	79, 627	7, 072. 91	184, 084	5, 363, 571		33, 703
Santa Cruz.....	343	187. 39	5, 456	20, 156		53, 054
Yavapai.....	189, 037	11, 288. 25	307, 610	29, 350, 791		78, 772
Yuma.....	366	419. 56	3, 867	5, 506		79, 865
Total, 1932.....	607, 531	54, 614. 92	1, 897, 746	90, 104, 023		3, 291, 403
	525, 179	41, 047. 58	1, 586, 884	86, 513, 126		2, 276, 660

BY CLASSES OF ORE

	Ore	Gold	Silver	Copper	Lead	Zinc
Dry and siliceous.....	16, 316	11, 457. 47	99, 435	105, 577		88, 907
Copper.....	580, 951	40, 626. 57	1, 663, 351	89, 918, 982		91
Lead.....	10, 264	2, 530. 88	134, 960	79, 464		3, 202, 405

Miscellaneous material in Arizona in 1933, not included in the tables given under "Metallurgic Industry", consisted of 108 tons of old tailings smelted; 19 tons of matte, slag, and mill clean-up sold to a smelter; and copper precipitates smelted.

REVIEW BY COUNTIES AND DISTRICTS

Mine production of gold, silver, copper, lead, and zinc in Arizona in 1933, by counties and districts, in terms of recovered metals

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Cochise County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Lb.</i>	
Cochise.....	1		50	17. 80	17				\$374
Dos Cabezas.....	16	1	1, 321	1, 144. 21	1, 983	1, 953	32, 351		25, 669
Huachuca Mountain.....	4	2	25	12. 63	17	47			270
Swisshelm.....	1		(1)	(1)	(1)		(1)		(1)
Teviston.....	1	2	1	21. 48	3			54	447
Tombstone.....	12		7, 016	1, 441. 14	100, 323	27, 875	1, 744, 270		131, 226
Turquoise.....	5	2	430	108. 99	3, 177	1, 453	8, 595		3, 776
Warren.....	2		(1)	(1)	(1)	(1)	(1)		(1)
Gila County:									
Banner.....	2		1, 987	95. 01	5, 837	39, 469	770, 460		35, 040
Globe.....	10	5	470	365. 23	5, 086	258, 703	56, 486		27, 977
Green Valley.....	13		196	156. 88	100				3, 387
Graham County:									
Aravaipa.....	2		135	1. 50	2, 037	3, 172	55, 622		3, 005
Rattlesnake.....	3		37	16. 30	163				394
Stanley.....	1		32	. 63	60	828	12, 162		537
Greenlee County:									
Chase Creek.....		7		51. 33	14				1, 066
Copper Mountain.....	2	2	319	212. 17	8, 783	7, 219	378		7, 936
Gold Mountain.....	1		1	. 63					13
San Francisco River.....		7		200. 32	20				4, 148
Maricopa County:									
Agua Fria River.....		1		3. 97					82
Big Horn.....	2	2	17	58. 68	3	16			1, 215
Cave Creek.....	5	1	74	50. 31	17				1, 046
Hassayampa River.....		1		6. 72					139
Magazine.....	1		26	. 29	1, 057	4, 078			637
New River.....		1		3. 97					82
Salt River Mountains.....	1		324	247. 44	203	187			5, 198

1 Included under "Undistributed."

Mine production of gold, silver, copper, lead, and zinc in Arizona in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Maricopa County—Contd.			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Lb.</i>	
San Domingo.....		8		120.94	17				\$2,506
Vulture.....	8		38,038	2,318.66	3,020	16	11,973		49,432
White Picacho ²	1		2	4.11	3	47			89
Winifred.....	2		1,654	562.65	103	47	27		11,671
Mohave County:									
Bentley.....	1		3	.05	3	1,219			80
Chemehuevi.....	9	1	612	199.16	1,777	203	2,486		4,844
Colorado River.....		1		4.79					99
Cottonwood.....	1		541	681.99	220	5,359			14,513
Gold Basin.....	3	4	3,425	430.39	80	16	243		8,935
Greenwood.....	1		1	1.55					32
Indian Secret.....	1		4	2.13	2,857				1,044
Lost Basin.....	1	3		129.89	17				2,691
Maynard.....	1		1	5.56					115
Music Mountain.....	1		1	2.95	3				62
Owens.....	3		146	51.13	323	547	55,514		3,259
San Francisco (including Katherine).....	9	3	22,683	6,309.55	5,437				132,333
Vermillion Cliffs.....	2		9		23	2,234			151
Wallapai.....	9		333	236.12	3,517	1,422	56,946	11,024	8,773
Weaver.....	7		231	192.87	440	62	919		4,179
Pima County:									
Ajo.....		1		11.51					238
Arivaca.....	20	2	247	192.63	1,240	1,047	946		4,518
Baboquivari.....	3		66	90.51	1,580	406	3,405		2,576
Cababi.....	4		352	215.56	177	1,781			4,632
Cerro Colorado.....	2		13	3.58	503	969	189		319
Empire.....	1		5	3.63	3				76
Greaterville ³	2	3	21	98.73	314	172	1,135		2,204
Papago.....	1		(¹)	(¹)	(¹)	(¹)			(¹)
Picacho.....	1		2	1.50	20	31	108		44
Pima.....	4		100	8.90	1,117	953	36,000		1,968
Quijotoa.....	5	1	78	63.08	203	94	54		1,383
Pinal County:									
Bunker Hill.....	2		285	2.42	817	14,250	28,405		2,299
Casa Grande.....	3		24	25.64	80	297	27		578
Cottonwood.....	1		(¹)	(¹)	(¹)	(¹)	(¹)		(¹)
Goldfields.....	4		71	24.38	23	250			628
Hackberry.....	2		21	5.32	17				116
Mineral Creek.....	4		132,149	61.68	1,860	2,751,750			178,038
Old Hat.....	15		421	285.80	383	1,328			6,127
Pioneer.....	7		198,335	11,087.26	574,117	21,829,078	4,919		1,827,378
Ripsey.....	1		80	6.82	6,723	1,172			2,569
Santa Cruz County:									
Gold Hill.....	2		9	6.00	3		162		131
Greaterville ³	1		32	1.79	680	5,516			628
Harshaw.....	1		30	1.11	2,637	219	7,919		1,253
Oro Blanco.....	17		200	279.61	403				5,921
Pajarito.....	1		8	.53	117		7,514		330
Palmetto.....	1		33	4.79	263	8,859			758
Parker Canyon.....	1		53	36.38	100	234	486		820
Patagonia.....	4	1	79	16.98	1,080	4,922	19,432		1,763
Tyndall.....	3		56	.87	217	406	16,946		747
Wrightson.....	2		2	.24	40		595		41
Yavapai County:									
Ash Creek.....	1		(¹)	(¹)	(¹)	(¹)			(¹)
Big Bug.....	6	6	1,772	1,305.69	1,923	2,266	19,595		28,534
Black Canyon.....	7	4	6,558	1,593.28	27,520	6,922	162,730		49,032
Black Rock.....	13	1	197	266.45	1,123	2,109	135		6,041
Castle Creek.....	9	1	146	151.56	100	1,234	27		3,248
Cherry Creek.....	14		327	360.49	423	1,969			7,726
Copper Basin.....		11		366.78	54				7,601
Eureka.....	9	4	367	288.17	380	984	621		6,176
Granite Creek.....		1		19.98	3				414
Hassayampa.....	16	9	2,623	448.53	9,663	37,750	9,649		15,427
Humbug.....	1	9	3	88.38	20				1,834
Kirkland.....	1		2	.87					18
Lynx Creek.....		6		1,287.26	177				26,672
Martinez.....	4	1	984	130.08	140	578			2,775
Oak Creek.....		1		6.77					140
Ochocomo.....	1		1	2.66					55
Peck.....	1		14	5.95					123
Red Picacho.....	1		127	68.16	17	672			1,458

¹ Included under "Undistributed."

² White Picacho district lies in both Maricopa and Yavapai Counties.

³ Greaterville district lies in both Pima and Santa Cruz Counties.

Mine production of gold, silver, copper, lead, and zinc in Arizona in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Yavapai County—Contd.			Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Lb.	
Silver Mountain	1	2	3	29.22	3				\$605
Squaw Creek	1	2	5	10.50					217
Thumb Butte		1		6.19					128
Tiger	1	2	27	27.14	83	47			593
Tip Top	1	2	51	43.10	1,537	47	162		1,438
Turkey Creek	1	1	9	2.13	1,083	484			464
Verde	3		243,245	12,288.99	338,860	33,201,656			2,497,543
Wagoner		1		10.06					208
Walker	2	1	222	43.73	80	47	2,676		1,034
Walnut Grove	2	5	12	125.05	20				2,592
Weaver	11	12	381	472.77	140	625	243		9,871
White Picacho ²	1		10	8.32	17				178
Yuma County:									
Castle Dome	6		105	31.25	1,917	110	79,865		4,279
Cienega	2		60	24.09	3				499
Colorado River		1		250.00	26				5,177
Dome		3		132.50	17				2,745
Ellsworth	11	1	368	245.60	383	1,703			5,320
Fortuna	4		76	83.98	20	31			1,745
Kofa	1	2	121	149.48	1,617				3,656
Laguna		1		130.03	17				2,694
La Paz	2	4	3	100.28	20				2,080
Muggins Mountains		3		43.54					900
Planet	2		49	162.88	17	47			3,376
Plomosa	1	12	3	508.76	40				10,531
Tank Mountains	2		11	13.74	3				285
Wellton Hills	1		12	2.66	17	3,844			307
Undistributed ⁴			324,917	30,646.19	1,261,443	55,797,047	230,109		4,654,543
Total Arizona	399	179	995,728	79,992.61	2,390,363	114,041,781	3,442,540	11,024	9,916,732

² White Picacho district lies in both Maricopa and Yavapai Counties.

⁴ Includes items entered as "(1)" above.

COCHISE COUNTY

Cochise and Golden Rule districts (Johnson, Dagoon).—The entire output of the Cochise district in 1933 was gold ore from the Golden Eagle mine at Dagoon, treated by amalgamation.

Dos Cabezas district.—The largest producer in the Dos Cabezas district in 1933 was the Gold Prince mine, which yielded 157 tons of gold ore of smelting grade. Several hundred tons of gold ore were also shipped from the Gold Ridge property, which is opened by shallow workings, and lead ore and concentrates were shipped from the LeRoy property. The remainder of the lode output consisted chiefly of gold ore of smelting grade from the Silver Dike, Klondyke, Speaks, Flanders, Blair, and Dives properties. A little placer gold was recovered from claims near Willcox.

Huachuca Mountain district.—A small lot of first-class gold ore was shipped in 1933 from the Wild Horse group in Brown Canyon, and a little gold bullion was produced from lode and placer prospects.

Swisshelm district (Webb, Elfrida).—The output of the Swisshelm district in 1933 consisted of 1 car of lead ore of smelting grade, containing gold and silver, from the Four-Horse property.

Teviston district.—The output of the Teviston district in 1933 was chiefly placer gold recovered from the property of the Gold Gulch Mining Co. A large placer machine was installed at the property in February but was not operated.

Tombstone district.—The output of ore in the Tombstone district increased about 2,000 tons from 1932 to 1933, due chiefly to the production at the Tombstone group of the Tombstone Development Co. and the Tombstone Extension property. The latter was operated from January 1 to March 20 by Hayward-Richard and from March 21 to December 31 by the American Smelting & Refining Co., and the output of the Tombstone Extension mine consisted of several thousand tons of oxidized lead ore containing gold and silver. The Tombstone group, formerly operated by the Bunker Hill Mines Co. of the Phelps Dodge Corporation, was taken over by the Tombstone Development Co. in June 1933. The new company shipped 2,700 tons of oxidized silver-lead ore and siliceous gold ore to El Paso, Tex., for smelting and did 3,100 feet of development. The remainder of the district output consisted chiefly of siliceous silver ore from the South Bonanza mine and Herschel dump and gold and silver ore from the Old Guard property.

Turquoise district (Courtland, Pearce, Gleeson).—The output of the Turquoise district in 1933 was chiefly gold and silver ore and old tailings from the Commonwealth property at Pearce and lead ore and siliceous gold ore from the Tom Scott (Tejon) mine at Gleeson. Placer gold from two properties was recovered by dry washing.

Warren district (Bisbee, Lovell, Warren, Don Luis).—The output of ore in the Warren district in 1933 increased 25 percent over 1932, when three mines near Bisbee produced 260,284 tons.

The district output in 1933 consisted chiefly of copper ore, lead ore, and copper precipitates from the Copper Queen branch of the Phelps Dodge Corporation at Bisbee. The mine at Bisbee and the smelter at Douglas were operated throughout 1933, but the concentrator was idle. The output was chiefly sulphide copper ore containing gold and silver smelted at the company plant at Douglas. The annual report of the Phelps Dodge Corporation states that production for the year from the company mines, together with metals produced from purchased ores treated at Douglas, was 77,592,032 pounds of copper, 2,331,971 ounces of silver, and 43,882 ounces of gold. Operations were carried on only at the Copper Queen branch; the other copper properties remained closed. At Bisbee production was again confined to the Junction and Campbell divisions, except for small amounts of flux and lease ores obtained from other areas. Approximately 23,800 feet of exploration, 4,100 feet of stope preparation, and 6,885 feet of diamond drilling were done. The mines operated 215 days during the year, and the smelter operated 10 months with one furnace in use at a time. Purchases of custom ores were resumed.

The only other producer in the district in 1933 was the Shattuck mine at Bisbee. The property was operated by lessees who shipped 599 tons of gold ore to El Paso, Tex., for smelting. Prior to 1931 the Shattuck Denn Mining Corporation was an important producer of copper ore.

GILA COUNTY

Banner district.—All the output of the Banner district in 1933, except a little gold ore, was oxidized lead ore from the "79" mine of the "79" Lead Copper Co. The company shipped about 1,500 tons of lead ore from a stock pile, and a lessee shipped nearly 400 tons of similar ore from the mine. The metal output of the district de-

creased decidedly in 1933 due chiefly to idleness at the Christmas mine.

Globe district (Miami, Inspiration).—The output of the Globe district in 1933 was chiefly siliceous gold ore from the Cedar Tree claim of the Porphyry Reserve Copper Co.; lead ore from the Clemo, Van Winkle, and Mercer properties; and siliceous silver ore from the Rescue mine.

A marked decrease is shown in the district output as both the Inspiration and Miami properties were idle throughout 1933 after operating several months in 1932. The only production from the Miami property in 1933 was copper recovered from copper precipitates; in 1932 (from January 1 to May 15) the company treated 1,417,810 tons of copper ore containing 0.774 percent copper. The property of the Inspiration Consolidated Copper Co. has been closed since May 9, 1932; for the 4 months of operation in 1932 the company reported a production of 12,026,181 pounds of copper from the treatment of 570,050 tons of ore.

The district placer output (41.02 ounces of gold and 6 ounces of silver) came chiefly from the Inspiration placer north of Claypool and from the Three Johns claim south of Globe where gravel was treated by dry washing.

Green Valley district.—The output of the Green Valley district from 13 lode mines in 1933 was more than double that from 7 lode mines in 1932. Most of the output in 1933 was gold ore of shipping grade from the Tornado and Columbia mines and an unidentified property; gold bullion was produced by amalgamation at the Gold Bond, Excursion, Little Daisy, and several small prospects.

GRAHAM COUNTY

Aravaipa district.—Several cars of oxidized lead ore containing silver were shipped in 1933 from the Clark property near Aravaipa.

Rattlesnake district.—The output of the Rattlesnake district in 1933 was chiefly siliceous gold ore from the Powers mine operated by the Consolidated Galiuro Gold Mines, Inc.

Stanley district.—The output of the Stanley district in 1933 was 1 car of sulphide lead ore shipped from the Tri Bullion property 15 miles from the Coolidge Dam.

GREENLEE COUNTY

Chase Creek district.—The production of the Chase Creek district in 1933 was all placer bullion.

Copper Mountain district (Morenci, Metcalf, Clifton).—The output of the Copper Mountain district was small in 1933 compared with 1932; the only production was siliceous gold ore from the Stargo mine, 1 car of sulphide copper ore from the property of the Dover Copper Co., and a little placer gold. The output of the district in 1932 was 751,483 tons of ore yielding metals valued at \$1,533,155, largely copper from the Morenci branch of the Phelps Dodge Corporation, a large producer of copper ore, which was closed in July 1932.

Gold Mountain district.—A small test lot of gold ore was shipped in 1933 from the Searchlight property near Clifton.

San Francisco River district.—There were many placer operators on the San Francisco River in 1933. The most important operations were those carried on during the first half of the year at the Keppler property 14 miles south of Morenci and the Smuggler claim 5 miles from Clifton.

MARICOPA COUNTY

Big Horn district.—Small lots of gold ore were shipped in 1933 from the Thompson & Neal property 5 miles south of Eagle Tail Mountains and from a prospect near Arlington. Placer gold (37.78 ounces) was recovered, chiefly from the Big Horn claim north of Wintersburg.

Cave Creek district.—The largest producer in the Cave Creek district in 1933 was the Rackensack mine, gold ore from which was treated by amalgamation; small lots of gold ore were also produced from several prospects. A little placer gold was recovered from gravel along Cave Creek.

Magazine district.—One car of oxidized copper ore containing silver was shipped in 1933 from the Red Rover property 50 miles north of Phoenix.

Salt River Mountains district.—The Delta mine 10 miles south of Phoenix produced 324 tons of siliceous gold ore in 1933.

San Domingo district.—Placer gold and silver were recovered in 1933 from various properties along San Domingo Wash; the greater part of the gold came from the Corrillo, Imperial, Mendez, and Nelson claims.

Vulture district.—The only important operations in the Vulture district in 1933 were those carried on at the old Vulture mine, in workings near the surface and on old tailings from former operations. More than 5,000 tons of gold ore were mined from the Vulture property and treated in a plant equipped for amalgamation and concentration; the property was worked from January 1 to October 15 by the Vulture Lease and the remainder of the year by the East Vulture Mining Co. The Vulture tailings dump was operated by the Finlayson & Peach Lease, which treated 32,400 tons of old tailings by cyanidation and shipped precipitates yielding 1,236.26 ounces of gold and 1,936 ounces of silver. The district placer output (73.72 ounces of gold and 3 ounces of silver) came chiefly from the Ventura and Vulture placers by dry washing.

White Picacho district.—A test lot of gold ore was shipped in 1933 from the Another Chance group in the White Picacho district.

Winifred district.—The Jack White mine was operated by the Hartman Mining & Milling Co. in 1933 from January 1 to October 24, and the mill was active 45 days. The company treated 1,641 tons of ore, containing chiefly gold, in a concentration mill equipped with flotation machinery. Both mine and mill were closed late in October.

MOHAVE COUNTY

Bentley (Grand Gulch) district.—A sample lot of copper ore from the Savanac mine was hauled by truck in 1933 to a smelter in Utah.

Chemehuevis district.—Most of the production in the Chemehuevis district in 1933 was gold ore mined at the Dutch Flat, Mohawk, and Santa Claus properties, all under lease to the Best Bet Mining Corporation; several hundred tons of ore containing chiefly gold with

some silver and lead were treated in a 50-ton concentration mill equipped with flotation machinery. The remainder of the district output was small lots of gold ore from the Susan, Gold Dome, and other prospects treated by amalgamation and a small amount of placer gold recovered at the Silver Creek claim.

Cottonwood district.—Lessees operated the Walkover mine 9 miles southeast of Hackberry and shipped 541 tons of gold ore in 1933 to various smelting plants.

Gold Basin district.—Most of the gold produced in the Gold Basin district in 1933 came from the Cyclopic property 60 miles north of Kingman; the mine was operated 4 months by lessees who treated 3,400 tons of gold ore in a cyanidation mill, the daily capacity of which was increased from 50 to 100 tons. The remainder of the lode output of the district was first-class gold ore from the Climax and Sunrise claims. The placer output (32.70 ounces of gold and 3 ounces of silver) came from the Gold Basin placer and other prospects near Hualpai Wash northeast of Chloride.

Indian Secret district.—A small lot of silver ore containing a little gold was shipped in 1933 from the White Hills group 28 miles north of Chloride.

Lost Basin district.—The most important production in the Lost Basin district in 1933 was gold recovered at the King Tut placers, 50 miles north of Kingman, where placer gravel was handled by caterpillar tractors with scrapers and treated in a large dry-concentration plant. The property was operated from August 29 to December 12, and 117 ounces of gold were recovered. Placer gold was also recovered at the Joy Bells claim and other properties.

Owens (McCracken and Potts Mountain) district.—The chief output in the Owens district in 1933 was gold ore from the Gold Leaf property and oxidized lead ore of smelting grade from the Lead Pill mine.

San Francisco district (Oatman, Gold Road, Vivian, Katherine).—In spite of the fact that there was no production from the Tom Reed mine in 1933, the output of the San Francisco district including the Katherine area increased more than \$60,000 in value over 1932. The most important operations in 1933 were those by lessees at the Big Jim mine at Oatman and by the Arizona Gold Mines at Katherine. Nearly 17,000 tons of gold ore from the Big Jim mine were treated by cyanidation in the Telluride mill at Oatman, owned by the Oatman Associated Mines Co.; other production from mines near Oatman consisted of gold ore from the Mossback and Telluride mines, clean-up material from the Tom Reed mill, and placer gold from claims on Silver Creek. In the Katherine region south of Oatman near the Colorado River the Roadside and Arabian mines and the Katherine 250-ton cyanidation mill were acquired by the Arizona Gold Mines, later incorporated as the Gold Standard Mines Corporation. The mill, which began operating September 13, treated 1,768 tons of gold ore from the Arabian, 3,777 tons from the Roadside, and 349 tons from the Tyro. Nearly 1,500 feet of drifting were done at the Arabian and Roadside mines.

Vermillion Cliffs district.—Two test lots of oxidized copper ore were shipped in 1933 from the Meeks claim and another prospect west of Fredonia.

Wallapai district (Cerbat, Chloride, Kingman, Mineral Park, Stockton Hill).—The output of the Wallapai district in 1933 con-

sisted of 66 tons of sulphide lead ore, containing more than 1 ounce of gold to the ton, from the Golden Eagle mine near Chloride; 1 car of gold ore and 1 car of sulphide lead ore, containing considerable gold, from the Tintic mine north of Chloride; 3 cars of lead-zinc ore from the Silver Legion property, operated by the Kingman Refining Co.; 1 car of ore, containing chiefly gold and silver, from the Good Hope mine; and 1 car of gold ore, containing silver and lead, from the Rainbow claim 4 miles from Chloride. Small lots of gold ore from several prospects near Chloride were treated by amalgamation.

Weaver district.—The metal output of the Weaver district in 1933 increased considerably over that in 1932. Lessees operated the Golden Door property and produced about 120 tons of gold ore, which was treated by amalgamation and cyanidation; 1 car of rich gold ore of smelting grade was shipped from the Esther claim; and a little gold ore from the Dixie Queen and Gold Bug mines was treated by amalgamation. The remainder of the district output consisted of small lots of gold ore from the Jumbo, Boulder, and Gold Chief claims.

PIMA COUNTY

Ajo district.—The New Cornelia property of the Phelps Dodge Corporation was idle throughout 1933. The output of the Ajo district was placer gold from claims near Ajo.

Arivaca district.—The output of the Arivaca district in 1933 was chiefly gold ore from the Buena Vista, Gold Rim & Rebecca, and Rosebud properties; small lots of gold ore were also produced from several prospects near Arivaca. The placer output (30.43 ounces of gold and 3 ounces of silver) was estimated to have come from various claims.

Baboquivari district.—A little gold ore from the property of the Iowana Mines, Inc., was treated in 1933 by concentration, 1 car of sulphide lead ore containing considerable gold and silver was shipped from the Jupiter mine, and several small lots of gold ore were produced from the Gold King property.

Cababi (Comobabi) district.—Most of the output in the Cababi district in 1933 was gold ore from the Jaeger & Rainbow property shipped by the Akron Gold Mining Co. to a smelter and gold ore from the Jaeger dump treated by amalgamation.

Cerro Colorado district.—A sample lot of lead ore was marketed in 1933 from the Guadalupe claim, and a little copper ore and gold ore were produced from the Tumacacori mine.

Empire district.—A small lot of gold ore from the Wedge claim near Pantano was treated in 1933 by amalgamation.

Greaterville district.—One car of mixed siliceous gold ore and lead sulphide ore was produced in 1933 from a prospect near Greaterville, and a test lot of lead ore containing considerable silver was shipped from the Juniper claim. The placer output (75.85 ounces of gold and 17 ounces of silver) came from various claims worked by Mexicans or Indians and purchased by the storekeeper at Greaterville.

Pima district (Olive, San Xavier, Helmet Peak, Twin Buttes).—All the output in the Pima district in 1933 was oxidized lead ore from 4 claims near Continental.

Quijotoa district.—The chief producers in the Quijotoa district in 1933 were the Morgan, Maud H., and Hillside mines; nearly all the

output was gold ore of smelting grade. Placer gold (11.37 ounces) was sold to a bullion buyer in Ajo.

PINAL COUNTY

Bunker Hill district (Copper Creek).—The Arizona Molybdenum Corporation, operating property at Copper Creek, treated ore containing chiefly copper and molybdenum; 1 car of copper concentrates was shipped in 1933 to El Paso, Tex. The remainder of the Bunker Hill district output was sulphide lead ore from the Blue Bird property near Mammoth.

Casa Grande district.—The only producer worthy of mention in the Casa Grande district was the Mammoth mine, from which two lots of gold ore were marketed in 1933.

Cottonwood district.—The Betty Jane Mining Co. operated claims in the Black Hills 35 miles southwest of Florence and in 1933 shipped several lots of ore containing chiefly gold.

Goldfields district.—Most of the output in the Goldfields district in 1933 was gold ore shipped to a smelter from the Mammoth (Goldfield Mines) property and from the Gold Bond mine.

Hackberry district.—A small lot of gold ore was produced in 1933 from the Venado property, and a little gold bullion was recovered at the Eagle group from ore treated by amalgamation.

Mineral Creek district (Ray, Kelvin).—The metal output of the Mineral Creek district decreased greatly in 1933 as the Ray property of the Nevada Consolidated Copper Co. was active only the first 84 days of the year. The 12,000-ton flotation plant at Hayden, which treats copper ore from the Ray mine, was operated only 48 days; about 132,000 tons of copper ore were treated in 1933 compared with 582,000 tons in 1932. Small lots of gold ore were mined in 1933 at the Aurora, Pool, and Gold Butte claims near Ray.

Old Hat district.—Of the 15 lode mines producing in the Old Hat district in 1933, the Mohawk mine operated by lessees made the largest output; several cars of gold ore from this mine were shipped to a smelter, and a little gold ore was treated by amalgamation. Gold ore from the Irene and Southern Belle mines and from various prospects was also treated by amalgamation, and the Pickwick mine produced 2 cars of gold ore of smelting grade.

Pioneer district (Superior).—There was a decided increase in the metal output of the Pioneer district in 1933, due to the continued production of copper ore from the Magma mine and to the large increase in shipments of siliceous gold ore from the Lake Superior & Arizona property owned by the Magma Copper Co. Operations at the smelter at Superior were discontinued June 18, and the Magma mine and mill were closed June 26. The annual report of the Magma Copper Co. shows 9,001 feet of development done in 1933 or 208,006 feet to date. Ore treated in the concentrator in 1933 averaged 7.37 percent copper; the average recovery was 97.23 percent of the copper. During the year the Magma mine produced 145,425 tons of ore of all classes averaging 7.92 percent copper, 3.62 ounces of silver, and 0.35 ounce of gold; in 1932 it produced 149,010 tons. In 1933 the smelter metal production from the Magma mine was 19,628,135 pounds of copper, 473,384.27 ounces of silver, and 4,597.30 ounces of gold. From the Superior mine leasers produced 7,441 tons of siliceous gold ore

assaying 0.36 percent copper, 1.25 ounces of silver, and 0.677 ounce of gold; and the property ranked fourth as a gold producer in Arizona. The smelter purchased from shippers and treated 2,720 tons of ore and concentrates. Lessees operated the Belmont property in 1933 and shipped 800 tons of ore, chiefly gold and silver ore. Gold and silver ore was shipped from the property of the Queen Creek Copper Co. also, copper ore from the Boston claim, silver ore from the Grand Pacific property, and a little gold ore from the Sunset claim.

Ripsey district.—The Florence Lead & Silver mine 10 miles south of Wooley siding produced 80 tons of siliceous silver ore in 1933 containing a little gold and copper.

SANTA CRUZ COUNTY

Gold Hill district (Nogales).—A little gold ore from a prospect near Nogales was treated by amalgamation in 1933, and a test lot of oxidized lead ore containing gold was shipped from the Camel claim.

Greaterville district.—The Rock Candy Mountain property produced 1 car of copper ore of smelting grade in 1933 containing silver and gold.

Harshaw district.—Lessees worked the World's Fair mine near Patagonia in 1933 and shipped 30 tons of ore containing chiefly silver and lead; some of the ore averaged 124 ounces of silver to the ton.

Oro Blanco district.—Metal production from mines in the Oro Blanco district increased decidedly in 1933. There were 17 producers, but most of them were small gold prospects near Ruby. The largest output was gold ore from the Tres Amigos property; some of this ore was treated by amalgamation, but 32 tons of it were rich ore shipped to a smelter. Other important producers were the Gold Case & San Juan, Warsaw, and Yellow Jacket properties, all gold producers.

Pajarito district.—One lot of oxidized lead ore containing silver and a little gold was shipped in 1933 from the Big Steve claim.

Palmetto district.—One car of oxidized copper ore was shipped by lessees in 1933 from the Morris group.

Parker Canyon district.—One car of gold ore was shipped in 1933 from a claim 18 miles southeast of Patagonia in Parker Canyon.

Patagonia (Washington, Duquesne) district.—The output in 1933 from four lode mines in the Patagonia district was chiefly lead-silver ore from the Belmont claim, copper ore from a prospect near Patagonia, and a little gold ore from the Ala mine. A small quantity of placer gold (3.58 ounces) was recovered from claims in the district.

Tyndall district (Alto).—Most (54 tons) of the output in the Tyndall district in 1933 was oxidized lead ore from the Oak and Wandering Jew claims.

Wrightson district.—Two small lots of lead ore were marketed in 1933 from two prospects.

YAVAPAI COUNTY

Big Bug district.—The value of metal production in the Big Bug district in 1933 was nearly three times that in 1932. Most of the output was gold ore from the Lelan-Dividend group, operated by the Southern Exploration Co., and from the Union-Jessie group, operated by the Arizona Consolidated Mining Co.; the ore from

both groups was concentrated by flotation. A little gold ore of smelting grade was shipped from the Silverton and Lucille mines, and 1 car of sulphide lead ore containing considerable gold was shipped from the Poland mine. The placer output (486.41 ounces of gold and 40 ounces of silver) came from various claims on Big Bug Creek. The largest placer producer was the Savoy property, where gold was recovered from gravel and old tailings fed into a concentration plant equipped with four rubber-riffled Ainalay centrifugal bowls; the property was operated from July 15 to December 31, and 9,000 cubic yards of gravel were treated.

Black Canyon district.—The value of metal production in the Black Canyon district increased about 60 percent in 1933. Most of the output was ore containing chiefly gold, silver, and lead from the Golden Belt property near Cordes; about 5,500 tons of ore from this property were milled in a 50-ton flotation plant. The Turkey group, also near Cordes, was operated by a lessee who shipped several hundred tons of lead ore and siliceous gold ore to a smelter and milled in a flotation plant several hundred tons of lead ore chiefly valuable for its gold content. The Gold Crown mine at Cordes was operated under lease, and nearly 100 tons of combined lead ore and siliceous gold ore were shipped to a smelter. The placer production (42.04 ounces of gold and 3 ounces of silver) came from various claims near Bumblebee.

Black Rock district.—The largest production in the Black Rock district in 1933 was gold ore from the Gold Bar mine near Constellation worked by lessees; most of this ore was treated by amalgamation and concentration, but a little of it was shipped crude for smelting. The Monte Cristo Gold Silver Co. shipped 1 car of gold and silver ore and completed the construction of a new 50-ton flotation plant late in the year. The remainder of the lode output was gold ore from the Amazon, Grijalva, and Homestake mines and various prospects. The placer output (19.98 ounces of gold and 3 ounces of silver) was recovered by various transient operators.

Castle Creek district.—The output of the Castle Creek district in 1933 was chiefly gold ore from the Masade, Jack Pot, Willis, and Golden Aster properties and various prospects. Placer bullion (22.01 ounces of gold and 3 ounces of silver) was sold in small lots to bullion buyers.

Cherry Creek district.—There were 14 producers in the Cherry Creek district in 1933. The output (327 tons) was all gold ore; about half of it was shipped for smelting, and the rest was treated in amalgamation mills. The chief producers were the Bunker, Lucky Bird, Cross Cut, Gold Crown, Golden Eagle, and Sessions properties.

Copper Basin district.—The output of the Copper Basin district in 1933 was gold and silver from various placers near Kirkland. Considerable work was done by the Gold Star Placer Co. 2 miles east of Kirkland, and bullion was marketed at the San Francisco Mint. A large part of the district output was purchased by several local bullion buyers.

Eureka district.—Gold ore of smelting grade was shipped in 1933 from the Mammoth, Crosby, Sultan, Gold Star, and Tri-State mines northwest of Hillside; gold bullion was recovered from ore treated by amalgamation, chiefly from the Crosby, James, and Sunbeam prop-

erties. Placer gold (15.72 ounces) was recovered from various claims north of Hillside.

Hassayampa district.—Lode properties in the Hassayampa district produced gold, silver, copper, and lead in 1933; the placer output was 132.69 ounces of gold and 20 ounces of silver. The chief production from lode mines was gold ore from the Davis-Dunkirk property, treated by flotation; the remainder of the lode output was mostly gold ore from the Empire, Pine Grove, Gold Basis, and Hidden Treasure mines and lead ore containing gold and silver from the Trapshooter Reilly property. The placer output was recovered from a number of small operations, chiefly on Hassayampa River and its tributaries.

Humbug district.—The placer output of the Humbug district in 1933 was 84.22 ounces of gold and 17 ounces of silver; it came from small operations on Humbug, French, and Cow Creeks.

Lynx Creek district.—Production in the Lynx Creek district, all placer gold and silver, was decidedly more in 1933 than in 1932. The increase in output was due chiefly to operations by the Calari Dredging Corporation at the Fitzmaurice placers. This corporation operated a dredge from March to July, when the property was again worked by the owners, the Arizona Dredging & Power Corporation, who began operations November 20 and produced a little gold.

Martinez district.—There was a decided decrease in the output of the Martinez district in 1933 as the milling plant at the Congress tailings dump was operated only a short time and produced little gold; late in the year the Illinois Mining Corporation was organized to operate the mill. Gold ore of smelting grade was shipped from the Blue Bird and Senator properties.

Red Picacho district.—Several cars of gold ore from the Golden Slipper mine operated by lessees were shipped in 1933 to El Paso, Tex., for smelting.

Silver Mountain district.—The output of the Silver Mountain district in 1933 was chiefly placer gold from the Silver Mountain property.

Squaw Creek district.—A small lot of gold bullion was marketed in 1933 from the Shamrock claim, and a little placer gold was produced at the Squaw Creek property.

Tiger district.—One car of gold ore was shipped in 1933 from the Lapham claim in Minnehaha Flat, and a little placer gold was produced from claims on Humbug Creek.

Tip Top district.—One car of silver ore was produced in 1933 from the Tom Wade claim, and placer gold (42.52 ounces) was recovered from claims on Agua Fria and Black Canyon Creeks.

Turkey Creek district.—A small lot of rich silver ore was shipped in 1933 from the Goodwin claim, and a little placer gold was produced from a prospect.

Verde district (Jerome).—The value of the metal output of the Verde district, chiefly gold, silver, and copper from the United Verde Extension mine, was slightly less in 1933 than in 1932. Operations at the mine, mill, and smelter of the United Verde Extension Mining Co. were continuous throughout 1933. The company mined and shipped crude to the smelter 185,833 tons of ore averaging 0.056 ounce of gold and 1.56 ounces of silver to the ton and 7.78 percent copper; 55,951 tons of ore averaging 0.053 ounce of gold and 1.14 ounces of silver to the ton and 3.79 percent copper were treated in a 200-ton flotation

plant. The company produced 33,197,118 net pounds of copper from ore mined at the United Verde Extension property and did 5,567 feet of drifting and 1,264 feet of raising. The mine and smelter of the United Verde Copper Co. have been idle since May 1931.

Walker district.—The output of the Walker district in 1933 consisted chiefly of lead ore containing considerable gold from the Alturas group and of low-grade gold ore from the Pine Mountain property treated by amalgamation.

Walnut Grove district (Wagoner).—The production in the Walnut Grove district in 1933 was chiefly placer gold from the Glenn placer and from claims on Milk Creek and French Gulch.

Weaver district.—Of the metal output of the Weaver district in 1933 placers yielded 329.29 ounces of gold and 40 ounces of silver. The lode output was gold ore of smelting grade chiefly from the Mahogany, Beehive, and Myers properties and gold ore treated in milling plants, chiefly by amalgamation, at the Dixie, Upton, Last Chance, Cuba, and A. & J. properties and at several prospects. No regular operations were carried on at any of the placer properties, but considerable gold was recovered from various properties on Antelope, Model, and Weaver Creeks and at Rich Hill east of Congress Junction. A large part of the placer gold came from the Rich Hill, Dutch Barr, Pay Day, and Golden Oak claims; and most of the district output was purchased by bullion buyers at Congress, Wickenburg, and Phoenix.

YUMA COUNTY

Castle Dome district.—Most of the output in the Castle Dome district in 1933 was silver-lead ore of smelting grade from unidentified claims and rich gold ore from the Look Out mine.

Cienega district.—A little gold ore was treated in 1933 by amalgamation at the Sue and Lion Hill mines near Parker.

Colorado River district.—Placer gold and a little silver were recovered by a group of transient miners from claims along the east side of the Colorado River north of Yuma; the output was purchased in 1933 by storekeepers in Yuma.

Dome (Gila City) district.—Placer gold, nearly double the output in 1932, was sold in 1933 in small lots to storekeepers in Dome and Yuma.

Ellsworth district.—The output from 11 lode mines and prospects in the Ellsworth district in 1933 was chiefly gold ore from the Why Not, Bonanza & Golden Eagle, True Blue, and Gemmil properties. Lessees operating the Why Not group treated gold ore by amalgamation and concentration and shipped 2 cars of ore of smelting grade averaging 1 ounce of gold to the ton; gold ore from the Bonanza & Golden Eagle and True Blue groups was treated by amalgamation; and some of the gold ore from the Gemmil property was treated by concentration and some was shipped crude for smelting.

Fortuna district.—No regular operations were carried on in 1933 at any of the properties in the Fortuna district, but some gold ore was produced by lessees from one of the claims of the Fortuna group; the ore was treated by amalgamation.

Kofa district.—The Sheep Tanks Consolidated Mines Co. constructed a 100-ton cyanidation plant and a power plant at its property in 1933 and did considerable work in developing enough water for

milling purposes. The milling plant consists of ball mill, classifier, cyanidation equipment, and Oliver filter. The company shipped 121 tons of gold ore in 1933 to a smelter for testing. A little placer gold was recovered by dry washing from claims near Kofa.

Laguna district.—Placer gold and a little silver were produced in 1933 by operators in the McPhaul and Las Flores areas.

La Paz district.—Nearly all the production in the La Paz district in 1933 was placer gold recovered by dry washing from the Big Nugget and other placer claims west of Quartzsite. Most of the gold was sold to bullion buyers in Quartzsite, Ariz., and Blythe, Calif.

Muggins Mountains district.—Placer gold was produced in 1933 from various claims in the Muggins Mountains.

Planet district.—Gold, silver, and a little copper were produced in 1933 from two properties in the Planet (Harcuvar) district. The metal came from gold ore shipped crude from claims owned by the New Planet Copper Mining Co.

Plomosa district.—The output of the Plomosa district, chiefly placer gold, increased decidedly in 1933. Most of the gold was recovered by drifting and dry washing at the Happy Days, La Cholla, Veteran, Kunze, and other properties near Quartzsite.

Tank Mountains district.—A little gold ore from the Engesser and Nottbusch claims was treated in 1933 by amalgamation.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN CALIFORNIA

(DETAILED STATISTICS—MINE REPORT)

By F. W. HORTON AND H. M. GAYLORD ¹

SUMMARY OUTLINE

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The output of gold, silver, copper, lead, and zinc from California ores and gravels in 1933, in terms of recovered metals, was 613,578.85 fine ounces of gold, 402,591 fine ounces of silver, 990,380 pounds of copper, 761,156 pounds of lead, and 290,214 pounds of zinc. The quantity of gold increased nearly 8 percent compared with 1932, but there were decreases of 18, 30, and 69 percent, respectively, in silver, copper, and lead; no zinc was produced in 1932. There were 797 lode mines and 993 placers producing in 1933 compared with 718 lode mines and 828 placers in 1932.

It may be said that mining in California is synonymous with gold mining as the value of the gold output in 1933 constituted over 98 percent of the combined value of the five metals and most of the silver and much of the lead and copper were byproducts of gold mining.

The largest producing counties in 1933 were Nevada, Sacramento, and Amador, in the order given, each with a metal output valued at more than \$1,500,000; they were followed by Yuba and Shasta Counties, each exceeding \$500,000. The leading producing districts were the Grass Valley-Nevada City, Folsom, and Mother Lode, each with an output exceeding \$2,000,000; they were followed by the Yuba River, Iron Mountain, Snelling, Alleghany, and Randsburg districts, each exceeding \$250,000.

Premium on newly mined gold.—There were four epochs of gold prices for newly mined gold in the United States in 1933: (1) The period of the legal coinage value of \$20.671835, from January 1 to August 9 to all producers; (2) that of (a) \$20.671835 to the majority of producers and (b) the fluctuating world price as secured by export by some producers, to August 29; (3) the period of fluctuating world price as secured through the agency of the Federal Reserve Banks, to October 25 (period of actual Bank sales, from September 8 to November 1); and (4) the period of the Reconstruction Finance Corporation arbitrarily fixed, gradually rising price (generally above the world price), from October 25 to December 31, 1933. For further details see chapter of Minerals Yearbook, 1934, on Gold and Silver (pp. 25 to 52), by Chas. W. Henderson.

¹ The assistance of Opal Y. Sharman, of the Bureau of Mines, is gratefully acknowledged.

Following is a table on mine production of gold in California, 1929-33, in terms of recovered metal; two values are given for 1933—(1) at legal coinage value (\$20.67+ per ounce) and (2) at average weighted price (\$25.56 per ounce).

*Mine production of gold in California, 1929-33, in terms of recovered metal*¹

Year	Fine ounces	Value ¹	Year	Fine ounces	Value ¹
1929.....	412, 479. 25	\$8, 526, 703	1932.....	569, 166. 99	\$11, 765, 726
1930.....	457, 199. 98	9, 451, 162	1933.....	613, 578. 85	² 12, 683, 801
1931.....	523, 135. 09	10, 814, 162			³ 15, 683, 075

¹ 1929-32: At legal value (\$20.67+ per ounce); 1933: At both legal coinage value (\$20.67+ per ounce) and average weighted price (\$25.56 per ounce).

² At legal coinage value (\$20.67+ per ounce).

³ At average weighted price (\$25.56 per ounce).

Calculation of value of metal production.—The value of metal production hereinafter reported has been calculated at the figures given in the table that follows. Gold is figured at the mint value for fine gold, that is, \$20.671835 an ounce. The silver price is the average New York price for bar silver. The copper, lead, and zinc prices are weighted averages, for each year, of all grades of primary metal sold by producers.

Prices of silver, copper, lead, and zinc, 1929-33

Year	Silver	Copper	Lead	Zinc	Year	Silver	Copper	Lead	Zinc
	<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>		<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>
1929.....	\$0. 533	\$0. 176	\$0. 063	\$0. 066	1932.....	\$0. 282	\$0. 063	\$0. 030	\$0. 030
1930.....	. 385	. 130	. 050	. 048	1933.....	. 350	. 064	. 037	. 042
1931.....	. 290	. 091	. 037	. 038					

Mine production of gold, silver, copper, lead, and zinc in California, 1929-33, in terms of recovered metals

Year	Mines producing		Ore, old tailings, etc. (short tons)	Gold		Silver	
	Lode	Placer		Fine ounces	Value	Fine ounces	Value
1929.....	324	478	1, 657, 069	412, 479. 25	\$8, 526, 703	1, 176, 895	\$627, 285
1930.....	481	892	1, 595, 150	457, 199. 98	9, 451, 162	1, 622, 803	624, 779
1931.....	462	497	1, 497, 247	523, 135. 09	10, 814, 162	867, 818	251, 667
1932.....	718	828	1, 060, 361	569, 166. 99	11, 765, 726	493, 533	139, 176
1933 ¹	797	993	1, 322, 100	613, 578. 85	12, 683, 801	402, 591	140, 907

Year	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
1929.....	33, 218, 994	\$5, 846, 543	1, 429, 489	\$90, 058	-----	-----	\$15, 090, 589
1930.....	27, 285, 272	3, 547, 085	3, 559, 564	177, 978	-----	-----	13, 801, 004
1931.....	12, 931, 995	1, 176, 812	3, 757, 256	139, 018	159, 865	\$6, 075	12, 387, 734
1932.....	1, 417, 876	89, 326	2, 417, 416	72, 522	-----	-----	12, 066, 750
1933 ¹	990, 380	63, 384	761, 156	28, 163	290, 214	12, 189	12, 928, 444

¹ Figures include copper recovered from copper concentrates produced in 1930 but not marketed until 1933.

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Gold and silver produced at placer mines in California, 1929-33

Year	Dredge				Drift				Total value
	Gold		Silver		Gold		Silver		
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	
1929.....	173,630.38	\$3,589,259	11,510	\$6,135	4,095.82	\$84,668	450	\$240	
1930.....	166,980.85	3,451,801	10,753	4,140	3,029.01	62,615	426	164	
1931.....	175,086.28	3,619,355	10,602	3,075	5,379.26	111,199	687	199	
1932.....	188,830.89	3,903,481	11,269	3,178	9,959.43	205,880	1,166	329	
1933.....	201,710.32	4,169,722	12,730	4,455	16,981.08	351,030	1,862	652	

Year	Hydraulic				Surface				Total value
	Gold		Silver		Gold		Silver		
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	
1929.....	2,889.55	\$59,732	445	\$237	6,624.85	\$136,948	907	\$483	\$3,877,702
1930.....	4,324.88	89,403	466	179	7,320.31	151,324	981	378	3,760,004
1931.....	3,026.16	62,556	380	110	11,011.90	227,636	1,545	448	4,024,578
1932.....	5,944.15	122,876	696	196	25,795.39	533,238	3,469	978	4,770,156
1933.....	4,494.94	92,919	472	165	38,192.52	789,510	5,396	1,889	5,410,342

Gold.—In 1933 the higher price of gold caused notable expansion in California mining operations and resulted in augmented gold production. The number of producing lode mines increased from 718 in 1932 to 797 in 1933 (11 percent) and the number of placer operations from 828 to 993 (20 percent). The output of gold from lode mines advanced 13,563 fine ounces (4 percent) and that from placers 30,849 ounces (13 percent). Lode gold supplied 57 percent and placer gold 43 percent of the State output. Nevada and Sacramento Counties each produced more than 100,000 ounces of gold in 1933 and were followed in order by Amador, Yuba, and Shasta Counties; these five counties yielded 444,226 ounces in all, or over 72 percent of the State total. The five Mother Lode counties—Amador, Calaveras, Eldorado, Mariposa, and Tuolumne—contributed 128,778 ounces (21 percent) of the total output. The Grass Valley-Nevada City, Folsom, and Mother Lode districts each produced over 100,000 ounces of gold in 1933; they yielded an aggregate of 397,859 ounces (65 percent) of the State total.

In 1933 dry gold ore, old tailings, etc., yielded over 99 percent of the gold recovered from lode mines. Amalgamation accounted for 72 percent of the total lode gold, smelting of concentrates 15 percent, cyanidation 11 percent, and smelting of ore, old tailings, etc., 2 percent.

Of the placer gold 77 percent was supplied by 16 companies working 25 dredges; these dredges recovered 201,710 ounces in 1933 from 55,331,000 cubic yards of gravel, an average of 0.0036 ounce per cubic yard compared with 0.0039 ounce per cubic yard by dredges in 1932.

The largest producers of gold in California in 1933, in order of output, were Empire Star Mines Co., Ltd., Grass Valley-Nevada City district; Natomas Co., Folsom district; Yuba Consolidated Gold Fields, Yuba River and Snelling districts; Idaho-Maryland Mines

Co., Grass Valley-Nevada City district; Capital Dredging Co., Folsom district; The Argonaut Mining Co., Ltd., Jackson district; The Mountain Copper Co., Ltd., Iron Mountain district; Kennedy Mining & Milling Co., Jackson district; Central Eureka Mining Co., Sutter Creek district; and Original Sixteen to One Mine, Inc., Alleghany district. These 10 companies produced 406,788 ounces of gold—nearly two-thirds of the State total.

Silver.—The silver output of California was 402,591 fine ounces in 1933 compared with 493,533 ounces in 1932, a decrease of 18 percent. The production of lode silver was 382,131 ounces—95 percent of the total silver but 20 percent less than the lode output in 1932. The silver recovered from crude placer gold amounted to 20,460 ounces—5 percent of the total silver and an increase of 3,860 ounces (23 percent) over the placer output in 1932. Nevada County was the only county in the State that produced over 150,000 ounces of silver; its output was a byproduct of gold mining and came almost wholly from the Grass Valley-Nevada City district. San Bernardino, Kern, and Inyo Counties followed in order of output; most of their silver came from the Randsburg, Mojave, and Cerro Gordo districts, respectively. Of the total silver nearly 65 percent came from gold ore, old tailings, etc.; 23.5 percent from gold-silver ore; 5 percent from lead ore, etc.; 1 percent from copper ore, etc.; and less than 0.35 percent from dry silver ore. Of the total lode silver 37 percent was recovered by amalgamation; 30 percent by smelting concentrates; 20 percent by smelting ore, old tailings, etc.; and 13 percent by cyanidation.

Copper.—The production of copper in California was slightly less than 1,000,000 pounds in 1933 and 30 percent below the output in 1932. In 1933 nearly all of the copper came from copper ore from the Iron Mountain district in Shasta County, and 17 percent of it was derived in the form of cement copper by precipitation from mine water. In 1932 approximately three-fourths of the copper output of the State came from the Genesee district in Plumas County, but production in this district in 1933 was only nominal.

Lead.—The lead output of California was 761,156 pounds in 1933, or less than one-third of that in 1932. Most of it came from the Cerro Gordo and Carbonate districts of Inyo County, largely by direct smelting of straight lead ore; only 112,665 pounds were obtained from concentrates.

Zinc.—The zinc output of California in 1933 was 290,214 pounds; all of it came from straight zinc ore and most of it from the Cerro Gordo district, Inyo County. No zinc was produced in California from 1928 to 1932, inclusive, except in 1931 when the output was 159,865 pounds.

MINE PRODUCTION BY COUNTIES

Mine production of gold, silver, copper, lead, and zinc in California in 1933, by counties, in terms of recovered metals

County	Gold					
	Lode		Placer		Total	
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value
Alpine.....	64.61	\$1,336			64.61	\$1,336
Amador.....	68,613.07	1,418,358	7,492.61	\$154,886	76,105.68	1,573,244
Butte.....	1,297.88	26,830	10,288.93	212,691	11,586.81	239,521
Calaveras.....	6,800.66	140,582	10,530.32	217,681	17,330.98	358,263
Colusa.....	2.24	46			2.24	46
Del Norte.....			75.64	1,564	75.64	1,564
Eldorado.....	16,615.74	343,478	4,547.38	94,003	21,163.12	437,481
Fresno.....	125.77	2,600	635.54	13,138	761.31	15,738
Humboldt.....			230.90	4,773	230.90	4,773
Imperial.....	213.16	4,406	33.04	683	246.20	5,089
Inyo.....	2,316.24	47,881	121.65	2,515	2,437.89	50,396
Kern.....	15,803.60	326,689	799.54	16,528	16,603.14	343,217
Lassen.....	326.64	6,752			326.64	6,752
Los Angeles.....	218.49	4,517	402.06	8,311	620.55	12,828
Madera.....	212.85	4,400	137.76	2,848	350.61	7,248
Mariposa.....	9,360.12	193,491	603.21	12,469	9,963.33	205,960
Mendocino.....			6.07	125	6.07	125
Merced.....			17,645.66	364,768	17,645.66	364,768
Modoc.....	52.65	1,088			52.65	1,088
Mono.....	904.75	18,703	401.13	8,292	1,305.88	26,995
Monterey.....	4.62	96	3.02	62	7.64	158
Nevada.....	176,960.98	3,658,108	5,995.12	123,930	182,956.10	3,782,038
Orange.....			4.10	85	4.10	85
Placer.....	943.67	19,507	5,620.26	116,181	6,563.93	135,688
Plumas.....	787.57	16,281	1,951.08	40,332	2,738.65	56,613
Riverside.....	498.20	10,299	88.38	1,827	586.58	12,126
Sacramento.....	15.77	326	117,224.79	2,423,252	117,240.56	2,423,578
San Bernardino.....	4,194.11	86,700	347.13	7,176	4,541.24	93,876
San Diego.....	158.38	3,274	72.20	1,493	230.58	4,767
San Joaquin.....			39.80	823	39.80	823
San Luis Obispo.....			29.71	614	29.71	614
Santa Barbara.....	1.06	22			1.06	22
Santa Cruz.....			12.00	248	12.00	248
Shasta.....	21,679.07	448,146	2,510.67	51,900	24,189.74	500,046
Sierra.....	15,635.79	323,220	1,778.21	36,759	17,414.00	359,979
Siskiyou.....	3,869.75	79,995	8,843.62	182,814	12,713.37	262,809
Stanislaus.....			5,798.26	119,861	5,798.26	119,861
Trinity.....	1,485.24	30,703	12,045.71	249,007	13,530.95	279,710
Tulare.....	49.09	1,015	35.09	725	84.18	1,740
Tuolumne.....	2,511.12	51,909	1,703.91	35,223	4,215.03	87,132
Ventura.....	62.31	1,288			62.31	1,288
Yolo.....			5.04	104	5.04	104
Yuba.....	414.79	8,574	43,319.32	895,490	43,734.11	904,064
Total, 1932.....	352,199.99	7,280,620	261,378.86	5,403,181	613,578.85	12,683,801
	338,637.13	7,000,251	230,529.86	4,765,475	569,166.99	11,765,726

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Mine production of gold, silver, copper, lead, and zinc in California in 1933, by counties, in terms of recovered metals—Continued

County	Silver					
	Lode		Placer		Total	
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value
Alpine.....	3, 118	\$1, 091			3, 118	\$1, 091
Amador.....	17, 747	6, 211	742	\$260	18, 489	6, 471
Butte.....	1, 848	647	926	324	2, 774	971
Calaveras.....	4, 400	1, 540	1, 105	387	5, 505	1, 927
Colusa.....						
Del Norte.....			9	3	9	3
Eldorado.....	3, 590	1, 257	575	201	4, 165	1, 458
Fresno.....	15	5	122	43	137	48
Humboldt.....			30	11	30	11
Imperial.....	214	75	4	1	218	76
Inyo.....	20, 934	7, 327	15	5	20, 949	7, 332
Kern.....	39, 737	13, 908	172	60	39, 909	13, 968
Lassen.....	194	68			194	68
Los Angeles.....	276	97	61	21	337	118
Madera.....	1, 997	699	37	13	2, 034	712
Mariposa.....	3, 075	1, 076	102	36	3, 177	1, 112
Mendocino.....						
Merced.....			1, 744	610	1, 744	610
Modoc.....	37	13			37	13
Mono.....	2, 695	943	174	61	2, 869	1, 004
Monterey.....						
Nevada.....	159, 455	55, 809	856	300	160, 311	56, 109
Orange.....			2	1	2	1
Placer.....	547	191	810	284	1, 357	475
Plumas.....	902	316	247	86	1, 149	402
Riverside.....	287	100	13	5	300	105
Sacramento.....	15	5	5, 037	1, 763	5, 052	1, 768
San Bernardino.....	96, 570	33, 800	49	17	96, 619	33, 817
San Diego.....	63	22	5	2	68	24
San Joaquin.....			4	1	4	1
San Luis Obispo.....						
Santa Barbara.....	20	7			20	7
Santa Cruz.....			3	1	3	1
Shasta.....	19, 211	6, 724	343	120	19, 554	6, 844
Sierra.....	3, 132	1, 096	220	77	3, 352	1, 173
Siskiyou.....	693	243	1, 266	443	1, 959	686
Stanislaus.....			689	241	689	241
Trinity.....	655	229	1, 539	539	2, 194	768
Tulare.....	25	9	15	5	40	14
Tuolumne.....	536	188	264	92	800	280
Ventura.....	54	19			54	19
Yolo.....						
Yuba.....	89	31	3, 280	1, 148	3, 369	1, 179
Total, 1932.....	382, 131	133, 746	20, 460	7, 161	402, 591	140, 907
	476, 933	134, 495	16, 600	4, 681	493, 533	139, 176

GOLD, SILVER, COPPER, LEAD, AND ZINC IN CALIFORNIA 185

Mine production of gold, silver, copper, lead, and zinc in California in 1933, by counties, in terms of recovered metals—Continued

County	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
Alpine.....	323	\$21	1, 178	\$44			\$2, 492
Amador.....	13, 827	885	30, 725	1, 137			1, 581, 737
Butte.....	1, 124	72					240, 564
Calaveras.....	2, 057	132	6, 272	232			360, 554
Colusa.....							46
Del Norte.....							1, 567
Eldorado.....	2, 677	171	514	19			439, 129
Fresno.....							15, 786
Humboldt.....							4, 784
Imperial.....							5, 165
Inyo.....	7, 714	494	601, 203	22, 245	255, 744	\$10, 741	91, 208
Kern.....	505	32	474	18			357, 235
Lassen.....	648	41	214	8			6, 869
Los Angeles.....	710	45	2, 006	74			13, 065
Madera.....	496	32	5, 441	201			8, 193
Mariposa.....	238	15					207, 087
Mendocino.....							125
Merced.....							365, 378
Modoc.....							1, 101
Mono.....	668	43	4, 583	170			28, 212
Monterey.....							158
Nevada.....	67, 004	4, 288	64, 782	2, 397	34, 470	1, 448	3, 846, 280
Orange.....							86
Placer.....							136, 163
Plumas.....	123	8					57, 023
Riverside.....	633	41					12, 272
Sacramento.....							2, 425, 346
San Bernardino.....	7, 881	504	26, 628	985			129, 182
San Diego.....							4, 791
San Joaquin.....							824
San Luis Obispo.....							614
Santa Barbara.....	27, 998	1, 792					1, 821
Santa Cruz.....							249
Shasta.....	855, 108	54, 727	14, 836	549			562, 166
Sierra.....	563	36					361, 188
Siskiyou.....							263, 495
Stanislaus.....							120, 102
Trinity.....			385	14			280, 492
Tulare.....							1, 754
Tuolumne.....			169	6			87, 418
Ventura.....			1, 631	60			1, 367
Yolo.....							104
Yuba.....	83	5	115	4			905, 252
Total, 1932.....	990, 380 1, 417, 876	63, 334 89, 326	761, 156 2, 417, 416	28, 163 72, 522	290, 214	12, 189	12, 928, 444 12, 066, 750

Ore treated and gold and silver recovered at gold mills in the Mother Lode counties in California in 1933¹

County	Ore treated	Gold and silver recovered in bullion			Concentrates produced ²	Gold and silver recovered from concentrates			Value of total recovery	
		Gold	Silver	Average value per ton of ore		Gold	Silver	Average value per ton of concentrates	Total	Average value per ton of ore
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>		<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>			
Amador.....	200, 672	52, 520. 98	10, 341	\$5. 43	2, 694	8, 838. 69	2, 779	\$68. 18	\$1, 273, 008	\$6. 34
Calaveras.....	13, 784	4, 925. 25	1, 898	7. 43	188	1, 327. 44	1, 575	148. 89	130, 470	9. 47
Eldorado.....	59, 392	6, 601. 08	1, 597	2. 31	2, 263	7, 372. 88	1, 571	67. 59	289, 977	4. 88
Mariposa.....	13, 057	5, 925. 91	1, 233	9. 41	63	225. 79	351	76. 03	127, 721	9. 78
Tuolumne.....	3, 928	2, 446. 56	462	12. 92	10	20. 36	11	42. 50	51, 162	13. 02
Total, 1932.....	290, 833 243, 104	72, 419. 78 68, 583. 85	15, 531 14, 042	5. 17 5. 85	5, 218 3, 362	17, 785. 16 10, 869. 13	6, 287 3, 770	70. 88 67. 15	1, 872, 338 1, 647, 462	6. 44 6. 78

¹ Old tailings and mill cleanings excluded.

² Includes only concentrates recovered from gold ore.

MINING INDUSTRY

ORE CLASSIFICATION

Ore, old tailings, etc., sold or treated in California in 1933, with content in terms of recovered metals

Source	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold ore.....	¹ 1,261,869	349,431.32	260,505	54,550	134,069	-----
Dry gold and silver ore.....	19,952	1,321.31	94,700	1,579	1,178	-----
Dry silver ore.....	22	3.63	1,381	-----	-----	-----
Copper ore.....	² 38,176	1,153.95	5,015	³ 928,039	572	-----
Copper-lead ore.....	8	14.87	233	710	2,006	-----
Lead ore.....	⁴ 1,257	222.41	19,785	3,803	611,195	-----
Zinc ore.....	816	52.50	512	1,699	12,136	290,214
Total, lode mines.....	1,322,100	352,199.99	382,131	³ 990,380	761,156	290,214
Total, placers.....	-----	261,378.86	20,460	-----	-----	-----
	1,322,100	613,578.85	402,591	³ 990,380	761,156	290,214
Total, 1932.....	1,060,361	569,166.99	493,533	1,417,876	2,417,416	-----

¹ Includes 3,856 tons of old tailings and 11 tons of mill cleanings amalgamated, 86,860 tons of old tailings and 1 ton of mill cleanings cyanided, 30 tons of old tailings concentrated, and 252 tons of old tailings and 6 tons of mill cleanings smelted.

² Includes 37,413 tons of pyrites roasted for the manufacture of sulphuric acid—residue leached—and 8 tons of old tailings concentrated.

³ Includes 257,537 pounds of copper from copper concentrates produced in 1930 but not marketed until 1933 and 167,036 pounds of copper from mine water.

⁴ Includes 16 tons of mill cleanings smelted.

Value of metals from ore, old tailings, etc., sold or treated in California in 1933, by classes of ore

Class	Ore, old tailings, etc. (short tons)	Gold	Silver	Copper	Lead	Zinc	Total value
Dry gold ore.....	1,261,869	\$7,223,387	\$91,177	\$3,491	\$4,961	-----	\$7,323,016
Dry gold and silver ore.....	19,952	27,314	33,145	101	44	-----	60,604
Dry silver ore.....	22	75	483	-----	-----	-----	558
Copper ore.....	38,176	23,854	1,755	¹ 59,395	21	-----	85,025
Copper-lead ore.....	8	307	82	45	74	-----	508
Lead ore.....	1,257	4,598	6,925	243	22,614	-----	34,380
Zinc ore.....	816	1,085	179	109	449	\$12,189	14,011
	1,322,100	7,280,620	133,746	¹ 63,384	28,163	12,189	7,518,102
Total, 1932.....	1,060,361	7,000,251	134,495	89,326	72,522	-----	7,296,594

¹ Includes value of 257,537 pounds of copper from copper concentrates produced in 1930 but not marketed until 1933 and 167,036 pounds of copper from mine water.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN CALIFORNIA 187

Ore, old tailings, etc., sold or treated in California in 1933, by counties, with content in terms of recovered metals

DRY GOLD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Amador.....	¹ 265, 292	68, 613. 07	17, 747	13, 827	30, 725	-----
Butte.....	7, 161	1, 297. 88	1, 848	1, 124	-----	-----
Calaveras.....	15, 585	6, 800. 66	4, 400	2, 057	6, 272	-----
Colusa.....	² 30	2. 24	-----	-----	-----	-----
Eldorado.....	86, 686	16, 615. 74	3, 590	2, 677	514	-----
Fresno.....	³ 166	125. 77	15	-----	-----	-----
Imperial.....	686	213. 16	214	-----	-----	-----
Inyo.....	3, 759	2, 168. 06	2, 316	2, 590	25, 441	-----
Kern.....	⁴ 70, 073	15, 803. 60	39, 737	505	474	-----
Lassen.....	879	326. 64	194	648	214	-----
Los Angeles.....	314	203. 62	43	-----	-----	-----
Madera.....	⁵ 4, 096	212. 85	1, 997	496	5, 441	-----
Mariposa.....	31, 987	9, 357. 42	2, 598	238	-----	-----
Modoc.....	155	52. 65	37	-----	-----	-----
Mono.....	⁶ 836	892. 56	2, 291	189	969	-----
Monterey.....	2	4. 62	-----	-----	-----	-----
Nevada.....	⁷ 428, 562	175, 794. 34	154, 682	23, 208	59, 074	-----
Placer.....	⁸ 1, 382	943. 67	547	-----	-----	-----
Plumas.....	⁹ 1, 552	787. 57	902	123	-----	-----
Riverside.....	871	498. 20	287	633	-----	-----
Sacramento.....	14	15. 77	15	-----	-----	-----
San Bernardino.....	¹⁰ 6, 346	2, 878. 39	3, 235	5, 589	4, 060	-----
San Diego.....	551	158. 38	63	-----	-----	-----
Shasta.....	224, 906	21, 646. 27	18, 604. 27	-----	216	-----
Sierra.....	¹¹ 40, 553	15, 635. 79	3, 132	563	-----	-----
Siskiyou.....	60, 266	3, 869. 75	693	-----	-----	-----
Trinity.....	¹² 3, 474	1, 485. 24	655	-----	385	-----
Tulare.....	35	49. 09	25	-----	-----	-----
Tuolumne.....	3, 945	2, 511. 12	536	-----	169	-----
Ventura.....	226	52. 41	13	-----	-----	-----
Yuba.....	1, 479	414. 79	89	83	115	-----
Total, 1932.....	1, 261, 869 967, 716	349, 431. 32 333, 878. 94	260, 505 180, 703	54, 550 40, 887	134, 069 168, 431	-----

DRY GOLD AND SILVER ORE

Alpine.....	1, 400	64. 61	3, 118	323	1, 178	-----
San Bernardino.....	18, 552	1, 256. 70	91, 582	1, 256	-----	-----
Total, 1932.....	19, 952 26	1, 321. 31 11. 00	94, 700 776	1, 579	1, 178 133	-----

DRY SILVER ORE

Mariposa.....	1	2. 70	477	-----	-----	-----
San Bernardino.....	21	. 93	904	-----	-----	-----
Total, 1932.....	22 10, 476	3. 63 1, 660. 90	1, 381 179, 962	6, 397	2, 515	-----

¹ Includes 2,200 tons of old tailings amalgamated, 49,526 tons of old tailings and 1 ton of mill cleanings cyanided, and 252 tons of old tailings and 3 tons of mill cleanings smelted.

² Old tailings amalgamated.

³ Includes 10 tons of old tailings amalgamated.

⁴ Includes 36,834 tons of old tailings cyanided and 1 ton of mill cleanings amalgamated.

⁵ Includes 4 tons of old tailings amalgamated.

⁶ Includes 65 tons of old tailings amalgamated.

⁷ Includes 200 tons of old tailings cyanided and 10 tons of mill cleanings amalgamated.

⁸ Includes 15 tons of old tailings amalgamated.

⁹ Includes 3 tons of mill cleanings smelted.

¹⁰ Includes 1,332 tons of old tailings amalgamated and 300 tons of old tailings cyanided.

¹¹ Includes 200 tons of old tailings amalgamated.

¹² Includes 30 tons of old tailings concentrated.

Ore, old tailings, etc., sold or treated in California in 1933, by counties, with content in terms of recovered metals—Continued

COPPER ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Inyo.....	¹³ 8	0. 50	104	1, 448	-----	-----
Nevada.....	608	1, 114. 14	4, 261	42, 797	572	-----
San Bernardino.....	10	5. 45	61	688	-----	-----
Santa Barbara.....	106	1. 06	20	27, 998	-----	-----
Shasta.....	¹⁴ 37, 444	32. 80	569	¹⁵ 855, 108	-----	-----
Total, 1932.....	38, 176 78, 031	1, 153. 95 1, 561. 28	5, 015 28, 726	¹⁵ 928, 039 1, 353, 505	572	-----

COPPER-LEAD ORE

Los Angeles.....	8	14. 87	233	710	2, 006	-----
Total, 1932.....	(¹⁶) 8	14. 87	233	710	2, 006	-----

LEAD ORE

Inyo.....	1, 110	147. 68	18, 514	2, 976	568, 762	-----
Mono.....	30	12. 19	404	479	3, 614	-----
San Bernardino.....	95	52. 64	788	348	22, 568	-----
Shasta.....	¹⁷ 16	-----	38	-----	14, 620	-----
Ventura.....	6	9. 90	41	-----	1, 631	-----
Total, 1932.....	1, 257 4, 112	222. 41 1, 525. 01	19, 785 86, 766	3, 803 17, 087	611, 195 2, 246, 337	-----

ZINC ORE

Inyo.....	416	-----	-----	700	7, 000	255, 744
Nevada.....	400	52. 50	512	999	5, 136	34, 470
Total, 1932.....	(¹⁶) 816	52. 50	512	1, 699	12, 136	290, 214

¹³ Old tailings concentrated.

¹⁴ Includes 37,413 tons of pyrites roasted for the manufacture of sulphuric acid—residue leached.

¹⁵ Includes 257,537 pounds of copper from copper concentrates produced in 1930 but not marketed until 1933 and 167,036 pounds of copper from mine water.

¹⁶ None produced in 1932.

¹⁷ Mill cleanings smelted.

METALLURGIC INDUSTRY

Mine production of metals in California in 1933, by methods of recovery

Method of recovery	Material treated (dry weight)	Gold	Silver	Copper	Lead	Zinc
Ore, old tailings, and mill cleanings amalgamated	<i>Short tons</i> 832,542	<i>Fine ounces</i> 254,754.73	<i>Fine ounces</i> 140,956	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Ore, old tailings, and mill cleanings cyanided	332,140	30,716.46	46,933			
Concentrates cyanided	2,525	6,842.19	2,471			
Ore, old tailings, and mill cleanings smelted	¹ 7,710	7,666.03	78,615	96,452	648,491	255,744
Concentrates smelted:						
Flotation	7,855	48,729.26	106,602	² 300,545	103,345	34,470
Table and vanner	927	3,491.32	6,554	3,003	9,320	
Pyrites roasted for acid—residue leached	³ 37,413			⁴ 590,380		
Total, lode mines		352,199.99	382,131	⁵ 990,380	761,156	290,214
Total, placers		261,378.86	20,460			
Total, 1932		613,578.85	402,591	⁵ 990,380	761,156	290,214
		569,166.99	493,533	1,417,876	2,417,416	

¹ Includes 252 tons of old tailings yielding 503.30 ounces of gold, 159 ounces of silver, and 275 pounds of copper, and 22 tons of mill cleanings yielding 239.09 ounces of gold, 156 ounces of silver, 123 pounds of copper, and 14,620 pounds of lead.

² Includes 287,537 pounds of copper from copper concentrates produced in 1930 but not marketed until 1933.

³ Residue leached amounted to 37,286 tons.

⁴ Includes 167,036 pounds of copper from mine water.

⁵ Includes 287,537 pounds of copper from copper concentrates produced in 1930 but not marketed until 1933 and 167,036 pounds of copper from mine water.

Mine production of metals from gold and silver mills in California in 1933, by counties, in terms of recovered metals

County	Ore, old tailings, etc., treated		Recovered in bullion			
	Ore	Old tailings, etc.	Amalgamation		Cyanidation	
			Gold	Silver	Gold	Silver
	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>
Amador	200,672	51,727	52,448.22	10,359	1,773.12	359
Butte	7,161		439.11	64	609.87	774
Calaveras	13,784		4,920.83	1,898	4.42	
Colusa		30	2.24			
Eldorado	59,392		6,308.50	1,504	292.58	93
Fresno	155	10	110.67	13		
Imperial	686		213.16	214		
Inyo	3,086		493.45	152	99.19	15
Kern	32,834	36,835	9,071.69	2,642	6,336.91	23,898
Lassen	756		46.67	29		
Los Angeles	312		198.22	38		
Madera	300	4	64.25	35		
Mariposa	13,057		5,852.16	1,186	73.75	47
Modoc	151		14.04	4		
Mono	626	65	625.74	761		
Monterey	2		4.62			
Nevada	400,039	210	147,283.26	116,114	1,081.92	3,162
Placer	1,367	15	846.44	266	35.93	10
Plumas	1,549		619.98	801		
Riverside	728		317.80	96		
Sacramento	10		9.37	7		
San Bernardino	2,163	1,632	899.46	277	58.83	383
San Diego	551		143.68	47		
Shasta	224,874		1,138.42	329	20,300.88	18,171
Sierra	40,351	200	14,683.59	2,646		
Siskiyou	60,263		3,660.47	556	8.68	6
Trinity	3,418		1,447.34	356		
Tulare	34		45.79	22		
Tuolumne	3,928		2,446.56	462		
Ventura	226		47.51	12		
Yuba	1,479		351.49	66	40.38	15
Total, 1932	1,073,954	90,728	254,754.73	140,956	30,716.46	46,933
	878,074	37,905	224,053.73	41,720	34,565.99	35,002

*Mine production of metals from gold and silver mills in California in 1933, by counties, in terms of recovered metals—Continued*¹

County	Concentrates and recovered metal				
	Concentrates produced	Gold	Silver	Copper	Lead
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Amador.....	2,694	8,838.69	2,779	910	714
Butte.....	37	248.90	1,010	1,124	-----
Calaveras.....	188	1,327.44	1,575	370	1,603
Eldorado.....	2,263	7,372.88	1,571	2,677	170
Inyo.....	28	142.00	242	557	3,267
Kern.....	2	8.70	24	-----	186
Madera.....	1	2.20	2	-----	-----
Mariposa.....	63	225.79	351	238	-----
Modoc.....	3	24.21	19	-----	-----
Mono.....	13	57.67	1,245	-----	-----
Nevada.....	1,683	16,538.62	15,400	8,633	15,909
Placer.....	22	61.30	271	-----	-----
San Bernardino.....	12	57.90	89	-----	2,053
San Diego.....	4	14.70	16	-----	-----
Shasta.....	28	59.76	49	-----	216
Sierra.....	128	930.60	480	563	-----
Siskiyou.....	30	184.40	125	-----	-----
Tuolumne.....	10	20.36	11	-----	169
Ventura.....	5	4.90	1	-----	-----
Yuba.....	6	22.92	8	83	115
Total, 1932.....	7,220	36,143.94	25,268	15,155	24,402
	10,397	50,943.92	44,612	9,229	101,051

*Mine production of metals from concentrating mills in California in 1933, by counties, in terms of recovered metals*¹

County	Ore and old tailings treated	Concentrates and recovered metal					
		Concentrates produced ¹	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Alpine.....	1,400	7	64.61	3,118	323	1,178	-----
Amador.....	12,614	436	4,873.94	3,989	12,540	30,011	-----
Calaveras.....	1,714	117	358.86	624	475	3,561	-----
Eldorado.....	27,271	999	2,572.53	361	-----	-----	-----
Inyo.....	8	3	.50	104	1,448	-----	-----
Madera.....	3,780	189	128.90	1,946	496	5,441	-----
Mariposa.....	18,840	219	3,111.60	762	-----	-----	-----
Nevada.....	28,660	870	10,792.04	20,350	15,574	48,072	34,470
San Bernardino.....	17,978	640	1,010.00	59,100	-----	-----	-----
Shasta.....	-----	2 606	-----	-----	257,537	-----	-----
Trinity.....	30	1	5.80	5	-----	-----	-----
Total, 1932.....	112,295	1 4,087	22,918.83	90,359	288,393	88,263	34,470
	98,561	4,476	23,226.89	216,730	1,065,736	48,778	-----

¹ Totals for 1933 include copper concentrates produced in Shasta County in 1930 but not marketed until 1933.

² Figures represent copper concentrates produced in 1930 but not marketed until 1933.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN CALIFORNIA 191

Gross metal content of California concentrates produced in 1933, by classes of concentrates ¹

Class of concentrates	Concentrates produced ¹	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold.....	10,000	57,910.96	52,711	53,375	109,575	-----
Dry gold and silver.....	647	1,074.61	62,218	404	1,230	-----
Copper.....	¹ 609	.50	104	266,756	-----	-----
Lead.....	10	24.20	82	148	2,316	-----
Zinc.....	41	52.50	512	1,388	5,404	37,073
	¹ 11,307	59,062.77	115,627	327,071	118,525	37,073
Total, 1932.....	14,873	74,170.81	261,342	1,109,617	157,713	-----

¹ Totals for 1933 include copper concentrates produced in 1930 but not marketed until 1933.

Mine production of metals from California concentrates in 1933, in terms of recovered metals

BY COUNTIES

	Concentrates	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Alpine.....	7	64.61	3,118	323	1,178	-----
Amador.....	3,130	13,712.63	6,768	13,450	30,725	-----
Butte.....	37	248.90	1,010	1,124	-----	-----
Calaveras.....	305	1,686.30	2,199	845	5,164	-----
Eldorado.....	3,262	9,945.46	1,932	2,677	170	-----
Inyo.....	31	142.50	346	2,005	3,267	-----
Kern.....	2	8.70	24	-----	186	-----
Madera.....	190	131.10	1,948	496	5,441	-----
Mariposa.....	282	3,337.39	1,113	238	-----	-----
Modoc.....	3	24.21	19	-----	-----	-----
Mono.....	13	57.67	1,245	-----	-----	-----
Nevada.....	2,553	27,330.66	35,750	24,207	63,981	34,470
Placer.....	22	61.30	271	-----	-----	-----
San Bernardino.....	652	1,067.90	59,189	-----	2,053	-----
San Diego.....	4	14.70	16	-----	-----	-----
Shasta.....	634	59.76	49	257,537	216	-----
Sierra.....	128	930.60	480	563	-----	-----
Siskiyou.....	30	184.40	125	-----	-----	-----
Trinity.....	1	5.80	5	-----	-----	-----
Tuolumne.....	10	20.36	11	-----	169	-----
Ventura.....	5	4.90	1	-----	-----	-----
Yuba.....	6	22.92	8	83	115	-----
	11,307	59,062.77	115,627	303,548	112,665	34,470
Total, 1932.....	14,873	74,170.81	261,342	1,074,965	149,829	-----

BY CLASSES OF CONCENTRATES

Dry gold.....	10,000	57,910.96	52,711	43,145	105,301	-----
Dry gold and silver.....	647	1,074.61	62,218	323	1,178	-----
Copper.....	609	.50	104	258,965	-----	-----
Lead.....	10	24.20	82	96	1,050	-----
Zinc.....	41	52.50	512	999	5,136	34,470
	11,307	59,062.77	115,627	303,548	112,665	34,470

Gross metal content of California crude ore shipped to smelters in 1933, by classes of ore

Class of ore	Ore	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold.....	4,438	5,269.11	19,895	14,694	35,084	-----
Dry gold and silver.....	574	246.70	32,482	1,795	-----	-----
Dry silver.....	2	2.70	1,071	-----	-----	-----
Copper.....	755	1,153.45	4,911	81,516	954	-----
Copper-lead.....	8	14.87	233	1,092	2,112	-----
Lead.....	1,243	236.81	19,708	5,379	627,788	-----
Zinc.....	416	-----	-----	1,000	10,000	319,680
	7,436	6,923.64	78,300	105,476	675,938	319,680
Total, 1932.....	7,397	5,426.30	138,444	43,641	2,380,714	-----

Mine production of metals from California crude ore shipped to smelters in 1933, in terms of recovered metals

BY COUNTIES

	Ore	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Amador.....	24	104.30	85	102	-----	-----
Calaveras.....	87	189.11	303	1,212	1,108	-----
Eldorado.....	23	69.20	61	-----	344	-----
Fresno.....	1	15.10	2	-----	-----	-----
Inyo.....	2,199	1,581.10	20,421	5,709	597,936	255,744
Kern.....	404	386.30	13,173	505	288	-----
Lassen.....	123	279.97	165	648	214	-----
Los Angeles.....	10	20.27	238	710	2,006	-----
Madera.....	12	17.50	14	-----	-----	-----
Mariposa.....	91	96.82	729	-----	-----	-----
Modoc.....	4	14.40	14	-----	-----	-----
Mono.....	175	221.34	689	668	4,583	-----
Nevada.....	661	1,265.14	4,429	42,797	801	-----
Riverside.....	143	180.40	191	633	-----	-----
Sacramento.....	4	6.40	8	-----	-----	-----
San Bernardino.....	3,251	2,167.92	36,721	7,881	24,575	-----
Santa Barbara.....	106	1.06	20	27,998	-----	-----
Shasta.....	63	180.01	624	7,191	-----	-----
Sierra.....	2	21.60	6	-----	-----	-----
Siskiyou.....	3	16.20	6	-----	-----	-----
Trinity.....	26	32.10	294	-----	385	-----
Tulare.....	1	3.30	3	-----	-----	-----
Tuolumne.....	17	44.20	63	-----	-----	-----
Ventura.....	6	9.90	41	-----	1,631	-----
	7,436	6,923.64	78,300	96,054	633,871	255,744
Total, 1932.....	7,397	5,426.30	138,444	34,501	2,267,587	-----

BY CLASSES OF ORE

Dry gold.....	4,438	5,269.11	19,895	11,007	29,591	-----
Dry gold and silver.....	574	246.70	32,482	1,256	-----	-----
Dry silver.....	2	2.70	1,071	-----	-----	-----
Copper.....	755	1,153.45	4,911	78,674	572	-----
Copper-lead.....	8	14.87	233	710	2,006	-----
Lead.....	1,243	236.81	19,708	3,707	594,702	-----
Zinc.....	416	-----	-----	700	7,000	255,744
	7,436	6,923.64	78,300	96,054	633,871	255,744

REVIEW BY COUNTIES AND DISTRICTS

Mine production of gold, silver, copper, lead, and zinc in California in 1933, by counties and districts, in terms of recovered metals ¹

County and district ¹	Mines producing		Ore, old tailings, and mill cleanings	Gold			Silver (loade and placer) ²	Copper	Lead	Zinc	Total value
	Lode	Placer		Lode	Placer	Total					
Alpine County: Monitor.....	1		Short tons 1,400	Fine ounces 64.61			Fine ounces 3,118				\$2,492
Amador County:											
East Belt ³	15	14	9,436	5,835.34	228.22	6,063.56	4,294	12,642	30,011		128,767
Mother Lode ⁴	31	58	255,856	62,777.73	719.03	63,496.76	13,583	1,185	714		1,317,451
Butte County:											
Butte Creek.....		10				99.89	12				2,069
Cherokee.....		6				762.90	90				15,803
Enterprise.....		3				172.59	18				3,574
Magalia.....	4	10	2,963	256.78	1,658.01	1,914.79	252				39,070
Merrimac.....	(5)	12	(5)	(5)	63.03	63.03	63				1,804
Oroville.....	6	23	25	148.54	6,595.22	6,743.76	509				139,584
Stirling.....	(5)	4	(5)	(5)	208.57	208.57	28				4,322
Yankee Hill.....	3	9	4,161	859.70	236.79	1,096.49	1,805	1,124			23,370
Calaveras County:											
Camanche.....	(5)	8	(5)	(5)	995.28	995.28	86				20,604
Campo Seco.....	1	12	40	31.90	113.84	145.74	15				3,018
Copperopolis.....	3	1	126	51.30	2.01	53.31	26				1,111
East Belt ³	33	18	3,732	1,362.39	448.26	1,810.65	1,700	1,008	3,561		38,221
Jenny Lind.....	3	5	5,358	2,269.18	63.86	2,333.04	1,756	1,049	2,711		49,010
Mother Lode ⁴	21	45	6,314	3,069.62	8,907.07	11,976.69	1,919				248,252
Del Norte County:											
French Hill.....		4				56.90	6				1,178
Smith River.....		4				14.26	3				296
Eldorado County:											
East Belt ³	4	4	451	239.67	72.44	312.11	165		344		6,523
Mother Lode ⁴	53	62	86,134	16,365.40	4,474.94	20,840.34	3,997	2,677	170		432,384
Fresno County:											
Auberry.....		3				63.76	11				1,322
Friant.....	5	15	81	53.55	566.21	619.76	117				12,853
Mill Creek.....	1		4	32.23		32.23	1				666
Temperance Flat.....	1		2	22.48		22.48	5				467

¹ Only those districts shown separately for which Bureau of Mines is at liberty to publish figures; other producing districts listed in footnote 13 and output included under "Undistributed." Purchases by bullion buyers and production by snipers included in district totals with production by regular producers.

² Of the 402,591 ounces of silver produced, 382,131 ounces were from lode mines and 20,460 ounces from placers.

³ East Belt district lies in Amador, Calaveras, Eldorado, Mariposa, and Tuolumne Counties.

⁴ Mother Lode district lies in Amador, Calaveras, Eldorado, Mariposa, and Tuolumne Counties.

⁵ Included under "Undistributed."

⁶ Exclusive of lode output, which is included under "Undistributed."

Mine production of gold, silver, copper, lead, and zinc in California in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, and mill cleanings	Gold			Silver (loke and placer)	Copper	Lead	Zinc	Total value
	Lode	Placer		Lode	Placer	Total					
Humboldt County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
China Flat.....		3			5.89	5.89					\$122
Gold Bluff.....		5			57.73	57.73	5				1,195
Orleans.....		12			144.70	144.70	23				2,999
Weitchpec.....		5			22.58	22.58	2				468
Imperial County: Mesquite.....	3	(^o)	551	107.23	(^o)	7 107.23	120				7 2,259
Inyo County:											
Cerro Gordo.....	3		1,160	84.50		84.50	15,305	3,335	454,276	255,744	34,866
Chloride Cliff.....	8	(^o)	363	421.38	(^o)	7 421.38	7 982	258	21,996		7 9,885
Coso.....	4	(^o)	322	129.86	(^o)	7 129.86	57				7 2,704
Modoc.....	3		59	27.63		27.63	30		149		588
South Park.....	6		1,635	805.78		805.78	844	2,168	5,462		17,293
Union.....		1			34.35	34.35	4				711
White Mountain.....	4		297	110.84		110.84	219	1,544	2,217		2,549
Kern County:											
Agua Caliente.....	8		503	241.11		241.11	219		474		5,079
Clear Creek.....	1	(^o)	230	141.62	(^o)	7 141.62	7 58				7 2,948
Goler.....		3			179.95	179.95	32				3,730
Green Mountain.....	6	3	190	57.87		20.66	36				1,636
Mojave.....	40		9,094	5,785.75		5,785.75	36,553	311			132,416
Pioneer.....	8	(^o)	176	119.90	(^o)	7 119.90	7 76				7 2,506
Randsburg ^o	34	12	59,002	9,229.45	407.64	9,637.09	2,780				200,159
Stringer.....	(^o)	1	(^o)	(^o)	72.63	^o 72.63	^o 18				^o 1,507
Woody.....	4	4	25	18.05	57.48	75.53	24				1,569
Los Angeles County:											
Azusa.....	(^o)	3	(^o)	(^o)	87.76	^o 87.76	^o 13				^o 1,819
San Gabriel.....	4	12	122	40.04	241.02	281.06	58				5,830
Saugus.....	(^o)	7	(^o)	(^o)	71.44	^o 71.44	^o 2	(^o)	(^o)		^o 1,478
Madera County:											
Coarse Gold.....	5	2	4,011	161.48	94.28	255.76	1,987	496	5,441		6,215
Hildreth.....	4	(^o)	57	21.54	(^o)	7 21.54	12				7 449
Potter Ridge ^o	7	(^o)	28	29.83	(^o)	7 29.83	7 25				7 626
Mariposa County:											
Colorado.....	4	(^o)	371	230.01	(^o)	7 230.01	507				7 4,932
Hunter Valley.....	8	12	2,223	592.65	217.91	810.56	200				16,826
Mother Lode ^o	36	31	22,802	4,371.99	314.18	4,686.17	1,395				97,360
Quartzburg.....	7	3	148	200.64	11.84	212.48	74				4,418
Whitlock.....	8	(^o)	546	2,460.98	(^o)	7 2,460.98	7 379				7 51,006
Mendocino County: Hopland.....		1			6.07	6.07					125
Merced County: Snelling.....		9			17,645.66	17,645.66	1,744				365,378
Modoc County: Winters.....	1		150	30.44		30.44	19				636

Mono County:										
Bodie	4	(5)	519	487.88	(5)	7 487.88	7 1,883			7 10,744
Chidago	3	(5)	244	380.12	(5)	7 380.12	7 330	189	969	7 8,022
Dogtown	(5)	3	(5)	(5)	(5)	20.79	6 20.79			6 431
Monterey County: Los Burros	(5)	1	(5)	(5)	(5)	3.02	6 3.02			6 62
Nevada County:										
French Corral	(5)	6	(5)	(5)	(5)	521.77	6 521.77	6 61		6 10,807
Grass Valley-Nevada City	19	27	424,552	174,584.90	3,611.54	178,196.44	161,995	23,208	58,845	3,740,507
North San Juan		4			562.73	562.73	54			11,652
Washington	(5)	18	(5)	(5)	(5)	682.57	6 682.57	6 106	(5)	(5)
You Bet	(5)	3	(5)	(5)	(5)	326.49	6 326.49	6 28		6 14,147
Placer County:										
Colfax	1	1	50	12.33	681.04	693.37	73			14,359
Forest Hill	(5)	6	(5)	(5)	673.13	6 673.13	6 146			6 13,966
Gold Run	1	1			28.26	28.26	2			585
Iowa Hill	3	5	31	19.80	906.68	926.48	175			19,213
Last Chance		7			445.73	445.73	41			9,228
Michigan Bluff	3	5	80	95.61	2,120.40	2,216.01	301			45,914
Miners Ravine		3			53.75	53.75	6			1,113
Ophir	10	3	895	520.94	387.47	908.41	517			18,960
Plumas County:										
Butte Valley	(5)	3	(5)	(5)	126.39	6 126.39	6 7			6 2,615
Crescent Mills	7	7	977	318.55	195.61	514.16	107			10,666
Genesee	3	6	14	180.98	189.10	370.08	147	123		7,709
Johnsville		3			58.50	58.50	12			1,213
La Porte	(5)	5	(5)	(5)	794.06	6 794.06	6 95			6 16,448
Quincy	1	(5)	60	7.56	(5)	7 7.56	7 1			7 156
Seneca		8			156.70	156.70	19			3,246
Slate Creek 10		2			133.41	133.41	13			2,763
Riverside County:										
Chuckawalla	5	2	43	84.28	11.17	95.45	21			1,980
Eagle Mountain	(5)	3	(5)	(5)	61.11	6 61.11	6 13			6 1,268
Monte Negro	1		218	67.51		67.51	29			1,406
Pinacate	3		79	28.57		28.57	11			595
Pinon	4	(5)	355	146.12	(5)	7 146.12	32			7 3,032
San Jacinto	4		48	47.39		47.39	17			986
Sacramento County: Folsom	(5)	14	(5)	(5)	117,224.79	6 117,224.79	6 5,037			6 2,425,015
San Bernardino County:										
Bear Valley		1			14.50	14.50	3			301
Buckeye	3	(5)	1,597	1,033.60	(5)	7 1,033.60	622	72	1,607	7 21,648
Calico	4		78	27.93		27.93	958	85	7,061	1,178
Coolgardie		4			188.04	188.04	27			3,896
Dale	4		62	39.40		39.40	31			825
Halloran Springs	2		526	304.28		304.28	1,583			6,844
Hikorum	3		65	43.25		43.25	53	655		955

4 Mother Lode district lies in Amador, Calaveras, Eldorado, Mariposa, and Tuolumne Counties.
 5 Included under "Undistributed."
 6 Exclusive of lode output, which is included under "Undistributed."
 7 Exclusive of placer output, which is included under "Undistributed."
 8 Randsburg district lies in Kern and San Bernardino Counties.
 9 Potter Ridge district lies in Fresno and Madera Counties.
 10 Slate Creek district lies in Plumas and Sierra Counties.

Mine production of gold, silver, copper, lead, and zinc in California in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, and mill cleanings	Gold			Silver (lode and placer)	Copper	Lead	Zinc	Total value
	Lode	Placer		Lode	Placer	Total					
San Bernardino County—Continued.											
Ivanpah	5		Short tons 108	Fine ounces 77.49	Fine ounces 77.49	Fine ounces 77.49	Fine ounces 151	Pounds 427	Pounds 400	Pounds	\$1,697
Kelso	3		139	121.92	121.92	121.92	105	559			2,593
Lytle Creek		4			12.82	12.82	1				265
Ord Mountain	3	3	125	128.06	64.02	192.08	63	1,572			4,094
Providence	4		31	22.97		22.97	46	504			523
Randsburg	5	(¹)	19,991	1,560.05	(¹)	1,560.05	791,689	1,256			764,420
Slate Range	6	2	569	151.93	8.70	160.63	642	263	5,835		3,779
Whipple Mountain	5		78	103.68		103.68	73	1,046			2,236
San Diego County:											
El Cajon	3		44	74.04		74.04	20				1,538
Julian	1	3	400	39.96	58.57	98.53	42				2,052
Shasta County:											
Centerville	(¹)	4	(¹)	(¹)	45.61	45.61	5				945
Clear Creek		2			30.94	30.94	5				642
Flat Creek	3	(¹)	531	50.95	(¹)	50.95	587	7,191			7,178
French Gulch	9	4	1,335	980.96	1,200.15	2,181.11	424		216		45,244
Horsetown		2			12.95	12.95	2				269
Igo		1			386.88	386.88	51				8,016
Muletown	3	(¹)	722	281.47	(¹)	281.47	7142				7,588
Shasta		4			269.97	269.97	37				5,594
Whiskeytown		2			103.57	103.57	13				2,146
Sierra County:											
Alleghany	8	31	39,343	14,680.44	724.18	15,404.62	2,949	563			319,510
American Hill	1	(¹)	8	13.43	(¹)	13.43	73				7279
Downieville	4	7	91	91.50	151.77	243.27	37				5,042
Gibsonville	1				21.02	21.02	2				436
Sierra City	8	7	810	279.30	89.44	368.74	106				7,660
Siskiyou County:											
Klamath River	1	12	25	181.58	2,109.42	2,291.00	329				47,474
North Central	17	27	476	653.60	4,851.33	5,504.93	845				114,093
Salmon River	10	25	59,127	2,605.61	1,357.96	3,963.57	531				82,120
Scott River	11	11	618	383.48	466.65	850.13	216				17,650
Stanislaus County:											
Knights Ferry		7			122.13	122.13	12				2,529
La Grange		4			5,656.72	5,656.72	675				117,171
Trinity County:											
Big Bar		6			305.27	305.27	32				6,321
Coffee Creek	4	8	57	35.36	801.66	837.02	120				17,345
Hayfork	(¹)	4	(¹)	(¹)	213.19	213.19	24				4,415
Junction City	(¹)	5	(¹)	(¹)	760.39	760.39	76				15,746
Lewiston	6	7	2,056	815.88	5,291.02	6,106.90	929				126,566
New River	(¹)	7	(¹)	(¹)	2,458.39	2,458.39	301		(¹)		50,924

Salyer.....		5			16.48	16.48	2			342	
Trinity Center.....	3	5	57	86.80	205.88	292.68	294	118		6,157	
Weaverville.....		14			1,569.52	1,569.52	168			32,504	
Tulare County: White River.....	4	(⁶)	14	17.83	(⁶)	7 17.83	7 10			7 373	
Tuolumne County:											
Columbia.....	30	25	1,763	1,197.91	739.53	1,937.44	242			40,135	
East Belt ³	19	2	1,356	402.45	229.32	631.77	237	169		13,149	
Mother Lode ⁴	16	12	576	752.72	669.54	1,422.26	274			29,497	
Ventura County: Piru.....	3		232	62.31		62.31	54	1,631		1,367	
Yuba County:											
Camptonville.....		7			115.27	115.27	9			2,386	
Dobbins.....	4	6	299	52.88	875.16	928.04	97			19,218	
Honcut Creek ¹¹	3	1	31	12.12	103.15	115.27	19			2,390	
Smartville.....		10			485.08	485.08	40			10,041	
Strawberry Valley.....	(⁶)	4	(⁶)	(⁶)	226.19	⁶ 226.19	⁶ 18			⁶ 4,682	
Yuba River ¹²		4			41,263.55	41,263.55	3,085			854,073	
Undistributed ¹³	107	88	280,411	28,989.32	10,909.87	39,899.19	34,876	924,547	155,601	34,470	
Total California.....	797	993	1,322,100	352,199.99	261,378.86	613,578.85	402,591	990,380	761,156	290,214	12,928,444

³ East Belt district lies in Amador, Calaveras, Eldorado, Mariposa, and Tuolumne Counties.

⁴ Mother Lode district lies in Amador, Calaveras, Eldorado, Mariposa, and Tuolumne Counties.

⁶ Included under "Undistributed."

⁶ Exclusive of lode output, which is included under "Undistributed."

⁷ Exclusive of placer output, which is included under "Undistributed."

⁸ Randsburg district lies in Kern and San Bernardino Counties.

¹¹ Honcut Creek district lies in Butte and Yuba Counties.

¹² Yuba River district lies in Nevada and Yuba Counties.

¹³ Includes following districts: Lancha Plana, Amador County; Honcut Creek, Merrimac (lode), Palermo, and Stirling (lode), Butte County; Camanche (lode) and Douglas Flat, Calaveras County; Wilbur Springs, Colusa County; Myrtle Creek, Del Norte County; Rescue, Eldorado County; Copper King, Potter Ridge, and Sycamore, Fresno County; Cargo Muchacho, Mesquite (placer), Picacho, and Potholes, Imperial County; Argus Mountains, Carbonate, Chloride Cliff (placer), Coso (placer), Darwin, Fish Springs, Lone Pine, Panamint, and Tecopa, Inyo County; Bakersfield, Black Mountain, Clear Creek (placer), Kern River, Long Tom, Pine Mountain, Pioneer (placer), Plute, Washmacher, and Stringer (lode), Kern County; Hayden Hill and Honey Lake, Lassen County; Azusa (lode), Cedar Mountain, Pacoima Canyon, and Saugus (lode), Los Angeles County; and Fresno River, Hildreth (placer), and Potter Ridge (placer), Madera County; Colorado (placer), Hites Cove, Kinsley, and Whitlock (placer), Mariposa County; High Grade and Surprise Valley, Modoc County; Bodie (placer), Chidago (placer), Dogtown (lode), Homer, and Masonic, Mono County; Los Burros (lode), Monterey County; American River (lode), Meadow Lake, North Columbia, Washington (lode), You Bet (lode), and Yuba River, Nevada County; Lucas Canyon and Yorba Linda, Orange County; American River, Auburn, Bear River, Blue Canyon, Butcher Ranch, Dairy Farm, Forest Hill (lode), Rocklin, and Tahoe, Placer County; Butte Valley (lode), East Fork Feather River, Granite Basin, La Porte (lode), Lights Canyon, Meadow Valley, Quincy (placer), Rich, and Taylorville, Plumas County; Arica, Eagle Mountain (lode), Finon (placer), and Washington, Riverside County; Folsom (lode), Sacramento County; Atolia, Barstow, Black Hawk, Buckeye (placer), Dry Lake, Hart, Holcomb, Kingston, Kramer Hills, Lava Bed, Monumental, Morrow, Oro Grande, Paradise Range, Randsburg (placer), Silver Mountain, Twentynine Palms, and Washington, San Bernardino County; Foster and Mesa Grande, San Diego County; Calaveras River, Mokelumne River, and San Joaquin River, San Joaquin County; La Panza, San Luis Obispo County; San Rafael Mountains, Santa Barbara County; Santa Cruz, Santa Cruz County; Centerville (lode), Churntown, Cottonwood Creek, Dog Creek, Flat Creek (placer), Harrison Gulch, Iron Mountain, Muletown (placer), Slate Creek, and Squaw Creek, Shasta County; American Hill (placer), Indian Hill, Pike, Poker Flat, Port Wine, and Slate Creek, Sierra County; Elliott Creek, Siskiyou County; Cinnabar, Forest Glen, Hayfork (lode), Helena, Junction City (lode), and New River (lode), Trinity County; Badgers, Cow Mountain, Forterville, and White River (placer), Tulare County; Woodland, Yolo County; and Bear River, Browns Valley, Brownsville, and Strawberry Valley (lode), Yuba County.



CRUDE PETROLEUM AND PETROLEUM PRODUCTS

(DETAILED STATISTICS)

By G. R. HOPKINS AND A. B. COONS

SUMMARY OUTLINE

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SUMMARY TABLES OF CRUDE PETROLEUM, PETROLEUM PRODUCTS, AND NATURAL GASOLINE

Selected statistics of crude petroleum, refined products, and natural gasoline, 1920, 1925, 1930, 1932, and 1933

	1920	1925	1930	1932	1933
Crude petroleum:					
Domestic production.....thousands of barrels ¹ ..	442,929	763,743	898,011	785,159	905,656
World production.....do. ²	688,884	1,068,933	1,411,904	1,309,677	1,443,382
United States proportion of world production					
percent.....	64	71	64	60	63
Imports.....thousands of barrels ¹	106,175	61,824	62,129	44,682	31,893
Exports ³.....do. ¹	9,295	13,337	23,705	27,393	36,584
Stocks, end of period ³.....do. ¹	149,448	345,863	{ 408,809	{ 339,715	{ 355,312
Runs to stills.....do. ¹	433,915	739,920	{ 411,882	{ 339,875	{ 361,254
Total value of domestic production at wells					
Average price per barrel at wells.....thousands of dollars..	1,360,745	1,284,960	1,070,200	680,460	608,000
Total producing oil wells in the United States, Dec. 31.....	\$3.07	\$1.68	\$1.19	\$0.87	\$0.67
Total oil wells completed in the United States during year.....	⁴ 258,600	306,100	331,070	321,500	326,850
Refined products:	24,273	16,559	11,640	10,444	8,068
Imports.....thousands of barrels ¹	2,647	16,376	43,489	29,812	13,501
Exports ³.....do. ¹	70,281	100,497	132,794	75,882	70,143
Stocks, end of period ³.....do. ¹	60,397	206,275	{ 254,311	{ 247,188	{ 244,578
Output of motor fuel.....do. ¹	118,022	262,252	{ 251,880	{ 249,116	{ 407,932
Yield of gasoline.....percent.....	26.1	32.4	42.0	44.7	45.7
Completed refineries, end of year.....	415	510	435	505	591
Daily crude-oil capacity of refineries					
Average tank-wagon price (excluding tax) of gasoline in 50 United States cities cents per gallon ⁶ ..	1.889	2.853	3.943	3.890	3.918
Average tank-wagon price (excluding tax) of gasoline in 50 United States cities cents per gallon ⁶ ..	28.05	17.46	14.49	12.45	11.62
Natural gasoline:					
Production.....thousands of barrels ¹	9,161	26,307	52,631	36,281	33,810
Stocks, end of period.....do. ¹	(?)	⁸ 326	{ 2,377	{ 3,203	{ 3,317

¹ Of 42 gallons.² Includes shipments to Alaska, Hawaii, and Puerto Rico.³ 1925, 1930, 1932, and 1933, California heavy crude and fuel oil included under refined products. Statistics of heavy crude and fuel oil in California not available before June 30, 1923.⁴ For comparison with succeeding year.⁵ Oct. 31.⁶ From American Petroleum Institute.⁷ Not available.⁸ At plants only—stocks of natural gasoline at refineries not segregated from refined products until Dec. 31, 1929.

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

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Supply and demand of all oils, 1920, 1925, 1930, 1932, and 1933

[Thousands of barrels of 42 gallons]

	1920	1925	1930	1932	1933
New supply:					
Domestic production:					
Crude petroleum.....	442,929	763,743	898,011	785,159	905,656
Daily average.....	1,210	2,092	2,460	2,145	2,481
Natural gasoline.....	9,161	26,307	52,631	36,281	33,810
Benzol.....	1,771	1,857	2,689	1,031	1,368
Total production.....	453,861	791,907	953,331	822,471	940,834
Daily average.....	1,240	2,170	2,612	2,247	2,578
Imports:					
Crude petroleum.....	106,175	61,824	62,129	44,682	31,893
Refined products.....	2,647	16,376	43,489	29,812	13,501
Total new supply, all oils.....	562,683	870,107	1,058,949	896,965	986,228
Daily average.....	1,537	2,384	2,901	2,451	2,702
Increase in stocks, all oils.....	27,303	29,291	24,000	41,792	11,013
Demand:					
Total demand.....	535,380	840,816	1,082,949	938,757	975,215
Daily average.....	1,463	2,304	2,967	2,565	2,672
Exports:¹					
Crude petroleum.....	9,295	13,337	23,705	27,393	36,584
Refined products.....	70,281	100,497	132,794	75,882	70,143
Domestic demand.....	455,804	726,982	926,450	835,482	868,488
Daily average.....	1,245	1,992	2,538	2,283	2,379
Excess of daily average domestic production over domestic demand.....	35	178	74	36	199
Stocks, end of period:					
Crude petroleum ⁴	149,448	345,863	{ 408,809 \$ 411,882	{ 339,715 \$ 339,875	} 355,312
Natural gasoline.....	(⁵)	7,326	{ 2,377 \$ 3,100	{ 3,203 \$ 247,188		} 3,317
Refined products ⁴	60,397	206,275	{ 254,311 \$ 251,680	{ 249,116 \$ 249,116	} 244,578
Grand total stocks, all oils.....	209,845	552,464	{ 665,497 \$ 666,662	{ 590,106 \$ 592,194		} 603,207
Days' supply ⁸.....	143	240	224	230	226
Bunker oil (included in domestic demand).....	26,335	42,827	50,773	38,152	31,734

¹ Decrease.

² Exports include benzol and shipments to Alaska, Hawaii, and Puerto Rico.

³ Deficiency.

⁴ 1925, 1930, 1932, and 1933, California heavy crude and fuel oil included under refined products. Statistics of heavy crude and fuel oil in California not available before June 30, 1923.

⁵ For comparison with succeeding year.

⁶ Not available.

⁷ At plants only—stocks of natural gasoline at refineries not segregated from refined products until Dec. 31, 1929.

⁸ Grand total stocks of all oils divided by daily average total demand.

Supply and demand of all oils in 1933, by months

[Including wax, coke, and asphalt, in thousands of barrels of 42 gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	Total
New supply:													
Domestic production:													
Crude petroleum.....	65,159	61,252	75,185	65,709	86,638	84,386	85,321	85,485	78,321	76,077	69,966	72,157	905,656
Daily average.....	2,102	2,188	2,425	2,190	2,795	2,813	2,752	2,758	2,611	2,454	2,332	2,328	2,481
Natural gasoline.....	2,893	2,560	2,788	2,690	2,793	2,686	2,786	2,840	2,807	2,998	2,948	3,021	33,810
Benzol.....	88	82	82	83	97	117	151	159	144	129	116	120	1,368
Total production.....	68,140	63,894	78,055	68,482	89,528	87,189	88,258	88,484	81,272	79,204	73,030	75,298	940,834
Daily average.....	2,198	2,282	2,518	2,283	2,888	2,906	2,847	2,854	2,709	2,555	2,434	2,429	2,578
Imports:													
Crude petroleum.....	2,831	2,369	3,802	2,910	2,207	2,143	3,410	3,674	2,069	1,727	1,875	2,876	31,893
Refined products.....	1,175	1,615	1,509	1,854	653	712	1,282	1,678	774	932	875	842	13,501
Total new supply, all oils.....	72,146	67,878	83,366	72,746	92,388	90,044	92,950	93,836	84,115	81,863	75,880	79,016	986,228
Daily average.....	2,327	2,424	2,689	2,425	2,980	3,001	2,998	3,027	2,804	2,641	2,529	2,549	2,702
Increase in stocks, all oils.....	1 3,110	839	8,721	1 3,467	11,424	1,435	6,017	6,492	66	1 4,942	1 8,584	1 3,878	11,013
Demand:													
Total demand.....	75,256	67,039	74,645	76,213	80,964	88,609	86,933	87,344	84,049	86,805	84,464	82,894	975,215
Daily average.....	2,428	2,394	2,408	2,540	2,612	2,954	2,804	2,818	2,802	2,800	2,815	2,674	2,672
Exports:¹													
Crude petroleum.....	1,913	1,886	2,137	2,939	2,679	4,355	4,523	3,141	3,182	3,888	3,305	2,636	36,584
Refined products.....	6,315	4,479	5,428	6,856	5,495	5,092	7,439	5,048	5,005	6,883	6,350	5,953	70,143
Domestic demand:													
Motor fuel.....	26,397	23,320	28,123	29,791	33,709	37,699	34,078	37,400	34,580	33,022	30,312	28,572	377,003
Kerosene.....	3,677	3,299	2,974	2,861	3,006	3,115	2,023	2,791	3,378	3,434	3,777	4,160	38,498
Gas oil and fuel oil.....	27,105	26,367	26,554	23,922	23,264	24,690	24,820	25,119	25,684	27,933	29,927	30,959	316,344
Lubricants.....	947	1,088	1,150	1,345	1,693	1,639	1,617	1,562	1,431	1,505	1,550	1,045	17,152
Wax.....	80	87	94	87	83	125	107	134	112	122	114	118	1,268
Coke.....	863	781	821	612	528	596	861	960	855	1,098	1,193	785	9,962
Asphalt.....	525	381	614	815	1,286	1,360	1,479	1,344	1,199	1,269	775	761	11,806
Road oil.....	90	54	52	79	232	903	994	936	555	816	230	5	5,266
Still gas (production).....	3,224	2,914	3,368	3,557	4,232	4,141	4,524	4,250	3,989	3,990	3,466	3,557	45,212
Miscellaneous.....	94	121	113	76	147	139	179	148	105	109	98	137	1,464
Losses and crude as fuel.....	4,026	2,262	3,217	3,273	4,610	4,755	4,289	4,502	3,706	3,197	3,303	3,381	44,521
Total domestic demand.....	67,028	60,674	67,080	66,418	72,790	79,162	74,971	79,155	75,862	76,234	74,809	74,305	868,488
Daily average.....	2,162	2,167	2,164	2,214	2,348	2,639	2,418	2,553	2,529	2,459	2,494	2,397	2,379
Stocks:													
Crude petroleum.....	337,483	337,107	344,253	339,140	348,103	352,756	355,263	359,945	359,904	356,849	355,199	355,312	355,312
Natural gasoline.....	3,198	3,397	3,548	3,594	3,870	3,763	3,723	3,779	3,545	3,287	3,131	3,317	3,317
Refined products.....	248,403	249,419	250,843	252,443	254,628	251,517	255,067	256,821	257,162	255,533	248,755	244,578	244,578
Total stocks, all oils.....	589,084	589,923	598,644	595,177	606,601	608,036	614,053	620,545	620,611	615,669	607,085	603,207	603,207

¹ Decrease.² Exports include benzol and shipments to Alaska, Hawaii, and Puerto Rico.

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

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Runs to stills and production at refineries of the various refined products, 1920, 1925, 1930, 1932, and 1933

[Thousands of barrels of 42 gallons, except as otherwise indicated]

	1920	1925	1930	1932	1933
Input:					
Crude petroleum:					
Domestic.....	372, 779	698, 582	866, 615	777, 696	825, 786
Foreign.....	61, 136	41, 338	60, 832	42, 301	35, 468
Total crude petroleum.....	433, 915	739, 920	927, 447	819, 997	861, 254
Unfinished oils rerun (net).....	(1)	9, 221		1, 861	
Natural gasoline.....	3, 153	19, 636	43, 170	26, 332	25, 346
Total input.....		768, 777	970, 617	848, 190	886, 600
Output:					
Gasoline.....	116, 251	259, 601	432, 241	392, 623	401, 591
Kerosene.....	55, 240	59, 689	49, 208	43, 836	48, 977
Gas oil and distillate fuel oils.....			81, 551	69, 467	78, 920
Residual fuel oils.....	210, 987	364, 991	290, 947	225, 283	237, 519
Lubricants.....	24, 938	31, 055	34, 201	22, 433	23, 775
Wax.....	(4)	2, 135	1, 956	1, 639	1, 677
Coke.....	(4)	5, 281	9, 895	9, 123	7, 900
Asphalt.....	(4)	15, 067	18, 194	13, 612	12, 757
Still gas.....	(4)	(4)	(4)	40, 905	45, 212
Wax..... thousands of pounds.....	541, 204	590, 577	547, 680	458, 920	469, 560
Coke..... thousands of short tons.....	576. 6	991. 0	1, 940. 0	1, 788. 8	1, 580. 0
Asphalt..... do.....	1, 290. 6	2, 677. 4	3, 308. 0	2, 474. 9	2, 319. 5
Still gas..... millions of cubic feet.....	(4)	(4)	(4)	160, 812	170, 853
Road oil.....	(5)	(5)	5, 425	6, 879	5, 534
Other finished products.....	35, 538	8, 044	7, 754	1, 738	1, 435
Unfinished oils produced (net).....	(6)		2, 242		4, 547
Shortage.....	18, 743	22, 914	37, 003	20, 652	16, 756
Total output.....		768, 777	970, 617	848, 190	886, 600

¹ Not available on present basis of reporting unfinished oils.

² Includes natural gasoline run through pipe lines in California.

³ Includes transfers in California. In 1932 such transfers constituted part of supply but were not included in refinery production.

⁴ Not available.

⁵ Included in "Other finished products."

⁶ Includes unfinished oils produced.

Runs to stills and production at refineries of the various refined products in 1933, by months

[Thousands of barrels of 42 gallons, except as otherwise indicated]

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Input:													
Crude petroleum ¹	66,093	61,042	67,984	68,822	74,340	74,619	79,525	79,151	75,316	75,461	68,461	70,440	861,254
Unfinished oils rerun (net).....	217		76			634	163				610		
Natural gasoline.....	2,262	1,760	1,846	1,843	1,741	2,039	1,860	2,059	2,409	2,625	2,700	2,202	25,346
Total input	68,572	62,802	69,906	70,665	76,081	77,292	81,548	81,210	77,725	78,086	71,771	72,642	886,600
Fresh cracking stocks charged to stills.....	30,494	29,473	32,246	33,211	37,785	36,316	39,319	37,670	36,731	36,929	34,825	34,363	419,362
Output:													
Gasoline.....	30,465	27,678	31,608	31,961	34,298	35,309	36,666	36,619	36,581	35,945	32,891	31,570	401,591
Kerosene.....	4,392	3,696	3,888	4,038	4,140	4,162	4,261	4,109	4,004	3,993	4,005	4,289	48,977
Gas oil and distillate fuel oils.....	7,036	6,106	6,433	5,745	6,416	6,366	7,164	6,057	6,557	7,157	6,552	7,331	78,920
Residual fuel oils.....	18,861	17,388	19,686	19,153	20,202	20,509	21,752	21,085	20,207	20,749	18,963	18,964	237,519
Lubricants.....	1,826	1,619	1,772	1,871	2,114	1,847	1,959	2,019	2,046	2,115	2,375	2,212	23,775
Wax.....	131	100	130	135	145	138	129	144	151	169	156	149	1,677
Coke.....	484	545	735	688	727	772	768	559	694	697	588	643	7,900
Asphalt.....	580	558	724	874	1,316	1,409	1,503	1,394	1,236	1,331	981	851	12,757
Still gas.....	3,224	2,914	3,368	3,571	4,232	4,141	4,524	4,250	3,989	3,990	3,466	3,557	45,212
Wax..... thousands of pounds.....	36,680	28,000	36,400	37,800	40,600	38,640	36,120	40,320	42,280	47,320	43,680	41,720	469,560
Coke..... thousands of short tons.....	96.8	109.0	147.0	137.6	145.4	154.4	153.6	111.8	133.8	139.4	117.6	128.6	1,580.0
Asphalt..... do.....	105.4	101.5	131.6	158.9	239.3	256.2	273.3	253.5	224.7	242.0	178.4	154.7	2,319.5
Still gas..... millions of cubic feet.....	12,122	11,125	12,894	13,679	15,821	15,551	15,896	16,343	15,452	15,017	13,226	13,727	170,853
Road oil.....	99	150	186	274	471	964	973	789	703	403	275	247	5,534
Other finished products.....	82	97	124	98	137	130	142	127	120	103	133	142	1,435
Unfinished oils produced (net).....		998		1,241	421			2,080	11	13		1,483	4,547
Shortage.....	1,392	953	1,252	1,030	1,462	1,545	1,707	1,978	1,426	1,421	1,386	1,204	16,756
Total output	68,572	62,802	69,906	70,665	76,081	77,292	81,548	81,210	77,725	78,086	71,771	72,642	886,600

¹ Details by districts and months on p. 231.

Runs to stills and production at refineries of the various refined products in 1933, by districts

[Thousands of barrels of 42 gallons, except as otherwise indicated]

	East coast	Appalachian	Indiana, Illinois, Kentucky, etc.	Oklahoma, Kansas, and Missouri	Texas inland	Texas Gulf coast	Louisiana Gulf coast	Arkansas and Louisiana inland	Rocky Mountain	California	United States
Input:											
Crude petroleum.....	166,932	33,567	117,073	96,541	57,454	160,691	39,034	18,485	14,209	157,268	861,254
Unfinished oils rerun (net).....		3,381		513				20		18	
Natural gasoline.....	1,109	237	1,785	4,968	3,404	2,512	284	407	819	19,821	25,346
Total input.....	168,041	37,185	118,858	102,022	60,858	163,203	39,318	18,912	15,028	167,107	886,600
Fresh cracking stocks charged to stills.....	86,307	16,130	68,032	46,821	17,069	83,239	19,962	9,599	7,744	64,459	419,362
Output:											
Gasoline.....	68,536	17,496	64,585	55,037	30,946	71,003	14,460	8,392	8,074	63,062	401,591
Kerosene.....	9,677	2,855	4,221	6,823	3,218	11,345	3,896	773	570	5,599	48,977
Gas oil and distillate fuel oils.....	15,085	2,601	8,991	7,267	2,972	17,370	4,136	1,830	776	17,942	78,920
Residual fuel oils.....	46,719	4,810	18,059	19,539	17,654	40,074	11,895	6,010	2,858	69,901	237,519
Lubricants.....	7,387	4,576	1,832	2,435	284	4,980	386	116	172	1,607	23,775
Wax.....	834	247	92	104	11	159	205		25		1,677
Coke.....	1,057	122	3,100	1,390	141	1,492	188	12	335	63	7,900
Asphalt.....	5,802	486	2,322	367	185	859	551	448	19	1,718	12,757
Still gas.....	9,382	2,366	9,638	4,557	1,218	10,574	1,499	552	834	4,592	45,212
Wax..... thousands of pounds..	233,520	69,160	25,760	29,120	3,080	44,520	57,400		7,000		469,560
Coke..... thousands of short tons..	211.4	24.4	620.0	278.0	28.2	298.4	37.6	2.4	67.0	12.6	1,580.0
Asphalt..... do.....	1,054.9	88.4	422.2	66.7	33.7	156.2	100.2	81.4	3.4	312.4	2,319.5
Still gas..... millions of cubic feet..	30,354	8,665	35,668	17,496	5,407	43,186	6,520	2,457	3,519	17,581	170,863
Road oil.....	747	81	1,434	822	67	182	86	129	619	1,367	5,534
Other finished products.....	336	258	170	165	76	39	6	23	20	342	1,435
Unfinished oils produced (net).....	1,575		3,452		568	1,695	971		218		4,547
Shortage.....	954	1,287	962	3,516	3,518	3,431	1,039	627	508	914	16,756
Total output.....	168,041	37,185	118,858	102,022	60,858	163,203	39,318	18,912	15,028	167,107	886,600

¹ Includes 1,287,000 barrels run through pipe lines in California.

Crude production, crude runs to stills, and refinery capacity in 1933, by States

State	Crude production		Crude runs to stills		Daily capacity, Jan. 1, 1934, of total refineries operating	
	Thousands of barrels	Percent of total	Thousands of barrels	Percent of total	Thousands of barrels	Percent of total
Arkansas.....	11,686	1.3	6,792	0.8	38	1.1
California.....	172,010	19.0	157,268	18.3	755	21.2
Colorado.....	919	.1	1,002	.1	6	.2
Georgia.....	-----	-----	12,753	1.3	9	.2
Illinois.....	4,244	.5	33,386	3.9	121	3.4
Indiana.....	737	.1	55,157	6.4	186	5.2
Kansas.....	41,976	4.6	241,015	24.8	160	4.5
Kentucky ¹	4,613	.5	5,980	.7	26	.7
Louisiana.....	425,175	42.8	50,727	5.9	181	5.1
Maryland.....	-----	-----	11,584	1.3	55	1.5
Massachusetts.....	-----	-----	15,057	1.7	30	.8
Michigan.....	7,942	.9	6,112	.7	21	.6
Missouri.....	10	-----	(²)	(²)	17	.5
Montana.....	2,273	.2	1,833	.2	19	.5
New Jersey.....	-----	-----	61,030	7.1	258	7.3
New Mexico.....	14,116	1.6	1,059	.1	6	.2
New York.....	3,181	.3	14,667	1.8	57	1.6
Ohio.....	4,235	.5	25,828	3.0	106	3.0
Oklahoma.....	182,251	20.1	55,526	6.4	269	7.6
Pennsylvania.....	12,624	1.4	82,355	9.6	283	8.0
Rhode Island.....	-----	-----	(⁶)	(⁶)	11	.3
South Carolina.....	-----	-----	(¹)	(¹)	6	.2
Texas.....	402,609	44.5	218,145	25.3	865	24.3
Utah.....	(⁷)	(⁷)	1,960	.2	8	.2
Virginia.....	-----	-----	(¹)	(¹)	2	.1
West Virginia.....	3,815	.4	3,663	.4	16	.5
Wyoming.....	711,240	71.2	8,355	1.0	43	1.2
	905,656	100.0	861,254	100.0	3,554	100.0

¹ Georgia includes South Carolina and Virginia.² Kansas includes Missouri.³ Includes Tennessee.⁴ Includes Mississippi.⁵ Includes Alabama and Mississippi.⁶ Massachusetts includes Rhode Island.⁷ Wyoming includes Alaska and Utah.⁸ Includes Nebraska and South Dakota.

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

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Comparative analyses of statistics for the major refined products, 1920, 1925, 1930, 1932, and 1933

[Thousands of barrels of 42 gallons, except as otherwise indicated]

	1920	1925	1930	1932	1933
Motor fuel:					
Production.....	118,022	262,252	440,728	399,712	407,932
Imports.....	964	3,813	16,927	8,205	15
Exports.....	15,678	31,684	65,575	35,438	29,321
Stocks, end of period.....	11,009	38,918	{ 40,541	{ 53,805	{ 55,933
Domestic demand.....	102,937	226,329	{ 40,098	{ 54,310	{ 377,003
			394,800	373,900	
Kerosene:					
Production.....	55,240	59,689	49,208	43,836	48,977
Imports.....	(?)	19	200	71	
Exports.....	20,878	21,212	16,884	11,044	8,959
Stocks, end of period.....	9,359	7,121	6,883	{ 4,974	{ 6,558
Domestic demand.....	33,082	39,969	34,736	{ 15,033	{ 38,493
				33,221	
Gas oil and fuel oil:					
Production.....	210,987	364,991	372,498	4301,353	4316,439
Imports.....	(?)	12,245	26,080	21,286	13,215
Exports.....	22,080	36,088	36,450	19,994	20,563
Stocks, end of period ⁵	19,938	110,464	140,428	{ 129,881	{ 123,500
Domestic demand.....	185,972	(?)	(?)	{ 130,753	{ 316,344
				308,157	
Lubricants:					
Production.....	24,938	31,055	34,201	22,433	23,775
Imports.....	(?)	37	25	12	1
Exports.....	9,643	9,678	9,935	6,851	8,218
Stocks, end of period.....	3,822	7,253	10,971	{ 8,465	{ 7,100
Domestic demand.....	14,742	20,581	21,589	{ 8,694	{ 17,152
				16,614	
Wax (thousands of pounds):					
Production.....	541,204	590,577	547,680	458,920	469,560
Imports.....	7,629	14,588	30,402	33,255	36,634
Exports.....	375,276	334,179	292,973	235,304	247,769
Stocks, end of period.....	195,368	116,391	232,592	{ 163,628	{ 69,117
Domestic demand.....	200,651	244,301	242,109	{ 163,935	{ 353,243
				264,463	

¹ For comparison with succeeding year.

² Figures not available.

³ Exclusive of imports.

⁴ Includes transfers (see p. 255).

⁵ 1925, 1930, 1932, and 1933, California heavy crude included.

Summary of percentage yields of refined products, 1920, 1925, 1930, 1932, and 1933

[Computed on total crude runs to stills]

Product	1920	1925	1930	1932	1933
Gasoline ¹	26.8	35.1	46.6	47.9	46.6
Do. ¹	26.1	32.4	42.0	44.7	43.7
Kerosene.....	12.7	8.1	5.3	5.3	5.7
Gas oil and distillate fuel oils.....			8.8	8.5	9.2
Residual fuel oils.....	48.6	49.3	{ 31.4	{ 27.5	{ 27.6
Lubricants.....	5.7	4.2	3.7	2.7	2.8
Wax.....	(?)	.3	.2	.2	.2
Coke.....	(?)	.7	1.0	1.1	.9
Asphalt.....	(?)	2.0	2.0	1.7	1.5
Road oil.....	(?)	(?)	.6	.8	.6
Still gas.....	(?)	(?)	(?)	5.0	5.2
Other finished products.....	(?)	1.1	1.4	2	2
Shortage.....	4.3	3.1	4.0	2.5	1.9

¹ Based on total gasoline production.

² Based on total gasoline production less natural gasoline used.

³ Not available.

Stocks of crude petroleum, natural gasoline, and refined products at the end of the year, 1920, 1925, 1930, 1932, and 1933

[Thousands of barrels of 42 gallons, except as otherwise indicated]

	1920	1925	1930	1932	1933
Crude petroleum:					
At refineries ¹	28, 703	² 29, 607	² 41, 136	{ 55, 513 ³ 61, 769 }	} 66, 049
Pipe line and tank farm ⁴	117, 159	² 308, 696	{ ² 361, 065 ³ 364, 138 }	{ 276, 189 ³ 270, 093 }	
Producers' ⁴	3, 586	7, 560	6, 608	8, 013	
Total crude petroleum ⁵	149, 448	345, 863	{ 408, 909 ³ 411, 882 }	{ 339, 715 ³ 330, 875 }	355, 312
Natural gasoline	(⁶)	7 326	{ 2, 377 ³ 3, 100 }	3, 203	3, 317
Refined products:					
Gasoline ⁸	11, 009	38, 918	{ 40, 541 ³ 40, 098 }	{ 50, 602 ³ 51, 107 }	} 52, 616
Kerosene.....	9, 359	7, 121	6, 883	{ 4, 974 ³ 5, 033 }	
Gas oil and distillate fuel oils.....	(⁶)	(⁶)	16, 390	{ 14, 110 ³ 14, 277 }	} 17, 025
Residual fuel oils.....	(⁶)	(⁶)	{ 124, 038 ³ 121, 400 }	{ 115, 771 ³ 116, 476 }	
Total, gas oil and fuel oil ⁸	19, 938	110, 464	{ 140, 428 ³ 137, 790 }	{ 129, 881 ³ 130, 753 }	123, 500
Lubricants.....	3, 822	7, 253	10, 971	{ 8, 465 ³ 8, 694 }	7, 100
Wax..... thousands of pounds.....	195, 368	116, 391	232, 592	{ 163, 628 ³ 163, 935 }	} 69, 117
Coke..... thousands of short tons.....	31. 5	238. 4	1, 069. 1	1, 330. 2	
Asphalt..... do.....	81. 1	159. 4	307. 8	276. 1	727. 4 254. 5
Road oil.....	} 13, 821	1, 009	{ 189 ³ 234 530 ³ 575 }	{ 564 456 }	} 832 388
Other finished products.....					
Unfinished oils.....	1, 119	38, 922	{ 46, 793 ³ 47, 153 }	{ 43, 359 ³ 43, 753 }	48, 300
Total refined products ⁸	60, 397	206, 275	{ 254, 311 ³ 251, 680 }	{ 247, 188 ³ 249, 116 }	244, 578
Grand total	209, 845	552, 464	{ 665, 497 ³ 666, 662 }	{ 590, 106 ³ 592, 194 }	603, 207

¹ Includes foreign crude held by importers.

² Refinery stocks in California included in pipe-line and tank-farm stocks.

³ For comparison with succeeding years.

⁴ 1920, 1925, and 1930, producers' stocks in California included with pipe-line and tank-farm stocks.

⁵ California heavy crude and fuel oil included under refined products as residual fuel oil, 1925, 1930, 1932, and 1933.

⁶ Not available.

⁷ At plants only—stocks of natural gasoline at refineries not segregated from unfinished oils until Dec. 31, 1929.

⁸ 1925 and 1930 includes stocks of motor blends (not available in 1920); 1932 includes gasoline pipe-line stock and bulk-terminal stocks.

⁹ Includes equivalents for wax, coke, and asphalt in barrels.

CRUDE PETROLEUM

CRUDE-OIL ALLOCATIONS

Because of the general interest in proration, it has been decided to present herewith a brief historical review of the crude-oil allocations of the producing States for 1933.

The State allocations for Texas are based on a law which empowers the State railroad commission to set production allowables by fields and districts in conformity with market demand and with due regard to the prevention of physical waste. The daily average State allowables so set for 1933 ranged from a high of 1,410,210 barrels for May to a low of 781,500 barrels for January. The State allowables for the period September to December 1933 did not exactly conform to the Federal allocations for Texas, which began with September. Proration in Oklahoma in the first 8 months of 1933 was administered along the same general lines as in Texas, except that the regulatory

body was known as the "corporation commission." The Federal allocations for the last 4 months of 1933 were accepted as the operating schedule for the State by the commission, which continued to apportion the total among the various districts. Proration in California during the first 8 months of 1933 was handled by the Central Committee of California Oil Producers (known generally as the "central proration committee"), which continued to function as the State regulatory body in accordance with that part of the code which stipulates that the President may designate official agencies to compile quotas within States having no regulatory body. Proration in Kansas during the first 8 months of 1933 was confined to those fields not having 100 percent outlet. After the enactment of the code the Federal allocations were accepted as the operating schedules by the corporation commission, which divided them proportionally among the fields. The Louisiana Department of Conservation, the regulatory body of that State, did not compile State quotas prior to the first Federal allocation in September. Proration in New Mexico prior to the code was effected through an agreement between the operators in the Hobbs field and the State. In Michigan, the only other area with a material amount of flush production, proration during the period just prior to the code was confined to voluntary curtailment by the major producers. The Bradford district, where proration was first inaugurated in 1930, continued to operate under so-called "ratable" contracts, whereby the major purchasers take a varying percentage of a base amount.

The following table summarizes the State and Federal allowables for 1933 in the principal producing States:

Federal and State allocations and actual production of crude petroleum in the principal producing States, in 1933

[Daily average in thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1933
Texas:													
State allowable.....	731	836	906	850	1,410	1,297	1,164	1,213	1,017	964	888	890	1,020
Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	975	965	965	888	(1)
Actual production.....	857	899	1,099	923	1,510	1,417	1,233	1,204	1,123	1,060	939	952	1,103
Excess of production over Federal allowable.....									148	95	-26	64	(1)
Oklahoma:													
State allowable.....	383	445	469	426	445	502	536	584	(2)				
Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	540	495	495	457	(1)
Actual production.....	418	456	505	399	427	518	607	614	554	499	498	491	499
Excess of production over Federal allowable.....									14	4	3	34	(1)
California:													
State allowable.....	443	445	440	440	447	446	450	453	473	453	456	456	450
Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	480	455	455	450	(1)
Actual production.....	461	463	428	473	477	478	487	502	486	470	461	471	471
Excess of production over Federal allowable.....	(1)	(1)	(-)	(1)	(1)	(1)	(1)	(1)	6	25	6	21	(1)
Kansas:													
Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	111	116	116	112	(1)
Actual production.....	95	104	116	118	106	115	131	126	128	107	122	112	116
Excess of production over Federal allowable.....									17	-9	6		(1)
Louisiana:													
Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	70	70	70	69	(1)
Actual production.....	64	61	67	72	67	66	69	74	71	71	74	70	69
Excess of production over Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1	1	4	1	(1)
New Mexico:													
Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	41.4	41.4	41.4	41.2	(1)
Actual production.....	32.1	36.4	37.7	36.2	35.3	38.2	40.9	40.8	41.6	41.6	42.1	41.0	38.7
Excess of production over Federal allowable.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	.2	.2	.7	-.2	(1)

¹ No Federal allowable prior to September 1933.

² State allowable discontinued.

DOMESTIC

Petroleum produced in the United

[Thousands of barrels

Year	New York	Pennsylvania	Ohio	West Virginia	California	Kentucky	Tennessee	Colorado	Indiana	Illinois	Kansas
1859-75	(2)	74, 072									
1876	(2)	8, 969	32	120	12						
1877	(2)	13, 135	30	172	13						
1878	(2)	15, 164	38	180	15						
1879	(2)	19, 685	29	180	20						
1880	(2)	26, 208	39	179	40						
1881	(2)	27, 376	34	151	100						
1882	6, 685	23, 368	40	128	129						
1883	4, 004	19, 125	47	126	143	5 (2)					
1884	3, 231	20, 541	90	90	262	4 (2)					
1885	2, 658	18, 118	662	91	325	5 (2)					
1886	2, 151	23, 647	1, 783	102	377	5 (2)					
1887	2, 075	20, 281	5, 023	145	678	5 (2)		76			
1888	(2)	16, 489	10, 011	119	690	5 (2)		298			
1889	1, 897	19, 591	12, 472	544	303	5 (2)		317	33	1	1
1890	(2)	28, 458	16, 125	493	307	6 (2)		369	64	1	1
1891	1, 585	31, 424	17, 740	2, 406	324	9 (2)		666	137	1	1
1892	1, 273	27, 149	16, 363	3, 810	385	5 (2)		824	698	1	5
1893	1, 032	19, 283	16, 249	8, 446	470	3 (2)		594	2, 335	1	18
1894	942	18, 078	16, 792	8, 577	706	2 (2)		516	3, 689	(2)	40
1895	913	18, 231	19, 545	8, 120	1, 209	2 (2)		438	4, 386	(2)	44
1896	1, 205	19, 379	23, 941	10, 020	1, 253	2 (2)		361	4, 681	(2)	114
1897	1, 279	17, 983	21, 561	13, 090	1, 903	(2) (2)		385	4, 122	1	81
1898	1, 205	14, 743	18, 739	13, 615	2, 257	6 (2)		444	3, 731	(2)	72
1899	1, 321	13, 054	21, 142	13, 911	2, 642	18 (2)		390	3, 848	(2)	70
1900	1, 301	13, 258	22, 368	16, 196	4, 325	62 (2)		317	4, 874	(2)	75
1901	1, 207	12, 625	21, 648	14, 177	8, 787	137 (2)		461	5, 757	(2)	179
1902	1, 120	12, 064	21, 014	13, 513	13, 984	185 (2)		397	7, 481	(2)	332
1903	1, 163	11, 355	20, 480	12, 900	24, 382	554 (2)		484	9, 186		932
1904	1, 113	11, 126	18, 877	12, 645	29, 649	998 (2)		501	11, 339		4, 251
1905	1, 118	10, 437	16, 347	11, 578	33, 428	1, 217 (2)		376	10, 964	181	12, 014
1906	1, 243	10, 257	14, 788	10, 121	33, 099	1, 214 (2)		328	7, 674	4, 397	21, 718
1907	1, 212	10, 000	12, 207	9, 095	39, 748	821 (2)		332	5, 128	24, 282	2, 410
1908	1, 160	9, 424	10, 859	9, 523	44, 855	728		380	3, 283	35, 686	1, 801
1909	1, 135	9, 299	10, 633	10, 745	55, 472	639		311	2, 286	30, 898	1, 264
1910	1, 054	8, 795	9, 916	11, 753	73, 011	469		240	2, 160	33, 143	1, 128
1911	953	8, 248	8, 817	9, 796	81, 134	472		227	1, 695	31, 317	1, 279
1912	874	7, 838	8, 969	12, 129	87, 269	484		206	970	28, 602	1, 593
1913	948	7, 917	8, 781	11, 567	97, 788	525		189	956	23, 894	2, 375
1914	939	8, 170	8, 536	9, 690	99, 775	503		223	1, 336	21, 920	3, 104
1915	888	7, 838	7, 825	9, 265	86, 592	437		208	876	19, 042	2, 823
1916	874	7, 593	7, 744	8, 731	90, 952	1, 202	1	197	769	17, 714	8, 738
1917	880	7, 733	7, 751	8, 379	93, 878	3, 088	12	121	760	15, 777	36, 336
1918	809	7, 408	7, 285	7, 867	97, 532	4, 368	8	143	878	13, 366	45, 451
1919	851	8, 137	7, 736	8, 327	101, 183	9, 278	15	121	972	11, 960	33, 048
1920	906	7, 438	7, 400	8, 249	103, 377	8, 738	14	111	945	10, 774	39, 005
1921	988	7, 418	7, 335	7, 822	112, 600	9, 013	12	108	1, 158	10, 043	36, 456
1922	1, 000	7, 425	6, 781	7, 021	138, 468	8, 973	10	97	1, 087	9, 383	31, 766
1923	1, 250	7, 609	7, 085	6, 358	262, 876	8, 069	8	86	1, 043	8, 707	28, 250
1924	1, 440	7, 486	6, 811	5, 920	228, 933	7, 407	10	445	935	8, 081	28, 836
1925	1, 695	8, 097	7, 212	5, 763	232, 492	6, 759	24	1, 226	829	7, 863	38, 357
1926	1, 956	8, 961	7, 272	5, 946	224, 673	6, 274	43	2, 768	808	7, 760	41, 498
1927	2, 242	9, 526	7, 593	6, 023	231, 196	6, 719	60	2, 831	852	6, 904	41, 069
1928	2, 603	9, 856	7, 015	5, 661	231, 811	7, 359	46	2, 774	1, 052	6, 462	38, 586
1929	3, 377	11, 820	6, 743	5, 574	232, 534	7, 775	19	2, 358	981	6, 319	42, 813
1930	3, 647	12, 803	6, 486	5, 071	227, 329	7, 989	21	1, 656	994	5, 736	41, 638
1931	3, 363	11, 892	5, 327	4, 472	188, 830	6, 456	6	1, 545	840	5, 039	37, 018
1932	3, 508	12, 412	4, 644	3, 876	178, 128	6, 287	5	1, 136	806	4, 673	34, 848
1933	3, 181	12, 624	4, 235	3, 815	172, 010	4, 608	5	919	737	4, 244	41, 976
Percent of total production	7 85, 454	7 878, 360	563, 042	384, 373	4, 036, 663	3 129, 296	3 319	29, 500	120, 145	412, 263	6 703, 624
	0.5	5.6	3.6	2.4	25.7	0.8		0.2	0.8	2.6	4.5

¹ 1889-99, Missouri; 1900-1906, Michigan and Missouri; 1907-11 Michigan, Missouri, and Utah; 1912, 1917, 1918, Alaska and Michigan; 1913 and 1919, Alaska Michigan, Missouri, and New Mexico; 1914-16, Alaska, Michigan, and Missouri; 1920, Alaska, Arkansas, Missouri, New Mexico, and Utah; 1921-23 Alaska, Missouri, and New Mexico; 1924-31, Alaska and Utah; 1932, Alaska, Missouri, and Utah; 1933, Alaska, Mississippi, Missouri, and Utah.

² New York included with Pennsylvania.

³ Tennessee included with Kentucky, 1883-1907, inclusive.

PRODUCTION

States, 1859-1933, by States

of 42 gallons]

Texas	Okla-homa	Wyo-ming	Michi-gan	Louisi-ana	New Mex-ico	Monta-na	Arkan-sas	Other ¹	Total		
									Quantity	Value at wells (thou-sands of dollars)	Aver-age per barrel
									74,072	215,781	\$2.91
									9,133	22,983	2.52
									13,350	31,789	2.38
									15,397	18,045	1.17
									19,914	17,211	.86
									26,286	24,601	.94
									27,661	25,448	.92
									30,350	23,631	.78
									23,450	25,790	1.10
									24,218	20,596	.85
									21,859	19,198	.88
									28,065	19,996	.71
									28,283	18,877	.67
									27,612	17,948	.65
									35,164	26,963	.77
									45,824	35,365	.77
(²)								(²)	54,293	30,527	.56
(²)	(²)							(²)	50,515	25,907	.51
(²)	(²)							(²)	48,431	28,950	.60
(²)	(²)		2					(²)	49,344	35,522	.72
(²)	(²)		4					(²)	52,892	57,632	1.09
1	(²)		3					(²)	60,960	58,519	.96
66	1		4					(²)	60,476	40,874	.68
546			6					(²)	55,364	44,193	.80
669			6					(²)	57,071	64,604	1.13
836			6	(²)				(²)	63,621	75,989	1.19
4,394	10		5	(²)				2	69,389	66,417	.96
18,084	37		6	(²)	549			1	88,767	71,179	.80
17,956	139		9	(²)	918			3	100,461	94,694	.94
22,241	1,367		12	(²)	2,959			3	117,081	101,175	.86
28,136	(²)		8	(²)	8,910			3	134,717	84,157	.62
12,568	(²)		7	(²)	9,077			3	126,494	92,445	.73
12,323	43,524		9	(²)	5,000			-4	166,095	120,107	.72
11,207	45,799		18	(²)	5,789			15	178,527	129,079	.72
9,534	47,859		20	(²)	3,080			6	183,171	128,329	.70
8,899	52,029	115	(²)	(²)	6,841			4	209,557	127,900	.61
9,526	56,069	187	(²)	(²)	10,721			8	220,449	134,045	.61
11,735	51,427	1,572	(²)	(²)	9,263			4	222,935	164,213	.74
15,010	63,579	2,407	(²)	(²)	12,499	(²)		11	248,446	237,121	.95
20,068	73,632	3,560	(²)	(²)	14,309	(²)		8	265,763	214,125	.81
24,943	97,915	4,246	(²)	(²)	18,192			14	281,104	179,463	.64
27,645	107,072	6,234	(²)	(²)	15,248		45	8	300,767	330,900	1.10
32,413	107,508	8,978	(²)	(²)	11,392		100	10	335,316	522,635	1.56
38,750	103,847	12,506	(²)	(²)	16,043		69	8	355,928	703,944	1.98
79,366	86,911	13,172	(²)	(²)	17,188	(²)	90	12	378,367	760,266	2.01
96,868	106,206	16,831			35,714	(²)	340	(²)	442,929	1,360,745	3.07
106,166	114,634	19,333			27,103	(²)	1,509	10,473	472,183	814,745	1.73
118,684	149,571	26,715			35,376	(²)	2,449	12,712	557,531	895,111	1.61
131,023	160,929	44,785			24,919	(²)	2,782	36,610	732,407	978,430	1.34
134,522	173,538	39,498			21,124	98	2,815	46,028	713,940	1,022,683	1.43
144,643	176,768	29,173		4	20,272	1,060	4,091	77,398	12,763,943	1,284,960	1.68
166,916	179,195	25,776		94	23,201	1,666	7,727	58,332	8,770,874	1,447,760	1.88
217,389	277,775	21,307		439	22,818	1,226	5,058	40,005	7,100,129	1,172,830	1.30
257,320	249,857	21,461		594	21,847	943	4,015	32,096	9,014,474	1,054,880	1.17
296,876	255,004	19,314		4,528	20,554	1,830	3,980	24,917	1,007,323	1,280,417	1.27
290,457	216,486	17,868		3,911	23,272	10,189	3,349	19,702	898,011	1,070,200	1.19
332,437	180,574	14,834		3,789	21,804	15,227	2,830	14,791	7,851,081	550,630	.65
312,478	153,244	13,418		6,910	21,807	12,455	2,457	12,051	785,159	680,460	.87
402,609	182,251	11,227		7,942	25,168	14,116	2,273	11,686	30,905,656	608,000	.67
3,415,309	3,514,263	374,732		28,211	512,937	58,810	45,979	396,801	298,15,690,379	19,510,984	1.24
21.8	22.4	2.4	0.2	3.3	0.4	0.3	2.5		100.0		

¹ Less than 500 barrels. (See Mineral Resources, 1916, pt. 2, pp. 684-685.)

² Included under "Other."

³ Oklahoma included with Kansas in 1905 and 1906.

⁴ Early production in New York included with Pennsylvania.

⁵ Figures represent 1925-33 production only. Earlier years included under "Other."

⁶ Figures represent 1924-33 production only. Earlier years included under "Other."

Production of crude petroleum by districts and States and daily average production in principal fields and States in 1933, by months

[Quantity in thousands of barrels of 42 gallons; value in thousands of dollars]

TOTAL PRODUCTION

	January	February	March	April	May	June	July	August	September	October	November	December	Total		
													Quantity	Value at wells	
Appalachian:															
New York.....	254	240	272	245	223	256	256	280	286	292	279	298	3,181	5,960	
Pennsylvania.....	972	900	1,004	993	1,045	1,061	1,080	1,113	1,108	1,188	1,086	1,074	12,624	23,590	
West Virginia.....	302	262	281	287	313	317	323	357	339	373	335	326	3,815	5,860	
East and southeast Ohio.....	266	246	269	260	256	250	267	295	275	299	266	254	3,203	3,490	
Kentucky.....	438	336	379	351	362	320	428	382	414	423	389	386	4,608	3,780	
Tennessee.....	1		1					1			1		5	3	
Total Appalachian.....	2,233	1,984	2,206	2,136	2,199	2,204	2,354	2,428	2,422	2,576	2,356	2,338	27,436	42,683	
Lima-Indiana:															
Northwestern Ohio.....	86	69	84	79	82	88	95	99	95	96	80	79	1,032	1,050	
Northeastern Indiana.....	1	1	1	1	1	1	2	2	1	1	1	1	14	9	
Michigan.....	546	407	439	442	524	488	563	879	905	962	895	892	7,942	7,150	
Total Lima-Indiana.....	633	477	524	522	607	577	660	980	1,001	1,059	976	972	8,988	8,209	
Illinois-Indiana:															
Southwest Indiana.....	48	45	51	49	50	61	66	68	70	74	72	69	723	641	
Illinois.....	297	262	316	284	314	359	409	413	415	408	389	378	4,244	3,690	
Total Illinois-Indiana.....	345	307	367	333	364	420	475	481	485	482	461	447	4,967	4,331	
Mid-Continent:															
Kansas.....	2,932	2,919	3,611	3,527	3,280	3,453	4,061	3,909	3,831	3,307	3,666	3,480	41,976	27,700	
Oklahoma.....	12,955	12,774	15,669	11,957	13,243	15,545	13,813	19,043	16,607	15,479	14,936	15,230	182,251	120,800	
Texas, exclusive of coastal Texas and west Texas.....	17,674	17,143	24,566	18,140	36,429	32,377	27,188	25,817	23,606	22,964	19,814	20,545	286,263	160,500	
West Texas.....	4,959	4,408	4,991	4,963	5,003	4,875	4,966	5,122	4,257	4,177	3,697	3,926	55,344	24,000	
Southeast New Mexico.....	975	998	1,140	1,057	1,072	1,106	1,232	1,229	1,217	1,260	1,220	1,242	13,748	6,170	
Arkansas.....	974	844	974	960	979	1,040	1,011	959	1,077	1,015	915	938	11,686	4,850	
Northern Louisiana.....	919	768	934	900	831	760	785	851	768	772	769	805	9,862	5,700	
Mississippi and Missouri.....	2	2	2	2	1	1	1		2	1	1	2	17	9	
Total Mid-Continent.....	41,390	39,856	51,887	41,506	60,838	59,157	58,057	56,930	51,365	48,975	45,018	46,168	601,147	349,729	

Gulf coast:																		
Texas Gulf coast.....	3, 924	3, 632	4, 523	4, 594	5, 383	5, 252	6, 077	6, 386	5, 839	5, 719	4, 645	5, 028	61, 002	40, 500				
Louisiana Gulf coast.....	1, 074	1, 935	1, 146	1, 253	1, 253	1, 222	1, 346	1, 448	1, 373	1, 438	1, 444	1, 374	15, 306	9, 580				
Total Gulf coast.....	4, 998	4, 567	5, 669	5, 847	6, 636	6, 474	7, 423	7, 834	7, 212	7, 157	6, 089	6, 402	76, 308	50, 080				
Rocky Mountain:																		
Montana.....	166	142	165	169	184	207	205	199	203	210	218	205	2, 273	2, 220				
Wyoming.....	1, 005	872	985	909	923	954	934	964	956	929	888	908	11, 227	6, 570				
Colorado.....	85	71	85	69	82	75	81	75	70	74	77	75	919	540				
Northwest New Mexico.....	19	21	30	30	22	40	36	36	32	29	43	30	368	320				
Utah and Alaska.....				1	2	2	2	2	1	1	1	1	13	18				
Total Rocky Mountain.....	1, 275	1, 106	1, 265	1, 178	1, 213	1, 278	1, 258	1, 276	1, 262	1, 243	1, 227	1, 219	14, 800	9, 668				
California.....	14, 285	12, 955	13, 267	14, 187	14, 781	14, 276	15, 094	15, 556	14, 574	14, 585	13, 839	14, 611	172, 010	143, 300				
Total United States: 1933.....	65, 159	61, 252	75, 185	65, 709	86, 638	84, 386	85, 321	85, 485	78, 321	76, 077	69, 966	72, 157	905, 656	608, 000				
1932.....	67, 014	62, 512	67, 456	67, 915	68, 854	68, 854	65, 144	66, 655	65, 518	65, 598	63, 630	58, 295	785, 159	680, 460				
Total Ohio.....	352	315	353	339	338	338	362	394	370	395	346	333	4, 235	4, 540				
Total Indiana.....	49	46	52	50	51	62	68	70	71	75	73	70	737	650				
Total Texas.....	26, 557	25, 183	34, 080	27, 697	46, 815	42, 504	38, 231	37, 325	33, 702	32, 860	28, 156	29, 499	402, 609	225, 000				
Total Louisiana.....	1, 993	1, 703	2, 080	2, 153	2, 084	1, 982	2, 131	2, 299	2, 141	2, 210	2, 213	2, 179	25, 168	15, 280				
Total New Mexico.....	994	1, 019	1, 170	1, 087	1, 094	1, 146	1, 268	1, 265	1, 249	1, 289	1, 263	1, 272	14, 116	6, 490				

DAILY AVERAGE PRODUCTION

California.....	461	463	428	473	477	476	487	502	486	470	461	471	471	-----
Kettleman Hills.....	58	58	60	60	62	62	64	62	63	60	49	53	59	-----
Long Beach.....	65	67	59	73	73	74	74	75	66	58	57	61	67	-----
Santa Fe Springs.....	54	53	49	54	54	54	54	54	49	46	38	42	50	-----
Kansas.....	95	104	116	118	106	115	131	126	128	107	122	112	115	-----
New Mexico.....	32	36	38	36	35	38	41	41	42	42	42	41	39	-----
Hobbs.....	26	30	31	30	29	31	33	33	34	34	34	34	32	-----
Oklahoma.....	418	456	505	399	427	518	607	614	554	499	498	491	499	-----
Oklahoma City.....	109	149	200	103	135	202	278	268	233	194	181	189	187	-----
Seminole.....	118	109	110	102	100	114	131	133	125	104	109	107	114	-----
Texas.....	857	899	1, 099	923	1, 510	1, 417	1, 233	1, 204	1, 123	1, 090	939	952	1, 103	-----
East Texas.....	351	387	560	369	969	841	646	608	560	525	453	451	562	-----
Gulf Coast.....	127	130	146	120	174	175	196	206	195	184	155	162	187	-----
West Texas.....	160	157	161	165	161	166	160	165	142	135	123	127	152	-----
Wyoming.....	32	31	32	30	30	32	30	31	32	30	30	29	31	-----
Salt Creek.....	22	20	20	19	19	19	19	19	19	19	18	18	18	-----
Other States.....	207	199	207	211	210	217	223	240	246	246	240	232	223	-----
United States: 1933.....	2, 102	2, 188	2, 425	2, 190	2, 795	2, 813	2, 752	2, 758	2, 611	2, 454	2, 332	2, 328	2, 481	-----
1932.....	2, 162	2, 156	2, 176	2, 264	2, 221	2, 171	2, 150	2, 147	2, 184	2, 116	2, 121	1, 880	2, 145	-----

*Pennsylvania-grade crude oil produced, 1924-33, by States*¹

[Thousands of barrels of 42 gallons]

State	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
New York.....	1,440	1,695	1,956	2,242	2,603	3,377	3,647	3,363	3,508	3,181
Pennsylvania.....	7,486	8,097	8,961	9,526	9,956	11,320	12,786	11,876	12,396	12,607
West Virginia.....	5,920	5,763	5,946	6,023	5,661	5,574	5,068	4,470	3,875	3,815
Central and eastern Ohio.....	2,168	2,242	2,011	2,346	2,877	2,654	2,742	2,184	1,741	1,594
Total.....	17,014	17,797	18,874	20,137	21,097	23,425	24,243	21,893	21,520	21,197

¹ Pennsylvania Grade Crude Oil Association, 1924-29.

Production of crude petroleum in Arkansas, 1923-33, by districts

[Thousands of barrels of 42 gallons]

Year	Bradley	Champagnolle	El Dorado	Irma	Lisbon	Miller	Mount Holly	Smackover	Stephens	Urbana	Total
1923.....			5,830	(¹)				30,048	¹ 732		36,610
1924.....			4,760	450				40,000	818		46,028
1925.....			4,247	334				72,144	673		77,398
1926.....	52		2,722	763	2,125			52,063	607		58,332
1927.....	44	(²)	2,433	774	1,054			35,201	499		40,005
1928.....	31	3,522	2,456	536	566			24,569	416		32,096
1929.....	24	2,651	1,987	409	492		(³)	³ 18,991	363		24,917
1930.....	19	1,486	1,424	380	399		34	15,405	319	236	19,702
1931.....	5	944	1,186	266	288		4	11,504	272	322	14,791
1932.....		623	1,182	234	143			9,510	213	146	12,051
1933.....		488	1,231	264	95	100		8,882	127	499	11,686

¹ Irma included with Stephens.
² Champagnolle included with El Dorado.
³ Mount Holly included with Smackover.

Production of crude petroleum in Arkansas in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties												Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production	
	January	February	March	April	May	June	July	August	September	October	November	December			Total
Champagnolle.....	47	35	37	37	39	35	36	36	42	36	35	33	448	40	488
El Dorado.....	103	106	95	97	96	94	84	101	200	110	69	79	1,234	-3	1,231
Irma.....	13	1	29	24	33	69	25	6	19	8	24	27	278	-14	264
Lisbon.....	5	8	10	9	8	7	7	6	9	7	7	8	91	4	95
Miller.....									9	16	17	16	58		100
Smackover.....	797	664	783	765	778	778	756	749	706	744	681	692	8,893	-11	8,882
Stephens.....				3	3	14	20	13	18	18	16	18	123	4	127
Urbana.....	16	14	9	12	14	37	45	49	77	84	73	69	499		499
Total: 1933.....	981	828	963	947	971	1,034	973	960	1,080	1,023	922	942	11,624	62	11,686
1932.....	1,014	962	1,013	998	1,073	1,002	1,028	1,004	995	1,015	977	928	12,009	42	12,051

Production of crude petroleum in California in 1933, by districts and months¹

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
San Joaquin Valley:													
Belridge.....	253	237	266	249	265	200	200	210	211	280	219	271	2,861
Coalinga.....	327	290	322	309	334	314	330	322	381	453	506	461	4,349
Elk Hills.....	376	362	394	386	391	379	397	398	372	360	321	342	4,478
Fruitvale.....	145	140	156	147	153	138	128	135	122	135	128	129	1,656
Kern.....	263	250	270	259	267	262	272	277	262	244	276	255	3,162
Kettleman Hills.....	1,796	1,610	1,850	1,797	1,932	1,854	1,970	1,936	1,899	1,871	1,468	1,656	21,639
Midway-Mari-copa.....	1,480	1,323	1,468	1,410	1,451	1,384	1,431	1,472	1,472	1,505	1,538	1,574	17,512
Mount Poso.....	237	223	271	235	251	235	281	250	258	243	246	250	2,980
Other.....	162	164	181	173	204	185	191	203	189	202	237	386	2,477
Total San Joa-quin.....	5,044	4,599	5,178	4,965	5,248	4,951	5,200	5,207	5,166	5,293	4,939	5,324	61,114
Coastal district:													
Elwood.....	422	377	415	383	415	408	436	406	430	432	404	386	4,914
Santa Maria.....	82	76	80	83	75	71	105	101	108	138	157	157	1,233
Ventura Avenue.....	1,133	1,042	1,123	976	1,012	991	1,020	1,104	1,089	1,079	959	1,033	12,561
Other.....	207	196	216	211	226	217	227	223	211	197	216	215	2,562
Total coastal.....	1,844	1,691	1,834	1,653	1,728	1,687	1,788	1,834	1,838	1,846	1,736	1,791	21,270
Los Angeles Basin:													
Brea Olinda.....	236	216	209	229	229	224	231	234	260	291	292	287	2,938
Coyote.....	301	277	237	340	310	300	313	310	315	315	334	332	3,684
Dominguez.....	569	506	397	548	607	572	623	634	602	593	396	581	6,628
Huntington Beach.....	787	705	630	822	901	919	1,152	1,485	1,161	1,288	1,690	1,434	12,974
Inglewood.....	378	338	304	384	373	356	368	356	344	331	243	280	4,055
Long Beach.....	2,021	1,867	1,820	2,196	2,263	2,210	2,301	2,340	1,966	1,805	1,713	1,893	24,395
Montebello.....	144	131	125	160	149	141	168	183	193	185	190	162	1,931
Playa del Rey.....	383	341	356	354	366	344	347	333	321	310	259	290	4,004
Richfield.....	178	169	160	189	196	190	210	229	215	212	243	225	2,416
Santa Fe Springs.....	1,683	1,471	1,504	1,614	1,667	1,616	1,669	1,662	1,482	1,420	1,139	1,302	18,229
Seal Beach.....	275	242	136	295	299	314	286	285	272	268	210	261	3,143
Torrance.....	189	166	176	187	187	191	192	211	208	199	216	209	2,331
Other.....	253	236	201	251	258	261	246	253	231	229	239	240	2,898
Total Los An-geles.....	7,397	6,665	6,255	7,569	7,805	7,638	8,106	8,515	7,570	7,446	7,164	7,496	89,626
Total California.....	14,285	12,955	13,267	14,187	14,781	14,276	15,094	15,556	14,574	14,585	13,839	14,611	172,010

¹ Central Committee of California Oil Producers.

Production of crude petroleum in Colorado, 1923-33, by districts

[Thousands of barrels of 42 gallons]

Year	Boul-der	Flor-ence	Fort Col-lins ¹	Grease-wood	Hes	Moffat	Rangely	Tow Creek	Total
1923.....	4	62	-----	-----	-----	-----	20	-----	86
1924.....	4	70	86	-----	-----	256	29	-----	445
1925.....	3	97	430	-----	17	605	32	42	1,226
1926.....	2	148	1,222	-----	24	1,199	33	140	2,768
1927.....	(²)	³ 291	1,260	-----	263	670	469	278	2,831
1928.....	(²)	³ 430	1,030	-----	626	464	434	190	2,774
1929.....	(²)	³ 344	824	-----	546	436	535	173	2,358
1930.....	(²)	³ 200	485	(⁴)	352	394	647	148	1,656
1931.....	(²)	³ 135	355	173	391	321	549	121	1,545
1932.....	(²)	³ 111	290	108	245	248	533	101	1,136
1933.....	(²)	³ 91	226	56	213	212	533	88	919

¹ Includes Wellington.
² Included with Rangely.
³ Includes Canon City.

⁴ Includes Boulder and Walden.
⁵ Includes Berthoud, Boulder, and Walden.
⁶ Includes Berthoud, Boulder, Greasewood, and Walden.

Production of crude petroleum in Colorado in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties												Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production	
	January	February	March	April	May	June	July	August	September	October	November	December			Total
Florence ¹	9	6	8	6	8	7	8	8	7	9	8	8	92	-1	91
Fort Collins ²	24	17	23	17	21	18	19	16	17	18	18	19	227	-1	226
Greasewood.....	8	6	5	4	5	5	5	5	4	3	3	3	56		56
Iles.....	17	14	16	14	18	17	17	15	15	14	23	20	200	13	213
Moffat.....	17	18	21	16	18	16	19	19	15	18	14	13	204	8	212
Rangely ³	1	1	8	3	2	2	3	3	4	4	4	3	32	1	33
Tow Creek.....	8	8	8	7	8	8	8	7	7	5	5	7	88		88
Total: 1933.....	84	70	83	67	80	73	79	73	69	73	75	73	899	20	919
1932.....	107	103	112	101	99	94	90	83	88	84	83	79	1,123	13	1,136

¹ Includes Canon City. ² Includes Wellington. ³ Includes Berthoud, Boulder, and Walden.

Production of crude petroleum in Illinois, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923.....	773	643	807	662	784	739	745	747	696	733	693	685	8,707
1924.....	631	650	734	619	713	691	722	689	684	710	623	615	8,081
1925.....	662	604	728	536	661	665	690	647	667	677	639	637	7,863
1926.....	635	600	729	579	650	662	680	670	657	651	616	631	7,760
1927.....	589	558	698	536	601	602	576	607	577	557	562	531	6,994
1928.....	510	516	635	468	573	550	551	573	506	568	508	514	6,462
1929.....	508	455	603	457	532	517	561	572	532	566	505	490	6,319
1930.....	487	478	532	511	540	513	531	523	409	428	378	406	5,736
1931.....	411	376	374	378	384	456	463	439	437	444	430	447	5,039
1932.....	433	415	502	391	450	428	398	407	376	285	299	289	4,673
1933.....	297	262	316	284	314	359	409	413	415	408	389	378	4,244

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

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Production of crude petroleum in Indiana, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Southwestern Indiana:													
1923	71	60	64	69	73	70	68	70	63	64	62	59	793
1924	52	55	52	61	62	58	62	55	54	57	49	49	666
1925	56	53	50	58	54	58	59	51	54	54	49	53	649
1926	54	55	50	54	57	56	56	54	54	53	56	59	658
1927	55	59	55	53	59	60	60	66	63	66	64	66	726
1928	70	75	71	75	81	78	81	86	82	88	87	89	963
1929	83	81	77	76	78	71	72	75	71	78	78	78	918
1930	74	80	77	87	87	85	89	88	69	70	67	68	941
1931	70	66	58	66	66	75	72	64	67	67	64	68	803
1932	69	70	66	72	73	75	71	71	62	49	50	49	777
1933	48	45	51	49	50	61	66	68	70	74	72	69	723
Northeastern Indiana:													
1923	21	16	19	19	19	20	22	25	24	27	18	20	250
1924	18	22	24	27	27	26	26	23	22	22	16	16	269
1925	15	15	18	18	16	17	17	16	14	12	11	11	180
1926	10	13	14	13	13	14	14	14	13	12	9	11	150
1927	9	12	12	12	12	13	11	10	10	9	8	8	126
1928	7	8	7	8	9	8	7	8	7	8	6	6	89
1929	4	4	6	6	6	7	5	5	5	5	5	5	63
1930	4	4	4	5	6	5	5	4	5	5	3	3	53
1931	4	4	3	3	4	3	2	3	3	3	3	2	37
1932	3	2	3	3	3	3	2	2	2	2	2	2	29
1933	1	1	1	1	1	1	2	2	1	1	1	1	14
Total Indiana:													
1923	92	76	83	88	92	90	90	95	87	91	80	79	1,043
1924	70	77	76	88	89	84	88	78	76	79	65	65	935
1925	71	68	68	76	70	75	76	67	68	66	60	64	829
1926	64	68	64	67	70	70	70	63	67	65	65	70	808
1927	64	71	67	65	71	73	71	76	73	75	72	74	852
1928	77	83	78	83	90	86	88	94	89	96	93	95	1,052
1929	87	85	83	82	84	78	77	80	76	83	83	83	981
1930	78	84	81	92	93	90	94	92	74	75	70	71	994
1931	74	70	61	69	70	78	74	67	70	70	67	70	840
1932	72	72	69	75	76	78	73	73	64	51	52	51	806
1933	49	46	52	50	51	62	68	70	71	75	73	70	737

Production of crude petroleum in Kansas, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923	2,463	2,155	2,549	2,681	2,812	2,595	2,300	2,005	1,821	2,164	2,371	2,334	28,250
1924	2,113	2,131	2,276	2,341	2,513	2,399	2,460	2,678	2,609	2,630	2,431	2,255	28,836
1925	2,455	2,534	2,835	2,942	3,448	3,563	3,613	3,604	3,424	3,458	3,267	3,214	38,357
1926	3,199	2,932	3,248	3,395	3,522	3,624	3,740	3,685	3,498	3,610	3,461	3,584	41,498
1927	3,575	3,342	3,608	3,496	3,586	3,452	3,374	3,357	3,283	3,441	3,277	3,278	41,069
1928	3,362	3,248	3,561	3,422	3,444	3,274	3,283	3,222	2,912	3,073	2,828	2,967	38,596
1929	2,939	2,717	3,093	3,385	3,812	3,795	4,323	4,194	3,963	3,681	3,427	3,484	42,813
1930	3,149	3,103	3,477	3,520	3,948	4,087	3,618	3,414	3,439	3,432	3,252	3,199	41,638
1931	3,102	3,030	3,299	3,195	3,244	2,999	2,862	2,825	3,105	3,114	3,060	3,183	37,018
1932	3,014	2,774	2,932	2,951	2,973	2,774	2,948	3,039	2,960	2,945	2,846	2,692	34,844
1933	2,932	2,919	3,611	3,527	3,280	3,453	4,061	3,909	3,831	3,307	3,666	3,480	41,976

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*Production of crude petroleum in Kansas in 1933, by districts and months*¹

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Barton.....	2	4	6	11	19	12	9	13	12	13	18	25	144
Builer:													
Eldorado.....	148	118	149	144	154	146	164	162	159	150	165	158	1,817
Leon-Weaver.....	61	53	63	62	47	43	67	68	73	62	84	72	760
Other.....	296	260	292	299	304	291	335	345	337	301	371	309	3,740
Cowley.....	208	169	190	178	161	166	205	194	185	157	175	159	2,147
Ellsworth.....	77	52	69	53	31	50	127	145	130	117	149	119	1,119
Greenwood-Woodson:													
Seeley.....	116	99	113	105	92	101	110	108	103	99	117	103	1,266
Teeter.....	79	68	78	73	68	71	73	70	71	63	73	65	852
Virgil.....	117	95	112	105	86	102	109	116	116	116	131	120	1,325
Other.....	81	70	78	72	68	67	74	73	70	66	82	69	870
Harvey.....	51	84	183	220	219	235	476	425	354	250	261	262	3,020
Kingman.....	1	-----	10	11	8	9	14	13	22	12	27	40	167
McPherson:													
Nikkell.....	39	84	184	229	245	247	277	233	112	85	77	107	1,919
Ritz-Canton.....	483	565	702	650	576	521	661	620	589	456	406	398	6,627
Voshell.....	163	216	334	232	176	176	214	198	175	184	230	269	2,567
Other.....	21	46	85	71	65	62	64	57	52	41	46	40	650
Rice.....	85	61	98	109	105	103	195	210	241	234	251	244	1,936
Russell.....	67	54	66	67	57	65	72	80	81	115	186	157	1,067
Sedgwick:													
Eastborough.....	77	62	68	63	48	45	46	48	59	48	49	46	659
Greenwich.....	96	93	128	161	172	158	138	108	144	129	94	90	1,511
Wright.....	88	75	83	80	75	68	79	83	83	75	75	69	933
Other.....	25	23	24	21	26	22	44	52	60	32	43	35	467
Stafford.....	4	6	6	9	5	-----	17	15	22	26	33	29	172
Sumner.....	120	116	117	108	113	104	110	106	104	109	105	108	1,320
Other.....	366	329	367	360	357	341	388	366	375	348	351	363	4,311
	2,871	2,802	3,605	3,493	3,277	3,210	4,068	3,908	3,729	3,288	3,599	3,456	41,306

¹ Oil and Gas Journal.

Production of petroleum in Kentucky, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923.....	746.3	643.3	675.4	674.4	670	688.3	611.7	736	670.7	685.3	628.3	639.3	8,069
1924.....	586.4	596.3	636.4	643.4	647.7	611.4	677.4	615.6	625.2	631.6	566.3	569.3	7,407
1925.....	575.7	544.4	592.4	579.5	580.6	567.2	598.6	556	561.6	552.8	534.2	516	6,759
1926.....	499	485	531	517	522	526	549	540	532	536	521	516	6,274
1927.....	509	490	549	540	559	558	586	612	587	588	586	555	6,719
1928.....	542	558	623	618	653	563	681	662	594	660	608	597	7,359
1929.....	585	511	560	584	636	547	710	676	722	810	724	710	7,775
1930.....	665	604	625	643	663	609	676	610	621	608	524	541	7,389
1931.....	551	525	688	515	477	486	478	461	555	591	615	514	6,456
1932.....	524	468	518	473	547	535	550	579	648	502	490	453	6,287
1933.....	438	336	379	351	362	320	428	382	414	423	389	386	4,608

Production of crude petroleum in Louisiana, 1923-33, by districts

[Thousands of barrels of 42 gallons]

District	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Gulf coast:											
Anse la Butte.....	18	12	17	17	17	16	14	9	12	11	(1)
Bayou Bouillon.....						205	72	78	15		
Black Bayou.....							(1)	177	477	353	292
Caillou Island.....											362
Choctaw.....									104	146	100
Edgerly.....	157	166	185	207	467	358	245	161		109	63
Gueydan.....											195
Hackberry.....					42	1,149	1,783	1,213	1,399	2,149	1,938
Iowa.....											489
Jennings.....	204	213	278	342	299	250	515	495	169	332	400
Lake Barre.....							46	388	1,021	2,722	3,021
Lake Washington.....										39	152
Leesville.....									154	273	359
Lockport.....		128	471	1,343	2,038	1,445	1,369	1,131	1,906	989	938
Port Barre.....								33	970	450	577
Sorrento.....							289	110	30	53	15
Starks.....					262	186	170	206	260	289	328
Sulphur.....					(1)	890	1,374	1,362	567	822	910
Sweet Lake.....				(1)	77	661	93	193	459	271	335
Vinton.....	2,071	1,968	2,274	2,215	1,736	1,569	1,484	1,768	1,940	1,514	1,302
White Castle.....							(1)	300	329	200	192
Other.....			2	16	62	35	146	129	97	56	93
Total Gulf coast.....	2,450	2,487	3,227	4,140	5,050	7,053	7,454	8,610	9,560	11,616	15,306
Northern:											
Bellevue.....	2,351	1,749	1,129	788	472	323	255	233	93		
Caddo.....	4,178	4,319	4,067	4,749	5,789	4,798	4,589	4,120	3,054	2,486	2,248
Cotton Valley.....		1,211	3,348	2,914	1,968	1,731	1,040	880	509	353	307
De Soto.....	429	353	305	321	541	463	276	247	192	469	411
Elm Grove.....	220	217	212	222	222	185	178	172	149	109	107
Haynesville.....	10,496	6,720	4,604	3,328	2,600	2,150	1,806	1,743	1,902	1,534	1,402
Holly.....								308	189	99	74
Homer.....	3,581	2,837	2,296	2,033	1,785	1,548	1,405	1,278	1,083	1,021	991
Pleasant Hill.....							(2)	178	115	85	(3)
Red River (Bull Bayou, Crich- ton).....	1,207	1,231	1,074	1,037	1,070	1,109	987	838	713	257	190
Sarepta.....							(2)	4,888	4,259	4,119	3,242
Urania.....			10	3,669	3,321	2,487	2,155	1,976	1,448	1,208	883
Zwolle.....							3,409	1,801	2,538	2,451	3,007
Other.....	7										
Total northern.....	22,469	18,637	17,045	19,061	17,768	14,794	13,100	14,662	12,244	10,191	9,862
Total Louisiana.....	24,919	21,124	20,272	23,201	22,818	21,847	20,554	23,272	21,804	21,807	25,168

¹ Included under "Other."

² Caddo includes Carterville and Sarepta.

³ Zwolle includes Pleasant Hill.

⁴ Includes Carterville.

⁵ Sarepta includes Carterville and Pleasant Hill.

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Production of crude petroleum in Louisiana in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties												Total	Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production			
	January	February	March	April	May	June	July	August	September	October	November	December						
Gulf coast:																		
Black Bayou.....	21	19	19	16	16	16	13	29	39	37	32	23	280	12	292			
Caillout Island.....							16	71	69	70	63	73	362		362			
Choctaw.....	9	8	8	8	8	7	7	8	9	8	9	9	98	2	100			
Ederly.....	4	5	5	4	3	3	3	2	5	8	4	4	50		50			
Gueydan.....	19	12	11	9	18	10	7	14	10	11	7	7	135	30	165			
Hackberry.....	234	174	150	144	126	125	159	138	161	156	140	149	1,856	82	1,938			
Iowa.....	79	65	128	227	243	265	331	384	391	447	443	380	3,383	13	3,396			
Jennings.....	8	49	61	28	33	25	32	35	36	36	27	29	399	1	400			
Lake Barre.....	249	242	289	313	305	292	281	253	218	180	198	197	3,017	4	3,021			
Lake Washington.....	11	7	2	5	4	12	14	19	19	19	18	14	144	10	154			
Leesville.....	19	12	17	42	48	29	20	19	7	41	39	46	339	20	359			
Lockport.....	99	74	107	96	71	61	60	76	76	73	65	67	925	13	938			
Port Barre.....	62	56	97	105	124	102	90	76	64	58	57	60	951	5	956			
Starks.....	43	26	28	22	33	31	21	24	22	24	21	23	318	10	328			
Sulphur.....	29	28	48	64	81	98	113	96	98	83	75	93	906	4	910			
Sweet Lake.....	15	16	16	14	14	14	42	41	37	46	32	38	325	10	335			
Vinton.....	110	95	109	98	101	93	97	115	129	127	111	103	1,288	14	1,302			
White Castle.....	13	12	18	15	16	12	12	13	13	10	27	28	189	3	192			
Other.....	1	2	3	3	5	2	2	4	1	8	12	7	50	58	108			
Total Gulf coast: 1933.....	1,025	902	1,116	1,213	1,249	1,197	1,320	1,417	1,404	1,443	1,379	1,350	15,015	291	15,306			
1932.....	863	776	836	1,003	1,054	906	940	948	1,008	1,019	1,026	1,023	11,402	214	11,616			
Northern:																		
Caddo.....	212	191	197	199	184	178	177	180	191	189	176	177	2,251	-3	2,248			
Cotton Valley.....	30	22	29	24	27	25	23	24	27	26	27	25	309	-2	307			
De Soto.....	38	32	38	36	34	32	31	34	33	33	34	36	411		411			
Elm Grove.....	10	8	10	7	8	9	8	8	8	8	8	9	101	6	107			
Haynesville.....	125	106	123	113	128	116	113	123	113	118	115	109	1,402		1,402			
Holly.....	7	6	6	6	7	6	5	7	6	6	6	6	74		74			
Homer.....	87	77	88	80	84	83	84	84	80	83	78	83	991		991			
Red River (Bull Bayou, Crich-ton).....	19	16	18	16	18	16	16	15	16	13	14	13	190		190			
Sarepta 1.....	15	13	14	15	11	15	19	18	23	31	31	37	242		242			
Urania.....	82	36	57	52	64	72	73	76	89	96	91	95	883		883			
Zwolle.....	296	264	342	343	253	202	213	216	210	216	207	215	2,977	30	3,007			
Total north-ern: 1933.....	921	771	922	891	818	754	762	785	796	819	787	805	9,831	31	9,862			
1932.....	816	788	817	839	876	855	861	895	861	856	859	832	10,155	36	10,191			
Total Louisiana: 1933.....	1,946	1,673	2,038	2,104	2,067	1,951	2,082	2,202	2,200	2,262	2,166	2,155	24,846	322	25,168			
1932.....	1,679	1,564	1,653	1,842	1,930	1,761	1,801	1,843	1,869	1,875	1,885	1,855	21,557	250	21,807			

¹ Includes Carterville and Pleasant Hill.

Production of crude petroleum in Michigan, 1925-33, by districts

[Thousands of barrels of 42 gallons]

Year	Mount Pleasant	Muskegon	Porter	Saginaw	Vernon	Other	Total
1925.....				4			4
1926.....				94			94
1927.....		(¹)		1,439			439
1928.....		(²)	338	2,256			594
1929.....	1,394	3,019		115			4,528
1930.....	2,599	1,223		89			3,911
1931.....	2,608	577		59	244	301	3,789
1932.....	5,796	479		64	322	249	6,910
1933 ³	3,129	276	3,354	55	539	589	7,942

¹ Muskegon included with Saginaw.

² Mount Pleasant included with Saginaw.

³ Department of Conservation, Michigan.

Production of crude petroleum in Michigan in 1933¹, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Mount Pleasant.....	433	302	335	303	296	261	231	258	175	206	170	159	3,129
Muskegon.....	32	23	25	28	29	23	21	26	17	18	16	18	276
Porter.....	.....	9	9	51	123	112	228	481	586	605	592	558	3,354
Saginaw.....	5	6	3	3	6	6	6	7	4	3	3	3	55
Vernon.....	26	23	26	23	27	35	30	57	45	76	71	100	539
Other.....	50	44	41	34	43	51	47	50	78	54	43	54	589
Total: 1933 ¹	546	407	439	442	524	488	563	879	905	962	895	892	7,942
1932.....	483	428	475	534	592	531	601	644	742	745	594	546	6,910

¹ Department of Conservation, Michigan.

Production of crude petroleum in Montana, 1923-33, by districts

[Thousands of barrels of 42 gallons]

Year	Border	Cat Creek	Cut Bank	Dry Creek	Elk Basin	Kevin-Sunburst	Lake Basin	Pondera	Other	Total
1923.....	.....	2,227	.....	.....	28	523	.....	.....	4	2,782
1924.....	.....	1,572	.....	.....	24	1,217	.....	.....	2	2,815
1925.....	.....	1,255	.....	.....	21	2,780	31	.....	4	4,091
1926.....	.....	1,015	.....	.....	19	6,630	63	.....	.....	7,727
1927.....	.....	1,779	.....	.....	17	4,214	48	.....	.....	5,058
1928.....	.....	1,613	.....	.....	20	3,189	43	150	.....	4,015
1929.....	.....	1,497	.....	.....	19	2,378	29	1,057	.....	3,980
1930.....	120	418	.....	15	16	1,998	23	739	20	3,349
1931.....	178	359	.....	164	16	1,557	25	525	6	2,830
1932.....	113	311	.....	195	11	1,337	18	436	36	2,457
1933.....	51	266	238	125	3	1,237	18	308	27	2,273

¹ Includes small amounts from Bannatyne and Devils Basin.

Production of crude petroleum in Montana in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties											Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production		
	January	February	March	April	May	June	July	August	September	October	November			December	Total
Border.....	5	5	4	4	5	5	5	5	4	3	4	2	51	.....	51
Cat Creek.....	24	18	23	21	22	22	23	22	21	21	20	21	258	8	266
Cut Bank.....	.....	.....	.....	6	6	20	17	21	25	30	37	41	203	35	233
Dry Creek.....	1	.....	1	8	11	22	10	13	7	16	21	14	124	1	125
Kevin-Sunburst.....	103	82	103	95	110	106	116	110	116	103	106	83	1,233	4	1,237
Pondera.....	31	28	30	28	24	24	24	23	19	27	26	24	308	.....	308
Other.....	2	2	2	2	2	1	2	2	1	1	1	2	20	28	48
Total: 1933.....	166	135	163	164	180	200	197	196	193	201	215	187	2,197	76	2,273
1932.....	170	213	216	233	228	221	226	225	187	181	160	173	2,433	24	2,457

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Production of crude petroleum in New Mexico, 1924-33, by districts

[Thousands of barrels of 42 gallons]

Year	Artesia	Hobbs	Hogback	Lea	Rattlesnake ¹	Total
1924				86	12	98
1925	748			187	125	1,060
1926	1,016			221	2	1,666
1927	582			223	39	1,226
1928	410			169	69	943
1929	323	(³)		120	899	1,330
1930	261	6,525		159	2,782	10,189
1931	426	12,788		176	1,490	15,227
1932	480	10,237		133	1,345	12,455
1933	596	11,543		77	1,609	14,116

¹ Includes Bloomfield in 1925; Bloomfield and Table Mesa in 1926; Hoshpah and Table Mesa in 1929; Table Mesa in 1930-32; and Aztec and Table Mesa in 1933.

² Maljamar only.

³ Included with Lea.

⁴ Includes Hobbs, Jal, Maljamar, and other pools in Lea County.

⁵ Includes Jal, Maljamar, and other pools in Lea and Eddy Counties.

Production of crude petroleum in New Mexico in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties												Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production	
	January	February	March	April	May	June	July	August	September	October	November	December			Total
Artesia	47	38	48	44	44	47	54	54	52	59	53	56	596	---	596
Hobbs	808	846	964	872	898	939	1,037	1,034	1,013	1,044	1,020	1,044	11,519	24	11,543
Hogback	7	6	6	6	6	6	6	7	6	6	7	7	77	---	77
Lea ¹	120	113	125	126	132	126	141	148	139	152	146	136	1,604	---	1,609
Rattlesnake ²	14	14	22	23	14	29	34	33	25	22	36	23	289	5	291
Total: 1933	996	1,017	1,166	1,071	1,095	1,147	1,272	1,276	1,235	1,283	1,261	1,266	14,085	31	14,116
1932	1,164	1,076	1,146	1,118	1,124	1,061	1,098	974	931	961	936	849	12,438	17	12,455

¹ Includes Jal, Maljamar, and other pools in Lea and Eddy Counties.

² Includes Aztec and Table Mesa.

Production of crude petroleum in New York, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923	88	76	90	99	106	104	110	105	140	115	105	112	1,250
1924	106	106	117	119	128	118	130	118	133	129	114	122	1,440
1925	125	122	139	134	138	146	150	148	147	152	144	150	1,695
1926	147	141	158	165	156	162	174	167	171	176	158	181	1,956
1927	169	169	195	185	191	189	184	200	192	189	187	192	2,242
1928	185	181	195	192	211	225	200	230	219	249	251	265	2,603
1929	262	240	267	277	295	284	301	285	282	288	281	315	3,377
1930	314	327	369	373	392	326	275	213	263	285	248	262	3,647
1931	251	241	264	269	268	286	275	257	299	324	291	338	3,363
1932	323	294	303	301	313	307	298	304	277	266	259	263	3,508
1933	254	240	272	245	223	256	256	280	286	292	278	298	3,181

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

Production of crude petroleum in Ohio, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Central and eastern Ohio:													
1923	413	349	424	414	434	411	422	421	404	436	408	400	4,981
1924	368	358	393	409	408	391	419	401	411	440	386	409	4,798
1925	409	393	438	447	428	453	458	447	450	460	423	466	5,272
1926	410	406	471	447	438	472	463	464	452	449	449	471	5,392
1927	454	453	536	502	527	512	487	518	492	492	482	473	5,884
1928	445	441	480	455	492	471	462	473	416	468	418	415	5,434
1929	431	388	442	441	456	431	489	430	422	408	423	438	5,259
1930	446	423	436	404	463	450	457	402	417	441	367	408	5,174
1931	391	356	389	375	368	364	313	290	345	355	322	344	4,212
1932	296	281	304	316	321	324	289	304	294	288	280	282	3,579
1933	266	246	269	260	256	250	267	295	275	299	266	254	3,203
Northwestern Ohio:													
1923	173	141	187	177	193	195	188	188	182	190	171	169	2,154
1924	144	159	178	182	183	185	181	169	172	180	141	144	2,018
1925	151	150	165	172	166	181	176	166	165	161	141	146	1,940
1926	147	145	165	158	163	181	169	160	156	154	137	145	1,880
1927	131	144	158	144	149	158	145	149	143	144	123	121	1,709
1928	117	123	138	129	154	149	152	137	122	133	110	117	1,581
1929	104	95	122	119	128	145	159	148	120	129	110	105	1,484
1930	101	112	109	120	123	120	121	107	109	108	86	96	1,312
1931	105	91	93	93	93	100	98	82	95	98	78	89	1,115
1932	83	81	91	98	99	103	91	94	89	85	72	79	1,065
1933	86	69	84	79	82	88	95	99	95	96	80	79	1,032
Total Ohio:													
1923	586	490	611	591	627	606	610	609	586	626	574	569	7,085
1924	512	571	571	591	571	576	600	570	583	620	527	553	6,811
1925	560	543	603	619	594	634	634	613	615	621	564	612	7,212
1926	557	551	636	605	601	653	632	624	608	603	586	616	7,272
1927	585	597	694	646	676	670	632	667	635	626	596	569	7,593
1928	562	564	618	584	646	620	614	610	538	599	528	532	7,015
1929	535	483	564	560	584	576	648	578	542	597	533	543	6,743
1930	547	535	545	584	586	570	578	509	526	549	453	504	6,456
1931	496	447	482	468	461	464	411	372	440	453	400	433	5,327
1932	379	362	395	414	420	427	380	398	383	373	352	361	4,644
1933	352	315	353	339	338	338	362	394	370	395	346	333	4,235

Production of crude petroleum in Oklahoma, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923	12,716	11,988	13,639	14,843	15,818	15,888	14,586	13,058	11,711	11,939	12,508	12,235	160,929
1924	12,109	12,448	13,262	13,850	14,181	14,262	15,041	16,032	16,109	15,713	15,258	15,273	173,538
1925	15,002	13,989	14,776	14,818	14,775	14,684	14,797	14,797	15,228	15,020	14,789	14,113	176,798
1926	13,787	12,706	14,345	14,466	14,924	14,424	14,793	14,844	14,335	15,891	16,829	17,851	179,195
1927	18,596	19,951	22,341	21,407	23,400	23,516	26,810	26,377	24,424	24,704	23,767	22,482	277,775
1928	21,040	19,166	19,980	18,921	19,745	19,009	19,175	21,363	22,796	23,862	22,040	22,760	249,857
1929	22,856	20,235	21,213	20,689	21,803	20,802	22,874	22,805	21,505	20,739	19,249	20,234	255,004
1930	20,276	17,643	19,361	19,919	21,204	19,570	17,967	17,010	16,553	16,882	15,095	15,006	216,486
1931	15,044	14,160	17,088	17,437	18,026	17,683	16,233	9,117	8,414	13,724	16,649	16,999	180,574
1932	13,758	12,458	13,361	13,403	13,839	12,936	13,051	12,619	12,051	12,006	11,912	11,850	153,244
1933	12,955	12,774	15,669	11,957	13,243	15,545	18,813	19,043	16,607	15,479	14,936	15,230	182,251

Production of crude petroleum in Oklahoma in 1933, by districts and months ¹

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Ada-Allen	371	337	377	357	354	342	360	364	341	348	335	337	4,223
Bristow-Depew	294	235	262	252	255	245	281	276	278	275	265	273	3,191
Burbank	310	287	295	298	307	297	295	293	290	300	284	290	3,516
Chandler	97	90	90	85	77	74	78	77	72	75	124	121	1,060
Cronwell	156	141	159	151	152	147	156	154	148	150	146	147	1,807
Cushing	428	389	446	438	455	420	464	459	450	468	502	495	5,414
Duncan	183	165	174	146	157	150	152	154	148	133	160	144	1,866
Fox-Graham	136	140	133	126	135	128	123	135	127	129	123	128	1,563
Garber-Billings	116	112	121	115	117	109	103	106	99	102	99	102	1,301
Glenn	152	136	147	150	146	138	151	152	147	152	147	152	1,770
Healdton	323	286	315	301	307	296	312	309	300	304	287	299	3,639
Hewitt	172	155	171	150	158	155	163	160	155	157	152	155	1,903
Holdenville	44	72	129	49	139	126	140	119	103	113	108	109	1,251

¹ Oil and Gas Journal.

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Production of crude petroleum in Oklahoma in 1933, by districts and months—Con.

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Lucien.....							67	141	199	221	203	169	1,000
Nowata County.....	145	133	146	141	145	132	140	147	145	148	144	149	1,715
Oklahoma City.....	3,107	4,203	6,184	3,087	4,667	5,792	8,352	8,354	6,889	5,580	5,159	5,611	66,985
Okmulgee.....	157	146	153	151	144	140	134	141	140	144	129	128	1,707
Osage (outside Bur- bank).....	511	459	548	532	502	508	516	517	543	589	612	682	6,519
Seminole Field:													
Bowllegs.....	331	297	312	271	282	286	396	429	360	322	309	323	3,918
Earlsboro.....	443	371	421	389	396	346	418	419	364	335	325	287	4,514
East Earlsboro.....	532	436	481	457	457	472	622	611	476	438	427	339	5,798
Little River.....	569	499	551	467	506	457	624	655	552	486	489	456	6,311
St. Louis-Pearson.....	569	521	567	535	571	598	722	901	823	715	692	694	7,908
Seminole City.....	328	291	319	288	293	299	383	431	364	321	299	316	3,932
Other.....	712	625	694	635	637	629	770	743	630	564	531	534	7,704
Sholem-Alechেম.....	186	171	188	180	184	174	164	166	157	153	149	151	2,023
Tatums.....	118	101	121	117	122	118	255	277	312	298	254	232	2,325
Tonkawa.....	153	134	149	143	134	128	146	142	133	141	134	138	1,675
Tulsa.....	125	100	122	116	124	123	127	129	127	131	117	124	1,465
Washington County.....	118	106	115	112	113	108	115	114	111	116	111	115	1,354
Wewoka.....	121	109	120	96	117	103	201	192	157	143	139	149	1,647
Other.....	1,569	1,375	1,470	1,411	1,400	1,321	1,476	1,541	1,464	1,480	1,409	1,436	17,352
	12,576	12,592	15,480	11,746	13,553	14,361	18,406	18,808	16,604	15,031	14,364	14,835	178,356

Production of crude petroleum in Pennsylvania, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923.....	644	523	667	650	700	655	643	652	603	673	594	605	7,609
1924.....	560	562	626	659	669	638	665	628	638	692	566	533	7,486
1925.....	613	593	684	697	669	700	708	704	701	710	651	667	8,097
1926.....	654	650	726	748	748	777	784	783	772	802	760	757	8,961
1927.....	718	728	842	799	812	824	789	830	805	820	793	766	9,266
1928.....	768	770	842	792	884	836	838	860	795	893	828	850	9,956
1929.....	851	805	913	943	1,020	953	1,037	1,043	972	1,120	1,053	1,110	11,820
1930.....	1,162	1,127	1,217	1,298	1,312	1,109	939	862	911	1,008	946	912	12,803
1931.....	936	850	924	935	942	937	935	941	1,087	1,204	1,072	1,129	11,895
1932.....	1,053	972	1,042	1,109	1,136	1,122	1,028	1,055	970	977	964	984	12,412
1933.....	972	900	1,004	993	1,045	1,061	1,080	1,113	1,108	1,188	1,086	1,074	12,624

Production of crude petroleum in Texas, 1923-33, by districts

[Thousands of barrels of 42 gallons]

District	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	
Gulf coast:												
Barbers Hill.....	(¹)	(¹)		(¹)	(¹)	(¹)		4,552	7,441	7,651	7,320	8,082
Batson.....	403	464	432	456	462	550	444	418	330	268	208	2,008
Big Creek.....	(²)	293	310	520	1,243	811	1,496	1,390	858	425	413	2,955
Blue Ridge.....	287	278	313	486	1,210	2,205	1,194	644	378	328	295	3,828
Boling.....			40	1,175	753	814	580	378	269	188	126	1,195
Buckeye.....										105	272	3,547
Clay Creek.....										553	356	334
Conroe.....											2,630	21,215
Corpus Christi.....								(²)	152	486	861	2,919
Damon Mound.....	628	520	416	341	312	291	224	224	282	219	(¹)	2,509
Dayton.....	35	36	20	(²)	(²)	(²)	214	406	202	100	55	1,000
Esperson.....							(²)	819	712	509	481	2,521
Fannette.....							(²)	350	180	151	146	1,000
Goose Creek.....	1,6,026	1,3,967	1,3,464	1,3,501	1,3,102	1,3,726	2,254	1,690	1,460	1,232	1,163	17,820
Greta.....												1,195
Hankamer.....							(²)	546	798	691	547	2,534
High Island.....			121	60	96	163	449	331	255	1,547	2,534	7,547
Hull.....	7,300	7,074	6,944	7,058	5,685	4,055	3,376	3,128	2,264	1,891	1,946	25,685
Humble.....	2,275	2,224	1,864	1,568	1,485	1,242	2,990	5,859	3,022	2,144	1,722	17,222
Kingsville.....					146	153	120	41	29	28	26	526
Livingston.....												435
Lost Lake.....							99	209	96	127	84	515

¹ Barbers Hill included with Goose Creek.

² Included under "Other."

Production of crude petroleum in Texas, 1923-33, by districts—Continued

[Thousands of barrels of 42 gallons]

District	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Gulf coast—Contd.											
Manvel										160	586
Markham	21	66	41	51	109	112	133	98	218	516	351
Moss Bluff								(?)	154	38	(?)
Nash				207	395	491	193	110	187	55	(?)
Orange	4,649	3,958	4,816	3,458	1,803	1,415	1,006	790	618	451	312
Orchard				75	22	44	44	636	495	496	413
Pierce Junction	313	154	265	948	2,954	3,899	5,160	3,847	2,831	1,763	1,524
Port Neches								242	672	503	383
Raccoon Bend					1	98	2,084	3,893	2,704	1,814	1,544
Refugio						(?)	1,990	11,485	9,274	3,424	2,105
Saratoga	626	543	514	482	413	343	333	380	360	326	302
Sourlake	1,906	1,588	1,444	2,004	1,593	1,185	946	806	675	570	453
South Liberty			4,416	1,992	1,084	1,398	2,137	1,603	694	369	255
Spindletop	326	359	412	13,441	20,751	14,150	10,037	6,176	3,301	1,387	1,149
Sugarland						390	3,948	4,274	4,216	3,487	2,532
Thompsons									808	4,201	4,906
Tomball											233
West Columbia	5,994	4,536	4,081	3,197	3,291	2,800	2,298	1,827	1,310	1,295	1,441
Other	32	22	22	115	94	301	917	695	193	200	373
Total Gulf coast.	30,821	26,082	29,885	41,135	47,004	39,636	49,652	61,066	43,032	41,850	61,002
East Texas:											
East Texas proper ⁴									109,561	121,449	204,954
Boggy Creek					15	331	1,120	1,133	618	378	292
Van							144	7,330	15,598	17,201	17,077
Other	38	59	58	36	(6)	(6)	101	109	69	56	49
Total east Texas.	38	59	58	36	6 15	6 331	1,365	8,572	125,846	139,084	222,372
Central Texas:											
Darst Creek							243	11,552	8,196	6,084	4,565
Luling	2,248	11,134	8,979	7,699	6,169	5,443	4,943	3,692	2,964	2,625	2,368
Lytton Springs			2,603	1,783	784	846	600	489	378	323	405
Mexia ⁵	50,827	49,272	42,353	20,494	12,417	8,353	5,969	4,621	3,201	2,259	2,064
Petuis								1,730	2,360	1,715	978
Rockdale-Chapman	247	235	255	535	508	337	251	1,906	1,305	565	371
Salt Flat (Bruner)						(?)	13,286	7,305	4,372	2,944	2,020
Somerset-Medina	1,030	1,109	873	791	767	738	659	566	576	518	521
Other		187	98	52	672	675	47	12	19	17	238
Total central											
Texas	54,352	61,937	55,161	31,354	20,717 ⁶	15,792 ⁶	26,003	31,873	23,371	17,050	13,530
North Texas ⁷	43,896	42,487	46,013	49,932	54,806	49,459	52,046	44,301	29,811	26,475	26,293
Panhandle ⁸		272	1,132	25,551	40,253	25,286	30,632	31,777	21,851	18,263	16,673
Southwest Texas ¹¹	1,786	2,215	2,688	4,150	3,056	3,276	3,550	4,138	5,002	6,421	7,395
West Texas:											
Big Lake	12	1,056	8,900	10,937	8,986	6,753	6,460	7,050	9,444	8,265	6,535
Chalk-Roberts ¹²	118	414	811	1,372	2,437	5,736	15,633	11,999	10,413	7,264	6,257
Crane-Upton				2,204	30,607	25,529	16,852	14,451	8,524	7,444	6,396
Ector						(?)		3,168	2,587	1,657	1,944
Fisher							418	532	270	198	844
Hendricks					3,641	62,045	50,179	26,404	15,510	10,998	8,263
Loving								663	1,237	1,134	949
Taylor-Link								1,389	502	289	221
Ward							461	931	1,152	1,761	2,559
World				237	516	796	453	831	1,152	1,761	2,559
Yates				(?)	5,329	22,429	41,905	41,338	28,226	23,177	20,723
Other				8	22	252	294	112	99	139	198
Total west Texas	130	1,470	9,711	14,758	51,538	123,540	133,328	108,730	78,524	63,335	55,344
Total Texas	131,023	134,522	144,648	166,916	217,389	257,320	296,876	290,457	332,437	312,478	402,609

³ West Columbia includes Damon Mound and Nash.

⁴ Joiner, Kilgore, Lathrop, and other pools in Cherokee, Gregg, Rusk, Smith, and Upshur Counties.

⁵ Includes Long Lake.

⁶ "Other" in east Texas included under "Other" in central Texas.

⁷ Salt Flat included with Luling.

⁸ Includes Corsicana, Nigger Creek, Powell, Richland, Wortham, and other fields in Falls, Freestone, Limestone, and Navarro Counties.

⁹ Includes the districts in and between Wilbarger, Wichita, Clay, Montague, and Cooke Counties on the north and Runnels, Coleman, Brown, and Comanche Counties on the south.

¹⁰ Carson, Gray, Hutchinson, Moore, Potter, and Wheeler Counties.

¹¹ Includes fields in Duval, Jim Hogg, Jim Wells, Starr, Webb, and Zapata Counties.

¹² Includes Westbrook and other fields in Howard and Mitchell Counties.

Production of crude petroleum in Texas in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties												Total	Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production			
	January	February	March	April	May	June	July	August	September	October	November	December						
Gulf coast:																		
Barbers Hill.....	657	645	689	655	620	668	790	849	749	659	549	529	8,059	23	8,082			
Batson.....	16	16	20	24	19	15	14	13	19	20	15	15	206	2	208			
Big Creek.....	36	32	36	32	32	34	44	41	32	35	29	31	414	-1	413			
Blue Ridge.....	32	28	29	26	24	20	24	26	19	20	26	27	301	-6	295			
Bolling.....	11	9	13	11	11	11	10	9	10	10	9	9	123	3	126			
Buckeye.....	5		38	14	8	75	62	27	16	10	6	5	266	6	272			
Clay Creek.....	33	35	39	34	21	23	31	31	30	29	27	61	394	-60	334			
Conroe.....	748	745	1,211	1,299	2,085	1,900	2,401	2,587	2,367	2,339	1,696	1,801	21,179	36	21,215			
Corpus Christi.....	63	62	63	72	85	81	79	78	79	79	65	55	861		861			
Dayton.....	4	4	6	4	2	5	1	6	6	5	6	6	55		55			
Esperson.....	39	36	39	40	44	41	44	43	39	35	32	31	463	18	481			
Fannette.....	11	10	9	11	10	9	10	13	9	23	14	17	146		146			
Goose Creek.....	95	105	100	97	94	97	96	108	97	97	77	100	1,163		1,163			
Greta.....							40	251	242	225	197	230	1,185	10	1,195			
Hankamer.....	55	48	50	53	54	57	47	45	37	41	29	31	547		547			
High Island.....	171	145	217	214	234	250	259	258	207	200	176	203	2,534		2,534			
Hull.....	154	124	140	141	143	124	135	140	154	206	224	241	1,926	20	1,946			
Humble.....	180	147	165	157	148	147	149	145	137	124	109	110	1,718	4	1,722			
Kingsville.....	2	2	3	1	3	3	2	3	1	2	2	2	26		26			
Livingston.....					9	25	37	74	74	92	61	59	431	4	435			
Lost Lake.....	7	8	7	8	6	4	8	4	7	8	4	6	77	7	84			
Manvel.....	13	14	16	19	58	69	85	80	61	61	55	55	586		586			
Markham.....	44	40	31	35	19	26	28	23	21	18	16	25	326	25	351			
Orange.....	26	31	27	25	26	25	24	21	26	29	23	25	308	4	312			
Orchard.....	45	32	31	28	30	26	26	41	39	36	31	48	413		413			
Pierce Junction.....	176	137	159	125	108	130	119	117	109	116	111	101	1,508	16	1,524			
Port Neches.....	45	34	29	27	31	29	36	36	29	24	25	22	367	16	383			
Raccoon Bend.....	145	124	145	143	143	138	143	151	110	107	102	109	1,560	-16	1,544			
Refugio.....	227	191	216	201	199	192	171	156	154	141	113	127	2,088	17	2,105			
Saratoga.....	31	23	25	26	26	26	26	24	24	24	26	25	305	-3	302			
Sourlake.....	41	34	39	41	45	35	38	39	36	36	31	35	450	3	453			
South Liberty.....	20	23	23	20	21	21	20	20	17	18	15	17	235	20	255			
Spindletop.....	105	130	111	90	104	91	87	86	76	89	69	111	1,149		1,149			
Sugarland.....	236	212	233	225	233	223	231	241	176	171	166	187	2,534	-2	2,532			
Thompsons.....	283	251	413	496	512	486	504	511	386	379	301	373	4,895	11	4,906			
Tomball.....						1	16	27	49	48	41	45	227	6	233			

West Columbia ¹	107	117	142	133	142	132	126	124	106	100	89	100	1,418	23	1,441
Other.....	20	17	24	21	16	19	29	22	17	55	48	49	337	36	373
Total Gulf coast.....	3,883	3,611	4,538	4,548	5,364	5,258	5,992	6,470	5,767	5,711	4,615	5,023	60,780	222	61,002
East Texas:															
East Texas proper.....	10,812	10,774	16,698	11,013	29,774	25,310	20,202	18,770	16,781	16,376	13,447	13,947	203,004	1,050	204,954
Boggy Creek ²	28	26	28	25	27	28	27	27	21	19	18	18	292		292
Van.....	1,360	1,470	1,617	1,561	1,594	1,549	1,597	1,596	1,272	1,197	1,107	1,157	17,077		17,077
Other.....	5	4	4	4	4	4	4	4	4	4	4	4	49		49
Total east Texas.....	12,205	12,274	18,347	12,603	31,399	26,891	21,830	20,397	18,078	17,596	14,576	15,126	221,322	1,050	222,372
Central Texas:															
Darst Creek.....	489	391	484	387	390	381	410	404	321	314	292	302	4,565		4,565
Luling.....	198	184	218	182	207	194	182	211	187	175	203	211	2,352	16	2,368
Lytton Springs.....	29	24	29	26	31	35	30	32	34	43	46	46	405		405
Mexia ³	186	156	182	174	172	172	163	174	179	176	169	166	2,069	-5	2,064
Pettus.....	102	93	99	90	90	77	73	70	76	61	66	69	966	12	978
Rockdale-Chapman.....	36	29	36	33	33	29	33	32	27	32	29	22	371		371
Salt Flat (Bruner).....	180	168	185	175	213	175	177	173	152	154	135	142	2,029	-9	2,020
Somerset-Medina.....	39	38	42	39	43	43	47	46	44	43	41	46	511	10	521
Other.....	1		1		1	26	35	38	30	28	25	25	210	28	238
Total central Texas.....	1,260	1,083	1,276	1,106	1,180	1,132	1,150	1,180	1,050	1,026	1,006	1,029	13,478	52	13,530
North Texas.....	2,204	1,868	2,224	2,074	1,854	2,006	2,147	2,221	2,356	2,415	2,342	2,447	26,158	135	26,293
Panhandle.....	1,419	1,243	1,480	1,360	1,319	1,455	1,578	1,552	1,404	1,406	1,206	1,265	16,687	-14	16,673
Southwest Texas.....	524	487	578	620	639	651	679	727	651	606	571	606	7,339	56	7,395
West Texas:															
Big Lake.....	584	515	635	594	670	577	581	555	499	475	422	428	6,535		6,535
Chalk-Roberts ⁴	486	423	520	520	517	519	595	639	546	521	448	547	6,281	-24	6,257
Crane-Upton.....	563	515	576	543	580	613	638	582	470	470	397	459	6,406	-10	6,396
Ector.....	123	116	122	118	133	118	122	278	215	209	198	201	1,953	-9	1,944
Fisher.....	17	33	96	83	85	82	89	94	88	88	90	96	941	3	944
Hendricks.....	829	729	767	681	721	669	729	726	626	619	591	600	8,287	-24	8,263
Loving.....	104	87	98	89	84	80	74	78	76	62	51	68	951	-2	949
Taylor-Link.....	19	16	21	18	21	18	21	24	18	17	15	16	224	-3	221
Ward.....	201	193	209	219	226	244	250	226	208	256	148	149	2,529	30	2,559
World.....	34	29	31	29	33	31	36	33	28	27	22	24	357	-2	355
Yates.....	1,973	1,764	1,942	1,943	1,909	1,807	1,870	1,933	1,526	1,462	1,308	1,336	20,773	-50	20,723
Other.....	13	10	16	17	21	14	16	16	19	18	14	26	200	-2	198
Total west Texas.....	4,946	4,430	5,033	4,854	5,000	4,772	5,021	5,184	4,319	4,224	3,704	3,950	55,437	-93	55,344
Total Texas: 1933.....	26,441	24,996	33,476	27,165	46,755	42,165	38,397	37,731	33,625	32,984	28,020	29,446	401,201	1,408	402,609
1932.....	25,540	24,269	26,630	26,074	26,932	26,169	26,794	26,843	27,055	27,214	26,217	20,919	311,256	1,222	312,478

¹ Includes Damon Mound and Nash.

² Includes Long Lake.

³ Includes Corsicana, Nigger Creek, Powell, Richland, Wortham, and other fields in Falls, Freestone, Limestone, and Navarro Counties.

⁴ Includes Westbrook and other fields in Howard and Mitchell Counties.

Production of crude petroleum in West Virginia, 1923-33, by months

[Thousands of barrels of 42 gallons]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923.....	515	472	571	528	582	544	538	559	503	575	477	494	6,358
1924.....	479	481	495	512	508	495	524	488	490	541	441	466	5,920
1925.....	475	446	488	491	477	511	501	476	485	503	436	474	5,763
1926.....	449	440	497	493	490	510	518	504	518	519	489	519	5,946
1927.....	475	474	550	509	518	517	496	523	505	507	484	465	6,023
1928.....	460	460	502	451	519	471	481	489	444	506	444	434	5,661
1929.....	458	403	466	465	492	452	482	477	453	511	454	461	5,574
1930.....	462	443	449	471	475	451	444	355	372	417	350	382	5,071
1931.....	379	346	376	376	373	380	365	347	381	415	352	382	4,472
1932.....	333	304	325	347	345	356	318	336	306	323	287	296	3,876
1933.....	302	262	281	287	313	317	323	357	339	373	335	326	3,815

Production of crude petroleum in Wyoming, 1923-33, by districts

[Thousands of barrels of 42 gallons]

Year	Big Muddy	Byron-Grey-bull-Torch-light	Elk Basin	Fran- nie	Gar- land	Grass Creek	Hamil- ton Dome- Warm Springs	La Barge	Lance Creek	Lander- Dallas- Derby Dome	Lost Sold- ier ¹	Mule Creek
1923.....	1,527	57	634	-----	-----	1,589	216	-----	363	137	1,551	-----
1924.....	1,272	33	409	-----	-----	1,113	239	-----	786	133	1,775	178
1925.....	1,223	30	314	-----	-----	1,240	264	-----	360	152	1,746	129
1926.....	1,215	(²)	273	-----	-----	1,025	319	70	540	165	2,059	-----
1927.....	1,072	28	337	-----	-----	974	313	341	269	246	1,341	188
1928.....	962	25	360	-----	-----	871	298	490	217	247	1,442	142
1929.....	802	26	265	-----	-----	778	355	805	87	209	1,311	141
1930.....	711	49	264	(²)	-----	729	300	747	60	252	1,271	29
1931.....	649	3	250	214	-----	746	87	466	94	358	1,349	-----
1932.....	610	7	190	161	379	787	308	381	38	375	1,003	2
1933.....	650	(²)	203	85	181	274	254	349	41	330	632	(²)

Year	Notches	Oregon Basin	Osage	Pilot Butte	Poison Spider- South Casper	Rex Lake	Rock Creek	Salt Creek	Teapot	Other	Total
1923.....	61	-----	178	29	(³)	-----	1,429	35,770	1,156	88	44,785
1924.....	39	-----	146	29	229	41	1,181	30,874	1,004	17	39,498
1925.....	35	-----	109	25	297	20	1,087	21,445	632	65	29,173
1926.....	34	-----	113	20	376	53	1,029	18,010	426	49	25,776
1927.....	24	-----	107	17	247	44	982	14,399	314	64	21,307
1928.....	-----	882	133	19	327	18	928	14,023	-----	77	21,461
1929.....	-----	1,540	166	18	446	36	842	11,377	-----	110	19,314
1930.....	-----	1,285	385	16	323	6	770	10,520	11	140	17,868
1931.....	-----	393	419	14	199	-----	682	8,834	-----	77	14,834
1932.....	-----	130	394	12	91	-----	477	8,006	-----	67	13,418
1933.....	-----	252	241	12	167	4	464	7,009	-----	79	11,227

¹ Includes Ferris.

² Included under "Other".

³ Includes Iron Creek and Simpson Ridge.

⁴ Includes Simpson Ridge.

⁵ Garland includes Byron.

Production of crude petroleum in Wyoming in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Petroleum transported from producing properties												Total	Oil consumed on leases plus net change in producers' stocks, Jan. 1-Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December			
Big Muddy	59	52	60	53	57	54	53	54	53	53	50	52	650	---	650
Elk Basin	18	15	19	17	17	17	16	17	16	17	17	16	202	---	203
Frannie	7	9	7	4	9	3	3	3	9	9	11	17	85	---	85
Garland ¹	4	3	6	7	6	6	29	36	27	31	24	24	176	---	181
Grass Creek	53	43	55	51	23	8	---	---	---	---	19	20	277	-5	274
Hamilton Dome	---	6	19	21	26	31	15	30	29	31	25	17	250	---	254
Warm Springs	---	23	28	25	20	25	25	24	53	30	29	30	345	4	349
La Barge	28	30	30	29	30	28	31	27	25	24	25	24	330	---	330
Lander-Dallas	30	27	30	49	57	56	58	55	52	51	56	56	641	-6	632
Lost Soldier-Ferris	70	39	43	48	47	16	16	17	19	6	39	42	266	---	266
Oregon Basin	9	6	3	4	16	60	54	34	19	6	20	19	241	-14	252
Osage	23	7	18	16	27	19	16	17	24	20	2	3	167	---	167
Poison Spider ²	6	7	10	7	20	22	23	24	29	37	35	37	461	-3	464
Rock Creek	41	39	44	43	27	36	39	37	38	37	36	44	461	---	464
Salt Creek	648	559	633	566	612	583	575	576	570	564	545	649	7,080	-71	7,009
Other	4	6	9	7	7	7	6	14	9	7	7	9	112	24	136
Total: 1933	1,000	859	984	898	945	975	923	948	941	907	905	968	11,283	-56	11,227
1932	1,135	1,144	1,194	1,225	1,185	1,068	1,169	1,214	1,112	1,028	1,049	945	13,438	-20	13,418

¹ Includes Byron.

² Includes South Casper.

WORLD PRODUCTION

World production of petroleum, in 1933 compared with 1932 and total, 1857-1933, by countries

[Compiled by L. M. Jones, of the Bureau of Mines]

Country	1933			1932			1857-1933 ¹	
	Thousands of barrels of 42 gallons	Thousands of metric tons	Percent of total by volume	Thousands of barrels of 42 gallons	Thousands of metric tons	Percent of total by volume	Thousands of barrels of 42 gallons	Percent of total by volume
United States	905,656	122,536	62.7	785,159	107,645	59.9	15,690,379	64.9
U.S.S.R. (Russia) ²	154,496	21,190	10.7	154,367	21,172	11.8	3,028,472	12.5
Venezuela	117,720	17,293	8.2	116,541	17,085	8.9	363,708	3.6
Persia	54,392	7,200	3.8	49,471	6,549	3.8	537,768	2.2
Rumania	54,096	7,387	3.7	53,815	7,339	4.1	540,182	2.2
Netherland India	42,607	5,527	3.0	39,001	5,093	3.0	594,426	2.5
Mexico	34,001	5,087	2.4	32,805	4,842	2.5	1,699,262	7.0
Argentina	13,691	1,951	.9	13,139	1,887	1.0	109,210	.5
Peru	13,257	1,762	.9	9,899	1,313	.7	154,131	.6
Colombia	13,158	1,834	.9	16,414	2,288	1.3	132,162	.5
India, British	9,761	1,349	.7	8,817	1,218	.8	235,531	1.0
Trinidad	9,561	1,345	.7	10,126	1,425	.8	93,252	.4
British Borneo (Sarawak and Brunei)	4,490	623	.3	3,796	527	.3	58,207	.3
Poland	4,072	551	.3	4,116	557	.3	236,013	1.0
Sakhalin	2,700	400	.2	2,631	390	.2	12,487	.1
Egypt	1,663	238	.1	1,895	271	.1	26,741	.1
Germany	1,624	233	.1	1,608	230	.1	25,992	.1
Ecuador	1,620	230	.1	1,597	227	.1	10,452	.1
Japan (including Taiwan)	1,404	201	.1	1,630	231	.1	65,997	.3
Iraq	1,200	171	.1	836	115	.1	5,694	.0
Canada	1,145	145	.1	1,044	132	.1	33,729	.1
France	562	79	.0	530	75	.0	7,559	.0
Italy	204	27	.0	208	27	.0	2,015	.0
Czechoslovakia	122	18	.0	126	18	.0	1,626	.0
Bolivia	112	14	.0	44	5	.0	237	.0
Other countries ³	68	10	.0	62	9	.0	1,074	.0
	1,443,382	197,401	100.0	1,309,677	180,670	100.0	24,171,306	100.0

¹ For detailed statement of petroleum production 1857 to 1930, inclusive, by years and by countries, see Mineral Resources of the United States, 1930, pt. 2, pp. 824-25.

² Exclusive of Sakhalin, which is shown separately.

³ Partly estimated.

CONSUMPTION AND DISTRIBUTION

Summary of demand for crude petroleum, 1925 and 1930-33

[Thousands of barrels of 42 gallons]

	1925	1930	1931	1932	1933
Production.....	763,743	898,011	851,081	785,159	905,656
Imports.....	61,824	62,129	47,250	44,682	31,893
Changes in stocks east of California and in stocks of light crude in California.....	-17,835	-19,636	-40,963	-30,479	+15,437
Total demand.....	843,402	979,776	939,294	860,320	922,112
Runs to stills.....	739,920	927,447	894,608	819,997	861,254
Exports ¹	13,337	23,705	25,535	27,393	36,584
Consumed as fuel on producing properties.....	4,286	1,643	1,628	1,701	1,834
Consumed as fuel in operation of pipe lines east of California.....	1,825	1,621	1,866	1,454	1,847
Consumed as fuel, losses, etc.....	84,034	25,360	15,657	9,775	20,593
Total demand.....	843,402	979,776	939,294	860,320	922,112

¹ Includes shipments to Alaska, Hawaii, and Puerto Rico.

Runs to stills of crude petroleum in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Janu-ary	Febru-ary	March	April	May	June	July	August	Septem-ber	October	Novem-ber	Decem-ber	Total
East coast:													
Domestic.....	10,655	9,579	10,813	10,860	11,439	11,361	11,257	11,698	11,213	11,834	10,828	11,257	132,794
Foreign.....	2,752	2,742	3,222	2,779	3,158	2,953	3,489	3,313	2,657	2,505	2,083	2,485	34,138
Total, East coast.....	13,407	12,321	14,035	13,639	14,597	14,314	14,746	15,011	13,870	14,339	12,911	13,742	166,932
Appalachian.....	2,655	2,307	2,443	2,477	2,770	2,875	3,146	3,119	3,031	3,100	2,971	2,673	33,567
Indiana, Illinois, Kentucky, etc.....	9,025	8,226	9,367	9,043	9,537	10,484	11,183	10,970	10,691	10,358	9,308	8,881	117,073
Oklahoma, Kansas, and Missouri.....	6,717	6,472	7,479	7,761	8,031	8,597	9,552	9,631	9,214	8,513	7,591	6,983	96,541
Texas inland.....	4,269	3,932	4,355	4,446	5,313	5,409	5,878	4,728	4,966	4,818	4,463	4,877	57,454
Texas Gulf coast:													
Domestic.....	12,485	11,795	12,479	13,162	14,288	12,958	13,622	14,554	13,288	14,689	12,839	14,056	160,215
Foreign.....	12	22	36	30	46	36	63	58	40	41	42	50	476
Total, Texas Gulf coast.....	12,497	11,817	12,515	13,192	14,334	12,994	13,685	14,612	13,328	14,730	12,881	14,106	160,691
Louisiana Gulf coast:													
Domestic.....	2,674	2,533	3,343	2,854	3,209	3,315	3,637	3,794	3,343	3,446	2,785	3,247	38,180
Foreign.....	30	40	18	100	130	109	78	75	93	61	41	79	854
Total, Louisiana Gulf coast.....	2,704	2,573	3,361	2,954	3,339	3,424	3,715	3,869	3,436	3,507	2,826	3,326	39,034
Arkansas and Louisiana inland.....	1,400	1,621	1,562	1,350	1,437	1,345	1,552	1,877	1,082	1,619	1,555	1,485	18,485
Rocky Mountain.....	981	981	1,003	1,021	1,260	1,450	1,463	1,294	1,198	1,272	1,193	1,093	14,209
California.....	12,438	10,792	11,864	12,939	13,722	13,727	14,605	14,040	13,900	13,205	12,762	13,274	157,268
Total domestic.....	63,299	58,238	64,708	65,913	71,006	71,521	75,895	75,705	72,526	72,854	66,295	67,826	825,786
Total foreign.....	2,794	2,804	3,276	2,909	3,334	3,098	3,630	3,446	2,790	2,607	2,166	2,614	35,468
Total United States: 1933.....	66,093	61,042	67,984	68,822	74,340	74,619	79,525	79,151	75,316	75,461	68,461	70,440	861,254
1932.....	68,715	63,814	68,502	71,131	74,669	72,327	71,455	67,271	63,913	66,698	65,504	65,998	819,997
Daily average, 1933.....	2,132	2,180	2,193	2,294	2,398	2,487	2,565	2,553	2,511	2,434	2,282	2,272	2,360

Indicated deliveries of crude petroleum to domestic consumers in 1933, by months

[Thousands of barrels of 42 gallons]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Domestic petroleum, by fields of origin:													
Appalachian:													
Pennsylvania grade.....	1,769	1,541	1,705	1,678	1,864	1,923	2,108	2,056	2,137	1,920	1,894	1,951	22,546
Other (including Kentucky).....	559	427	506	594	622	466	664	558	575	491	440	424	6,326
Lima-northeastern Indiana-Michigan.....	744	642	662	481	564	583	600	729	878	891	843	848	8,465
Illinois-southwestern Indiana.....	301	267	360	334	325	502	603	715	626	365	313	396	5,097
Mid-Continent:													
Northern Louisiana and Arkansas.....	1,958	2,249	1,661	1,825	1,793	1,797	1,968	2,396	1,800	1,987	1,566	2,001	23,001
West Texas-southeastern New Mexico.....	6,201	5,027	7,003	7,063	6,553	5,703	6,834	6,587	5,830	6,115	4,787	5,200	72,903
Other (Oklahoma, Kansas, north Texas, etc.).....	34,288	32,835	35,373	37,436	42,398	44,520	45,382	44,460	43,241	43,061	40,441	38,510	482,245
Gulf coast.....	5,636	5,184	6,720	5,762	5,673	6,274	6,798	7,128	6,531	7,980	6,248	6,850	76,784
Rocky Mountain ¹	1,200	1,013	1,082	1,034	1,257	1,463	1,563	1,361	1,351	1,428	1,214	1,128	15,094
California.....	13,258	11,453	12,485	13,877	14,725	14,571	15,542	14,699	14,384	13,779	13,379	14,140	166,292
Total demand.....	65,914	60,638	67,557	70,084	75,774	77,802	82,062	80,689	77,353	78,017	71,125	71,738	878,753
Exports ²	1,913	1,886	2,137	2,939	2,679	4,355	4,523	3,141	3,182	3,888	3,305	2,636	36,584
Domestic demand.....	64,001	58,752	65,420	67,145	73,095	73,447	77,539	77,548	74,171	74,129	67,820	69,102	842,169
Foreign petroleum.....	2,398	3,528	3,443	2,945	3,258	3,184	3,698	3,494	2,712	2,417	1,804	2,388	35,269
District	66,399	62,280	68,363	70,090	76,353	76,631	81,237	81,042	76,883	76,546	69,624	71,490	877,438

¹ Includes Alaska.² Includes shipments to Alaska, Hawaii, and Puerto Rico.

Distribution of crude petroleum in 1933, by States

[Thousands of barrels of 42 gallons]

State	Production	Imports	Receipts from other States		Runs to stills	Exports	Deliveries to other States		Net change in stocks, losses, and used as fuel
			Quantity	State			Quantity	State	
Arkansas.....	11, 686		1, 619	Tex.....	6, 792		7, 445	Ill., La., Md., N. Y., Tex.....	-932
California.....	172, 010				157, 268	9, 412			+5, 330
Colorado.....	919		¹ 2, 152	Wyo.....	¹ 2, 962		180	Utah.....	¹ -58
Georgia ²		715	1, 939	Tex.....	2, 753				-99
Illinois.....	4, 244		29, 466	Ark., Ind., Kans., Ky., La., Mich., N. Mex., Okla., Tex.....	33, 386	653	341	Ohio.....	-670
Indiana.....	737		55, 197	Kans., La., N. Mex., Okla., Tex.....	55, 157		74	Ill., Ky., Ohio.....	+703
Kansas.....	41, 976		³ 12, 590	Okla., Tex.....	³ 41, 015	324	11, 073	Ill., Ind., Mo., Ohio, Okla.....	³ +2, 164
Kentucky and Tennessee.....	4, 913		2, 391	Ind., Okla., Tex.....	5, 980	20	828	Ill., W. Va.....	+176
Louisiana.....	⁴ 25, 175		⁴ 45, 851	Ark., Tex.....	⁵ 50, 727	20	16, 278	Ill., Ind., Mass., N. J., Pa., Tex.....	⁵ +4, 549
Maryland.....		348	10, 085	Ark., N. Mex., Tex.....	11, 534				+263
Massachusetts.....		1, 762	⁶ 13, 961	La., N. Mex., Tex.....	⁶ 15, 037				-5
Michigan.....	7, 942		3, 181	Okla.....	6, 112	25	3, 697	Ill., Ohio.....	+1, 289
Missouri.....	10		(⁹)	Kans., Okla., Tex.....	(⁹)				(⁹)
Montana.....	2, 273	3	270	Wyo.....	1, 833	953			-240
New Jersey.....		14, 226	45, 464	La., N. Mex., N. Y., Ohio, Okla., Pa., Tex., W. Va.....	61, 030				-1, 340
New Mexico.....	14, 116		92	Tex.....	1, 059		14, 150	Ill., Ind., Md., Mass., N. J., Pa., Tex., Utah.....	-1, 001
New York.....	3, 181	3, 550	7, 119	Ark., Okla., Pa., Tex.....	14, 667	5	413	N. J., Pa.....	-1, 235
Ohio.....	4, 235		23, 940	Ill., Ind., Kans., Mich., Okla., Tex., W. Va.....	25, 823		1, 298	N. J., Pa., W. Va.....	+1, 049
Oklahoma.....	182, 251		6, 033	Kans., Tex.....	55, 526	7, 672	113, 548	Ill., Ind., Kans., Ky., Mich., Mo., N. J., N. Y., Ohio, Pa., Tex., W. Va.....	+11, 538
Pennsylvania.....	12, 624	9, 748	63, 991	La., N. Mex., N. Y., Ohio, Okla., Tex., W. Va.....	82, 355		3, 956	N. J., N. Y.....	+52
Rhode Island.....		764	(⁹)	Tex.....	(⁹)				(⁹)
Texas.....	402, 609	453	29, 567	Ark., La., N. Mex., Okla.....	218, 145	17, 500	179, 885	Ala., Ark., Ga., Ill., Ind., Kans., Ky., La., Md., Mass., Mo., N. J., N. Mex., N. Y., Ohio, Okla., Pa., R. I., Utah.....	+17, 099
Utah and Alaska.....	13		(¹)	Colo., N. Mex., Tex., Wyo.....	(¹)				(¹)
West Virginia.....	3, 815		2, 656	Ky., Ohio, Okla.....	3, 663		2, 436	N. J., Ohio, Pa.....	+372
Wyoming.....	11, 227				⁷ 8, 355		1, 962	Colo., Mont., Nebr., S. Dak., Utah.....	⁷ +910
	905, 656	31, 893	357, 564		861, 254	36, 584	357, 564		+39, 711

¹ Colorado includes Alaska and Utah.

² Georgia includes South Carolina and Virginia.

³ Kansas includes Missouri.

⁴ Includes Mississippi.

⁵ Includes Alabama and Mississippi.

⁶ Massachusetts includes Rhode Island.

⁷ Includes Nebraska and South Dakota.

STOCKS

Stocks of crude petroleum in 1933, by districts and months

[Thousands of barrels of 42 gallons]

	Jan. 1 ¹	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
At refineries, by location of storage:													
East coast:													
Domestic.....	8,004	8,003	8,378	8,724	8,822	9,536	9,864	9,338	9,190	9,530	9,718	9,708	9,556
Foreign.....	5,232	4,699	4,541	4,964	5,071	4,068	3,174	2,839	3,088	2,573	1,951	2,052	2,415
Appalachian.....	2,250	2,247	2,317	2,340	2,363	2,400	2,334	2,233	2,143	2,073	1,961	1,943	1,875
Indiana, Illinois, Kentucky, etc.....	3,803	4,211	4,461	4,337	4,272	4,651	4,440	3,947	3,857	3,830	3,751	4,262	4,554
Oklahoma, Kansas, and Missouri.....	4,948	5,270	5,189	5,719	5,584	5,431	5,091	4,898	5,892	6,123	6,232	6,174	6,223
Texas inland.....	1,557	1,632	1,645	2,061	2,214	2,890	3,122	2,699	2,695	2,802	2,513	2,448	2,296
Texas Gulf coast:													
Domestic.....	11,025	11,321	10,714	11,184	11,010	11,205	11,477	11,306	11,459	11,746	11,267	11,867	12,683
Foreign.....	83	71	115	79	49	72	35	100	43	3	7	24	102
Louisiana Gulf coast:													
Domestic.....	3,398	2,904	3,188	3,076	3,191	3,822	4,063	4,004	3,627	3,433	2,836	3,342	3,274
Foreign.....	1,116	1,094	1,049	1,021	909	838	728	710	698	610	538	491	538
Arkansas and Louisiana inland.....	445	641	499	620	754	798	932	1,011	1,007	1,074	1,104	1,022	1,027
Rocky Mountain.....	12,211	12,178	11,884	12,132	12,406	12,611	12,556	12,635	12,730	12,655	12,580	12,504	12,505
California.....	7,697	8,127	8,582	9,210	8,943	8,555	7,977	8,349	8,289	8,094	8,567	8,609	9,001
Total at refineries.....	61,769	62,398	62,562	65,467	65,588	66,877	65,793	64,069	64,718	64,546	63,025	64,446	66,049
At refineries, by fields of origin:													
Appalachian:													
Pennsylvania grade.....	2,107	2,134	2,170	2,191	2,168	2,227	2,187	2,048	2,005	1,945	1,890	1,851	1,699
Other Appalachian (including Kentucky).....	623	610	633	621	552	581	571	500	513	475	478	547	604
Lima-northeastern Indiana-Michigan.....	209	214	223	175	205	211	225	245	311	330	396	423	489
Illinois-southwestern Indiana.....	104	118	110	111	146	148	137	143	119	117	85	117	120
North Louisiana and Arkansas.....	2,480	2,415	2,108	2,160	2,763	2,676	2,456	2,697	2,290	2,588	2,655	2,602	2,515
West Texas and southeastern New Mexico.....	4,172	4,871	4,677	4,837	4,161	4,787	4,662	3,609	3,857	3,876	3,509	3,904	4,014
Oklahoma, Kansas, north Texas, etc.....	21,241	21,448	21,674	23,786	23,958	25,206	26,594	25,445	26,181	26,184	25,153	26,242	27,050
Gulf coast.....	4,541	4,464	4,832	4,209	4,286	4,919	4,509	4,767	4,616	5,117	5,238	5,098	5,015
Rocky Mountain.....	12,164	12,133	11,853	12,103	12,377	12,589	12,538	12,617	12,708	12,634	12,558	12,486	12,487
California.....	7,697	8,127	8,582	9,210	8,943	8,555	7,977	8,349	8,289	8,094	8,567	8,609	9,001
Foreign.....	6,431	5,864	5,705	6,064	6,029	4,978	3,937	3,649	3,829	3,186	2,496	2,567	3,055
Total at refineries.....	61,769	62,398	62,562	65,467	65,588	66,877	65,793	64,069	64,718	64,546	63,025	64,446	66,049

Pipe-line and tank-farm stocks—by fields of origin:															
Appalachian:															
Pennsylvania grade.....	4,850	4,704	4,649	4,607	4,606	4,388	4,267	4,091	3,977	3,769	3,882	3,861	3,882		
Other Appalachian (including Kentucky).....	903	939	954	986	945	789	780	740	700	702	779	793	827		
Lima-northeastern Indiana-Michigan.....	1,069	957	773	692	701	738	718	759	833	1,094	1,130	1,240	1,280		
Illinois-southwestern Indiana.....	11,210	11,240	11,288	11,318	11,293	11,306	11,240	11,096	10,891	10,746	10,890	11,005	11,061		
North Louisiana and Arkansas.....	10,888	10,901	10,567	10,738	10,152	10,240	10,454	9,984	9,745	9,528	9,321	9,521	9,359		
West Texas and southeastern New Mexico.....	32,317	31,341	31,937	30,947	30,459	29,357	29,866	30,142	29,731	29,409	29,143	28,887	28,766		
Oklahoma, Kansas, north Texas, etc.....	151,255	150,616	150,081	156,011	151,730	160,818	166,028	172,065	175,756	176,662	176,563	173,696	173,434		
Gulf coast.....	12,195	11,594	10,595	10,192	10,154	10,501	11,137	11,438	12,403	12,590	11,688	11,619	11,275		
Rocky Mountain.....	15,573	15,702	16,064	16,002	15,865	15,633	15,513	15,124	14,942	14,911	14,776	14,884	15,056		
California.....	29,833	29,440	29,966	29,089	28,693	28,047	27,430	26,636	26,908	26,982	27,001	26,790	26,192		
Total pipe-line and tank-farm.....	270,093	267,434	266,879	270,582	264,573	271,817	277,233	282,105	285,986	286,333	285,173	282,296	281,132		
Producers' stocks.....	8,013	7,651	7,666	8,204	8,979	9,409	9,730	9,089	9,241	9,025	8,651	8,457	8,131		
Total United States: 1933.....	339,875	337,483	337,107	344,253	339,140	348,103	352,756	355,263	359,945	359,904	356,849	355,199	355,312		
1932.....	370,194	368,302	368,353	371,050	370,981	369,072	363,696	358,308	354,846	354,104	351,893	348,432	339,715		

¹ Data given for Jan. 1 do not agree with those published for Dec. 31, 1932, because of new basis just established on Aug. 31, 1933, but later carried back to Jan. 1, 1933.

Stocks of crude petroleum, October to December 1933, by districts and weeks ¹

[Thousands of barrels of 42 gallons]

District	Oct. 7	Oct. 14	Oct. 21	Oct. 28	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2	Dec. 9	Dec. 16	Dec. 23	Dec. 30
Pennsylvania grade.....	5,461	5,433	5,490	5,452	5,450	5,352	5,383	5,393	5,308	5,307	5,218	5,269	5,360
Other Appalachian, including Kentucky...	1,026	1,022	1,006	1,024	1,058	1,102	1,115	1,117	1,123	1,131	1,113	1,158	1,186
Lima-northeastern Indiana-Michigan.....	1,326	1,372	1,351	1,385	1,442	1,520	1,462	1,440	1,562	1,526	1,568	1,553	1,611
Illinois-southwestern Indiana.....	10,896	10,793	10,774	10,906	10,972	11,082	11,067	11,124	11,174	11,170	11,090	11,060	11,161
North Louisiana and Arkansas.....	12,479	12,679	12,390	{ 12,295 } * 11,842	12,060	11,916	11,787	11,861	11,997	11,826	11,783	11,692	11,877
West Texas and southeastern New Mexico.	33,057	33,375	33,018	32,414	32,397	32,591	32,562	32,364	32,982	32,590	32,386	32,468	32,039
East Texas.....	48,003	47,731	47,268	47,155	47,072	46,124	45,538	44,931	45,191	44,811	44,463	43,778	43,998
Other Mid-Continent (Kansas, Oklahoma, and all of Texas except west Texas, east Texas, and coastal Texas).....	152,764	152,241	152,286	{ 151,670 } * 151,256	151,477	151,619	152,028	152,099	152,422	152,662	153,485	153,914	154,131
Gulf coast (Texas and Louisiana).....	17,439	17,104	16,653	16,847	16,644	16,624	16,183	16,289	16,325	16,235	15,691	16,158	15,615
Rocky Mountain.....	27,384	27,291	27,264	27,233	27,224	27,146	27,121	27,096	27,132	27,194	27,180	27,176	27,216
California.....	35,496	35,538	35,415	35,850	35,883	35,918	35,701	35,449	35,613	35,696	35,685	35,382	35,420
Total domestic crude.....	345,331	344,579	342,915	{ 342,231 } * 341,364	341,679	340,944	339,947	339,163	340,829	340,138	339,662	339,608	339,614
Foreign crude.....	2,878	2,620	2,436	2,395	2,492	2,451	2,800	2,600	2,705	2,709	2,977	3,031	2,861
Total crude.....	348,209	347,199	345,351	{ 344,626 } * 343,759	344,171	343,395	342,747	341,763	343,534	342,847	342,639	342,639	342,475

¹ Data obtained weekly by the Petroleum Administrative Board and compiled by the Bureau of Mines. They represent stocks of companies holding 100,000 barrels or more, exclusive of lease stocks.

² New basis—453,000 barrels transferred to fuel-oil stocks.

³ New basis—414,000 barrels transferred to fuel-oil stocks.

⁴ New basis—867,000 barrels transferred to fuel-oil stocks.

IMPORTS AND EXPORTS

Crude petroleum imported into and exported from United States ¹ in 1933, by months

[Quantity in thousands of barrels of 42 gallons; value in thousands of dollars]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
													Quantity	Value
Imports:														
By countries:														
Colombia.....	1,000	629	1,083	783	299	585	742	969	406	280	325	537	7,688	5,271
Mexico.....	356	248	360	265	583	264	946	959	356	146	350	1,032	5,865	3,089
Venezuela.....	1,475	1,492	2,154	1,782	1,324	1,154	1,562	1,603	1,227	1,189	1,023	1,105	17,090	8,690
Other countries.....			205	80	1	140	160	143	80	112	177	152	1,250	656
	2,831	2,369	3,802	2,910	2,207	2,143	3,410	3,674	2,069	1,727	1,875	2,876	31,893	17,706
By ports of entry:														
Atlantic coast.....	2,814	2,303	3,800	2,910	2,071	2,143	3,284	3,607	2,069	1,682	1,812	2,594	31,089	17,183
Gulf coast.....	17	66			135		126	67		45	63	282	801	521
Northern border.....			2		1								3	2
	2,831	2,369	3,802	2,910	2,207	2,143	3,410	3,674	2,069	1,727	1,875	2,876	31,893	17,706
Exports:														
By countries:														
Domestic crude oil:														
Belgium.....			46			76	58			101			281	257
Canada.....	870	868	830	1,530	1,495	2,069	2,792	2,071	1,991	2,011	1,942	1,032	19,501	15,678
Canary Islands.....			78	90		77	80			79	90	79	573	559
Cuba.....			85			118	37			73			313	281
France.....	560	563	692	614	568	1,272	1,046	640	676	892	838	782	9,143	8,385
Germany.....						68			271	230	107		676	822
Japan.....	400	453	489	620	536	576	510	343	140	501	269	696	5,533	5,505
United Kingdom.....	82					63			87				232	197
Other countries.....	1	2	2		80	36		87	17	1	59	47	332	295
	1,913	1,886	2,137	2,939	2,679	4,355	4,523	3,141	3,182	3,888	3,305	2,636	36,584	31,979
By ports:														
Atlantic coast.....				3					12	5	6		26	65
Gulf coast.....	468	486	848	1,180	1,272	2,515	2,327	1,456	1,603	2,164	1,808	850	16,977	14,651
Mexican border.....		2	69		2	165	1	2	89	30	1	57	418	416
Pacific coast.....	877	798	579	1,087	804	841	1,072	616	314	744	698	982	9,412	8,468
Northern border.....	568	600	641	669	601	834	1,123	1,067	1,164	945	792	747	9,751	8,379
	1,913	1,886	2,137	2,939	2,679	4,355	4,523	3,141	3,182	3,888	3,305	2,636	36,584	31,979
Excess of exports over imports.....	-918	-483	-1,665	29	472	2,212	1,113	-533	1,113	2,161	1,430	-240	4,691	14,273

¹ Exclusive of Alaska, Hawaii, and Puerto Rico.

PRICES AND VALUES

Value of crude petroleum at the wells, 1929-33, by States

[Totals in thousands of dollars; averages in dollars per barrel]

State	1929		1930		1931		1932		1933	
	Total	Average	Total	Average	Total	Average	Total	Average	Total	Average
Arkansas.....	21,896	0.88	17,390	0.88	7,200	0.49	7,690	0.64	4,850	0.42
California.....	1,321,367	1.10	1,271,699	1.20	1,355,960	.72	1,444,600	.81	1,433,300	.83
Colorado.....	2,380	1.01	1,430	.89	825	.53	880	.77	540	.59
Illinois.....	10,430	1.65	9,100	1.59	4,500	.89	4,720	1.01	3,690	.87
Indiana:										
Southwestern.....	1,520	1.66	1,540	1.64	730	.91	810	1.04	641	.89
Northeastern.....	90	1.43	70	1.32	20	.54	18	.62	9	.64
Total Indiana.....	1,610	1.64	1,610	1.62	750	.89	828	1.03	650	.88

¹ Division of Mines, Department of Natural Resources, California.

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Value of crude petroleum at the wells, 1929-33, by States—Continued

[Totals in thousands of dollars; averages in dollars per barrel]

State	1929		1930		1931		1932		1933	
	Total	Average	Total	Average	Total	Average	Total	Average	Total	Average
Kansas.....	62,510	1.46	54,880	1.32	25,500	0.69	31,720	0.91	27,700	0.66
Kentucky.....	13,220	1.70	11,080	1.50	5,295	.82	5,906	.94	3,780	.82
Louisiana:										
Gulf coast.....	9,150	1.23	9,200	1.07	6,370	.67	9,380	.81	9,580	.63
Northern.....	16,550	1.26	16,910	1.15	7,850	.64	9,170	.90	5,700	.58
Total Louisiana.....	25,700	1.25	26,110	1.12	14,220	.65	18,550	.85	15,280	.61
Michigan.....	6,140	1.36	5,160	1.32	2,840	.75	5,260	.76	7,150	.90
Montana.....	7,260	1.82	5,420	1.62	2,730	.96	2,560	1.04	2,220	.98
New Mexico:										
Northwestern.....	2,170	1.19	900	1.45	450	.86	365	.93	320	.87
Southeastern.....			8,280	.87	6,040	.41	7,285	.60	6,170	.45
Total New Mexico.....	2,170	1.19	9,180	.90	6,490	.43	7,650	.61	6,490	.46
New York.....	13,170	3.90	9,850	2.70	6,800	2.02	6,630	1.89	5,960	1.87
Ohio:										
Central and eastern.....	13,200	2.51	10,020	1.94	4,600	1.09	4,230	1.18	3,490	1.09
Northwestern.....	2,570	1.73	1,940	1.48	1,010	.91	1,200	1.13	1,050	1.02
Total Ohio.....	15,770	2.34	11,960	1.84	5,610	1.05	5,430	1.17	4,540	1.07
Oklahoma.....	364,650	1.43	279,250	1.29	119,200	.66	137,920	.90	120,800	.66
Pennsylvania.....	44,800	3.79	33,410	2.61	23,550	1.98	23,400	1.89	23,590	1.87
Tennessee.....	30	1.58	26	1.24	5	.83	4	.80	(?)	-----
Texas:										
Gulf coast.....	59,930	1.21	63,650	1.04	31,620	.66	34,100	.81	40,500	.66
East Texas proper.....	(?)	-----	(?)	-----	50,430	.46	114,200	.94	115,500	.56
West Texas.....	110,780	.83	87,040	.80	37,270	.47	40,860	.65	24,000	.43
Rest of State.....	151,810	1.33	137,720	1.14	51,630	.54	70,540	.82	45,000	.55
Total Texas.....	322,520	1.09	288,410	.99	170,950	.51	259,700	.83	225,000	.56
West Virginia.....	20,070	3.60	11,820	2.33	7,070	1.58	6,050	1.56	5,860	1.54
Wyoming.....	24,700	1.28	22,350	1.25	11,120	.75	10,942	.82	6,570	.59
Other ²	30	4.29	15	2.14	15	2.14	20	1.25	30	.86
United States.....	1,280,417	1.27	1,070,200	1.19	550,630	.65	680,460	.87	608,000	.67

¹ Included with Rest of State.

² Alaska and Utah, 1929-31; Alaska, Missouri, and Utah, 1932; Alaska, Missouri, Tennessee, and Utah, 1933.

Average monthly prices per barrel for selected grades of crude petroleum at wells in 1933

Month	Pennsylvania grade		Lima, Ohio	Illinois	Oklahoma-Kansas, 36°-36.9°	Pan-handle, Tex. (Carson and Hutchinson Counties, 35°-35.9°)	West Texas	Gulf-coast grade B, 30°-30.9°	California (Long Beach, 27°-27.9°)
	Bradford	South-west Pennsylvania							
January.....	\$1.62	\$1.32	\$0.84	\$0.76	\$0.59	\$0.44	\$0.42	\$0.70	\$1.00
February.....	1.47	1.17	.70	.62	.44	.31	.30	.54	1.00
March.....	1.47	1.17	.70	.62	.44	.20	.30	.54	.78
April.....	1.47	1.17	.70	.62	.44	.20	.30	.54	.75
May.....	1.35	1.05	.59	.51	.30	.18	.20	.33	.75
June.....	1.43	1.13	.65	.57	.33	.23	.24	.40	.77
July.....	1.77	1.45	.95	.89	.52	.31	.30	.54	.85
August.....	2.08	1.75	.87	.79	.56	.34	.33	.56	.85
September.....	2.33	2.00	1.15	1.07	.85	.58	.61	.86	.98
October.....	2.44	2.11	1.30	1.23	1.00	.71	.75	1.04	1.00
November.....	2.45	2.12	1.30	1.23	1.00	.71	.75	1.04	1.00
December.....	2.45	2.12	1.30	1.23	1.00	.71	.75	1.04	1.00
Average for year.....	1.86	1.55	.92	.85	.62	.41	.44	.68	.89

Posted price per barrel of petroleum at wells in 1933, by grades, with dates of change

Date	Pennsylvania grade		Corning grade in Buckeye Pipe Line Co. lines ²	West-ern Ken-tucky ³	Lima, Ohio ⁴	Illinois and Princeton, Ind. ⁵	Mid-land, Mich. ¹	Oklahoma-Kansas ⁶	
	Bradford and Alle-gany dis-tricts ¹	In South-west Penn-syl-va-nia Pipe lines ²						34°-34.9°	36°-36.9°
Jan. 1.	\$1.72	\$1.42	\$1.05	\$0.82	\$1.00	\$0.87	\$0.95	\$0.65	\$0.69
Jan. 10.				.57	.90				
Jan. 18.					.70	.62			
Jan. 19.	1.57	1.27	.85					.40	.44
Jan. 21.	1.47	1.17	.70						
May 8.							.75		
May 9.	1.27	.97	.50	.42	.55	.47		6.25	6.25
May 22.	1.37	1.07							
June 16.				.62	.75	.67			
June 17.	1.47	1.17							
June 19.				.95	1.05	1.00		7.40	7.44
June 26.	1.57	1.27	.60						
July 5.									
July 6.	1.70	1.37	.80						
July 8.								.50	.54
July 12.				.85	.95	.90			
July 17.	1.85	1.52					.90		
July 17.	2.00	1.67	.90						
July 28.									
Aug. 1.				.72	.85	.77			
Aug. 7.							.80		
Aug. 11.	2.10	1.77	.85						
Aug. 17.							.70		
Aug. 25.				.82	.95	.87		.60	.64
Aug. 30.	2.25	1.92						.70	.74
Sept. 6.	2.35	2.02	.95	.92	1.05	.97	.80	.70	.74
Sept. 8.								.85	.89
Sept. 9.				1.07	1.20	1.12	.90		
Sept. 29.				1.18	1.30	1.23		.96	1.00
Sept. 30.							1.02		
Oct. 4.	2.45	2.12	1.32						
Average for year..	1.86	1.55	.88	.80	.92	.85	.90	.59	.62

Date	Pan-handle, Tex. (Carson and Hutch-inson Counties 35°-35.9°) ⁸	West Texas ⁸	Hobbs, N. Mex. ⁹	Darst, Tex. ⁹	South-west Texas, Miran-do ⁸	Van, Tex., 34°-34.9° ⁴	East Texas ⁹	Gulf coast	
								Conroe, 38°-38.9° ⁸	Grade B, 30°-30.9° ¹⁰
Jan. 1.	\$0.53	\$0.50	\$0.50	\$0.60	\$0.55	\$0.65	\$0.75	\$0.86	\$0.80
Jan. 20.	.31	.30	.30	.40	.35	.40	.50	.60	.54
Feb. 28.	.20								
Apr. 26.							.25		
May 2.	6.18	.20	.20	.23	.25			6.30	
May 5.									6.30
May 8.						.25			
June 17.						.40	.50		
June 19.	7.31	.30	.30	.40	.40			7.65	7.54
July 7.						.73	.75		
July 11.						.63			
Aug. 2.							.50		
Aug. 3.						.40			
Aug. 24.	.41	.40	.40	.50*	.50			.75	
Aug. 25.						.50	.60		.64
Sept. 6.	.51	.50	.50	.62	.60	.70	.75	.90	.76
Sept. 8.	.61	11.65	.65	.77	.70	.85	.90	1.05	.91
Sept. 8.	.71	11.75	.75	.87	.80	.96	1.00	1.15	1.04
Sept. 29.									
Average for year..	.41	.44	.44	.54	.50	.59	.65	.76	.68

¹ The Tide-Water Pipe Co., Ltd.

² The Joseph Seep Purchasing Agency.

³ The Ohio Oil Co.

⁴ The Pure Oil Co.

⁵ The Texas Co.

⁶ Flat rate for all gravities.

⁷ Gravity scale restored.

⁸ Humble Oil & Refining Co.

⁹ Magnolia Petroleum Co.

¹⁰ Gulf Pipe Line Co.

¹¹ Ector, Pecos, and Winkler Counties; crude from Crane, Upton, Crockett, Howard, and Glasscock Counties—5 cents per barrel less.

Posted prices per barrel of petroleum at wells in 1933, by grades, with dates of change—Continued

Date	North Louisiana, 34°-34.9° ¹²	Smackover, Ark. ¹²	Salt Creek, Wyo., 36°-36.9° ¹³	Sunburst, Mont. ³	California ¹⁴				
					Kettleman Hills, 38°-38.9°	Long Beach, 27°-27.9°	Midway-Sunset, 19°-19.9°	Playa del Rey, 22°-22.9°	Santa Fe Springs, 33°-33.9°
Jan. 1.....	\$0.59	\$0.30	\$0.69	\$0.75	\$1.01	\$1.00	\$0.55	\$0.78	\$1.14
Jan. 18.....			.44						
Jan. 20.....	.32	.20							
Mar. 5.....					.76	.75	.49	.69	.85
May 6.....	6.25		6.25						
May 9.....				.65					
June 17.....			7.44	.80					
June 19.....	7.38	.30							
June 26.....					.83	.85	.54	.76	.99
July 8.....			.54	.90					
Aug. 25.....	.45	.35		1.00					
Aug. 26.....			.64						
Sept. 6.....	.60	.50		1.10	1.03	1.00	.64	.90	1.16
Sept. 7.....			.74						
Sept. 8.....	.75	.60							
Sept. 9.....			.89	1.25					
Sept. 29.....	.83	.70	1.00	1.35					
Average for year..	.50	.38	.62	.95	.93	.89	.56	.79	1.03

³ The Ohio Oil Co.
⁶ Flat rate for all gravities.
⁷ Gravity scale restored.
¹² Standard Oil Co. of Louisiana.
¹³ Stanolind Oil & Gas Co.
¹⁴ Standard Oil Co. of California.

WELLS

Oil and gas wells in 1933

State	Producing oil wells		Wells drilled ¹					Estimated average daily initial production per well (barrels)
	Approximate number, Dec. 31	Average production per well per day (barrels)	Oil	Gas	Dry	Total		
Arkansas.....	2,890	11.1	6			42	48	80
California.....	10,990	47.4	248	(?)		163	411	1,105
Colorado.....	190	13.3	3	6		21	30	413
Illinois.....	14,930	.8	4	1		9	14	6
Indiana:								
Southwestern.....	1,100	1.8	52	48		54	154	32
Northeastern.....	120	.2		7		9	16	
Total Indiana.....	1,220	1.5	52	55		63	170	32
Kansas.....	18,500	6.3	389	16		134	539	498
Kentucky.....	14,100	.9	83	10		93	186	54
Louisiana:								
Gulf coast.....	380	108.9	100	2		123	225	779
Northern.....	2,820	9.9	102	48		193	343	194
Total Louisiana.....	3,200	22.1	202	50		316	568	484

¹ For States east of California, Oil and Gas Journal; for California, American Petroleum Institute.
² California gas wells not reported.

Oil and gas wells in 1933—Continued

State	Producing oil wells		Wells drilled ¹					Estimated average daily initial production per well (barrels)
	Approximate number	Average production per well per day (barrels)	Oil	Gas	Dry	Total		
Michigan.....	830	29.5	218	11	67	296	688	
Montana.....	1,440	4.4	45	12	18	75	95	
New Mexico.....	540	75.1	45	1	15	61	3,310	
New York.....	18,270	.5	(²)	(²)	(²)	(²)	(²)	
Ohio:								
Central.....	20,100	.4	158	245	153	556	21	
Northwestern.....	13,500	.2	51	42	30	123	46	
Total Ohio.....	33,600	.3	209	287	183	679	27	
Oklahoma.....	56,850	8.3	668	72	353	1,093	460	
Pennsylvania.....	78,720	.4	³ 1,057	³ 81	³ 48	³ 1,186	³ 2	
Texas:								
Gulf coast.....	3,000	58.2	1,030	26	303	1,359	1,304	
East Texas proper.....	11,900	52.7	2,407	4	56	2,467	⁴ 2,020	
West Texas.....	3,060	49.3	237	3	58	298	283	
Rest of State.....	30,140	7.6	1,071	107	1,257	2,435	251	
Total Texas.....	48,100	24.0	4,745	140	1,674	6,559	1,370	
West Virginia.....	19,000	.6	67	160	59	286	93	
Wyoming.....	3,400	9.3	24	14	24	62	88	
Other.....	⁵ 80	-----	⁵ 3	⁵ 16	⁵ 30	⁵ 49	⁵ 51	
Total.....	326,850	7.7	8,068	932	3,312	12,312	955	

² New York included with Pennsylvania.

⁴ Based on short gages averaging 30 minutes.

⁵ Alaska, Missouri, Mississippi, Tennessee, and Utah.

⁶ Alabama, Mississippi, Tennessee, and Utah.

Wells drilled for oil and gas in the United States in 1933, by months

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
													Number	Per cent
Oil.....	652	516	496	482	460	387	548	635	967	1,037	933	905	8,068	65
Gas ¹	79	79	57	48	61	65	73	84	96	92	108	90	932	8
Dry.....	233	316	291	264	273	247	248	280	270	280	266	294	3,312	27
Total: 1933..	1,014	911	844	794	794	699	869	999	1,333	1,409	1,357	1,289	12,312	100
1932..	964	913	1,003	1,170	1,312	1,384	1,712	1,505	1,354	1,275	1,248	1,200	15,040	-----

¹ California dry gas wells not reported.

PRODUCTION AND ROYALTIES FROM WELLS ON FEDERAL AND INDIAN LANDS

Crude petroleum produced on Government lands in 1933, under operation of the Leasing Act of Feb. 25, 1920

[From U. S. Geological Survey]

State and land office	Production (barrels)	Royalty	
		Barrels	Value
California:			
Los Angeles.....	1,700,607.98	150,425.79	\$100,283.21
Sacramento (including Visalia), outside naval reserves.....	11,797,421.16	1,411,684.72	1,389,320.28
Sacramento (including Visalia), inside naval reserves.....	3,649,564.10	836,605.16	595,045.93
Total.....	17,147,593.24	2,398,715.67	2,084,649.42
Colorado: Denver.....	347,231.32	24,441.65	13,648.99
Louisiana: Baton Rouge.....	1,193.10	149.16	111.34
Montana:			
Billings.....	226,065.28	12,569.96	18,961.55
Great Falls.....	82,077.31	5,273.99	4,991.10
Total.....	308,142.59	17,843.95	23,952.65
New Mexico:			
Las Cruces.....	2,046,757.69	158,345.63	88,164.13
Santa Fe.....	6,302.52	315.13	595.05
Total.....	2,053,060.21	158,660.76	88,759.18
Oklahoma: Guthrie.....	228,127.08	26,277.23	7,600.16
Utah: Salt Lake City.....	4,395.50	219.79	274.55
Wyoming:			
Buffalo.....	159,610.58	9,762.83	8,229.23
Cheyenne, outside naval reserves.....	7,638,356.50	1,012,159.12	825,238.60
Evanston.....	363,543.13	27,090.45	13,750.00
Total.....	8,161,510.21	1,049,012.40	847,217.83
Grand total.....	28,251,253.25	3,675,320.61	3,066,214.12

Royalty receipts from production of oil and gas and bonuses paid for sale of leases on Indian reservations, fiscal year ended June 30, 1933

[From Office of Indian Affairs]

Reservation	Oil and gas land leased during year (acres)	Receipts	
		Bonus from sale of leases	Royalty from production
Five Civilized Tribes:			
Oil.....	21,899	\$42,458	\$1,129,254
Gas.....				64,432
Blackfeet.....	6,481	20,874	361
Cheyenne and Arapahoe: Oil.....	720	900	
Isabella.....	40	255	1,978
Kiowa:			
Oil.....	4,764	3,880	3,179
Gas.....				1,086
Navajo (northern): Oil.....			39,279
Osage:			
Oil.....	16,262	113,805	1,100,942
Gas.....				260,944
Pawnee: Oil.....	1,220	3,330	36,283
Seneca:			
Oil.....			1,285
Gas.....				5,800
Shawnee:			
Oil.....	3,351	11,709	26,032
Gas.....				1,396
Shoshone: Oil.....			8,533
Yakima: Oil.....	173	398	
Total.....	54,910	197,609	2,680,844

¹ Includes deferred payments.

PETROLEUM PRODUCTS
DETAILED STATISTICS, BY PRODUCTS

MOTOR FUEL AND GASOLINE

Comparative analyses of statistics for motor fuel in 1933, by months

[Thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production.....	30,926	28,320	32,387	32,619	35,162	35,765	37,337	37,220	36,776	36,181	33,063	32,176	407,932
Daily average.....	998	1,011	1,045	1,087	1,134	1,192	1,204	1,201	1,226	1,167	1,102	1,038	1,118
Imports.....			5	1	1	1	1	1	1	2	1	1	15
Exports.....	2,514	1,971	2,373	3,255	2,127	2,619	3,301	1,959	1,876	2,773	2,904	1,649	29,321
Daily average.....	81	70	77	109	69	87	106	63	63	89	97	53	80
Stocks, end of period.....	56,325	59,354	61,250	60,824	60,151	55,599	55,558	53,420	53,741	54,128	53,977	55,933	55,933
Days' supply.....	60	66	62	55	52	41	46	42	44	47	49	57	50
Domestic demand.....	26,397	23,320	28,123	29,791	33,709	37,699	34,078	37,400	34,580	33,022	30,312	28,572	377,003
Daily average:													
1933.....	852	833	907	993	1,087	1,257	1,099	1,206	1,153	1,065	1,010	922	1,033
1932.....	840	875	955	1,041	1,033	1,316	998	1,152	1,128	1,054	997	875	1,022

Production of motor fuel in 1933, by months

[Thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Refinery gasoline:													
Straight-run.....	15,075	13,707	16,118	15,860	16,157	17,415	17,794	18,082	18,181	17,345	14,798	15,090	195,622
Cracked.....	13,128	12,211	13,644	14,258	16,400	15,855	17,012	16,478	15,991	15,975	15,393	14,278	180,623
Natural gasoline:													
Production.....	2,893	2,560	2,788	2,690	2,793	2,686	2,786	2,840	2,807	2,998	2,948	3,021	33,810
Deduct losses.....	258	240	245	272	285	308	406	339	347	266	192	333	3,491
Benzol.....	88	82	82	83	97	117	151	159	144	129	116	120	1,368
Total motor fuel, 1933.....	30,926	28,320	32,387	32,619	35,162	35,765	37,337	37,220	36,776	36,181	33,063	32,176	407,932

Production and total stocks of motor fuel in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production:													
East coast.....	5,551	4,916	5,649	5,532	5,683	5,842	6,013	6,040	5,880	6,186	6,006	5,584	68,882
Appalachian.....	1,470	1,236	1,303	1,324	1,458	1,621	1,793	1,739	1,740	1,688	1,545	1,380	18,297
Indiana, Illinois, Kentucky, etc.....	4,723	4,281	5,184	4,857	5,870	5,606	6,030	6,056	6,221	6,077	5,201	4,806	64,912
Oklahoma, Kansas, and Missouri.....	3,954	3,812	4,566	4,421	4,729	4,755	5,496	5,626	5,356	5,161	4,626	4,168	56,670
Texas inland.....	2,496	2,249	2,634	2,562	2,966	2,995	3,088	2,707	2,661	2,665	2,634	2,760	32,417
Texas Gulf coast.....	5,190	5,105	5,697	5,727	6,593	6,435	6,128	5,947	6,396	6,309	5,899	5,638	71,064
Louisiana Gulf coast.....	1,162	996	1,238	1,204	1,192	1,147	1,178	1,437	1,383	1,190	1,106	1,842	14,575
Arkansas and Louisiana inland.....	679	668	721	682	703	650	726	744	739	791	798	711	8,612
Rocky Mountain.....	673	617	684	630	810	600	820	697	747	771	686	590	8,325
California.....	5,028	4,440	4,711	5,680	5,158	6,114	6,065	6,227	5,653	5,343	4,562	5,197	64,178
Total, 1933.....	30,926	28,320	32,387	32,619	35,162	35,765	37,337	37,220	36,776	36,181	33,063	32,176	407,932
Daily average.....	998	1,011	1,045	1,087	1,134	1,192	1,204	1,201	1,226	1,167	1,102	1,038	1,118
Total, 1932.....	33,516	32,310	33,487	34,387	35,782	34,227	33,851	33,371	31,199	33,528	32,296	31,758	399,712
Total stocks, end of period:													<i>Dec. 31,</i>
East coast.....	14,566	16,440	16,955	17,399	17,920	15,634	15,838	14,800	14,779	14,826	15,594	15,921	¹ 14,226
Appalachian.....	2,396	2,487	2,525	2,637	2,585	2,334	2,502	2,281	2,306	2,391	2,653	2,562	2,188
Indiana, Illinois, Kentucky, etc.....	7,292	7,837	8,577	8,370	8,200	6,993	7,424	6,671	6,916	7,511	7,640	7,945	¹ 6,948
Oklahoma, Kansas, and Missouri.....	5,339	5,932	6,323	5,909	5,783	5,277	5,385	5,480	5,726	5,980	6,161	6,420	4,996
Texas inland.....	2,112	2,184	2,384	2,379	2,558	2,309	2,409	2,293	2,175	2,038	1,886	1,936	1,904
Texas Gulf coast.....	6,098	5,796	5,818	5,422	4,973	5,853	5,132	5,814	5,166	5,171	4,813	5,002	6,141
Louisiana Gulf coast.....	1,653	1,793	1,789	2,012	2,013	1,605	1,574	1,439	1,425	1,153	1,375	1,548	¹ 1,259
Arkansas and Louisiana inland.....	370	395	436	476	401	424	362	330	303	421	413	439	360
Rocky Mountain.....	1,409	1,600	1,613	1,586	1,512	1,208	1,133	931	926	958	988	1,000	1,218
California.....	15,090	14,840	14,830	14,634	14,206	13,962	13,799	13,881	14,019	13,679	12,454	13,160	15,070
Total, 1933.....	56,325	59,354	61,250	60,824	60,151	55,599	55,558	53,420	53,741	54,128	53,977	55,933	¹ 54,310
1932.....	60,503	65,782	67,760	68,811	69,135	61,558	62,181	57,592	52,289	50,919	51,054	53,805	.....

¹ For comparison with 1933.

Stocks of motor fuel in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan. 1 ¹	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
Motor fuel stocks:													
Gasoline:													
At refineries:													
East coast.....	5, 148	5, 421	6, 103	6, 312	6, 796	6, 644	5, 753	5, 779	5, 418	5, 257	5, 069	5, 453	5, 730
Appalachian.....	1, 261	1, 486	1, 568	1, 611	1, 650	1, 559	1, 333	1, 356	1, 273	1, 241	1, 356	1, 465	1, 451
Indiana, Illinois, Kentucky, etc.....	3, 420	4, 185	5, 089	5, 966	5, 786	5, 293	4, 362	4, 489	3, 965	3, 877	3, 893	3, 530	3, 657
Oklahoma, Kansas, and Missouri.....	3, 522	3, 835	4, 248	4, 366	4, 107	3, 905	3, 303	3, 385	3, 437	3, 795	3, 824	3, 599	3, 851
Texas inland.....	1, 603	1, 799	1, 796	1, 961	1, 985	2, 147	1, 885	2, 008	1, 936	1, 827	1, 665	1, 551	1, 559
Texas Gulf coast.....	5, 585	5, 642	5, 438	5, 454	5, 050	4, 514	5, 213	4, 457	4, 334	4, 185	4, 313	3, 985	4, 281
Louisiana Gulf coast.....	907	1, 090	1, 294	1, 502	1, 522	1, 423	1, 034	1, 101	1, 016	948	812	919	1, 191
Arkansas and Louisiana inland.....	245	255	293	291	291	261	194	216	192	195	196	210	193
Rocky Mountain.....	1, 192	1, 379	1, 570	1, 586	1, 555	1, 484	1, 180	1, 106	896	898	934	961	973
California.....	8, 581	8, 502	8, 423	8, 118	7, 603	7, 067	6, 654	6, 691	7, 153	7, 056	6, 989	6, 049	7, 085
Total.....	31, 464	33, 594	35, 790	37, 169	36, 345	34, 297	30, 911	30, 588	29, 610	29, 279	29, 051	27, 722	29, 971
Bulk terminal and pipe line:													
East coast.....	8, 987	9, 018	10, 236	10, 556	10, 552	11, 228	9, 849	10, 039	9, 347	9, 455	9, 684	10, 054	10, 088
Appalachian.....	881	856	816	766	799	840	855	1, 030	913	1, 022	984	1, 117	1, 030
Indiana, Illinois, Kentucky, etc.....	3, 474	3, 063	2, 760	2, 561	2, 531	2, 849	2, 686	2, 898	2, 696	3, 018	3, 536	4, 068	4, 229
Oklahoma, Kansas, and Missouri.....	1, 304	1, 288	1, 453	1, 079	1, 493	1, 473	1, 651	1, 602	1, 571	1, 556	1, 840	2, 234	2, 242
Texas inland.....	144	141	141	186	177	179	220	163	173	171	232	169	183
Texas Gulf coast.....	337	244	140	179	194	282	513	546	833	900	771	731	477
Louisiana Gulf coast.....	352	563	499	287	490	590	571	473	423	477	341	456	357
Arkansas and Louisiana inland.....	89	85	106	112	146	106	187	107	110	83	201	176	218
California.....	4, 075	4, 275	4, 016	4, 207	4, 503	4, 437	4, 593	4, 489	3, 965	4, 235	4, 151	4, 119	3, 871
Total.....	19, 643	19, 533	20, 167	20, 533	20, 885	21, 984	20, 925	21, 247	20, 031	20, 917	21, 790	23, 124	22, 645
Total gasoline stocks.....	51, 107	53, 127	55, 957	57, 702	57, 230	56, 281	51, 836	51, 835	49, 641	50, 196	50, 841	50, 846	52, 616
Natural gasoline².....	3, 203	3, 198	3, 397	3, 548	3, 594	3, 870	3, 763	3, 723	3, 779	3, 545	3, 287	3, 131	3, 317
Total motor fuel stocks.....	54, 310	56, 325	59, 354	61, 250	60, 824	60, 151	55, 599	55, 558	53, 420	53, 741	54, 128	53, 977	55, 933

¹ New basis—see footnote 1, p. 235.

² For details of refinery stocks, see p. 278; for details of all stocks of natural gasoline, see Statistical Appendix to Minerals Yearbook, 1934.

Production of gasoline in 1933, by methods of manufacture, districts, and months

[Thousands of barrels of 42 gallons]

Method and district	January	February	March	April	May	June	July	August	September	October	November	December	Total		
													Quantity	Percent	
Straight distillation:															
East coast.....	2,552	2,394	2,589	2,649	2,435	2,937	2,949	3,067	2,877	2,985	2,911	2,601	32,946	48.1	
Appalachian.....	648	542	548	603	639	807	828	804	817	791	709	652	8,388	47.9	
Indiana, Illinois, Kentucky, etc.....	2,177	1,809	2,276	1,757	2,261	2,013	2,168	2,447	2,723	2,468	1,944	1,939	25,982	40.2	
Oklahoma, Kansas, and Missouri.....	1,977	1,778	2,161	2,166	2,168	2,244	2,673	2,750	2,733	2,510	2,142	1,785	27,087	49.2	
Texas inland.....	1,467	1,301	1,516	1,526	1,784	1,937	1,968	1,552	1,577	1,551	1,493	1,597	19,269	62.3	
Texas Gulf coast.....	2,176	2,408	2,685	2,481	2,836	2,633	2,459	2,559	2,720	2,915	2,553	2,477	30,902	43.5	
Louisiana Gulf coast.....	621	390	546	540	650	623	509	689	676	607	408	696	6,955	48.1	
Arkansas and Louisiana inland.....	324	337	341	348	362	331	404	389	367	365	359	318	4,245	50.6	
Rocky Mountain.....	300	260	315	303	386	197	402	262	325	336	288	256	3,630	45.4	
California.....	2,833	2,488	3,141	3,487	2,636	3,693	3,434	3,563	3,366	2,817	1,991	2,769	36,218	57.0	
Total straight run.....	15,075	13,707	16,118	15,860	16,157	17,415	17,794	18,082	18,181	17,345	14,798	15,090	195,622	48.7	
Percent of total production.....	49.5	49.5	51.0	49.6	47.1	49.3	48.5	49.4	49.7	48.3	45.0	47.8	48.7	-----	
Cracking:															
East coast.....	2,857	2,474	3,011	2,828	3,197	2,831	2,975	2,917	2,860	2,997	2,759	2,775	34,481	50.3	
Appalachian.....	744	615	668	648	730	733	870	835	831	817	750	630	8,871	50.7	
Indiana, Illinois, Kentucky, etc.....	2,362	2,312	2,774	2,962	3,491	3,448	3,715	3,458	3,268	3,359	3,001	2,668	36,818	57.0	
Oklahoma, Kansas, and Missouri.....	1,484	1,504	1,740	1,741	1,990	1,954	2,313	2,323	2,086	2,082	1,910	1,855	22,982	41.8	
Texas inland.....	645	558	629	582	629	654	758	754	772	746	750	688	8,273	26.7	
Texas Gulf coast.....	2,737	2,550	2,800	3,036	3,545	3,576	3,440	3,181	3,426	3,124	3,185	2,989	37,589	53.0	
Louisiana Gulf coast.....	519	590	642	639	590	490	633	705	672	556	661	606	7,221	49.9	
Arkansas and Louisiana inland.....	299	273	311	277	274	270	274	300	340	384	394	344	3,740	44.6	
Rocky Mountain.....	270	263	258	243	319	314	341	351	346	357	320	243	3,625	44.9	
California.....	1,211	1,072	811	1,302	1,609	1,585	1,693	1,654	1,390	1,553	1,663	1,480	17,023	27.0	
Total cracked.....	13,128	12,211	13,644	14,258	16,400	15,855	17,012	16,478	15,991	15,975	15,393	14,278	180,623	45.0	
Percent of total production.....	44.1	43.2	44.6	44.6	47.8	44.9	46.4	45.0	43.7	44.4	45.2	45.2	45.0	-----	
Natural gasoline blended at refineries ¹	2,262	1,760	1,846	1,843	1,741	2,039	1,860	2,059	2,409	2,625	2,700	2,202	25,346	6.3	
Percent of total production.....	7.4	6.4	5.8	5.8	5.1	5.8	5.1	5.6	6.6	7.3	8.2	7.0	6.3	-----	
Total:															
East coast.....	5,529	4,895	5,628	5,511	5,658	5,812	5,975	6,000	5,844	6,153	5,977	5,554	68,536	-----	
Appalachian.....	1,417	1,176	1,230	1,265	1,386	1,555	1,714	1,655	1,675	1,629	1,485	1,309	17,496	-----	
Indiana, Illinois, Kentucky, etc.....	4,701	4,280	5,161	4,835	5,844	5,578	5,996	6,019	6,190	6,049	5,175	4,777	64,585	-----	
Oklahoma, Kansas, and Missouri.....	3,833	3,631	4,295	4,244	4,511	4,628	5,383	5,502	5,321	5,123	4,545	4,021	55,037	-----	
Texas inland.....	2,387	2,084	2,388	2,402	2,768	2,880	2,987	2,596	2,632	2,632	2,562	2,628	30,946	-----	
Texas Gulf coast.....	5,186	5,098	5,687	5,720	6,585	6,430	6,124	5,942	6,395	6,308	5,896	5,632	71,003	-----	

Louisiana Gulf coast.....	1,155	989	1,231	1,197	1,183	1,137	1,166	1,424	1,371	1,179	1,096	1,332	14,460	-----
Arkansas and Louisiana inland.....	663	643	684	658	673	633	711	728	735	786	787	691	8,392	-----
Rocky Mountain.....	654	590	645	604	779	580	801	677	739	764	673	568	8,074	-----
California.....	4,940	4,312	4,659	5,525	4,911	6,076	5,809	6,076	5,679	5,322	4,695	5,058	63,062	-----
Total, 1933.....	30,465	27,678	31,608	31,961	34,298	35,309	36,666	36,619	36,581	35,945	32,891	31,570	401,591	100.0
Daily average.....	983	989	1,020	1,065	1,106	1,177	1,183	1,181	1,219	1,160	1,096	1,018	1,100	-----
Total, 1932.....	32,826	31,243	32,392	33,551	35,133	33,884	33,265	32,883	30,908	33,212	32,072	31,254	392,623	-----

¹ For details, see p. 277.

Percentage yields of gasoline in 1933, by districts and months

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Based on total gasoline production:													
East coast.....	41	40	40	40	39	41	41	40	42	43	46	40	41
Appalachian.....	53	51	50	51	50	54	54	53	55	53	50	49	52
Indiana, Illinois, Kentucky, etc.....	52	52	55	53	61	53	54	55	58	58	56	54	55
Oklahoma, Kansas, and Missouri.....	57	56	57	55	56	54	56	57	58	60	60	58	57
Texas inland.....	56	53	55	54	52	53	51	55	53	55	57	54	54
Texas Gulf coast.....	41	43	45	43	46	49	45	41	48	43	46	40	44
Louisiana Gulf coast.....	43	38	47	41	35	33	31	37	40	34	39	41	37
Arkansas and Louisiana inland.....	47	40	44	49	47	47	46	39	44	49	51	47	45
Rocky Mountain.....	67	60	64	59	62	40	55	52	62	60	56	52	57
California.....	40	40	39	43	36	44	40	43	41	40	37	38	40
United States: 1933.....	46.1	45.3	46.5	46.4	46.1	47.3	46.1	46.3	48.6	47.6	48.0	44.8	46.6
1932.....	47.8	49.0	47.3	47.2	47.1	46.8	46.6	48.9	48.4	49.8	49.0	47.4	47.9
Based on total gasoline production less natural gasoline used:													
East coast.....	40	40	40	40	39	40	40	40	41	42	44	39	40
Appalachian.....	52	50	50	51	49	54	54	53	54	52	49	48	51
Indiana, Illinois, Kentucky, etc.....	50	50	54	52	60	52	53	54	56	56	53	52	54
Oklahoma, Kansas, and Missouri.....	52	51	52	50	52	49	52	53	52	54	53	52	52
Texas inland.....	49	47	49	47	47	48	46	49	47	48	50	47	48
Texas Gulf coast.....	39	42	44	42	45	48	43	39	46	41	45	39	43
Louisiana Gulf coast.....	42	38	35	40	35	33	31	36	39	33	38	39	36
Arkansas and Louisiana inland.....	45	38	42	46	44	45	44	37	42	46	48	45	43
Rocky Mountain.....	58	53	57	53	56	35	51	47	56	54	51	46	51
California.....	33	33	33	37	31	38	35	37	34	33	29	32	34
United States: 1933.....	42.7	42.5	43.8	43.8	43.8	44.6	43.8	43.7	45.4	45.7	44.1	41.7	43.7
1932.....	44.3	46.0	44.5	44.4	44.2	44.0	43.7	45.7	44.5	45.9	45.3	43.9	44.7

Production of gasoline in 1933 by States

[Thousands of barrels of 42 gallons]

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Arkansas.....	181	204	184	164	182	191	193	203	203	253	266	205	2,429
California.....	4,940	4,312	4,659	5,525	4,911	6,076	5,809	6,076	5,679	5,322	4,695	5,058	63,062
Colorado.....	44	46	63	33	53	70	56	67	71	52	49	47	651
Georgia, Rhode Island, and South Carolina.....	114	134	146	130	136	127	139	124	123	132	143	123	1,571
Illinois.....	1,292	1,239	1,352	1,439	1,534	1,422	1,617	1,782	1,653	1,579	1,401	1,313	17,623
Indiana.....	2,152	1,988	2,560	2,249	3,089	2,835	2,986	2,838	3,121	3,004	2,410	2,276	31,508
Kansas and Missouri.....	1,604	1,390	1,759	1,778	1,870	1,998	2,322	2,334	2,269	2,148	1,886	1,815	23,173
Kentucky and Tennessee.....	273	229	241	291	241	241	317	264	314	290	222	227	3,150
Louisiana, Alabama, and Mississippi.....	1,637	1,428	1,731	1,691	1,674	1,579	1,684	1,949	1,903	1,712	1,617	1,818	20,423
Maryland.....	466	296	521	459	436	365	468	407	411	519	478	391	5,217
Massachusetts.....	431	385	417	447	497	474	428	432	405	491	453	472	5,332
Michigan.....	207	194	229	213	215	226	243	268	252	256	255	246	2,804
Montana.....	51	46	57	65	81	81	103	85	79	83	83	66	880
New Jersey.....	1,777	1,660	1,780	1,925	1,886	2,010	2,070	2,243	2,181	2,429	2,344	2,019	24,324
New Mexico and Utah.....	126	112	86	40	150	160	172	168	171	176	178	181	1,720
New York.....	401	344	366	353	422	477	529	542	488	496	460	359	5,237
Ohio.....	1,160	978	1,179	998	1,175	1,271	1,316	1,343	1,351	1,419	1,312	1,112	14,614
Oklahoma.....	2,229	2,241	2,536	2,466	2,641	2,630	3,061	3,168	3,052	2,975	2,659	2,206	31,864
Pennsylvania.....	3,193	2,778	3,068	2,984	3,123	3,329	3,389	3,257	3,249	3,037	3,009	2,986	37,402
Texas.....	7,573	7,182	8,075	8,122	9,353	9,310	9,111	8,538	9,027	8,940	8,458	8,260	101,949
West Virginia.....	181	106	160	123	134	168	183	174	161	179	150	116	1,835
Wyoming, Nebraska, and South Dakota.....	433	386	439	466	495	269	470	357	418	453	363	274	4,823
Total.....	30,465	27,678	31,608	31,961	34,298	35,309	36,666	36,619	36,581	35,945	32,891	31,570	401,591

Shipments of motor fuel by pipe lines in 1933, by months

[Thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Motor fuel turned into lines	2,416	2,394	2,821	3,018	3,384	3,209	3,488	3,663	3,310	3,440	3,866	3,408	38,417
Motor fuel delivered from lines . . .	2,437	2,302	2,800	3,092	3,374	3,222	3,523	3,660	3,321	3,356	3,692	3,417	38,196
Shortage	5	1	2	13	6	14	11	5	17	11	14	21	104
Stocks in lines and working tanks, end of month	1,172	1,263	1,282	1,211	1,215	1,188	1,142	1,140	1,112	1,185	1,345	1,315	1,315

¹ Overage

Consumption of gasoline in 1933, by States and months¹

[Thousands of gallons]

State	January	February	March	April	May	June	July	August	September	October	November	December	Total	
													Thousands of gallons	Equivalent in thousands of barrels
Alabama.....	9,600	8,806	10,121	10,416	11,657	11,917	10,907	12,690	11,784	12,124	11,799	12,064	133,885	3,188
Arizona.....	4,619	4,756	5,219	5,522	5,527	5,831	5,299	5,376	5,279	5,446	5,736	5,896	64,506	1,536
Arkansas.....	9,188	7,598	7,303	10,281	10,430	10,931	10,453	11,007	10,927	11,471	11,151	10,455	121,195	2,836
California.....	90,885	97,771	109,560	112,978	109,747	125,205	111,792	119,071	111,751	107,138	131,034	96,550	1,323,482	31,511
Colorado.....	11,192	9,320	11,353	12,400	14,156	16,608	14,759	16,744	15,270	14,388	12,647	11,180	159,917	3,808
Connecticut.....	14,882	14,297	16,825	17,819	22,481	25,130	25,089	25,560	23,874	23,399	20,135	18,635	248,126	5,908
Delaware.....	1,910	2,859	2,422	3,121	3,554	3,921	4,619	4,371	3,718	2,823	3,721	3,171	40,210	957
District of Columbia.....	7,907	7,813	8,472	9,131	9,677	9,230	9,953	9,084	8,783	8,896	8,282	8,124	104,852	2,496
Florida.....	19,567	19,115	19,095	17,387	17,095	16,286	14,355	15,652	14,246	15,455	17,054	20,261	205,568	4,894
Georgia.....	15,631	12,451	17,142	16,322	17,693	18,769	17,852	20,136	18,202	18,651	18,408	19,318	210,575	5,014
Idaho.....	2,272	1,768	2,522	3,933	4,460	5,472	5,419	6,466	5,935	5,372	4,823	3,872	52,314	1,246
Illinois.....	65,374	58,071	68,339	75,196	84,416	97,645	92,259	98,744	92,553	86,686	77,849	73,849	970,986	23,119
Indiana.....	30,797	25,704	32,757	33,478	40,339	44,636	39,600	44,768	42,904	38,160	34,620	31,156	439,009	10,453
Iowa.....	25,828	20,254	25,421	29,251	32,609	34,381	31,766	34,842	33,378	29,939	32,242	25,657	355,568	8,466
Kansas.....	23,828	20,730	23,426	30,351	34,453	40,446	35,455	33,732	34,276	25,761	26,242	23,823	352,523	8,393
Kentucky.....	11,385	10,372	11,415	13,033	14,391	15,636	15,235	17,050	15,278	14,956	14,170	13,371	162,202	3,950
Louisiana.....	13,080	10,977	11,515	12,234	13,757	14,698	12,868	14,930	14,494	15,013	14,547	15,026	163,139	3,884
Maine.....	5,397	5,036	5,191	5,878	10,090	11,065	12,544	14,112	12,305	10,904	8,545	6,426	107,583	2,561
Maryland.....	12,949	11,859	13,574	15,106	17,657	18,394	17,390	18,565	17,952	17,213	15,696	14,655	191,010	4,548
Massachusetts.....	33,767	33,036	37,810	41,342	52,033	56,093	55,612	58,820	52,286	51,943	45,661	42,761	561,164	13,361
Michigan.....	49,572	41,766	52,868	57,572	68,266	77,516	71,791	77,804	71,163	64,133	56,451	51,395	740,297	17,626
Minnesota.....	24,914	20,267	27,012	34,373	38,919	42,246	38,614	42,806	40,986	34,969	31,747	24,870	407,723	9,565
Mississippi.....	7,662	7,087	7,293	9,561	9,129	11,498	9,518	11,569	11,160	11,403	10,423	9,334	115,637	2,753
Missouri.....	35,643	30,690	34,634	38,173	39,188	45,016	40,620	44,643	42,020	40,802	38,551	35,596	465,876	11,092
Montana.....	3,429	2,591	4,614	6,290	6,861	7,486	7,516	7,498	8,502	6,237	4,894	3,926	69,844	1,663
Nebraska.....	14,504	11,575	13,182	16,333	17,014	19,763	18,035	18,315	19,639	15,510	16,785	14,043	194,698	4,636
Nevada.....	1,150	1,049	1,326	1,836	1,752	2,108	2,012	2,131	1,991	1,787	1,746	1,741	20,629	491
New Hampshire.....	3,321	3,265	3,511	4,049	6,028	6,715	7,468	8,736	7,151	6,455	5,054	4,118	65,871	1,568
New Jersey.....	44,736	45,845	52,467	56,337	66,612	73,285	66,875	67,317	60,491	61,022	54,370	51,422	700,779	16,685
New Mexico.....	3,133	2,930	3,497	4,001	4,259	4,660	4,400	4,400	4,448	4,361	4,046	4,076	48,342	1,151
New York.....	100,216	94,702	105,798	118,980	142,760	149,045	154,565	157,779	145,085	140,004	120,137	112,920	1,541,989	36,714
North Carolina.....	17,554	15,867	16,778	18,940	21,061	19,868	20,264	22,463	21,691	22,071	22,071	22,187	241,416	5,748
North Dakota.....	4,057	2,698	6,649	10,324	12,955	9,982	11,458	12,681	9,687	7,928	5,978	5,328	99,725	2,374
Ohio.....	67,234	55,675	62,110	68,787	77,723	87,009	80,549	85,769	86,498	76,890	74,466	63,930	886,640	21,110
Oklahoma.....	21,793	18,093	19,974	21,800	23,513	28,389	22,568	24,328	25,086	24,170	22,780	22,606	275,100	6,550
Oregon.....	9,838	11,723	14,208	11,948	12,230	15,231	14,306	16,429	15,770	14,014	12,137	11,070	158,904	3,783

Pennsylvania.....	68,288	64,020	74,930	82,170	92,360	98,401	100,566	105,054	99,457	96,498	85,878	80,841	1,048,463	24,963
Rhode Island.....	6,790	6,060	8,058	7,110	9,243	10,328	9,576	10,426	9,390	8,324	7,589	7,308	100,202	2,386
South Carolina.....	8,338	7,089	9,340	8,807	9,640	8,549	9,803	10,306	9,863	10,049	9,664	10,192	111,940	2,665
South Dakota.....	7,071	6,012	8,109	8,218	8,363	10,137	9,193	9,698	9,181	8,615	7,972	7,171	100,340	2,389
Tennessee.....	13,727	13,033	13,468	13,565	15,571	16,993	15,082	16,960	17,253	16,743	16,265	16,514	185,164	4,409
Texas.....	55,976	48,392	57,298	60,947	63,996	73,410	66,323	72,185	68,532	69,473	67,506	70,325	774,413	18,438
Utah.....	3,383	2,901	3,774	4,413	4,077	5,655	5,488	5,855	5,136	5,029	4,351	4,043	54,705	1,302
Vermont.....	1,917	2,073	2,144	2,495	4,080	4,668	4,959	5,662	5,120	4,631	3,481	2,921	44,151	1,051
Virginia.....	16,860	14,794	17,062	19,274	19,891	21,573	20,369	22,387	21,235	20,423	19,368	19,303	233,439	5,558
Washington.....	15,460	15,081	20,288	18,930	18,863	23,107	21,363	24,618	22,520	20,878	18,361	17,221	236,690	5,635
West Virginia.....	7,891	7,078	8,231	9,879	11,252	12,120	12,614	13,166	12,868	12,424	10,843	10,716	129,082	3,074
Wisconsin.....	23,916	21,152	24,935	29,256	34,921	40,423	41,320	43,256	39,049	34,378	29,408	25,476	387,490	9,226
Wyoming.....	1,966	1,606	2,138	2,453	3,076	3,960	3,837	4,326	3,479	3,374	2,762	2,489	35,466	844
Total.....	1,050,397	957,207	1,116,078	1,222,000	1,371,025	1,511,735	1,434,278	1,530,408	1,439,786	1,359,022	1,279,651	1,169,332	15,440,919	367,637

¹ Compiled from reports of the American Petroleum Institute which cover "quantities of gasoline sold or offered for sale, as reported by wholesalers and dealers in the various States under provisions of the gasoline tax or inspection laws."

252 MINERALS YEARBOOK, 1934—STATISTICAL APPENDIX

Refinery price of U. S. Motor gasoline (below 57¹ octane number) in Oklahoma in 1933, in cents per gallon²

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average monthly price.....	2.54	2.19	2.21	2.03	2.22	3.01	3.93	3.40	4.48	4.21	4.15	4.02	3.20

PRICE CHANGES BY WEEKS

Jan. 1 ¹	3.00	May 8.....	2.25	Aug. 21.....	3.50	Oct. 23.....	4.25
Jan. 3.....	2.75	June 12.....	2.75	Aug. 28.....	3.625	Nov. 13.....	4.125
Jan. 9.....	2.50	June 19.....	3.75	Sept. 5.....	4.00	Nov. 20.....	4.00
Jan. 23.....	2.375	June 26.....	4.00	Sept. 11.....	4.75	Nov. 27.....	4.125
Jan. 30.....	2.25	July 3.....	3.875	Sept. 18.....	5.00	Dec. 11.....	4.00
Feb. 6.....	2.125	July 10.....	4.00	Sept. 25.....	4.625	Dec. 26.....	3.875
Feb. 20.....	2.25	July 24.....	3.875	Oct. 2.....	4.375		
Mar. 27.....	2.00	July 31.....	3.50	Oct. 9.....	4.00		
Apr. 24.....	2.125	Aug. 7.....	3.25	Oct. 16.....	4.125		

¹ Beginning May 8, below 57 changed to 59 and below.

² From National Petroleum News.

³ Price in effect on this date.

Tank-wagon prices, including tax, of gasoline at 6 cities in 1933, in cents per gallon¹

	New York	Washington	Chicago	New Orleans	San Francisco	Denver
Average monthly price:						
January.....	13.5	12.2	14.2	15.0	15.0	14.1
February.....	13.5	12.2	14.1	15.2	15.0	14.0
March.....	13.5	12.2	14.1	15.5	14.9	14.0
April.....	14.4	12.2	14.1	15.4	14.2	14.0
May.....	13.8	12.2	12.9	14.0	15.0	14.0
June.....	14.3	14.9	13.4	17.4	15.6	14.8
July.....	15.2	16.0	15.5	19.1	17.0	17.0
August.....	15.3	16.1	15.9	19.4	17.0	17.1
September.....	16.8	17.3	17.4	20.6	17.5	18.8
October.....	17.0	17.5	17.8	20.8	17.3	19.0
November.....	17.0	17.5	17.8	20.8	15.5	19.0
December.....	17.0	17.5	17.8	20.5	15.3	19.0
Average for year.....	15.1	14.8	15.4	17.8	15.8	16.2
Date of price change:						
Jan. 1 ¹	14.5	12.2	15.1	16.0	15.0	15.0
Jan. 2.....				15.0		
Jan. 3.....			14.1			14.0
Jan. 4.....	13.5					
Feb. 17.....				15.5		
Mar. 28.....					14.0	
Apr. 5.....	14.5				15.0	
Apr. 25.....						
Apr. 28.....				14.0		
May 8.....			12.6			
May 15.....	13.2					
June 2.....		14.5		16.8		
June 3.....	13.5					
June 16.....			13.1			
June 17.....	14.0	15.0	13.6	17.3	15.5	14.5
June 19.....	15.5	15.5		17.8		15.0
June 20.....					16.0	
June 21.....			14.6	18.3		16.0
June 26.....					17.0	
June 27.....	15.0					
June 28.....		16.0				
June 30.....	15.2					
July 1.....			15.1			17.0
July 11.....			15.6			
July 14.....				19.3		
July 28.....			15.8			
Aug. 23.....	15.5					
Aug. 26.....		16.5	16.3	19.8		
Aug. 30.....						18.0
Sept. 2.....	16.4					18.5
Sept. 6.....					18.0	
Sept. 7.....			16.8			
Sept. 8.....		17.5		20.8		
Sept. 9.....			17.8			
Sept. 11.....					17.5	
Sept. 12.....	17.0					19.0
Oct. 19.....					17.0	
Nov. 9.....					15.0	
Dec. 5.....				20.5		
Dec. 28.....					17.0	

¹ From National Petroleum News.

² Prices in effect on this date.

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

253

KEROSENE

Comparative analyses of statistics for kerosene in 1933, by months

[Thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production.....	4,392	3,696	3,888	4,038	4,140	4,162	4,261	4,109	4,004	3,993	4,005	4,289	48,977
Daily average.....	142	132	125	135	134	139	137	133	133	129	134	138	134
Exports.....	887	637	649	718	610	368	850	650	730	943	1,049	868	8,959
Daily average.....	29	23	21	24	20	12	27	21	24	30	35	28	25
Stocks, end of period.....	4,861	4,621	4,886	5,345	5,869	6,548	7,936	8,604	8,502	8,118	7,297	6,558	6,558
Domestic demand.....	3,677	3,299	2,974	2,861	3,006	3,115	2,023	2,791	3,376	3,434	3,777	4,160	38,493
Daily average.....	119	118	96	95	97	104	65	90	113	111	126	134	105

Production and stocks of kerosene in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production:													
East coast.....	959	858	843	831	776	816	833	718	703	778	767	795	9,677
Appalachian.....	245	197	235	235	228	251	235	234	266	250	234	245	2,855
Indiana, Illinois, Kentucky, etc.....	276	232	322	378	348	440	529	362	363	318	301	352	4,221
Oklahoma, Kansas, and Missouri.....	500	434	556	658	733	647	584	615	600	592	502	402	6,823
Texas inland.....	200	194	239	260	326	360	305	275	269	253	248	289	3,218
Texas Gulf coast.....	1,145	851	863	861	899	858	944	956	832	898	1,059	1,179	11,345
Louisiana Gulf coast.....	368	358	362	362	199	222	319	282	327	362	314	421	3,896
Arkansas and Louisiana inland.....	63	69	67	67	71	57	67	65	65	60	64	58	773
Rocky Mountain.....	38	31	51	40	43	64	51	48	43	62	51	48	570
California.....	598	472	350	346	517	447	394	554	536	420	465	500	5,599
Total, 1933.....	4,392	3,696	3,888	4,038	4,140	4,162	4,261	4,109	4,004	3,993	4,005	4,289	48,977
Daily average.....	142	132	125	135	134	139	137	133	133	129	134	138	134
Total, 1932.....	3,798	3,200	3,525	3,762	4,092	3,523	3,629	3,497	3,449	3,463	3,801	4,097	43,836
Stocks, end of period:													<i>Dec. 31, 1932</i>
East coast.....	921	1,038	1,145	1,337	1,488	1,926	2,232	2,358	2,410	2,275	1,790	1,319	11,032
Appalachian.....	230	219	244	234	225	221	234	261	278	298	301	345	219
Indiana, Illinois, Kentucky, etc.....	465	428	438	410	337	367	600	596	587	567	548	634	451
Oklahoma, Kansas, and Missouri.....	371	339	349	305	394	461	547	599	610	687	730	696	334
Texas inland.....	84	83	97	116	137	169	160	182	186	196	187	165	77
Texas Gulf coast.....	972	890	831	1,215	1,420	1,615	1,979	2,254	2,102	1,928	1,720	1,343	811
Louisiana Gulf coast.....	302	234	348	421	394	317	536	684	659	430	305	454	334
Arkansas and Louisiana inland.....	24	25	20	17	24	13	21	17	25	14	16	13	14
Rocky Mountain.....	195	186	199	184	170	185	193	195	183	210	231	241	197
California.....	1,297	1,179	1,215	1,106	1,280	1,274	1,434	1,458	1,459	1,513	1,469	1,348	1,564
Total: 1933.....	4,861	4,621	4,886	5,345	5,869	6,548	7,936	8,604	8,502	8,118	7,297	6,558	6,558
1932.....	3,304	4,971	4,539	4,417	4,812	5,134	6,033	6,247	6,018	5,465	4,672	4,974	5,033

1 For comparison with 1933.

Percentage yields of kerosene in 1933, by districts and months

By districts:		By months:	
East coast.....	5.8	January.....	6.6
Appalachian.....	8.5	February.....	6.1
Indiana, Illinois, Kentucky, etc.....	3.6	March.....	5.7
Oklahoma, Kansas, and Mis- souri.....	7.1	April.....	5.9
Texas inland.....	5.6	May.....	5.6
Texas Gulf coast.....	7.1	June.....	5.6
Louisiana Gulf coast.....	10.0	July.....	5.4
Arkansas and Louisiana in- land.....	4.2	August.....	5.2
Rocky Mountain.....	4.0	September.....	5.3
California.....	3.6	October.....	5.3
		November.....	5.9
		December.....	6.1
United States: 1933.....	5.7	Year.....	5.7
1932.....	5.3		

Consumption of kerosene in 1933, by States and months ¹

[Thousands of barrels of 42 gallons]

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Alabama.....	27	28	24	27	23	28	21	24	13	40	27	29	311
Arkansas.....	36	28	27	41	38	-28	26	21	32	33	31	31	373
Colorado.....	10	9	11	11	12	11	11	11	10	9	9	10	126
Florida.....	59	52	58	48	43	42	37	40	40	48	61	64	592
Georgia.....	40	37	39	35	35	31	32	34	37	41	42	45	446
Kansas.....	50	52	73	88	88	82	66	65	84	52	47	55	802
Michigan.....	54	66	50	83	93	98	90	83	82	96	91	67	958
Minnesota.....	51	50	55	82	92	60	63	77	76	61	56	44	767
Missouri.....	70	78	82	104	123	114	132	72	106	88	75	107	1,151
Nebraska.....	37	40	41	101	81	78	53	61	48	36	32	30	638
North Dakota.....	15	15	18	46	50	21	13	24	19	16	12	12	261
Oklahoma.....	59	51	58	59	55	60	64	53	69	60	51	48	687
South Carolina.....	26	21	25	12	25	25	31	26	26	27	27	26	287
South Dakota.....	16	19	21	24	28	24	15	22	19	16	13	15	232
Total.....	550	546	582	766	786	702	654	613	662	623	576	581	7,641

¹ From American Petroleum Institute.

Tank-wagon prices of kerosene at 6 representative cities in 1933, in cents per gallon ¹

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average monthly price:													
New York.....	9.5	9.5	9.5	8.5	8.0	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.6
Washington.....	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.4	11.0	11.0	11.0	10.3
Chicago.....	10.0	10.0	9.2	8.0	8.0	8.1	8.5	8.7	9.3	9.7	9.7	9.7	9.1
New Orleans.....	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.3	12.0	12.0	12.0	11.3
San Francisco.....	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Denver.....	12.5	12.5	12.5	12.2	11.0	11.1	11.5	11.5	12.1	12.5	12.5	12.5	12.0
Average.....	10.7	10.7	10.6	10.2	9.9	10.0	10.1	10.0	10.5	11.0	11.0	11.0	10.6

	New York	Washing- ton	Chicago	New Orleans	San Francisco	Denver
Date of price change:						
Jan. 1 ²		9.5	10.0	10.0	11.0	12.5
Mar. 20.....				8.0		
Apr. 10.....		8.0				
Apr. 24.....						11.0
June 26.....				8.5		11.5
July 21.....					10.5	
July 24.....					11.0	
July 28.....				8.7		
Sept. 4.....		8.5				
Sept. 13.....				9.7		
Sept. 14.....						12.5
Sept. 15.....					10.0	
Sept. 18.....					12.0	
Sept. 20.....			11.0			

¹ From National Petroleum News.

² Prices in effect on this date.

GAS OIL AND FUEL OIL

Comparative analyses of statistics for gas oil and distillate fuel oils and residual fuel oils in 1933 by months

[Thousands of barrels of 42 gallons]

	January	February	March	April	May	June
Production:						
Gas oil and distillate fuel oils.....	7,036	6,106	6,433	5,745	6,416	6,366
Residual fuel oils.....	18,861	17,388	19,686	19,153	20,202	20,509
Total.....	25,897	23,494	26,119	24,898	26,618	26,875
Daily average.....	835	839	843	830	859	896
Net transfers to fuel-oil stocks in California¹.....	1,278	952	984	693	667	731
Production by cracking ¹	11,215	10,436	10,830	11,079	12,466	12,039
Imports.....	1,141	1,600	1,480	1,348	634	693
Daily average.....	37	57	48	45	20	23
Exports.....	2,095	1,155	1,469	1,795	1,886	1,162
Daily average.....	68	41	47	60	61	39
Stocks, end of period:						
Gas oil and distillate fuel oils.....	13,112	11,936	11,937	11,816	13,310	15,470
Residual fuel oils ²	115,479	114,227	113,802	114,452	115,060	114,616
Total.....	128,591	126,163	125,739	126,268	128,370	130,086
Domestic demand.....	27,105	26,367	26,554	23,922	23,264	24,690
Daily average.....	874	942	857	797	750	823

	July	August	September	October	November	December	Total
Production:							
Gas oil and distillate fuel oils.....	7,164	6,057	6,557	7,157	6,552	7,331	78,920
Residual fuel oils.....	21,752	21,085	20,207	20,749	18,963	18,964	237,519
Total.....	28,916	27,142	26,764	27,906	25,515	26,295	316,439
Daily average.....	933	876	892	900	851	848	867
Net transfers to fuel-oil stocks in California¹.....	412	150	244	-184	631	803	7,361
Production by cracking ¹	14,596	14,528	14,043	14,475	13,245	13,546	152,498
Imports.....	1,272	1,649	749	902	955	792	13,215
Daily average.....	41	53	25	29	32	26	36
Exports.....	2,169	1,636	1,274	1,829	1,614	2,479	20,563
Daily average.....	70	53	42	59	54	80	56
Stocks, end of period:							
Gas oil and distillate fuel oils.....	18,303	19,605	20,887	21,142	19,581	17,025	17,025
Residual fuel oils ²	114,982	115,716	114,989	113,780	110,270	106,475	106,475
Total.....	133,285	135,321	135,876	134,922	129,851	123,500	123,500
Domestic demand.....	24,820	25,119	25,684	27,933	29,927	30,959	316,344
Daily average.....	801	810	856	901	998	999	867

¹ Included in total production.

² Includes heavy crude in California.

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Production and stocks of gas oil and distillate fuel oils in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	January	February	March	April	May	June
Production:						
East coast.....	1, 118	1, 010	1, 426	1, 167	1, 121	1, 080
Appalachian.....	239	221	136	104	222	272
Indiana, Illinois, Kentucky, etc.....	820	769	652	624	695	827
Oklahoma, Kansas, and Missouri.....	647	631	558	410	466	590
Texas inland.....	246	282	276	176	201	257
Texas Gulf coast.....	1, 690	1, 496	1, 677	1, 159	1, 347	1, 301
Louisiana Gulf coast.....	369	185	329	292	495	401
Arkansas and Louisiana inland.....	211	198	193	175	152	81
Rocky Mountain.....	72	85	77	80	85	50
California.....	1, 624	1, 229	1, 109	1, 558	1, 632	1, 507
Total, 1933.....	7, 036	6, 106	6, 433	5, 745	6, 416	6, 366
Daily average.....	227	218	208	192	207	212
Total, 1932.....	6, 361	5, 599	6, 353	5, 738	5, 890	5, 207
Stocks, end of period:						
East coast.....	3, 341	2, 811	2, 575	2, 906	3, 291	3, 987
Appalachian.....	521	562	508	438	442	480
Indiana, Illinois, Kentucky, etc.....	1, 738	1, 462	1, 353	1, 354	1, 565	1, 839
Oklahoma, Kansas, and Missouri.....	1, 119	974	995	852	794	922
Texas inland.....	304	337	403	398	404	456
Texas Gulf coast.....	1, 837	1, 976	2, 179	1, 838	2, 315	2, 662
Louisiana Gulf coast.....	742	702	979	810	1, 137	1, 369
Arkansas and Louisiana inland.....	127	138	129	138	163	140
Rocky Mountain.....	138	139	163	163	141	144
California.....	3, 242	2, 835	2, 653	2, 929	3, 058	3, 471
Total: 1933.....	13, 112	11, 936	11, 937	11, 816	13, 310	15, 470
1932.....	16, 059	13, 623	12, 078	11, 607	12, 396	13, 477

District	July	August	September	October	November	December	Total
Production:							
East coast.....	1, 240	1, 121	1, 276	1, 389	1, 591	1, 496	15, 035
Appalachian.....	274	250	219	216	201	247	2, 601
Indiana, Illinois, Kentucky, etc.....	848	748	829	890	585	704	8, 991
Oklahoma, Kansas, and Missouri.....	812	708	771	667	461	546	7, 267
Texas inland.....	376	199	207	313	228	211	2, 972
Texas Gulf coast.....	1, 411	1, 369	1, 235	1, 541	1, 507	1, 637	17, 370
Louisiana Gulf coast.....	514	345	360	344	146	356	4, 136
Arkansas and Louisiana inland.....	168	130	148	134	109	131	1, 839
Rocky Mountain.....	44	48	50	67	59	59	776
California.....	1, 477	1, 139	1, 462	1, 596	1, 665	1, 944	17, 942
Total, 1933.....	7, 164	6, 057	6, 557	7, 157	6, 552	7, 331	78, 920
Daily average.....	231	196	219	231	219	236	216
Total, 1932.....	5, 191	5, 519	5, 665	6, 382	5, 582	5, 980	69, 467
Stocks, end of period:							
East coast.....	4, 906	5, 536	5, 832	5, 939	5, 610	4, 255	Dec. 31, 1932 13, 720
Appalachian.....	521	532	476	482	439	487	1, 440
Indiana, Illinois, Kentucky, etc.....	2, 172	2, 526	2, 773	2, 895	2, 455	2, 288	1, 750
Oklahoma, Kansas, and Missouri.....	1, 169	1, 301	1, 510	1, 561	1, 468	1, 324	1, 113
Texas inland.....	524	491	588	501	433	380	342
Texas Gulf coast.....	3, 079	3, 136	3, 260	3, 245	3, 184	2, 878	2, 070
Louisiana Gulf coast.....	1, 763	1, 922	2, 045	2, 036	1, 606	1, 454	809
Arkansas and Louisiana inland.....	188	180	253	276	226	231	112
Rocky Mountain.....	143	145	153	190	201	193	118
California.....	3, 838	3, 836	3, 997	4, 017	3, 959	3, 535	3, 803
Total: 1933.....	18, 303	19, 605	20, 887	21, 142	19, 581	17, 025	14, 277
1932.....	15, 408	16, 971	17, 905	18, 495	16, 775	14, 110	-----

¹ For comparison with 1933.

Percentage yields of gas oil and distillate fuel oils in 1933, by districts and months

By districts:		By months:	
East coast.....	9.0	January.....	10.6
Appalachian.....	7.7	February.....	10.0
Indiana, Illinois, Kentucky, etc.....	7.7	March.....	9.5
Oklahoma, Kansas, and Mis- souri.....	7.5	April.....	8.3
Texas inland.....	5.2	May.....	8.6
Texas Gulf coast.....	10.8	June.....	8.5
Louisiana Gulf coast.....	10.6	July.....	9.0
Arkansas and Louisiana in- land.....	9.9	August.....	7.7
Rocky Mountain.....	5.5	September.....	8.7
California.....	11.4	October.....	9.5
		November.....	9.6
		December.....	10.4
		Year.....	9.2
United States: 1933.....	9.2		
1932.....	8.5		

Distribution of domestic fuel oils.—The annual survey of the Bureau of Mines covering the distribution of gas oil and fuel oil by States and industries, which began with 1926, was discontinued with 1931 because of lack of funds. The work for 1932 and 1933 was confined solely to range oil, a light oil having many of the characteristics of kerosene, and the domestic heating oils such as furnace oil. The following data cover total sales of these two classes of fuel oil for the period 1931–33.

Deliveries of range oil and domestic heating oils, 1931–33

[Thousands of barrels of 42 gallons]

	1931	1932	1933
Range oil.....	4,549	6,841	9,849
Domestic heating oils.....	24,848	29,264	34,140

Production and stocks of residual fuel oils in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Production:													
East coast.....	4,039	3,570	4,207	3,968	4,001	3,986	4,005	3,993	3,826	3,944	3,411	3,679	46,719
Appalachian.....	441	347	348	336	379	400	482	443	392	471	391	380	4,810
Indiana, Illinois, Kentucky, etc.....	1,530	1,470	1,483	1,422	1,556	1,379	1,753	1,491	1,569	1,609	1,418	1,379	18,059
Oklahoma, Kansas, and Missouri.....	1,444	1,387	1,441	1,570	1,586	1,796	1,766	1,858	1,684	1,724	1,717	1,566	19,539
Texas inland.....	1,358	1,151	1,321	1,449	1,802	1,692	1,779	1,371	1,332	1,411	1,418	1,570	17,654
Texas Gulf coast.....	3,029	2,883	3,201	3,194	3,546	3,377	3,262	3,385	3,359	3,944	3,587	3,307	40,074
Louisiana Gulf coast.....	578	776	987	763	876	1,313	1,227	1,355	1,048	1,260	786	926	11,895
Arkansas and Louisiana inland.....	408	526	515	444	443	449	524	639	568	522	479	493	6,010
Rocky Mountain.....	208	221	191	206	283	266	298	271	225	259	213	217	2,858
California.....	5,826	5,057	5,992	5,801	5,730	5,851	6,566	6,279	6,204	5,605	5,543	5,447	69,901
Total, 1933.....	18,861	17,388	19,686	19,153	20,202	20,509	21,752	21,085	20,207	20,749	18,963	18,964	237,519
Daily average.....	608	621	635	638	652	684	702	680	673	669	632	612	651
Total, 1932.....	20,080	17,810	19,558	19,698	19,933	19,000	19,599	17,943	17,544	17,196	18,127	18,705	225,283
Stocks, end of period:													
East coast.....	5,850	5,004	4,587	4,756	5,083	4,666	4,856	5,507	5,471	5,415	4,900	4,399	Dec. 31, 1932 15,818
Appalachian.....	265	217	218	215	262	269	266	232	298	396	426	400	272
Indiana, Illinois, Kentucky, etc.....	1,675	1,637	1,851	1,883	2,050	1,963	2,282	2,406	2,547	2,688	2,413	2,203	1,775
Oklahoma, Kansas, and Missouri.....	2,626	2,606	2,604	2,624	2,711	2,948	3,205	3,344	3,157	3,594	3,450	3,208	12,479
Texas inland.....	2,584	2,522	2,571	2,678	2,946	2,932	2,671	2,508	2,589	2,603	2,309	2,227	2,539
Texas Gulf coast.....	4,785	4,641	4,479	4,236	3,927	3,764	4,017	3,905	3,686	3,820	3,787	3,437	5,638
Louisiana Gulf coast.....	1,727	1,676	1,610	1,402	1,417	1,373	1,010	1,086	858	1,226	1,360	1,488	1,863
Arkansas and Louisiana inland.....	899	1,019	1,048	1,002	957	907	881	979	993	1,070	976	907	870
Rocky Mountain.....	303	315	280	307	385	427	459	476	464	461	407	380	289
California ¹	94,765	94,590	94,554	95,349	95,322	95,367	95,335	95,273	94,926	92,507	90,242	87,826	94,933
Total: 1933.....	115,479	114,227	113,802	114,452	115,060	114,616	114,982	115,716	114,989	113,780	110,270	106,475	1,116,476
1932.....	116,901	115,817	114,173	115,169	117,177	118,594	120,609	122,024	120,805 120,342	118,951	117,196	115,771	-----

¹ For comparison with 1933.

² Includes heavy crude.

³ 463,000 barrels transferred to unfinished oil stocks.

Percentage yields of residual fuel oils in 1933, by districts and months

By districts:		By months:	
East coast.....	28.0	January.....	28.5
Appalachian.....	14.3	February.....	28.5
Indiana, Illinois, Kentucky, etc.....	15.4	March.....	29.0
Oklahoma, Kansas, and Mis- souri.....	20.2	April.....	27.8
Texas inland.....	30.7	May.....	27.2
Texas Gulf coast.....	24.9	June.....	27.5
Louisiana Gulf coast.....	30.5	July.....	27.4
Arkansas and Louisiana in- land.....	32.5	August.....	26.6
Rocky Mountain.....	20.1	September.....	26.8
California.....	44.4	October.....	27.5
		November.....	27.7
		December.....	26.9
		Year.....	27.6
United States: 1933.....	27.6		
1932.....	27.5		

Fuel consumption and purchases of electricity at refineries in the United States in 1933, by districts

District	Fuel used					B. t. u. generated		Pur- chased elec- tricity (thous- ands of kilo- watt- hours)	
	Oil (thous- ands of bar- rels)	Acid sludge (thous- ands of bar- rels)	Coal (thous- ands of short tons)	Gas (millions of cubic feet)		Coke (thous- ands of short tons)	Total (bil- lions) ¹		Average per bar- rel of crude oil run to stills
				Natural	Refin- ery (still gas)				
East coast.....	11,484	1,770	47	27,185	63	118,040	707,000	152,840	
Appalachian.....	1,665	36	677	2,171	7,864	8	41,283	1,230,000	
Indiana, Illinois, Ken- tucky, etc.....	4,627	698	345	219	33,737	36	88,415	755,000	
Oklahoma, Kansas, and Missouri.....	4,825	584	-----	8,523	22,292	19	72,306	749,000	
Texas inland.....	2,591	78	-----	6,932	6,871	5	32,945	573,000	
Texas Gulf coast.....	3,684	922	-----	19,152	43,232	122	110,548	688,000	
Louisiana Gulf coast.....	298	15	-----	4,557	6,357	1	15,570	399,000	
Arkansas and Louisiana inland.....	550	29	-----	3,543	3,116	-----	11,513	623,000	
Rocky Mountain.....	523	72	-----	3,717	3,121	9	12,004	845,000	
California.....	3,045	786	-----	17,519	18,310	-----	65,836	419,000	
Total B. t. u. (bil- lions).....	33,292	4,990	1,069	66,333	172,085	263	568,460	660,000	
	199,752	22,455	27,794	69,650	240,919	7,890	568,460	-----	

¹ Computed by the use of the following factors: Oil, 6,000,000 B. t. u. per barrel; acid sludge, 4,500,000 B. t. u. per barrel; coal, 28,000,000 B. t. u. per short ton; natural gas, 1,050 B. t. u. per cubic foot; still gas, 1,400 B. t. u. per cubic foot; coke, 30,000,000 B. t. u. per short ton.

Prices of fuel oil at 4 selected points in 1933, in dollars per barrel of 42 gallons, and refinery prices of 2 grades of distillate fuel oil in 1933, in cents per gallon ¹

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average monthly price:													
24°-26° gravity fuel oil at refineries, Oklahoma dollar per barrel...	0.49	0.43	0.37	0.33	0.33	0.35	0.41	0.44	0.55	0.62	0.65	0.66	0.47
Grade C bunker oil in cargoes, Gulf coast. dollar per barrel...	.40	.40	.44	.51	.55	.56	.60	.65	.84	.90	.80	.88	.63
14°-18° gravity grade C bunker oil in cargoes, New York.....dollars per barrel...	.75	.75	.75	.75	.75	.75	.82	.86	1.05	1.10	1.10	1.19	.89
14°-18° gravity bunker oil in cargoes, California dollar per barrel...	.60	.60	.60	.60	.60	.56	.55	.61	.76	.82	.83	.83	.66
38°-40° straw distillate, Oklahoma.....cents per gallon...	3.048	2.473	1.992	1.788	1.823	1.796	2.097	2.141	2.658	2.915	3.017	3.153	2.408
32°-36° straw gas oil, Oklahoma.....cents per gallon...	2.048	1.567	1.173	1.00	.960	1.125	1.468	1.435	1.929	2.125	2.125	2.12	1.590

	24°-26° gravity fuel oil at refineries, Oklahoma (dollar)	Grade C bunker oil in cargoes, Gulf coast (dollar)	14°-18° gravity grade C bunker oil in cargoes, New York (dollars)	14°-18° gravity bunker oil in cargoes, California (dollar)	38°-40° straw distillate, Oklahoma (cents)	32°-36° straw gas oil, Oklahoma (cents)
Price change by weeks:						
Jan. 1 ²	0.55	0.40	0.75	0.60	3.375	2.25
Jan. 3.....	.50				3.25	
Jan. 9.....					3.125	2.125
Jan. 16.....					3.00	2.00
Jan. 23.....	.45				2.875	1.875
Jan. 30.....	.425				2.625	1.75
Feb. 6.....					2.50	1.625
Feb. 13.....						1.50
Feb. 20.....					2.375	
Feb. 27.....					2.25	1.375
Mar. 6.....	.375				2.00	1.25
Mar. 13.....		.45				
Mar. 20.....	.35				1.875	1.00
Mar. 27.....		.50				
Apr. 3.....					1.75	
Apr. 10.....	.325					
Apr. 24.....		.53			1.875	
May 1.....		.55				
May 22.....					1.75	.875
May 29.....					1.625	
June 5.....				.55		1.00
June 19.....	.375				2.00	1.25
June 26.....	.40	.60			2.125	1.50
July 3.....	.375					
July 10.....	.425		.85			
July 24.....					2.00	1.375
July 31.....					2.125	
Aug. 7.....		.65				
Aug. 21.....	.45			.725		1.50
Aug. 28.....	.475	.75	.95		2.25	1.625
Sept. 5.....					2.375	
Sept. 11.....	.575	.95	1.10		2.625	2.00
Sept. 18.....	.60	.90		.80	2.875	2.125
Sept. 25.....		.80			3.00	
Oct. 2.....		.90			2.875	
Oct. 9.....	.625			.825		
Oct. 23.....					3.00	
Nov. 6.....	.65	.77				
Nov. 13.....		.80				
Nov. 20.....		.75				
Nov. 27.....		.85			3.125	
Dec. 4.....			1.20			
Dec. 11.....		.90			3.25	
Dec. 18.....	.675				3.125	

¹ National Petroleum News.

² Price in effect on this date.

LUBRICANTS

Comparative analyses of statistics for lubricants in 1933, by months

[Thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production.....	1,826	1,619	1,772	1,871	2,114	1,847	1,959	2,019	2,046	2,115	2,375	2,212	23,775
Daily average.....	59	58	57	62	68	62	63	65	68	68	79	71	65
Imports.....									1				1
Exports.....	547	504	751	863	652	633	870	458	839	839	538	724	8,218
Daily average.....	18	18	24	29	21	21	28	15	28	27	18	23	23
Stocks, end of period	9,026	9,053	8,924	8,587	8,356	7,931	7,403	7,402	7,179	6,950	7,257	7,100	7,100
Domestic demand.....	947	1,088	1,150	1,345	1,693	1,639	1,617	1,562	1,431	1,505	1,530	1,645	17,152
Daily average.....	31	39	37	45	55	55	52	50	48	49	51	53	47

Production and stocks of lubricants in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Production:													
East coast.....	602	506	609	580	713	470	621	637	678	597	640	734	7,387
Appalachian.....	342	292	317	345	384	372	411	435	399	414	428	437	4,576
Indiana, Illinois, Kentucky, etc.....	145	128	137	161	165	150	155	178	135	171	146	161	1,832
Oklahoma, Kansas, and Missouri.....	177	149	160	181	187	234	236	221	199	223	210	258	2,435
Texas inland.....	24	21	19	20	32	17	20	18	24	36	30	23	284
Texas Gulf coast.....	342	370	342	388	435	422	387	307	410	429	724	424	4,980
Louisiana Gulf coast.....	32	19	23	23	26	39	30	44	34	50	35	31	386
Arkansas and Louisiana inland.....	12	7	6	6	5	5	6	21	9	25	21	2	116
Rocky Mountain.....	10	22	20	28	18	19	3	9	17	17	14	—	172
California.....	140	105	139	139	149	119	90	149	150	153	127	147	1,607
Total, 1933.....	1,826	1,619	1,772	1,871	2,114	1,847	1,959	2,019	2,046	2,115	2,375	2,212	23,775
Daily average.....	59	58	57	62	68	62	63	65	68	68	79	71	65
Total, 1932.....	2,092	1,984	1,946	1,910	2,036	2,290	1,958	1,587	1,643	1,713	1,644	1,625	22,433
													Dec. 31, 1932
Stocks, end of period:													
East coast.....	2,972	3,000	3,096	2,977	2,787	2,573	2,389	2,442	2,454	2,260	2,282	2,351	12,924
Appalachian.....	1,165	1,203	1,184	1,121	1,045	936	889	914	876	798	812	876	1,075
Indiana, Illinois, Kentucky, etc.....	1,004	1,007	990	994	956	908	874	864	852	824	779	688	1,004
Oklahoma, Kansas, and Missouri.....	640	663	585	495	451	480	472	454	398	447	467	521	580
Texas inland.....	90	91	86	77	83	81	80	69	74	80	83	80	86
Texas Gulf coast.....	1,975	1,948	1,851	1,788	1,880	1,837	1,663	1,624	1,513	1,441	1,760	1,526	1,897
Louisiana Gulf coast.....	96	99	99	86	82	79	64	72	62	61	61	62	70
Arkansas and Louisiana inland.....	10	10	9	9	8	8	8	21	18	27	23	18	10
Rocky Mountain.....	193	198	187	196	195	191	173	163	166	159	149	133	185
California.....	881	834	837	844	869	838	791	779	766	853	841	845	863
Total: 1933.....	9,026	9,053	8,924	8,587	8,356	7,931	7,403	7,402	7,179	6,950	7,257	7,100	18,694
1932.....	9,551	9,747	9,355	9,139	8,809	7,323	7,991	7,965	8,182	8,289	8,245	8,465	—

1 For comparison with 1933.

Percentage yields of lubricants in 1933, by districts and months

By districts:		By months:	
East coast	4.4	January	2.8
Appalachian	13.6	February	2.7
Indiana, Illinois, Kentucky, etc.	1.6	March	2.6
Oklahoma, Kansas, and Missouri	2.5	April	2.7
Texas inland	.5	May	2.8
Texas Gulf coast	3.1	June	2.5
Louisiana Gulf coast	1.0	July	2.5
Arkansas and Louisiana inland	.6	August	2.6
Rocky Mountain	1.2	September	2.7
California	1.0	October	2.8
United States: 1933	2.8	November	3.5
1932	2.7	December	3.1
		Year	2.8

Refinery prices of 5 selected grades of lubricating oil in 1933, in cents per gallon ¹

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average monthly price:													
Oklahoma:													
200 viscosity, no. 4 color, neutral	8.3	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.3	8.5	9.0	8.2
150-160 viscosity at 210°, bright stock, 10-25 cold test	15.0	13.6	12.7	12.7	15.8	17.3	19.9	21.3	21.6	21.8	21.8	21.8	17.9
Pennsylvania:													
200 viscosity, no. 3 color, filtered, neutral, 420-425 flash	13.2	12.2	12.0	12.8	16.0	17.4	18.1	18.8	19.2	19.3	19.4	23.9	16.9
600 steam refined, filterable	9.0	8.0	7.3	7.4	9.5	11.6	13.4	14.5	15.0	15.9	15.8	15.5	11.9
Gulf coast: 500 viscosity, no. 3½ color, unfiltered, neutral	7.4	7.1	7.0	7.0	7.0	7.0	7.0	7.1	7.5	7.5	7.9	7.9	7.3

	Oklahoma		Pennsylvania		Gulf coast	
	200 viscosity, no. 4 color, neutral	150-160 viscosity at 210°, bright stock, 10-25 cold test	200 viscosity, no. 3 color, filtered, neutral, 420-425 flash	600 steam refined, filterable	500 viscosity, no. 3½ color, unfiltered, neutral	
Price change by weeks:						
Jan. 1		8.25	15.0	13.00	9.25	7.25
Jan. 3				13.25	9.00	
Jan. 9						7.50
Feb. 6		8.00	13.625	12.00	8.25	7.00
Feb. 13			13.25		7.75	
Feb. 20			13.00		7.50	
Mar. 6			12.75		7.25	
Mar. 27			12.25			
Apr. 10			11.75	12.25	7.00	
Apr. 17			14.75	15.00	8.50	
Apr. 24			15.50	15.75	8.75	
May 1					9.00	
May 8				16.00		
May 15			16.50	16.25	10.50	
May 22				17.00	11.00	
May 29					11.50	
June 5			17.25	17.50	12.25	
June 12			18.25		12.75	
June 19			19.25	18.00	13.50	
June 26			20.25		14.00	
July 3				18.50	14.25	
July 10			21.25	19.00	14.75	
July 17						7.50
July 24				19.25	15.00	
Aug. 7					15.50	
Aug. 14					16.00	
Aug. 21						
Aug. 28						
Sept. 4			21.75			
Sept. 11						
Oct. 2						
Oct. 9		8.5				
Oct. 16						8.00
Oct. 23						7.875
Oct. 30						
Nov. 6					15.50	
Nov. 13						
Nov. 20				20.50		
Nov. 27				24.00		
Dec. 4		9.00		25.00		
Dec. 11						
Dec. 18						
Dec. 25						

¹ National Petroleum News.

² Prices in effect on this date.

WAX

Comparative analyses of statistics for wax in 1933, by months

[Thousands of pounds]

	January	February	March	April	May	June
Production.....	36,680	28,000	36,400	37,800	40,600	38,640
Daily average.....	1,183	1,000	1,174	1,260	1,310	1,288
Imports.....	3,548	2,971	956	622	1,445	2,408
Daily average.....	114	106	31	21	47	80
Exports.....	21,459	18,924	22,463	25,635	18,857	18,241
Daily average.....	692	676	725	855	608	608
Stocks, end of period.....	160,503	148,128	137,006	125,287	125,145	112,845
Domestic demand.....	22,201	24,422	26,015	24,506	23,330	35,107
Daily average.....	716	872	839	817	753	1,170

	July	August	Septem-ber	October	Novem-ber	Decem-ber	Total
Production.....	36,120	40,320	42,280	47,320	43,680	41,720	469,560
Daily average.....	1,165	1,301	1,409	1,526	1,456	1,346	1,286
Imports.....	1,354	4,475	5,476	3,100	3,500	6,779	36,634
Daily average.....	44	144	183	100	117	219	101
Exports.....	21,464	19,857	22,096	20,240	19,043	19,490	247,769
Daily average.....	692	641	737	653	635	629	679
Stocks, end of period.....	98,882	86,136	80,636	76,600	73,079	69,117	69,117
Domestic demand.....	29,973	37,684	31,160	34,216	31,658	32,971	353,243
Daily average.....	967	1,216	1,039	1,104	1,055	1,064	968

Production and stocks of wax in 1933, by districts and months

[Thousands of pounds]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Production:													
East coast.....	19,880	15,120	19,600	19,320	21,280	17,920	16,800	18,760	22,400	21,000	21,840	19,600	233,520
Appalachian.....	6,720	5,600	5,320	5,320	5,880	6,160	5,320	4,480	5,880	6,440	5,880	6,160	69,160
Indiana, Illinois, Kentucky, etc.....	1,120	1,400	1,680	1,120	1,120	2,240	1,960	2,520	280	5,040	3,640	3,640	25,760
Oklahoma, Kansas, and Missouri.....	2,520	1,960	1,960	2,520	2,520	2,240	2,520	2,520	2,240	2,520	2,520	3,080	29,120
Texas inland.....	280	280	280	280	280	280	280	280	280	280	280	280	3,080
Texas Gulf coast.....	4,480	2,520	3,640	3,920	3,640	3,920	3,920	3,920	3,360	3,640	3,920	3,640	44,520
Louisiana Gulf coast.....	1,960	560	2,240	5,320	4,760	5,040	4,760	6,160	7,280	7,560	5,320	6,440	57,400
Rocky Mountain.....	-280	560	1,680	840	840	1,120	840	840	560	840	280	-1,120	7,000
Total.....	36,680	28,000	36,400	37,800	40,600	38,640	36,120	40,320	42,280	47,320	43,680	41,720	469,560
Daily average.....	1,183	1,000	1,174	1,260	1,310	1,288	1,165	1,301	1,409	1,526	1,456	1,346	1,286
Stocks, end of period:													
Crude scale:													
East coast.....	22,480	19,700	20,082	19,015	19,417	17,530	13,971	10,095	9,014	7,745	6,862	7,259	20,041
Appalachian.....	18,888	18,109	18,186	17,097	18,080	15,301	14,599	12,752	12,389	10,267	10,238	10,559	19,673
Indiana, Illinois, Kentucky, etc.....	21,985	20,895	19,344	17,652	14,952	12,839	10,964	10,297	7,535	9,783	9,646	8,739	22,993
Oklahoma, Kansas, and Missouri.....	1,868	1,598	1,652	1,544	1,601	1,342	1,176	1,646	1,822	2,109	2,131	2,414	1,675
Texas, Gulf coast.....	2,451	1,977	1,733	2,208	2,063	1,489	2,172	2,223	2,091	1,763	2,326	1,821	2,514
Louisiana Gulf coast.....	24,596	15,502	7,742	1,951	4,658	3,822	4,281	2,250	3,991	4,252	4,588	3,435	30,343
Rocky Mountain.....	28,112	27,895	28,652	27,768	27,092	26,400	21,837	21,083	17,990	15,241	12,116	7,966	29,190
Total.....	120,380	105,676	97,391	87,235	87,863	78,723	69,000	60,346	54,832	51,160	47,907	42,193	126,429
Refined:													
East coast.....	18,743	19,394	15,741	15,752	15,401	13,094	12,069	11,022	11,829	11,932	12,139	11,514	118,058
Appalachian.....	2,466	2,547	2,003	2,159	1,920	2,395	1,805	1,494	1,224	1,755	1,964	2,183	2,443
Indiana, Illinois, Kentucky, etc.....	1,446	1,598	1,343	1,420	1,710	1,281	1,352	1,254	1,156	982	1,026	1,738	2,076
Oklahoma, Kansas, and Missouri.....	1,105	1,295	1,405	1,221	1,112	1,330	1,009	1,877	1,659	1,890	1,331	1,049	1,303
Texas inland.....	187	50	306	156	64	55	82	176	407	326	217	204	284
Texas Gulf coast.....	10,413	11,122	11,716	11,802	12,005	11,764	9,468	7,863	7,301	6,554	6,986	8,241	8,904
Louisiana Gulf coast.....	3,176	4,865	5,811	4,329	3,919	3,331	2,607	957	1,156	895	397	643	1,612
Rocky Mountain.....	2,587	1,581	1,290	1,213	1,151	872	1,490	1,147	1,072	1,106	1,112	1,352	2,826
Total.....	40,123	42,452	39,615	38,052	37,282	34,122	29,882	25,790	25,804	25,440	25,172	26,924	137,506

¹ For comparison with 1933.

Production and stocks of wax in 1933, by districts and months—Continued

[Thousands of pounds]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Stocks, end of period—Continued													
Total stocks:													
East coast.....	41,223	39,094	35,823	34,767	34,818	30,624	26,040	21,117	20,843	19,677	19,001	18,773	¹ 38,099
Appalachian.....	21,354	20,656	20,189	19,256	20,000	17,696	16,404	14,246	13,613	12,022	12,202	12,742	25,116
Indiana, Illinois, Kentucky, etc.....	23,431	22,493	20,687	19,072	16,662	14,120	12,316	11,551	8,691	10,765	10,672	10,477	22,069
Oklahoma, Kansas, and Missouri.....	2,973	2,893	3,057	2,765	2,713	2,672	2,185	3,523	3,481	3,999	3,462	3,463	2,978
Texas inland.....	187	50	306	156	64	55	82	176	407	326	217	204	284
Texas Gulf coast.....	12,864	13,099	13,449	14,010	14,068	13,253	11,640	10,086	9,392	8,317	9,312	10,062	11,418
Louisiana Gulf coast.....	27,772	20,367	13,553	6,280	8,577	7,153	6,888	3,207	5,147	5,147	4,985	4,078	31,955
Rocky Mountain.....	30,699	29,476	29,942	28,981	28,243	27,272	23,327	22,230	19,062	16,347	13,228	9,318	32,016
Total.....	160,503	148,128	137,006	125,287	125,145	112,845	98,882	86,136	80,636	76,600	73,079	69,117	¹ 163,935

¹ For comparison with 1933.

Refinery price of 122 to 124 white crude scale wax at Pennsylvania refineries in 1933, in cents per pound ¹

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average monthly price	1.97	1.94	1.96	1.99	2.09	2.37	2.91	3.26	3.40	3.94	4.10	4.13	2.84

PRICE CHANGES, BY WEEKS

Jan. 1 ²	2.00	May 15.....	2.10	July 24.....	3.10	Oct. 30.....	4.00
Jan. 16.....	1.95	May 22.....	2.125	July 31.....	3.25	Nov. 6.....	4.05
Jan. 30.....	1.90	May 29.....	2.25	Aug. 28.....	3.35	Nov. 13.....	4.125
Feb. 6.....	1.95	June 12.....	2.375	Sept. 18.....	3.45	Nov. 20.....	4.15
Mar. 27.....	2.00	June 26.....	2.60	Sept. 25.....	3.50	Nov. 27.....	4.20
Apr. 17.....	1.95	July 3.....	2.75	Oct. 2.....	3.75	Dec. 4.....	4.15
Apr. 24.....	2.00	July 10.....	2.90	Oct. 9.....	3.95	Dec. 18.....	4.10
May 8.....	2.05	July 17.....	2.95	Oct. 16.....	4.05		

¹ National Petroleum News.

² Price in effect on this date.

PETROLEUM COKE

Comparative analyses of statistics for petroleum coke in 1933, by months

[Thousands of short tons]

	January	February	March	April	May	June
Production.....	96.8	109.0	147.0	137.6	145.4	154.4
Daily average.....	3.1	3.9	4.7	4.6	4.7	5.1
Exports.....	18.5	16.9	5.9	14.8	12.6	26.0
Stocks, end of period.....	1,235.8	1,171.8	1,148.5	1,148.9	1,176.2	1,185.4
Domestic demand.....	172.7	156.1	164.4	122.4	105.5	119.2
Daily average.....	5.6	5.6	5.3	4.1	3.4	4.0

	July	August	September	October	November	December	Total
Production.....	153.6	111.8	138.8	139.4	117.6	128.6	1,580.0
Daily average.....	5.0	3.6	4.6	4.5	3.9	4.1	4.3
Exports.....	17.5	31.2	16.9	15.5	10.0	4.6	190.4
Stocks, end of period.....	1,149.1	1,035.9	987.0	891.3	760.3	727.4	727.4
Domestic demand.....	172.4	193.8	170.8	219.6	238.6	156.9	1,992.4
Daily average.....	5.6	6.3	5.7	7.1	8.0	5.1	5.5

Production and stocks of petroleum coke in 1933, by districts and months

[Thousands of short tons]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Production:													
East coast.....	17.6	16.6	18.4	17.6	21.8	23.2	19.6	17.6	16.4	14.8	14.0	13.8	211.4
Appalachian.....	2.2	1.0	2.4	2.4	2.0	2.2	2.4	1.8	2.2	1.8	2.0	2.0	24.4
Indiana, Illinois, Kentucky, etc.....	48.4	38.0	58.0	50.4	47.2	53.0	57.6	53.4	53.8	58.4	50.4	51.4	620.0
Oklahoma, Kansas, and Missouri.....	18.6	17.4	23.0	22.8	22.8	27.6	27.6	26.2	25.2	26.4	20.2	20.2	278.0
Texas inland.....	-17.8	3.6	4.2	4.0	5.4	5.2	6.0	1.4	6.2	3.4	3.6	3.0	28.2
Texas Gulf coast.....	32.2	21.8	29.8	31.0	35.2	30.4	29.6	1.4	20.6	23.0	18.6	24.8	298.4
Louisiana Gulf coast.....	5.0	3.8	3.2	2.8	3.8	3.6	2.4	2.4	5.2	.8	.4	4.2	37.6
Arkansas and Louisiana inland.....	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	2.4
Rocky Mountain.....	-13.0	6.4	7.0	6.2	6.2	8.2	7.8	7.0	8.4	8.2	7.8	6.8	67.0
California.....	3.4	.2	.8	.2	.8	.8	.4	.4	.6	2.4	.4	2.2	12.6
Total, 1933.....	96.8	109.0	147.0	137.6	145.4	154.4	153.6	111.8	138.8	139.4	117.6	128.6	1,580.0
Daily average.....	3.1	3.9	4.7	4.6	4.7	5.1	5.0	3.6	4.6	4.5	3.9	4.1	4.3
Total, 1932.....	144.9	141.4	145.7	148.6	159.4	145.1	152.5	150.2	150.2	154.5	146.7	149.6	1,788.8
Stocks, end of period:													
East coast.....	20.5	13.8	11.4	18.1	30.0	41.8	50.7	57.9	57.2	49.0	38.7	27.0	29.3
Appalachian.....	7.9	6.3	5.5	6.0	6.3	6.5	5.5	5.0	5.1	5.0	4.8	4.7	7.3
Indiana, Illinois, Kentucky, etc.....	79.5	61.4	66.0	84.3	94.2	107.5	121.3	111.0	97.2	85.5	79.0	93.2	91.7
Oklahoma, Kansas, and Missouri.....	141.9	131.1	131.6	136.5	138.8	143.6	143.6	139.4	136.5	130.2	106.8	102.5	151.0
Texas inland.....	111.8	111.1	113.8	113.2	114.5	115.9	119.7	115.0	114.5	116.2	90.2	80.0	135.3
Texas Gulf coast.....	594.0	570.2	544.4	515.5	513.0	488.0	452.5	372.8	346.6	287.6	229.2	206.1	615.4
Louisiana Gulf coast.....	64.6	66.2	68.8	71.3	74.8	76.4	49.1	29.5	22.7	10.1	6.0	8.9	64.3
Arkansas and Louisiana inland.....			.1		.1	.2	.2	.3	.3	.3	.2		
Rocky Mountain.....	109.7	106.9	103.6	100.9	101.2	101.6	102.6	101.3	104.7	106.0	107.1	105.8	131.8
California.....	105.9	104.8	103.3	103.1	103.3	103.9	103.9	103.7	102.2	101.4	98.3	99.2	104.1
Total: 1933.....	1,235.8	1,171.8	1,148.5	1,148.9	1,176.2	1,185.4	1,149.1	1,035.9	987.0	891.3	760.3	727.4	1,330.2
1932.....	1,460.3	1,440.3	1,436.1	1,519.8	1,554.2	1,536.7	1,544.2	1,514.5	1,483.6	1,434.4	1,393.9	1,330.2	

ASPHALT

Comparative analyses of statistics for asphalt in 1933, by months

[Thousands of short tons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production.....	105.4	101.5	131.6	158.9	239.3	256.2	273.3	253.5	224.7	242.0	178.4	154.7	2,319.5
Daily average.....	3.4	3.6	4.2	5.3	7.7	8.5	8.8	8.2	7.5	7.8	5.9	5.0	6.4
Imports.....	3.5	.4	3.4	.3	2.2	1.0	.7	1.6	.4	3.3	.8	4.0	21.6
Exports.....	17.5	10.3	13.4	9.6	15.8	20.0	14.6	20.7	21.8	25.9	21.4	24.8	215.8
Stocks, end of period.....	272.2	294.4	304.4	305.8	297.6	287.6	278.1	268.1	253.4	242.2	258.9	254.5	254.5
Domestic demand.....	95.3	69.4	111.6	148.2	233.9	247.2	268.9	244.4	218.0	230.6	141.1	138.3	2,146.9
Daily average.....	3.1	2.5	3.6	4.9	7.5	8.2	8.7	7.9	7.3	7.4	4.7	4.5	5.9

Production and stocks of asphalt in 1933, by districts and months

[Thousands of short tons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production:													
East coast.....	36.3	37.1	59.5	67.7	113.1	113.6	146.2	126.0	100.0	112.1	81.6	61.7	1,054.9
Appalachian.....	2.7	4.7	4.7	11.1	11.4	12.8	8.9	6.8	10.9	5.8	4.4	4.2	88.4
Indiana, Illinois, Kentucky, etc.....	23.3	19.1	22.5	28.9	35.1	46.7	49.3	44.2	41.6	44.4	36.7	30.4	422.2
Oklahoma, Kansas, and Missouri.....	2.3	7.1	5.8	3.1	6.2	5.7	6.7	6.4	7.3	7.3	3.5	5.3	66.7
Texas inland.....	.9	1.8	3.3	1.7	5.1	3.8	3.8	2.7	2.2	2.3	3.7	2.4	33.7
Texas Gulf coast.....	11.3	8.0	7.8	9.8	12.4	17.3	14.6	19.6	16.3	12.0	14.4	12.7	156.2
Louisiana Gulf coast.....	4.9	2.0	4.9	4.2	14.7	13.8	10.7	13.5	13.3	6.6	3.6	8.0	100.2
Arkansas and Louisi- ana inland.....	5.3	5.3	5.3	5.6	7.4	8.2	3.3	8.2	9.3	8.2	7.1	8.2	81.4
Rocky Mountain.....				.5	.2	.5	.5	.4	.9	.4	.2	-.2	3.4
California.....	18.4	16.4	17.8	26.3	33.7	33.8	29.3	25.7	22.9	42.9	23.2	22.0	312.4
Total, 1933.....	105.4	101.5	131.6	158.9	239.3	256.2	273.3	253.5	224.7	242.0	178.4	154.7	2,319.5
Daily average.....	3.4	3.6	4.2	5.3	7.7	8.5	8.8	8.2	7.5	7.8	5.9	5.0	6.4
Total, 1932.....	134.6	133.6	185.6	216.8	257.2	261.4	240.3	237.8	245.5	235.6	181.7	144.8	2,474.9
Stocks, end of period:													<i>Dec. 31, 1932</i>
East coast.....	88.6	94.3	109.6	102.5	100.0	95.4	88.6	95.5	80.1	75.5	85.1	83.2	84.3
Appalachian.....	9.1	10.3	10.9	14.2	17.7	19.5	15.3	11.1	11.7	8.2	7.5	6.6	8.3
Indiana, Illinois, Kentucky, etc.....	72.3	79.1	75.9	72.3	64.4	63.2	59.7	54.5	56.5	59.0	65.4	61.2	67.5
Oklahoma, Kansas, and Missouri.....	4.2	4.8	3.2	2.9	3.1	3.5	4.2	3.9	3.9	4.8	5.4	6.4	5.1
Texas Gulf coast.....	5.3	7.4	6.3	8.6	5.9	4.2	7.7	5.6	8.8	5.9	8.2	7.3	6.0
Louisiana Gulf coast.....	22.0	21.7	21.2	19.5	21.3	20.9	22.2	24.6	27.8	26.2	23.7	22.1	39.8
Arkansas and Louisi- ana inland.....	25.1	27.5	31.6	32.1	31.2	27.9	21.9	19.9	17.3	18.1	17.8	19.2	22.8
Rocky Mountain.....	2.7	1.7	2.6	3.1	3.1	3.1	3.5	3.3	3.1	2.7	2.7	2.5	2.7
California.....	42.9	47.6	43.1	60.6	50.9	49.9	55.0	49.7	44.2	41.8	43.1	46.0	39.6
Total: 1933.....	272.2	294.4	304.4	305.8	297.6	287.6	278.1	268.1	253.4	242.2	258.9	254.5	276.1
1932.....	309.4	313.4	351.2	391.3	414.1	408.6	386.3	298.0	291.9	248.3	279.5	276.1	-----

ROAD OIL

Production and stocks of road oil in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production:													
East coast.....	8	13	12	72	104	180	141	77	48	59	32	1	747
Appalachian.....	3	—4	3	17	8	18	8	17	5	2	2	2	81
Indiana, Illinois, Ken- tucky, etc.....		17	46	36	113	348	324	260	202	38	7	43	1,434
Oklahoma, Kansas, and Missouri.....	26	46	53	33	22	92	118	149	149	108	3	23	822
Texas inland.....		1	4		9	5	5	10	12	11	9	1	67
Texas Gulf coast.....	2	1	4	8	8	53	19	24	1	15	13	34	182
Louisiana Gulf coast.....	1	1		20	19	4	21	9	5				86
Arkansas and Louisi- ana inland.....					13	21	50	19	—2	—6	2	32	129
Rocky Mountain.....	28	27	14	24	58	105	150	71	33	29	42	38	619
California.....	31	48	50	64	117	138	137	153	250	142	165	72	1,367
Total, 1933.....	99	150	186	274	471	964	973	789	703	403	275	247	5,534
Daily average.....	3	5	6	9	15	32	31	25	23	13	9	8	15
Total, 1932.....	154	88	171	367	581	1,228	1,410	1,273	818	470	190	129	6,879
													<i>Dec. 31, 1932</i>
Stocks, end of period:													
East coast.....	98	99	93	140	160	164	166	154	131	116	110	92	103
Appalachian.....	24	20	25	48	59	46	33	27	21	17	23	22	20
Indiana, Illinois, Ken- tucky, etc.....	22	21	53	72	229	210	243	153	130	65	41	41	40
Oklahoma, Kansas, and Missouri.....	110	160	203	226	223	260	185	241	232	198	157	172	90
Texas inland.....	14	17	24	20	24	24	35	26	21	24	28	24	17
Texas Gulf coast.....	11	10	11	14	15	47	54	55	34	27	30	31	13
Louisiana Gulf coast.....	7	7	6	14	17	7	13	16	15	15	13	14	7
Arkansas and Louisi- ana inland.....					1	16	11	13	8	2	4	29	
Rocky Mountain.....	109	136	150	171	204	209	241	208	146	152	189	212	83
California.....	178	199	238	293	305	315	296	237	270	240	189	195	191
Total: 1933.....	573	669	803	998	1,237	1,298	1,277	1,130	1,008	856	815	832	564
1932.....	460	509	618	825	986	999	1,096	991	742	589	499	564	

STILL GAS

Production of still gas in 1933, by districts and months

[Millions of cubic feet]

District	January	February	March	April	May	June	July
East coast.....	2,361	2,071	2,529	2,604	2,961	2,652	2,829
Appalachian.....	382	572	663	677	783	821	925
Indiana, Illinois, Kentucky, etc.....	2,430	2,355	2,923	2,795	3,253	3,475	2,740
Oklahoma, Kansas, and Missouri.....	1,075	992	1,249	1,297	1,560	1,634	1,789
Texas inland.....	406	310	359	324	536	510	487
Texas Gulf coast.....	3,362	2,991	3,364	3,540	4,111	3,834	3,919
Louisiana Gulf coast.....	467	509	591	747	592	447	644
Arkansas and Louisiana inland.....	197	186	195	188	219	201	228
Rocky Mountain.....	295	243	230	198	296	341	339
California.....	1,147	896	791	1,309	1,510	1,636	1,996
Total, 1933.....	12,122	11,125	12,894	13,679	15,821	15,551	15,896
Daily average.....	391	397	416	456	510	518	513
Total equivalent in thousands of barrels.....	3,224	2,914	3,368	3,557	4,232	4,141	4,524
Total, 1932.....	12,622	12,275	12,849	13,389	14,112	13,820	14,598
Total equivalent in thousands of barrels.....	3,207	3,029	3,200	3,382	3,664	3,539	3,763

Production of still gas in 1933, by districts and months—Continued

[Millions of cubic feet]

District	August	September	October	November	December	Total	
						Millions of cubic feet	Equivalent in thousands of barrels
East coast.....	2,735	2,486	2,526	2,323	2,277	30,354	9,382
Appalachian.....	860	870	815	660	637	8,665	2,366
Indiana, Illinois, Kentucky, etc.....	3,476	3,278	3,296	2,760	2,887	35,668	9,638
Oklahoma, Kansas, and Missouri.....	1,854	1,653	1,660	1,365	1,368	17,496	4,557
Texas inland.....	480	604	529	461	401	5,407	1,218
Texas Gulf coast.....	3,916	3,775	3,576	3,246	3,552	43,186	10,574
Louisiana Gulf coast.....	582	554	422	445	520	6,520	1,499
Arkansas and Louisiana inland.....	236	219	203	197	188	2,457	552
Rocky Mountain.....	325	364	352	290	246	3,519	834
California.....	1,879	1,649	1,638	1,479	1,651	17,581	4,592
Total, 1933.....	16,343	15,452	15,017	13,226	13,727	170,853	45,212
Daily average.....	527	515	484	441	443	468	124
Total equivalent in thousands of barrels.....	4,250	3,989	3,990	3,466	3,557	45,212	-----
Total, 1932.....	14,103	13,513	13,551	12,955	13,020	160,812	40,905
Total equivalent in thousands of barrels.....	3,626	3,386	3,484	3,311	3,314	40,905	-----

MISCELLANEOUS OILS

Production and stocks of miscellaneous oils in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production:													
East coast.....	19	19	27	28	26	27	31	39	25	33	26	36	336
Appalachian.....	13	16	19	15	22	35	32	24	20	18	15	29	258
Indiana, Illinois, Kentucky, etc.....	14	10	10	4	12	18	15	8	20	16	20	23	170
Oklahoma, Kansas, and Missouri.....	5	8	25	12	29	12	12	11	9	8	15	19	165
Texas inland.....	5	9	8	7	11	3	8	6	8	5	2	4	76
Texas Gulf coast.....	4	2	3	3	3	3	3	3	4	2	7	2	39
Louisiana Gulf coast.....	2	4											6
Arkansas and Louisiana inland.....	1			1	4	1		1	2	3	5	5	23
Rocky Mountain.....	6	1	5	2	2	3			1		-3	3	20
California.....	13	28	27	26	28	28	41	35	31	18	46	21	342
Total, 1933.....	82	97	124	98	137	180	142	127	120	103	133	142	1,435
Daily average.....	2	3	4	3	4	4	5	4	4	3	5	5	4
Total, 1932.....	244	223	193	198	150	147	112	97	106	82	110	76	1,738
Stocks, end of period:													<i>Dec 31, 1933</i>
East coast.....	61	68	69	81	74	83	81	74	71	68	74	81	55
Appalachian.....	27	23	24	25	26	27	28	23	27	32	43	43	38
Indiana, Illinois, Kentucky, etc.....	125	87	88	73	59	51	22	10	11	11	12	12	130
Oklahoma, Kansas, and Missouri.....	17	20	21	24	20	20	16	18	20	18	27	25	20
Texas inland.....	5	7	6	7	12	5	7	6	2	7	4	5	6
Texas Gulf coast.....	12	14	12	11	11	9	9	9	11	10	11	11	11
Louisiana Gulf coast.....	4	3											3
Arkansas and Louisiana inland.....	5	4	3	2	5	4	2	2	3	2	2	1	4
Rocky Mountain.....	5	6	8	9	10	9	7	7	8	7	3	6	-----
California.....	179	183	194	210	213	212	207	208	217	201	209	204	189
Total, 1933.....	440	415	425	442	430	420	379	357	370	356	385	388	456
1932.....	650	657	632	608	577	533	499	511	524	459	485	456	-----

Production of miscellaneous oils in 1933, by districts and classes

[Thousands of barrels of 42 gallons]

District	Petro- latum	Absorp- tion oil	Medici- nal oil	Ink oil	Acid oil	Special- ties	Other	Total
East coast.....	133		97	26	27	7	46	336
Appalachian.....	175	16			6		61	258
Indiana, Illinois, Kentucky, etc.....	26				3	2	139	170
Oklahoma, Kansas, and Missouri.....	20	46					99	165
Texas inland.....	1	70					5	76
Texas Gulf coast.....	3	6					17	39
Louisiana Gulf coast.....						13	6	6
Arkansas and Louisiana inland.....				18			5	23
Rocky Mountain.....	9					2	9	20
California.....			8			43	291	342
Total.....	367	138	105	44	36	67	678	1,435

UNFINISHED OILS

Production and stocks of unfinished oils in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Production (net):													
East coast.....	28	442	1 54	129	357	247	1 35	666	85	1 51	1 582	343	1,575
Appalachian.....	1 355	1 201	1 163	1 194	1 249	1 474	1 444	1 345	1 339	1 276	1 74	1 267	13,381
Indiana, Illinois, Kentucky, etc.....	634	505	509	563	1 415	348	1 3	370	88	1 89	584	358	3,452
Oklahoma, Kansas, and Missouri.....	1 175	1 82	62	227	1 17	108	32	1 23	54	1 312	1 135	1 252	1 513
Texas inland.....	1 53	80	1 31	57	1 79	1 3	146	94	296	64	1 120	117	568
Texas Gulf coast.....	131	207	1 267	777	69	1 756	118	1 230	1 52	479	1 995	784	1,695
Louisiana Gulf coast.....	1 56	99	237	57	236	1 49	146	103	1 34	66	151	15	971
Arkansas and Louisiana inland.....	1 36	93	6	1 85	1 41	1 12	1 62	154	36	1 12	1 17	1 44	1 20
Rocky Mountain.....	1 84	1 27	1 37	1 20	1 74	266	1	60	1 13	1 28	67	117	218
California.....	1 251	1 108	1 308	1 270	634	1 309	1 62	1 229	1 110	172	511	312	1 18
Total: 1933.....	1 217	998	1 76	1,241	421	1 634	1 163	2,080	11	13	1 610	1,483	4,547
1932.....	1 919	1 637	1 637	707	1,098	1,150	404	1 1,032	1 1,230	1 442	1 335	12	11,861
Stocks, end of period:													<i>Dec. 31, 1932</i>
East coast.....	7,201	7,540	7,466	7,525	7,872	7,748	7,419	7,884	7,838	7,651	7,254	7,546	² 7,499
Appalachian.....	1,814	1,738	1,776	1,829	1,805	1,745	1,649	1,611	1,591	1,568	1,669	1,631	² 1,824
Indiana, Illinois, Kentucky, etc.....	6,428	6,753	7,076	7,586	7,031	7,337	7,303	7,497	7,478	7,194	7,716	7,658	5,986
Oklahoma, Kansas, and Missouri.....	3,385	3,483	3,731	4,011	4,134	4,284	4,347	4,500	4,661	4,544	4,471	4,635	3,368
Texas inland.....	973	1,053	1,022	1,079	1,000	997	1,143	1,237	1,533	1,597	1,477	1,594	1,026
Texas Gulf coast.....	11,009	11,386	11,264	11,864	11,806	11,113	11,325	12,536	12,296	12,794	11,439	12,045	10,897
Louisiana Gulf coast.....	1,960	1,867	1,821	1,878	2,026	1,871	1,869	1,885	1,851	1,781	1,932	1,947	2,016
Arkansas and Louisiana inland.....	436	529	535	450	409	397	335	489	525	513	496	452	472
Rocky Mountain.....	2,251	2,214	2,177	2,157	2,083	2,349	2,350	2,410	2,397	2,369	2,436	2,553	2,335
California.....	8,079	7,971	7,590	7,320	7,645	7,645	7,583	7,354	7,244	7,416	7,927	8,239	8,330
Total: 1933.....	43,536	44,534	44,458	45,699	46,120	45,486	45,323	47,403	47,414	47,427	46,817	48,300	² 43,753
1932.....	43,838	43,201	42,564	43,271	44,369	45,519	45,923	44,891	{ 43,661 3 44,124 }	43,682	43,347	43,359	-----

¹ Negative quantity—represents net excess of unfinished oils rerun over unfinished oil produced.

² For comparison with 1933.

³ 463,000 barrels transferred from residual-fuel-oil stocks.

CRUDE PETROLEUM AND PETROLEUM PRODUCTS

SHORTAGE

Shortage in refinery operations in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
East coast.....	122	48	78	63	127	110	25	94	33	57	85	112	954
Appalachian.....	107	83	103	96	107	136	118	130	100	121	90	96	1,287
Indiana, Illinois, Ken- tucky, etc.....	49	63	125	111	26	67	146	213	150	88	113	83	962
Oklahoma, Kansas, and Missouri.....	251	221	252	281	294	306	345	358	327	304	290	287	3,516
Texas inland.....	366	238	249	257	309	320	348	322	296	234	269	260	3,518
Texas Gulf coast.....	207	160	226	216	336	307	405	552	270	314	229	209	3,431
Louisiana Gulf coast.....	110	12	57	66	84	170	83	92	96	101	149	33	1,039
Arkansas and Louisiana inland.....	43	47	48	42	62	50	51	61	58	53	56	56	627
Rocky Mountain.....	132	20	13	28	34	37	45	50	37	45	36	31	508
California.....	5	75	251	18	83	42	141	106	59	54	69	37	914
Total, 1933.....	1,392	953	1,252	1,030	1,462	1,545	1,707	1,978	1,428	1,421	1,386	1,204	16,756
Daily average.....	45	34	40	34	47	52	55	64	43	46	46	39	46
Total, 1932.....	1,634	1,533	1,789	1,735	1,846	2,054	1,983	1,805	1,834	1,536	1,525	1,378	20,652

¹ Overage.

IMPORTS AND EXPORTS

Imports of petroleum products (including natural asphalt) into United States ¹ in 1933, by months

[Quantity in thousands of barrels of 42 gallons, except as otherwise indicated; value in thousands of dollars]

Product	Jan.	Feb.	Mar.	Apr.	May	June	July
For domestic consumption:							
Gasoline.....			3	1	1	1	1
Fuel oil.....	858	1,087	1,154	965	504	519	30
Lubricants.....							
Wax..... thousands of pounds.....	3,548	2,971	396	510	1,445	2,184	1,130
Wax equivalent.....	13	11	2	2	5	7	4
Asphalt and bitumen.....	19	2	19	2	12	6	4
Other petroleum distillates.....	2	2	1	1	1	4	
Total.....	892	1,102	1,179	971	523	537	39
Imported in bond:							
Gasoline.....			2				
Fuel oil.....	283	513	326	383	130	174	1,242
Wax..... thousands of pounds.....			560	112		224	224
Wax equivalent.....	2	2	2	2		1	1
Total.....	283	513	330	383	130	175	1,243
Grand total.....	1,175	1,615	1,509	1,354	653	712	1,282

Product	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
						Quantity	Value
For domestic consumption:							
Gasoline.....	1	1	1	2	1	13	51
Fuel oil.....	208	141	202	273	208	6,154	3,070
Lubricants.....		1				1	27
Wax..... thousands of pounds.....	4,475	5,252	3,100	3,224	6,622	34,857	906
Wax equivalent.....	16	19	11	12	23	125	906
Asphalt and bitumen.....	9	2	18	4	22	119	278
Other petroleum distillates.....	3	1		1	3	19	157
Total.....	237	165	232	297	257	6,431	4,489
Imported in bond:							
Gasoline.....						2	13
Fuel oil.....	1,441	608	700	677	584	7,061	3,400
Wax..... thousands of pounds.....		224		276	157	1,777	51
Wax equivalent.....		1		1	1	7	51
Total.....	1,441	609	700	678	585	7,070	3,464
Grand total.....	1,678	774	932	975	842	13,501	7,953

¹ Exclusive of the territories of Alaska, Hawaii, and Puerto Rico.

Exports to foreign countries and shipments to noncontiguous territories of petroleum products in 1933, by months ¹

[Quantity in thousands of barrels of 42 gallons, except as otherwise indicated; value in thousands of dollars]

Product	Jan.	Feb.	Mar.	Apr.	May	June	July
Gasoline.....	2,352	1,960	2,010	3,112	2,037	2,325	3,160
Natural gasoline.....	143	10	351	109	78	287	140
Benzol.....	19	1	12	34	12	7	1
Kerosene.....	887	637	649	718	610	868	850
Gas oil and distillate fuel oils.....	1,043	682	748	1,086	1,081	547	1,063
Residual fuel oils.....	1,052	473	721	709	805	615	1,106
Lubricants.....	547	504	751	863	652	633	870
Wax.....	77	68	80	92	67	65	77
Coke.....	93	84	30	74	63	130	83
Asphalt.....	96	57	74	53	87	110	80
Wax, crude..... thousands of pounds.....	8,427	7,701	9,252	9,414	6,581	5,291	8,092
Wax, refined..... do.....	13,032	11,223	13,211	16,221	12,276	12,950	13,372
Wax, total..... do.....	21,459	18,924	22,463	25,635	18,857	18,241	21,464
Coke..... thousands of short tons.....	18	17	6	15	13	26	18
Asphalt..... do.....	17	10	13	10	16	20	15
Insulating or transformer oils ²	1	1	3	3	2	3	4
Mineral spirits.....	6	3	2	6	3	5	4
Total: 1933.....	6,315	4,479	5,428	6,856	5,495	5,092	7,439
1932.....	7,026	5,974	7,037	7,774	8,372	6,956	4,928

Product	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
						Quantity	Value
Gasoline.....	1,786	1,810	2,567	2,779	1,565	27,463	63,118
Natural gasoline.....	173	42	132	124	68	1,657	3,395
Benzol.....	24	74	1	1	16	201	1,595
Kerosene.....	650	730	943	1,049	868	8,959	20,221
Gas oil and distillate fuel oils.....	584	637	1,072	999	1,444	10,986	13,035
Residual fuel oils.....	1,052	637	757	615	1,035	9,577	7,202
Lubricants.....	458	839	839	538	724	8,218	56,588
Wax.....	71	79	72	68	69	885	6,960
Coke.....	156	84	77	50	23	952	580
Asphalt.....	114	120	142	118	136	1,187	2,912
Wax, crude..... thousands of pounds.....	7,051	9,678	9,228	8,023	8,176	96,914	2,352
Wax, refined..... do.....	12,806	12,418	11,012	11,020	11,314	150,855	4,608
Wax, total..... do.....	19,857	22,096	20,240	19,043	19,490	247,769	6,960
Coke..... thousands of short tons.....	31	17	15	10	5	191	580
Asphalt..... do.....	21	22	26	21	25	216	2,912
Insulating or transformer oils ²	1	7	2	3	2	32	333
Mineral spirits.....	4	3	8	9	5	58	336
Total: 1933.....	5,048	5,005	6,883	6,350	5,953	70,143	175,942
1932.....	5,649	5,784	5,495	5,696	4,591	75,882	187,758

¹ Exclusive of exports from Alaska, Hawaii, and Puerto Rico and inclusive of shipments from continental United States to Alaska, Hawaii, and Puerto Rico.

² Included in lubricants.

Exports of the major petroleum products in 1933, by countries of destination

[Quantity in thousands of barrels of 42 gallons, except as otherwise indicated; value in thousands of dollars]

Destination	Gasoline ¹		Kerosene		Gas oil and fuel oil		Lubricants		Wax	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity (thousands of pounds)	Value
Argentina.....	410	1,006	82	196	-----	-----	90	1,056	6,674	192
Australia.....	2,590	5,154	466	1,057	3	8	358	3,609	244	10
Belgium.....	1,388	2,794	86	179	207	274	680	3,231	8,492	242
Brazil.....	779	2,429	433	2,027	55	182	181	1,399	1,957	65
British India.....	28	104	37	157	28	96	414	2,461	704	25
Canada.....	1,599	3,541	51	124	1,262	1,215	294	2,371	505	21
Chile.....	1	5	1	3	1,247	812	25	274	10,355	263
China, Hong Kong, and Kwantung.....	490	1,324	1,825	3,617	558	731	299	1,956	16,445	441
Colombia.....	7	38	(²)	1	9	20	8	165	4,395	140
Cuba.....	308	584	(²)	3	218	127	25	233	1,758	62
Denmark.....	9	30	(²)	2	2	1	165	486	2,098	62
Finland.....	-----	-----	73	108	-----	-----	6	81	392	13
France.....	5,078	9,813	209	387	399	479	1,148	7,961	1,176	35
Germany.....	484	1,138	155	294	630	857	909	5,480	22,519	622
Irish Free State.....	364	648	139	234	15	20	3	20	2,538	61
Italy.....	145	450	166	284	393	534	363	2,633	43,047	1,211
Japan.....	1,031	2,300	265	511	5,181	3,430	165	1,406	1,788	56
Mexico.....	68	235	12	27	613	445	36	376	3,054	60
Netherlands.....	608	1,459	799	1,335	1,050	448	247	1,385	10,432	443
Netherlands West Indies.....	1,696	4,229	133	255	602	742	6	73	-----	-----
New Zealand.....	917	1,942	75	189	75	189	52	615	73	4
Norway.....	65	130	151	261	257	308	22	227	1,323	37
Panama.....	165	457	23	77	1,265	1,061	8	120	2,127	67
Philippine Islands.....	701	2,115	435	1,065	799	723	62	615	2,657	80
Spain.....	724	1,308	6	12	309	271	55	596	8,533	248
Sweden.....	532	1,148	249	446	264	377	71	478	4,352	114
Union of South Africa.....	514	1,204	141	417	3	10	65	788	1,854	57
United Kingdom.....	6,015	11,513	2,113	3,542	1,580	922	1,928	10,954	55,492	1,411
Other.....	937	3,817	639	2,399	1,431	4,028	462	4,853	29,290	937
	27,653	60,915	8,764	19,209	18,455	18,310	8,147	55,902	248,274	6,979

¹ Includes natural gasoline.² Less than 500 barrels.*Exports of the major petroleum products in 1933, by shipping points*

[Thousands of barrels of 42 gallons, except as otherwise indicated]

Customs district	Gasoline ¹	Kerosene	Gas oil and fuel oil	Lubricants	Wax (thousands of pounds)
Atlantic coast:					
New England ²	39	6	10	9	802
New York.....	377	451	187	2,745	126,125
Philadelphia.....	4,824	819	3	2,104	40,995
South Atlantic ³	110	20	-----	42	5,238
Gulf coast:					
Florida and Mobile.....	66	3	6	2	1
New Orleans.....	2,435	2,043	1,421	354	65,973
Sabine.....	3,963	828	1,210	1,108	7,215
Galveston.....	5,861	1,376	3,181	1,040	463
Mexican border:					
San Antonio.....	457	-----	204	15	-----
El Paso and Arizona.....	13	5	74	2	40
Pacific coast:					
San Diego.....	30	10	52	2	2
Los Angeles.....	5,280	2,015	10,724	30	79
San Francisco.....	3,386	1,136	1,277	431	319
Washington and Oregon.....	50	8	13	7	14
Northern border:					
Western districts ⁴	130	5	21	59	14
Chicago.....	49	-----	-----	-----	-----
Michigan and Ohio.....	293	11	38	46	24
Buffalo.....	157	21	27	123	368
Rochester and St. Lawrence.....	78	1	-----	27	64
Noncontiguous territories:					
Alaska.....	4	-----	2	-----	3
Puerto Rico.....	51	6	4	1	545
	27,653	8,764	18,455	8,147	248,274

¹ Includes natural gasoline.² Includes customs districts of Maine and New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.³ Includes customs districts of Maryland, Virginia, and South Carolina.⁴ Includes customs districts of Montana and Idaho, Dakota, and Duluth-Superior.

PANAMA CANAL SHIPMENTS

California oil shipped through the Panama Canal to Atlantic and Gulf ports in the United States in 1933, by months ¹

[Thousands of barrels of 42 gallons]

Product	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Gasoline.....	570	678	596	926	1,137	1,027	1,617	1,055	1,130	1,162	844	563	11,305
Natural gasoline.....	81	-----	-----	-----	-----	-----	-----	-----	-----	-----	73	-----	154
Kerosene.....	405	224	-----	79	82	80	6	62	182	81	183	347	1,731
Gas oil and Diesel oil.....	720	258	149	88	71	-----	-----	116	161	92	261	534	2,450
Fuel oil.....	73	159	145	211	140	73	-----	67	190	1,307	1,718	1,036	5,119
Lubricants.....	-----	8	-----	9	1	1	10	1	10	-----	10	2	52
Asphalt.....	-----	-----	-----	-----	-----	-----	-----	14	1	-----	17	16	4
Miscellaneous.....	16	15	73	1	14	1	22	1	1	1	1	15	205
Total: 1933.....	1,865	1,342	963	1,314	1,445	1,182	1,655	1,316	1,674	2,659	3,106	2,499	21,020
1932.....	572	189	1,165	706	1,104	1,588	1,103	882	1,178	979	1,519	1,051	12,036

¹ Compiled by E. T. Knudsen, of the San Francisco office of the Bureau of Mines.

NATURAL GASOLINE ¹

Production and distribution of natural gasoline in 1933, by months

[Thousands of barrels of 42 gallons]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Production.....	2,893	2,560	2,788	2,690	2,793	2,686	2,786	2,840	2,807	2,998	2,948	3,021	33,810
Decrease in all stocks.....	5	-----	-----	-----	-----	105	42	-----	237	257	156	-----	-----
	2,898	2,560	2,788	2,690	2,793	2,791	2,828	2,840	3,044	3,255	3,104	3,021	33,810
Blended at refineries.....	2,145	1,645	1,750	1,735	1,650	1,952	1,755	1,955	2,304	2,513	2,579	2,076	24,059
Blended at plants ²	5	8	10	9	10	12	9	12	12	14	15	14	130
Run through pipe lines ³	117	115	96	108	91	87	105	104	105	112	121	126	1,287
Exports and sales to jobbers.....	373	353	537	522	479	432	553	373	276	350	197	284	4,729
Increase in all stocks.....	-----	199	150	44	278	308	406	57	347	266	192	333	3,491
Losses.....	258	240	245	272	285	-----	-----	339	-----	-----	-----	-----	-----
	2,898	2,560	2,788	2,690	2,793	2,791	2,828	2,840	3,044	3,255	3,104	3,021	33,810

¹ For detailed statistics see Natural Gasoline—Statistical Appendix to Minerals Yearbook, 1934.

² East of California.

³ To refineries in California.

Consumption and stocks of natural gasoline at refineries in 1933, by districts and months

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Consumption:													
East coast.....	120	27	28	34	26	44	51	16	107	171	307	178	1,109
Appalachian.....	25	19	14	14	17	15	16	16	27	21	26	27	237
Indiana, Illinois, Kentucky, etc.....	162	139	111	116	92	117	113	114	199	222	230	170	1,785
Oklahoma, Kansas, and Missouri.....	372	349	394	337	353	430	397	429	502	531	493	381	4,968
Texas inland.....	275	225	243	294	247	289	261	290	283	335	319	343	3,404
Texas Gulf coast.....	273	140	202	203	204	221	225	202	249	269	158	166	2,512
Louisiana Gulf coast.....	15	9	43	18	25	24	24	30	23	16	27	30	284
Arkansas and Louisiana inland.....	40	33	32	33	37	32	33	39	28	37	34	29	407
Rocky Mountain.....	84	67	72	58	74	69	58	64	68	71	65	69	819
California ¹	779	637	611	628	575	711	577	755	818	840	920	683	8,534
California ²	117	115	96	108	91	87	105	104	105	112	121	126	1,287
Total: 1933.....	2,262	1,760	1,846	1,843	1,741	2,039	1,860	2,059	2,409	2,625	2,700	2,202	25,346
1932.....	2,397	1,887	1,920	1,998	2,124	2,093	2,072	2,140	2,462	2,594	2,389	2,256	26,332

¹Blended.

² Received by pipe lines.

Consumption and stocks of natural gasoline at refineries in 1933, by districts and months—Continued

[Thousands of barrels of 42 gallons]

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Stocks, end of period:													Dec. 31, 1932
East coast.....	127	101	87	51	48	32	20	35	67	73	87	153	91
Appalachian.....	5	3	2	2	1	1	1	-----	1	1	1	1	2
Indiana, Illinois, Kentucky, etc.....	39	33	36	34	39	30	24	10	15	27	38	52	50
Oklahoma, Kansas, and Missouri.....	26	38	27	30	20	16	20	17	32	30	39	36	22
Texas inland.....	3	9	3	5	5	5	4	6	7	9	9	7	4
Texas Gulf coast.....	212	218	185	178	177	127	129	147	81	87	97	244	219
Arkansas and Louisiana inland.....	5	5	8	8	3	10	10	5	2	2	3	7	4
Rocky Mountain.....	6	4	1	4	2	2	2	3	4	4	7	5	5
California.....	2,230	2,329	2,440	2,459	2,642	2,662	2,557	2,703	2,666	2,474	2,227	2,149	2,351
Total: 1933.....	2,653	2,740	2,789	2,771	2,937	2,885	2,766	2,926	2,875	2,707	2,508	2,654	2,748
1932.....	2,152	2,633	3,083	3,279	3,211	3,080	3,133	3,074	2,916	2,881	2,571	2,748	-----

OIL SHALE

World production of oil shale, 1929-33, in metric tons

[Compiled by M. T. Latus, of the Bureau of Mines]

Country	1929	1930	1931	1932	1933
Australia:					
New South Wales.....		352	2,165	2,734	-----
Tasmania.....	4,368	5,515	1,425	1,115	3,456
Estonia.....	517,653	497,955	499,495	495,811	499,969
France ¹	78,606	82,500	78,350	87,971	(²)
Germany (Bavaria).....	603	544	418	401	(²)
Great Britain: Scotland.....	2,056,088	2,052,939	1,760,557	1,390,562	1,419,410
Italy.....	1,331	938	713	1,398	1,024
Spain.....	54,900	55,147	55,611	64,132	60,448
United States.....	1,767				

¹ Includes some boghead coal.

² Data not available.

SURVEY OF REFINERY CAPACITIES

Summary of refinery capacity in the United States, 1914-34, by years

	Number				Capacity (barrels per day)			
	Operating	Shut down	Building	Total	Operating	Shut down	Building	Total
Jan. 1, 1914 ¹	(²)	(²)	(²)	176	(²)	(²)	(²)	(²)
Jan. 1, 1918.....	(²)	(²)	(²)	267	(²)	(²)	(²)	1,186,155
Jan. 1, 1919.....	(²)	(²)	(²)	289	(²)	(²)	(²)	1,295,115
Jan. 1, 1920.....	³ 373	(³)	99	472	³ 1,530,565	(³)	263,500	1,794,065
Jan. 1, 1921.....	350	65	44	459	1,794,395	94,405	76,600	1,965,400
Jan. 1, 1922.....	325	154	30	509	1,854,590	254,610	59,950	2,169,150
Nov. 1, 1924.....	357	190	8	555	2,480,922	333,410	18,200	2,832,532
Jan. 1, 1925.....	357	184	6	547	2,489,927	337,910	37,000	2,864,837
May 1, 1925.....	365	185	4	554	2,511,817	342,025	11,000	2,864,842
Jan. 1, 1926.....	352	158	2	512	2,562,357	290,610	5,500	2,858,467
Jan. 1, 1927.....	327	138	7	472	2,834,282	226,725	61,000	3,122,007
Jan. 1, 1928.....	326	97	5	428	3,036,125	214,255	22,000	3,272,380
Jan. 1, 1929.....	341	72	14	427	3,325,890	183,650	99,000	3,608,540
Jan. 1, 1930.....	358	54	8	420	3,634,825	130,760	37,200	3,802,785
Jan. 1, 1931.....	346	89	10	445	3,706,610	236,075	45,000	3,987,685
Jan. 1, 1932.....	365	108	6	479	3,624,992	389,616	8,720	4,023,328
Jan. 1, 1933.....	372	133	18	523	3,445,118	444,392	31,545	3,921,055
Jan. 1, 1934.....	454	137	13	604	3,553,569	364,648	44,450	3,962,667

¹ From the Bureau of the Census.

² Not available.

³ Inoperative plants included under operating.

Refinery capacity on Jan. 1, 1934, by districts, States, and types of process

District and State	Number				Capacity (barrels per day)			
	Oper-ating	Shut-down	Build-ing	Total	Oper-ating	Shut-down	Build-ing	Total
District:								
East coast.....	25	-----	1	26	609,000	-----	5,000	614,000
Appalachian.....	44	9	1	54	154,150	13,850	750	168,750
Indiana, Illinois, Kentucky, etc.....	40	8	2	50	423,820	13,800	3,000	440,620
Oklahoma, Kansas, and Missouri.....	66	22	2	90	445,870	59,280	3,600	508,750
Texas inland.....	120	46	4	170	328,244	105,175	4,850	438,269
Texas Gulf coast.....	17	2	1	20	536,500	10,500	25,000	572,000
Louisiana Gulf coast.....	5	1	-----	6	139,000	22,000	-----	161,000
Arkansas and Louisiana inland.....	14	11	-----	25	79,800	23,400	-----	103,200
Rocky Mountain.....	71	28	2	101	81,975	17,143	2,250	101,368
California.....	52	10	-----	62	755,210	99,500	-----	854,710
Total.....	454	137	13	604	3,553,569	364,648	44,450	3,962,667
State:								
Alabama.....	1	-----	-----	1	6,000	-----	-----	6,000
Arkansas.....	8	1	-----	9	38,050	5,500	-----	43,550
California.....	52	10	-----	62	755,210	99,500	-----	854,710
Colorado.....	7	2	1	10	6,070	260	2,000	8,330
Georgia.....	2	-----	-----	2	9,000	-----	-----	9,000
Illinois.....	9	2	-----	11	120,550	7,500	-----	128,050
Indiana.....	6	-----	-----	6	186,400	-----	-----	186,400
Kansas.....	23	3	1	27	160,461	7,200	3,100	170,761
Kentucky.....	9	3	-----	12	25,700	2,800	-----	28,500
Louisiana.....	10	7	-----	17	174,750	36,900	-----	211,650
Maryland.....	3	-----	-----	3	55,000	-----	-----	55,000
Massachusetts.....	2	-----	-----	2	30,000	-----	-----	30,000
Michigan.....	7	3	2	12	20,900	3,500	3,000	27,400
Mississippi.....	-----	4	-----	4	-----	3,000	-----	3,000
Missouri.....	1	2	-----	3	16,500	5,500	-----	22,000
Montana.....	24	8	-----	32	19,240	8,383	-----	27,623
Nebraska.....	3	-----	-----	3	335	-----	-----	335
New Jersey.....	6	-----	1	7	253,500	-----	5,000	263,500
New Mexico.....	9	2	-----	11	6,400	1,100	-----	7,500
New York.....	6	-----	1	7	56,700	-----	750	57,450
Ohio.....	13	1	-----	14	106,420	1,000	-----	107,420
Oklahoma.....	42	17	1	60	268,909	46,580	500	315,989
Pennsylvania.....	36	7	-----	43	282,750	10,350	-----	293,100
Rhode Island.....	2	-----	-----	2	11,000	-----	-----	11,000
South Carolina.....	1	-----	-----	1	6,500	-----	-----	6,500
South Dakota.....	2	-----	-----	2	80	-----	-----	80
Tennessee.....	1	-----	-----	1	50	-----	-----	50
Texas.....	137	48	5	190	864,744	115,675	29,850	1,010,269
Utah.....	2	3	-----	5	7,500	1,350	-----	8,850
Virginia.....	1	-----	-----	1	2,000	-----	-----	2,000
West Virginia.....	5	1	-----	6	15,500	2,500	-----	18,000
Wyoming.....	24	13	1	38	42,350	6,050	250	48,650
Total.....	454	137	13	604	3,553,569	364,648	44,450	3,962,667
Type of process:								
Skimming.....	291	117	11	419	1,081,329	309,363	17,450	1,408,142
Complete.....	79	4	-----	83	1,818,550	12,500	-----	1,831,050
Skimming and lube.....	22	3	-----	25	265,500	3,350	-----	268,850
Skimming and asphalt.....	27	1	-----	28	250,900	22,000	-----	272,900
Skimming, lube, and asphalt.....	4	-----	-----	4	42,300	-----	-----	42,300
Lube.....	7	2	-----	9	1,695	800	-----	2,495
Asphalt.....	10	5	1	16	42,700	5,600	2,000	50,300
Topping.....	14	5	1	20	50,595	11,035	25,000	86,630
Total.....	454	137	13	604	3,553,569	364,648	44,450	3,962,667

Summary of cracking capacity on June 1, 1925-26, and Jan. 1, 1928-34

Date	Charging capacity (barrels per day)			
	Operating	Shut down	Building	Total
June 1, 1925.....	690,492	26,200	116,000	832,692
June 1, 1926.....	844,800	47,690	47,600	940,090
Jan. 1, 1928.....	1,013,000	253,000	22,000	1,288,000
Jan. 1, 1929.....	1,194,501	147,923	134,450	1,476,874
Jan. 1, 1930.....	1,419,200	139,840	149,900	1,708,940
Jan. 1, 1931.....	1,594,990	244,661	111,130	1,950,781
Jan. 1, 1932.....	1,603,809	394,585	48,587	2,046,981
Jan. 1, 1933.....	1,580,051	417,694	33,650	2,031,395
Jan. 1, 1934.....	1,712,629	377,735	59,300	2,149,664

Cracking capacity on Jan. 1, 1934, by districts and States

District and State	Charging capacity (barrels per day)			
	Operating	Shut down	Building	Total
District:				
East coast.....	386,072	95,035	25,000	506,107
Appalachian.....	67,739	12,050	-----	79,789
Indiana, Illinois, Kentucky, etc.	269,100	77,350	-----	346,450
Oklahoma, Kansas, and Missouri.....	220,670	47,950	1,200	269,820
Texas inland.....	145,998	20,700	1,500	168,198
Texas Gulf coast.....	307,300	50,500	25,000	382,800
Louisiana Gulf coast.....	54,400	22,600	-----	77,000
Arkansas and Louisiana inland.....	46,700	6,900	6,000	59,600
Rocky Mountain.....	41,000	4,400	600	46,000
California.....	173,650	40,250	-----	213,900
Total.....	1,712,629	377,735	59,300	2,149,664
State:				
Alabama.....	3,000	-----	-----	3,000
Arkansas.....	14,200	3,500	-----	17,700
California.....	173,650	40,250	-----	213,900
Colorado.....	3,350	450	-----	3,800
Georgia.....	3,600	-----	-----	3,600
Illinois.....	73,600	18,800	-----	92,400
Indiana.....	131,900	50,050	-----	181,950
Kansas.....	104,570	19,450	-----	124,020
Kentucky.....	12,600	-----	-----	12,600
Louisiana.....	83,900	26,000	6,000	115,900
Maryland.....	58,072	1,500	-----	59,572
Massachusetts.....	28,500	10,800	-----	39,300
Michigan.....	9,150	-----	-----	9,150
Missouri.....	16,000	10,500	-----	26,500
Montana.....	4,900	700	600	6,200
New Jersey.....	167,900	75,035	-----	242,935
New Mexico.....	500	-----	-----	500
New York.....	14,500	6,600	-----	21,100
Ohio.....	59,700	8,750	-----	68,450
Oklahoma.....	100,100	18,000	1,200	119,300
Pennsylvania.....	142,525	11,100	25,000	178,625
Rhode Island.....	4,000	-----	-----	4,000
Texas.....	453,298	71,200	26,500	550,998
Utah.....	8,400	1,000	-----	9,400
West Virginia.....	16,864	1,800	-----	18,664
Wyoming.....	23,850	2,250	-----	26,100
Total.....	1,712,629	377,735	59,300	2,149,664

COAL

(DETAILED STATISTICS)

SUMMARY OUTLINE

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Part II. Pennsylvania anthracite, by H. L. Bennit and W. H. Young

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Part 1.—BITUMINOUS COAL

By L. MANN and F. G. TRYON

The urgent need for economy in public expenditure impels the Bureau of Mines to confine this report to presenting, through selected tables, the essential facts of the statistical record for the year. The reader is referred to the chapter on Coal in the Minerals Yearbook, 1934, pages 555 to 586, for a preliminary discussion of the developments in the coal industry in 1933.

ACKNOWLEDGMENTS

This report marks the fifty-third year of the continuous statistical record of coal production. Like its predecessors, the report is made possible by the voluntary cooperation of those interested in the coal industry; and it is a pleasure to acknowledge the generous support of the thousands of individual producers, distributors, and consumers who have supplied information. Detailed reports on production and mine operation have been made by about 5,600 commercial mines and on stocks and consumption by approximately 5,000 representative consumers.

Particularly valuable has been the help afforded by the traffic managers of the coal-originating railroads, who have furnished detailed records of shipments on their lines. For the weekly and daily information on cars of coal loaded, which forms the principal basis of the current estimates of weekly production, the Bureau is under obligations to M. J. Gormley, president, American Railway Association, and particularly to H. E. Ewin and G. Freeburg. Current records of shipments by waterways have been furnished by the United States Engineer Office.

Acknowledgment is also made of the generous help of the State mine inspectors, who have assisted in the collection of returns by furnishing information in their files, thereby increasing the accuracy of the statistics. Data have been given by W. B. Hillhouse, chief mine inspector, Birmingham, Ala.; James Dalrymple, chief inspector of coal mines, Denver, Colo.; James McSherry, director, department of mines and minerals, Springfield, Ill.; A. G. Wilson, chief mine inspector, Indianapolis, Ind.; P. R. Clarkson, secretary to the mine inspectors, Des Moines, Iowa; William Glennon, State mine inspector, Pittsburg, Kans.; J. F. Daniel, chief inspector of mines, Lexington, Ky.; John J. Rutledge, chief mine engineer, Maryland Bureau of Mines, Baltimore, Md.; Arnold Griffith, chief mine inspector, Joplin, Mo.; Edward Davies, State coal-mine inspector, Helena, Mont.; O. J. Olson, State coal-mine inspector, Bismarck, N. Dak.; J. B. Gilbert, chief, division of labor statistics, Columbus, Ohio; James R. Ballard, department of mines, Oklahoma City, Okla.; W. H. Glasgow, secretary of mines, department of mines, Harrisburg, Pa.; A. W. Evans, chief mine inspector, Nashville, Tenn.; C. E. Mick, secretary, bureau of labor statistics, Austin, Tex.; J. E. Bergin, chief mine inspector, Seattle, Wash.; N. P. Rhinehart, chief, department of mines, Charleston, W. Va.; and Lyman Fearn, chief coal-mine inspector, Rock Springs, Wyo.

The Bureau finds of especial value the cooperation of the secretaries of local associations of coal operators on account of their intimate knowledge of conditions in their several districts. Many of them have supplied current reports of production by fields. For information on 1933 the Bureau is indebted to Jonas Waffle, managing director, Coal Trade Association of Indiana, Terre Haute, Ind.; C. E. Reed, secretary, West Kentucky Coal Bureau, Louisville, Ky.; J. E. Johnson, secretary, Hazard Coal Operators' Exchange, Lexington, Ky.; George S. Ward, secretary, Harlan County Coal Operators' Association, Harlan, Ky.; R. F. Chumley, statistician, Utah Coal Producers' Association, Salt Lake City, Utah.; C. B. Neel, secretary,

Virginia Coal Operators' Association, Norton, Va.; P. C. Graney, treasurer, Winding Gulf Operators' Association, Beckley, W. Va.; S. C. Higgins, secretary-traffic manager, New River Coal Operators' Association, Mount Hope, W. Va.; A. O. Wilson, statistician, Kanawha Coal Operators' Association, Charleston, W. Va.; D. F. Hurd, secretary, Eastern Ohio Coal Operators' Association, Cleveland, Ohio; Walter A. Jones, secretary, Central Pennsylvania Coal Producers' Association; W. E. E. Koepler, secretary, Pocahontas Operators' Association, Bluefield, W. Va.; and W. J. Colley, secretary, Logan Coal Operators' Association, Logan W. Va. To these and many others who have supplied information cordial acknowledgment is made.

STATISTICAL SUMMARY

TABLE 1.—*Salient statistics of the coal industry in 1933*

	Bituminous	Anthracite
Production.....net tons.....	333, 630, 533	49, 541, 344
Value at mines.....	\$445, 788, 000	\$206, 718, 000
Average value per ton.....	\$1.34	\$4.17
Number of active mines of commercial size.....	5, 555	(1)
Stocks of commercial consumers:		
Jan. 1.....net tons.....	29, 666, 000	(2)
Dec. 31.....do.....	32, 714, 000	(2)
Net change during year.....	+3, 048, 000	(2)
Exports.....do.....	9, 036, 947	1, 035, 000
Imports.....do.....	202, 621	456, 000
Consumption (calculated).....do.....	321, 748, 000	49, 600, 000
Capacity of mines with present labor force (assuming 303.5 working days in the anthracite field and 308 working days in the bituminous field).....net tons.....	615, 000, 000	83, 000, 000
Average number of days worked.....	167	182
Average days idle:		
All causes.....	141	121.5
Through strikes and lockouts.....	9	13.5
Other causes.....	132	108.0
Average number employed:		
Underground.....	352, 866	79, 701
Surface.....	65, 837	24, 932
Output per man:		
Per day.....net tons.....	4.78	2.60
Per year.....do.....	797	473
Number of cutting machines.....	11, 845	168
Quantity cut by machines.....net tons.....	266, 999, 985	1, 648, 249
Percent of output cut by machines.....	80.0	3.3
Number of power shovels in strip pits.....	389	319
Quantity mined by stripping.....net tons.....	18, 270, 181	4, 932, 069

¹ Data not available.

² Data not available. For changes in producers' stocks see table 2 A, p. 344.

METHODS OF COLLECTING STATISTICS

The principal statistics for each State in 1933 are given in table 2. They are based upon written reports from the producers, and most of them were signed by responsible officers of the operating companies. It is believed that virtually complete returns are received for all mines, big and little, which ship by rail or water and for all those of commercial size which serve a purely local market. The figures, however, do not purport to cover the thousands of country banks and small wagon mines from which less than 1,000 tons of coal a year are mined.

In the present report the standard unit of measurement is the net or short ton of 2,000 pounds.

In statistical reports of the Bureau of Mines the anthracite industry of Pennsylvania and the bituminous-coal industry are listed separately. The statistics of the bituminous-coal industry published in this and preceding reports include data for anthracite and semianthracite mined outside of Pennsylvania, as well as for lignite.

More detailed information on the methods of collecting the statistics appears in coal reports for previous years.

As given in this report, the total value is the amount received at the mine f. o. b. cars minus the selling expense. The average value per ton is the average amount received, obtained by dividing the total value by the number of tons sold or produced.

If an operator who is known to have produced coal during the year makes no report of the value of his product to the Bureau of Mines, an estimate of the value is included in the total to make it complete. Since the proportion of the total value actually reported in 1933 was in round numbers 94 percent, the results would seem to be thoroughly representative for the country as a whole. A detailed explanation of the method used in making the estimates and in calculating average values may be found in *Coal in 1930*, pages 645 and 646.

RELATIVE RATE OF GROWTH OF COAL AND OTHER SOURCES OF POWER

TABLE 2.—*Annual supply of energy from mineral fuels and water power in the United States, 1913, 1923, and 1930-33*

[Figures represent trillions of British thermal units and because of rounding do not always add across exactly. In calculating thermal equivalents the gross British thermal unit values are used. Water power is represented by British thermal units of coal necessary to produce the same amount of power. Figures represent production except those for oil imports and take no account of changes of stock. Corresponding data for earlier years will be found in *Coal in 1930*, p. 623]

Year	Anthracite	Bituminous coal	Total coal	Domestic oil (total crude, including that refined)	Natural gas (total production)	Imported oil (total crude, including that refined)	Total oil and gas	Total mineral fuels	Water power	Grand total including water power
1913.....	2,490	12,535	15,025	1,491	626	102	2,219	17,243	588	17,831
1923.....	2,539	14,791	17,330	4,394	1,082	492	5,968	23,298	1,136	24,434
1930.....	1,887	12,249	14,136	5,388	2,089	373	7,850	21,986	1,856	23,842
1931.....	1,622	10,011	11,633	5,106	1,813	284	7,203	18,836	1,721	20,557
1932.....	1,356	8,114	9,470	4,711	1,673	268	6,652	16,122	1,900	18,022
1933.....	1,348	8,741	10,089	5,434	1,672	191	7,297	17,386	1,931	19,317

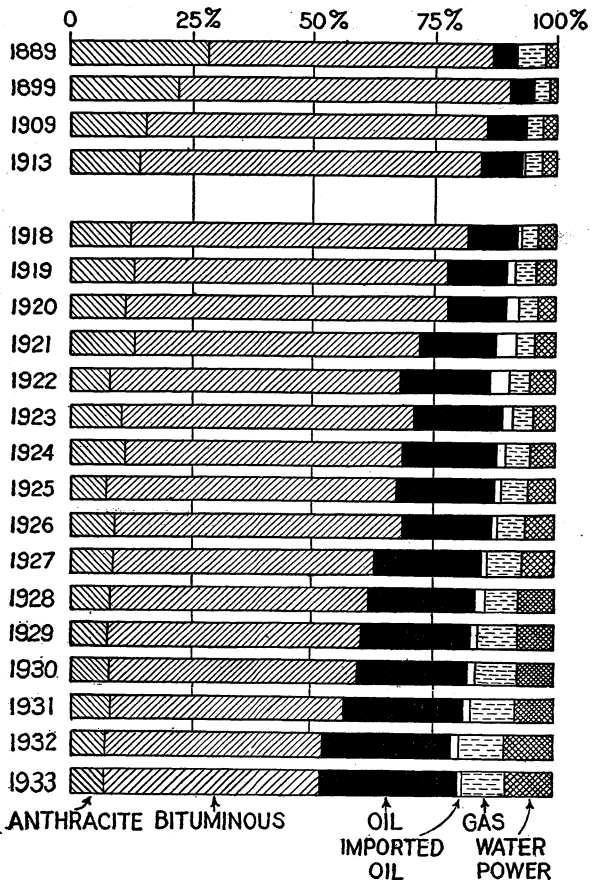


FIGURE 1.—Percentage of the energy supply of the United States derived from coal, oil, gas, and water power, 1889-1933.

PRODUCTION

TABLE 3.—Summary of coal produced, value, men employed, days operated, and output per man per day, by States, in 1933

State	Net tons						Value		Number of employees				Average number of days mines operated	Average tons per man per day ¹
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tipple	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Underground	Surface		Total		
										In strip pits	All others			
Alabama.....	8,465,688	152,935	100,444	40,922	-----	8,759,989	\$13,758,000	\$1.57	15,440	132	2,665	18,237	148	3.26
Alaska.....	90,700	-----	4,817	950	-----	96,467	481,000	4.99	59	-----	41	100	199	4.86
Arizona.....	-----	-----	10,345	-----	-----	10,345	52,000	5.03	19	-----	4	23	288	1.68
Arkansas.....	862,713	7,972	1,301	10,938	-----	882,924	2,348,000	2.66	3,150	47	474	3,671	94	2.57
California, Idaho and Oregon.....	5,592	1,688	212	-----	-----	7,492	27,000	3.60	46	-----	12	58	79	1.65
Colorado.....	3,925,594	1,014,381	102,594	132,720	54,478	5,229,767	11,350,000	2.17	6,579	19	1,310	7,908	148	4.46
Georgia.....	40,262	-----	340	780	-----	41,382	77,000	1.86	78	-----	15	93	234	1.80
Illinois.....	31,981,599	3,887,791	918,438	625,317	-----	37,413,145	54,578,000	1.46	36,414	1,549	6,182	44,145	141	6.00
Indiana.....	12,411,984	726,757	435,034	187,277	-----	13,761,052	17,567,000	1.28	8,023	1,573	1,603	11,199	163	7.52
Iowa.....	1,803,194	1,249,027	108,876	33,886	-----	3,194,983	7,217,000	2.26	6,591	333	771	7,695	138	3.01
Kansas.....	1,981,469	207,542	13,023	15,588	-----	2,217,622	3,881,000	1.75	2,629	822	358	3,809	140	4.15
Kentucky.....	35,114,331	363,441	369,396	252,561	-----	36,099,729	40,748,000	1.13	37,195	-----	6,522	43,717	170	4.17
Maryland.....	1,351,314	91,046	77,122	11,266	-----	1,630,748	2,134,000	1.39	2,516	-----	364	2,880	172	3.06
Michigan.....	241,356	136,574	10,447	18,607	-----	406,584	1,171,000	2.88	1,046	-----	140	1,186	130	2.63
Missouri.....	2,836,308	495,394	77,427	23,083	-----	3,432,212	6,175,000	1.80	3,987	1,022	681	5,690	150	4.02
Montana.....	2,037,102	99,776	11,516	3,813	-----	2,152,207	3,309,000	1.54	958	.41	325	1,324	166	9.82
New Mexico.....	1,120,987	34,862	30,190	40,197	-----	1,226,236	3,071,000	2.50	1,868	-----	472	2,340	168	3.12
North Carolina.....	-----	1,514	-----	500	-----	2,014	7,000	3.48	7	-----	3	10	175	1.15
North Dakota.....	1,349,408	311,838	60,203	60,823	-----	1,782,272	2,248,000	1.26	645	364	292	1,301	173	7.93
Ohio.....	17,248,755	1,744,816	476,418	118,774	-----	19,588,763	23,549,000	1.20	22,110	538	2,794	25,442	169	4.56
Oklahoma.....	1,184,254	29,354	6,585	18,051	-----	1,238,244	2,616,000	2.11	2,299	236	439	2,974	128	3.26
Pennsylvania, bituminous.....	71,326,491	3,895,888	2,868,023	666,261	1,039,281	79,295,944	108,418,000	1.37	101,593	93	13,634	115,453	162	4.24
South Dakota.....	33,610	22,516	3,200	44,311	-----	59,375	104,000	1.75	20	-----	34	147	100	4.04
Tennessee.....	3,574,753	94,243	45,363	9,409	16,091	3,774,761	5,255,000	1.39	5,935	-----	1,116	7,051	161	3.34
Texas.....	793,159	16,657	2,955	9,107	-----	821,878	833,000	1.01	650	42	111	803	162	6.39
Utah.....	2,526,233	100,139	16,574	10,124	21,916	2,674,986	5,109,000	1.91	2,159	-----	747	2,906	176	5.23
Virginia.....	7,892,547	42,449	97,730	24,839	121,077	8,178,642	10,029,000	1.23	8,134	-----	1,627	9,761	184	4.55
Washington.....	1,047,911	308,733	25,406	11,396	622	1,394,068	3,916,000	2.81	2,101	-----	454	2,555	168	3.25

West Virginia.....	91,328,937	817,841	1,648,139	361,347	187,271	94,343,535	107,124,000	1.14	77,722	20	14,730	92,472	196	5.20
Wyoming.....	3,703,414	107,565	67,954	134,234	-----	4,013,167	8,636,000	2.15	2,893	18	842	3,753	170	6.29
Total bituminous, 1933.	306,279,665	15,462,739	7,589,672	2,857,721	1,440,736	333,630,533	445,788,000	1.34	352,866	7,075	58,762	418,703	167	4.78
Total bituminous, 1932.	285,507,819	(²)	(²)	2,730,889	1,028,458	309,709,872	406,677,000	1.31	345,905	6,168	54,307	406,380	146	5.22
Pennsylvania anthracite, 1933.	43,335,409	(³)	3,249,552	2,956,383	-----	49,541,344	206,718,000	4.17	79,701	3,383	21,549	104,633	182	2.60
Pennsylvania anthracite, 1932.	43,894,723	(³)	2,810,337	3,150,161	-----	49,855,221	222,375,000	4.46	94,120	2,407	24,716	121,243	162	2.54
Grand total, 1933.....	349,615,074	15,462,739	10,839,224	5,814,104	1,440,736	383,171,877	652,506,000	1.70	432,567	10,458	80,311	523,336	170	4.31
Grand total, 1932.....	329,402,542	(²)	(²)	5,931,050	1,028,458	359,565,093	629,052,000	1.75	440,025	8,575	79,023	527,623	150	4.55

¹ Based upon (1) the "reported" number of man-shifts where the operator keeps a record thereof; otherwise upon (2) the "calculated" number of man-shifts obtained by multiplying the average number of men employed underground and on the surface at each mine by the number of days worked by the mine and tippie, respectively. Using throughout the "calculated" man-shifts as developed before the year 1932, namely, the product of the total number of men employed at each mine times the tippie days, the average output per man per day for the country as a whole was 4.80 tons in the bituminous mines; 2.64 in the anthracite mines; 4.34 in the bituminous and anthracite mines combined in 1933, figures which are strictly comparable with 5.30 in 1931 and 5.06 in 1930 in the bituminous mines; 2.37 in 1931 and 2.21 in 1930 in the anthracite mines; 4.54 in 1931 and 4.34 in 1930 in bituminous and anthracite mines combined, previously published.

² In 1932 there were 4,250,269 tons reported by the operators of bituminous mines as "trucked 10 miles or more from mine" (including 616,974 tons, a part of which went less than 10 miles, separation not possible) and 16,142,437 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these two items in 1932, which amounted to 20,392,706 tons, is exactly comparable with the sum of columns (2) and (3) in 1933, namely, 23,052,411 tons.

³ No data available on commercial sales of anthracite by truck or wagon. Tonnages moving by truck included under shipments and other sales to local trade.

⁴ Includes 33,060 tons of anthracite stored at collieries in 1932.

TOTAL PRODUCTION SINCE BEGINNING OF MINING

TABLE 4.—Coal produced, by States, 1932-33, with cumulative production from the earliest record to the end of 1933, in thousands of net tons

State	1932	1933	Total production from earliest record to end of 1933	State	1932	1933	Total production from earliest record to end of 1933
Alabama.....	7,857	8,760	585,650	Oklahoma.....	1,255	1,238	123,453
Arkansas.....	1,033	883	67,220	Oregon.....	(¹)	(¹)	² 2,380
Colorado.....	5,599	5,230	366,138	Pennsylvania, bituminous.....	74,776	79,296	5,486,066
Georgia.....	27	41	10,837	Tennessee.....	3,538	3,775	231,602
Illinois.....	33,475	37,413	2,217,565	Texas.....	637	822	54,093
Indiana.....	13,324	13,761	654,955	Utah.....	2,852	2,675	119,194
Iowa.....	3,862	3,195	294,124	Virginia.....	7,692	8,179	304,573
Kansas.....	1,953	2,218	218,033	Washington.....	1,591	1,394	118,355
Kentucky.....	35,300	36,100	1,036,075	West Virginia.....	85,609	94,344	2,816,446
Maryland.....	1,429	1,531	233,389	Wyoming.....	4,171	4,013	254,412
Michigan.....	446	407	41,478	Other States.....	175	173	46,400
Missouri.....	4,070	3,432	197,212	Total bituminous.....	309,710	333,631	16,957,329
Montana.....	2,125	2,152	103,790	Pennsylvania anthracite.....	49,855	49,541	4,020,595
New Mexico.....	1,263	1,226	98,810	Grand total.....	359,565	383,172	20,977,924
North Carolina.....	2	2	1,017				
North Dakota.....	1,740	1,782	29,647				
Ohio.....	13,909	19,689	1,244,415				

¹ Included under "Other States."² Total through 1920.

PRODUCTION, BY FIELDS

TABLE 5.—Bituminous coal produced, number of mines active, men employed, days operated, and output per man per day in the several fields adopted by the United States Coal Commission, 1932-33

[The definitions of these fields are given in detail on pp. 2034-2052, pt. IV, of the report of the U. S. Coal Commission]

U. S. Coal Commission field number	State	General name of field	1932					1933				
			Number of mines	Production (net tons)	Number of men	Average number of days mines operated	Average tons per man per day	Number of mines	Production (net tons)	Number of men	Average number of days mines operated	Average tons per man per day
1	Pennsylvania	Pittsburgh	163	20,233,000	23,527	184	4.68	164	20,710,000	27,893	174	4.27
2	do	Connellsville	94	10,316,000	14,273	139	5.19	96	11,389,000	18,530	131	4.68
3	do	Westmoreland-Ligonier	70	5,763,000	7,915	137	5.32	68	5,942,000	8,138	154	4.75
4a, b	do	Freeport (thick and thin)	62	6,080,000	6,779	155	5.80	62	6,877,000	7,912	170	5.10
5	do	Butler-Mercer	52	786,000	1,910	136	3.03	51	957,000	2,074	161	2.86
6	do	Blossburg	14	232,000	606	162	2.36	20	244,000	650	149	2.52
7	do	Broad Top	37	1,048,000	1,948	179	3.00	42	1,110,000	1,990	180	3.09
8	do	Somerset	88	3,547,000	5,194	145	4.71	83	3,402,000	4,998	164	4.14
9a	do	Central Pennsylvania, western	47	1,828,000	2,736	157	4.25	55	1,852,000	2,973	167	3.74
9b	do	Central Pennsylvania, middle	76	6,425,000	9,390	140	4.90	77	6,579,000	9,103	165	4.37
9c	do	Central Pennsylvania, eastern	390	18,518,000	30,254	146	4.20	430	20,234,000	31,192	166	3.90
10	Maryland-West Virginia	Maryland-Potomac	106	2,303,000	4,849	144	3.29	109	2,396,000	4,427	164	3.29
11	West Virginia	Fairmont	106	12,956,000	9,984	181	7.18	108	14,933,000	12,749	189	6.21
12	Ohio-West Virginia	Panhandle-Pittsburgh No. 8	130	10,808,000	12,882	157	5.36	129	14,485,000	14,771	202	4.86
13	do	Pomeroy	31	304,000	753	125	3.22	27	338,000	687	162	3.03
14	West Virginia	Putnam County	3	312,000	595	119	4.40	3	429,000	580	164	4.52
15	Kentucky-West Virginia	Kenova	16	1,939,000	1,670	175	6.64	14	1,819,000	1,739	175	5.97
16	Kentucky - Virginia - West Virginia	Thacker	36	4,224,000	4,911	133	6.46	42	5,055,000	5,704	175	5.05
17	West Virginia	Tug River	36	4,607,000	5,992	135	5.71	34	5,286,000	6,103	196	4.42
18	Virginia-West Virginia	Poconhontas	70	12,758,000	14,261	144	6.19	70	15,263,000	14,473	185	5.71
19	West Virginia	Winding Gulf	52	8,468,000	7,637	196	5.66	51	8,848,000	7,976	226	4.90
20	do	New River	89	10,200,000	11,679	178	4.91	91	11,061,000	11,508	211	4.53
21	do	Kanawha	89	11,793,000	12,052	183	5.36	86	12,728,000	13,597	201	4.65
22	do	Coal River	6	1,163,000	1,036	177	6.34	5	1,130,000	916	176	6.99
23	do	Logan	58	12,478,000	9,134	172	7.94	56	13,001,000	9,787	200	6.63
24a	do	Coal and Coke	4	528,000	634	178	4.67	11	693,000	927	223	3.35
24b	do	Preston County	27	550,000	1,316	113	3.71	31	451,000	964	143	3.21

COAL

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TABLE 5.—*Bituminous coal produced, number of mines active, men employed, days operated, and output per man per day in the several fields adopted by the United States Coal Commission, 1932-33—Continued*

U. S. Coal Commission field number	State	General name of field	1932					1933				
			Number of mines	Production (net tons)	Number of men	Average number of days mines operated	Average tons per man per day	Number of mines	Production (net tons)	Number of men	Average number of days mines operated	Average tons per man per day
24c	West Virginia.....	Taylor County, Junior, Philippi, and Gauley.	82	3,137,000	3,702	153	5.53	82	3,444,000	3,955	172	5.07
25	Virginia.....	Southwestern Virginia.....	51	5,051,000	6,553	139	5.53	51	5,050,000	5,862	184	4.69
26	do.....	Clinch Valley.....	15	1,444,000	2,145	152	4.42	15	1,472,000	1,988	171	4.34
27	do.....	Virginia "anthracite".....	7	194,000	649	154	1.94	6	165,000	678	150	1.62
28	do.....	Richmond Basin.....										
29	Ohio.....	Massillon-Palmyra-Lisbon.....	108	1,416,000	2,382	184	3.23	125	1,798,000	2,641	194	3.52
30	do.....	Coshocton-Goshen.....	126	1,121,000	1,904	142	4.13	138	1,504,000	2,281	175	3.76
31	do.....	Cambridge.....	38	1,655,000	1,792	178	5.20	35	1,541,000	2,012	170	4.49
32	do.....	Crooksville.....	47	516,000	821	146	4.31	59	944,000	1,102	206	4.17
33	do.....	Hocking.....	85	1,577,000	5,480	72	4.00	90	2,793,000	5,619	121	4.12
34	do.....	Jackson and Ironton.....	38	208,000	837	83	2.99	48	332,000	946	111	3.15
36	Kentucky.....	Northeast Kentucky ¹	79	7,841,000	9,934	159	4.95	76	8,753,000	10,713	185	4.42
37	do.....	Hazard ²	59	5,533,000	6,040	171	5.37	56	4,761,000	5,868	174	4.66
38	do.....	Harlan.....	48	7,011,000	8,004	157	5.57	52	8,916,000	9,094	183	5.35
39	Kentucky-Tennessee.....	Southern Appalachian.....	113	3,973,000	7,236	141	3.90	108	4,353,000	7,306	165	3.62
40	do.....	Jellico.....	17	298,000	926	89	3.60	16	322,000	901	105	3.42
41	Kentucky.....	Western Kentucky.....	144	9,540,000	10,804	149	5.92	120	7,834,000	10,187	137	5.61
42	Tennessee.....	Rockwood-Soddy.....	30	1,394,000	3,135	172	2.58	39	1,481,000	2,863	165	3.14
43	do.....	Fentress.....	6	179,000	589	94	3.23	7	196,000	379	194	2.66
44	Alabama.....	Big Seam Group.....	38	3,474,000	6,275	130	4.26	28	3,537,000	6,031	172	3.41
45	Alabama-Georgia.....	Cababa Group.....	96	2,370,000	6,981	106	3.21	86	2,991,000	6,462	142	3.25
46	Alabama.....	Pratt Group.....	61	2,040,000	7,251	88	3.19	45	2,274,000	5,837	130	3.01
47	Indiana.....	Indiana.....	142	12,813,000	10,196	144	8.74	157	13,302,000	10,801	163	7.55
48	do.....	Brazil Block.....	20	510,000	443	169	6.82	21	459,000	398	170	6.78
49	Illinois.....	Northern Illinois.....	48	1,731,000	2,287	179	4.24	51	1,697,000	2,104	178	4.54
50	do.....	Fulton-Peoria.....	167	3,473,000	4,458	143	5.45	180	4,148,000	4,676	178	4.97
51	do.....	Danville.....	61	1,900,000	3,133	111	5.47	62	2,044,000	3,009	130	5.21
52	do.....	Central Illinois.....	80	6,886,000	13,133	91	5.78	78	10,441,000	11,982	159	5.49
53	do.....	Bellefonte.....	96	4,480,000	5,809	105	7.34	97	5,108,000	5,685	133	6.77
54	do.....	Murphysboro.....	8	403,000	186	167	12.97	9	312,000	186	132	12.71
55	do.....	Southern Illinois.....	126	14,601,000	18,591	112	7.00	137	13,664,000	16,503	119	6.98
56	Michigan.....	Michigan.....	5	446,000	940	159	2.98	13	407,000	1,186	130	2.64
57	Arkansas.....	Sebastian.....	24	564,000	1,890	107	2.79	20	469,000	1,555	102	2.96
58	do.....	Excelsior-Logan.....	25	275,000	989	105	2.64	25	281,000	1,001	115	2.43
59	do.....	Arkansas "anthracite".....	16	194,000	1,446	62	2.15	12	134,000	1,115	63	1.91

60	Colorado	Colorado "domestic"	149	2,238,000	4,043	128	4.31	149	1,997,000	3,624	138	4.01
61	do	Trinidad	33	860,000	2,066	104	4.02	33	857,000	1,720	132	3.79
62	do	Northern Colorado	50	2,501,000	2,640	193	4.92	53	2,376,000	2,564	175	5.29
63	Iowa	Marion-Monroe-Polk	139	2,794,000	5,061	160	3.45	160	2,401,000	4,926	153	3.19
64	do	Appanoose	73	1,068,000	3,025	136	2.60	82	794,000	2,769	112	2.57
65	Kansas	Pittsburg	113	1,800,000	2,796	108	5.96	125	2,066,000	2,874	111	6.45
66	do	Lightning Creek										
67	do	Osage										
68	do	Leavenworth ²	3	113,000	567	235	.85	3	111,000	680	278	.59
69	Missouri	Southern Missouri	103	3,162,000	2,494	173	7.34	102	2,597,000	3,360	170	6.46
70	do	Lafayette	102	875,000	3,006	155	1.87	102	806,000	3,151	137	1.87
71	do	Grundy	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
72	do	Platte	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
73	Montana	Montana	62	2,125,000	1,525	145	9.64	61	2,152,000	1,324	166	9.80
74	New Mexico	Gallup	13	572,000	1,231	124	3.76	16	557,000	1,124	172	2.87
75	do	Cerrillos and Carthage	7	133,000	427	188	1.66	7	121,000	390	227	1.36
76	do	Raton	11	535,000	880	101	6.04	9	525,000	772	130	5.24
76a	do	Monero	11	24,000	64	156	2.40	9	23,000	54	193	2.20
77	North Dakota	Southern North Dakota	89	1,017,000	878	176	6.57	89	1,006,000	876	164	7.01
78	do	Northern North Dakota	57	723,000	433	207	8.06	49	776,000	425	191	9.57
79	Oklahoma	McAlester Vein	11	151,000	487	125	2.49	8	154,000	430	155	2.31
80	do	Oklahoma, Eastern	84	1,104,000	2,576	120	3.58	74	1,084,000	2,544	123	3.47
81	Texas	Texas (bituminous)	3	23,000	215	100	1.07	5	37,000	258	107	1.34
82	do	Texas (lignite)	15	614,000	484	175	7.25	15	785,000	545	188	7.66
83	Utah	Utah	39	2,852,000	2,842	176	5.69	48	2,675,000	2,906	176	5.23
84	Washington	Kittitas County	11	698,000	1,216	140	4.11	13	499,000	986	127	3.98
85	do	Pierce-King (bituminous)	19	295,000	617	179	2.67	21	367,000	651	213	2.65
86	do	Subbituminous	32	598,000	983	177	3.45	28	528,000	918	180	3.19
87	Wyoming	Wyoming	65	4,171,000	4,173	150	6.65	65	4,013,000	3,753	170	6.29
88	South Dakota	South Dakota	19	49,000	84	126	4.64	19	59,000	147	100	4.01
89	Oregon	Oregon	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
90	California	California ⁴	10	16,000	141	69	1.65	7	7,000	58	79	1.54
91	Nevada	Nevada										
92	North Carolina	North Carolina	3	2,000	26	55	1.40	1	2,000	10	175	1.14
	Unclassified		10	110,000	137	197	4.08	9	107,000	123	212	4.11
	Total		5,427	309,710,000	406,380	146	5.22	5,555	333,631,000	418,703	167	4.78

¹ Northeastern Kentucky field includes McRoberts district.

² Hazard field includes Whitesburg district.

³ Leavenworth field, Kansas, includes Grundy field, Missouri (No. 71), and Platte field, Missouri (No. 72).

⁴ California includes Idaho and Oregon.

PRODUCTION, BY WEEKS AND MONTHS

The following tables summarize the statistics of weekly and monthly production of bituminous coal first published in the Bureau of Mines weekly coal reports. The figures are estimates based upon daily and weekly statements of cars of coal and beehive coke loaded by the principal railroads and of shipments over the Monongahela, Allegheny, Ohio, and Kanawha Rivers. The estimates are revised afterward to agree with the results of the annual statistical reports from the coal producers; therefore the figures given here differ slightly from the estimates originally issued in the weekly reports.

For the method used in counting holidays see Coal in 1930, page 631.

TABLE 6.—Estimated weekly production of bituminous coal in 1933

Week ended—	Production (net tons)	Number of work- ing days	Average production per work- ing day (net tons)	Week ended—	Production (net tons)	Number of work- ing days	Average production per work- ing day (net tons)
Jan. 7.....	6,309,000	5.3	1,190,000	July 15.....	7,019,000	6.0	1,170,000
Jan. 14.....	6,916,000	6.0	1,153,000	July 22.....	7,276,000	6.0	1,213,000
Jan. 21.....	6,604,000	6.0	1,101,000	July 29.....	7,609,000	6.0	1,268,000
Jan. 28.....	5,902,000	6.0	984,000	Aug. 5.....	6,856,000	6.0	1,143,000
Feb. 4.....	6,021,000	6.0	1,004,000	Aug. 12.....	7,478,000	6.0	1,246,000
Feb. 11.....	7,959,000	6.0	1,327,000	Aug. 19.....	7,702,000	6.0	1,284,000
Feb. 18.....	7,736,000	6.0	1,289,000	Aug. 26.....	7,882,000	6.0	1,310,000
Feb. 25.....	6,256,000	5.9	1,060,000	Sept. 2.....	8,107,000	6.0	1,351,000
Mar. 4.....	5,428,000	6.0	905,000	Sept. 9.....	6,557,000	5.1	1,286,000
Mar. 11.....	5,687,000	6.0	948,000	Sept. 16.....	7,248,000	6.0	1,208,000
Mar. 18.....	5,280,000	6.0	880,000	Sept. 23.....	6,744,000	6.0	1,124,000
Mar. 25.....	5,263,000	6.0	877,000	Sept. 30.....	6,926,000	6.0	1,164,000
Apr. 1.....	5,286,000	5.7	927,000	Oct. 7.....	5,783,000	6.0	964,000
Apr. 8.....	4,824,000	6.0	804,000	Oct. 14.....	6,856,000	6.0	1,143,000
Apr. 15.....	4,935,000	6.0	823,000	Oct. 21.....	7,183,000	6.0	1,197,000
Apr. 22.....	4,702,000	6.0	784,000	Oct. 28.....	7,540,000	6.0	1,257,000
Apr. 29.....	4,893,000	6.0	816,000	Nov. 4.....	7,159,000	6.0	1,193,000
May 6.....	4,819,000	6.0	803,000	Nov. 11.....	7,320,000	5.8	1,267,000
May 13.....	5,089,000	6.0	848,000	Nov. 18.....	7,814,000	6.0	1,302,000
May 20.....	5,059,000	6.0	843,000	Nov. 25.....	7,462,000	6.0	1,244,000
May 27.....	5,124,000	6.0	854,000	Dec. 2.....	6,358,000	5.0	1,272,000
June 3.....	4,949,000	5.4	916,000	Dec. 9.....	6,808,000	6.0	1,135,000
June 10.....	5,466,000	6.0	911,000	Dec. 16.....	7,546,000	6.0	1,258,000
June 17.....	5,706,000	6.0	951,000	Dec. 23.....	7,362,000	6.0	1,227,000
June 24.....	6,024,000	6.0	1,004,000	Dec. 30.....	6,606,000	5.0	1,321,000
July 1.....	6,610,000	6.0	1,102,000				
July 8.....	5,573,000	5.0	1,115,000				
				Total....	333,631,000	306.2	1,090,000

TABLE 7.—Estimated monthly production of coal, by States, in 1933, in thousands of net tons

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Alabama.....	726	635	587	569	644	656	866	958	877	718	715	809	8,760
Arkansas.....	85	94	31	19	20	29	53	108	118	150	86	90	883
Colorado.....	555	616	380	312	292	188	206	375	585	580	548	593	5,230
Illinois.....	3,633	3,784	3,337	2,185	2,125	2,150	2,496	2,912	3,030	3,875	3,836	4,050	37,413
Indiana.....	1,250	1,290	1,070	850	838	880	955	1,173	1,132	1,360	1,460	1,553	13,761
Iowa.....	348	372	310	194	210	189	179	209	198	268	320	373	3,195
Kansas.....	243	224	168	136	117	132	143	218	182	243	220	192	2,218
Kentucky:													
Eastern.....	2,063	2,195	1,783	1,545	1,954	2,383	2,766	3,247	3,032	2,819	2,438	2,010	28,265
Western.....	765	794	658	478	466	421	580	721	751	721	708	771	7,834
Maryland.....	145	135	122	93	94	92	115	157	137	147	137	157	1,531
Michigan.....	56	54	48	11	11	10	11	13	17	66	56	54	407
Missouri.....	338	420	310	198	189	184	188	259	237	367	358	384	3,432
Montana.....	204	215	160	108	127	107	127	161	176	269	241	227	2,152
New Mexico.....	126	125	88	71	82	83	87	98	103	120	123	120	1,226
North Dakota.....	213	237	148	77	56	49	56	76	160	274	204	232	1,782
Ohio.....	1,510	1,577	1,390	975	1,206	1,379	1,630	2,246	2,024	1,943	1,897	1,807	19,589
Oklahoma.....	109	138	34	29	42	59	83	146	137	198	132	130	1,238
Pennsylvania, bituminous.....	6,352	6,060	6,061	5,148	6,036	7,108	8,036	8,743	5,300	5,044	7,776	7,632	79,296
Tennessee.....	328	320	274	236	273	320	388	446	349	297	271	273	3,775
Texas.....	60	61	67	61	67	72	76	82	82	75	62	57	822
Utah.....	329	363	166	124	138	100	111	170	274	279	308	313	2,675
Virginia.....	656	640	574	516	594	718	870	918	742	711	653	587	8,179
Washington.....	150	148	110	88	98	90	102	112	89	127	148	132	1,394
West Virginia.....	7,269	7,069	6,255	5,512	6,581	7,844	9,254	10,570	9,583	9,039	8,010	7,358	94,344
Wyoming.....	331	331	266	255	259	236	257	292	389	512	450	435	4,013
Other States.....	24	18	16	15	12	12	10	11	16	26	27	30	217
Total, bituminous.....	27,868	27,915	24,413	19,805	22,531	25,461	29,675	34,421	29,715	30,294	31,184	30,349	333,631
Pennsylvania anthracite.....	3,818	4,287	4,532	2,899	2,975	3,939	3,688	4,409	5,007	4,725	4,825	4,437	49,541
Grand total.....	31,686	32,202	28,945	22,704	25,506	29,400	33,363	38,830	34,722	35,019	36,009	34,786	383,172

NUMBER AND SIZE OF MINES

TABLE 8.—Number and production of commercial bituminous-coal mines, by size classes, in each State, in 1933

[No canvass of wagon mines producing less than 1,000 tons was made]

State	Class 1A (more than 500,000 tons)					Class 1B (200,000 to 500,000 tons)					Class 2 (100,000 to 200,000 tons)					Class 3 (50,000 to 100,000 tons)				
	Mines		Production			Mines		Production			Mines		Production			Mines		Production		
	Number	Per cent	Total (net tons)	Average per mine (net tons)	Per cent	Number	Per cent	Total (net tons)	Average per mine (net tons)	Per cent	Number	Per cent	Total (net tons)	Average per mine (net tons)	Per cent	Number	Per cent	Total (net tons)	Average per mine (net tons)	Per cent
Alabama.....	1	0.6	533,783	533,783	6.1	9	5.7	2,747,727	305,308	31.4	17	10.8	2,399,032	141,120	27.4	31	19.6	2,300,262	74,202	26.2
Arizona.....																				
Arkansas.....											1	1.8	165,000	165,000	18.7	2	3.5	147,910	73,955	16.8
Colorado.....						3	1.3	684,451	228,150	13.1	12	5.1	1,659,524	138,294	31.7	19	8.1	1,471,476	77,446	28.1
Georgia.....																				
Illinois.....	24	3.9	17,615,266	733,969	47.1	35	5.7	11,129,852	317,996	29.7	20	3.2	2,910,514	145,526	7.8	38	6.2	2,622,162	69,004	7.0
Indiana.....	2	1.1	1,078,814	539,407	7.9	19	10.7	6,649,525	349,976	48.3	21	11.8	3,270,421	155,734	28.8	21	11.8	1,475,211	70,248	10.7
Iowa.....						1	.4	268,181	268,181	8.4	6	2.5	924,212	154,035	28.9	9	3.7	620,287	68,921	19.4
Kansas.....											7	4.4	1,054,013	150,573	47.5	6	3.7	481,886	80,314	21.7
Kentucky:																				
Eastern.....	5	1.7	4,051,247	810,249	14.3	39	13.5	11,049,649	283,324	39.1	52	18.0	7,481,860	143,882	26.5	44	15.2	3,291,940	74,817	11.6
Western.....						13	10.8	3,619,373	278,413	46.2	17	14.2	2,288,140	134,596	29.2	16	13.3	1,189,204	74,325	15.2
Maryland.....											3	3.7	367,510	122,503	24.0	10	12.3	710,968	71,097	46.5
Missouri.....						4	1.9	1,113,414	278,354	32.4	5	2.4	684,478	136,896	19.9	8	3.9	520,109	65,014	15.2
Montana.....	1	1.7	783,805	783,805	36.4	3	4.9	875,270	291,757	40.7	2	3.3	215,957	107,979	10.0	1	1.6	88,672	88,672	4.1
Ohio.....						2	4.9	444,758	222,379	36.3	2	4.9	297,697	133,849	21.8	3	7.3	200,736	66,912	16.4
New Mexico.....																				
North Carolina.....						3	2.2	743,062	247,687	41.7	3	2.2	492,006	164,002	27.6	1	.7	60,665	60,665	3.4
North Dakota.....						20	3.3	5,847,605	292,380	29.9	22	3.6	3,135,984	142,545	16.0	26	4.3	1,977,024	76,039	10.1
Ohio.....	9	1.5	6,040,537	671,171	30.8	3	2.2	743,062	247,687	41.7	3	2.2	492,006	164,002	27.6	1	.7	60,665	60,665	3.4
Oklahoma.....						2	3.3	5,847,605	292,380	29.9	1	1.2	112,098	112,098	9.1	2	2.4	118,057	59,029	9.5
Pennsylvania.....	34	3.0	22,971,359	675,628	29.0	83	7.2	26,169,460	315,295	33.0	92	8.0	12,655,021	137,555	16.0	123	10.7	8,711,628	70,826	11.0
South Dakota.....																				
Tennessee.....						2	2.4	513,329	256,665	13.6	12	14.1	1,579,274	131,606	41.8	12	14.1	862,901	71,908	22.9
Texas.....						1	5.0	443,794	443,794	54.0						2	10.0	177,859	88,930	21.6
Utah.....						2	4.2	610,788	305,394	22.8	8	16.7	1,205,346	150,668	45.1	6	12.5	458,208	76,368	17.1
Virginia.....	3	3.7	1,674,848	558,283	20.5	11	13.8	3,110,091	282,736	38.0	13	16.2	1,900,301	146,177	23.2	12	15.0	825,377	68,781	10.1
Washington.....											5	8.1	714,591	142,918	51.3	3	4.8	214,642	71,547	15.4
West Virginia.....	32	4.4	22,410,105	700,316	23.7	132	18.0	41,954,377	317,836	44.5	123	16.8	18,006,136	146,391	19.1	95	12.9	7,180,035	75,053	7.6
Wyoming.....						5	7.7	1,465,177	293,035	36.5	10	15.4	1,592,419	159,242	39.7	9	13.8	665,589	73,954	16.6
Other States.....											1	3.9	119,903	119,903	23.5	3	11.5	239,581	79,860	46.9
Total.....	111	2.0	77,159,764	695,133	23.1	387	7.0	119,439,883	308,630	35.8	455	8.2	65,201,437	143,300	19.5	502	9.0	36,562,359	72,833	11.0

State	Class 4 (10,000 to 50,000 tons)					Class 5 (less than 10,000 tons)					Total		
	Mines		Production			Mines		Production			Mines	Production (net tons)	
	Number	Percent	Total (net tons)	Average per mine (net tons)	Percent	Number	Percent	Total (net tons)	Average per mine (net tons)	Percent		Total	Average per mine
Alabama.....	25	15.8	619,723	24,789	7.1	75	47.5	159,462	2,126	1.8	158	8,759,989	55,443
Arizona.....						3	100.0	10,345	3,448	100.0	3	10,345	3,448
Arkansas.....	22	38.6	441,755	20,080	50.0	32	56.1	128,259	4,008	14.5	57	882,924	15,490
Colorado.....	42	17.9	1,024,768	24,399	19.6	159	67.6	389,548	2,450	7.5	235	5,229,767	22,254
Georgia.....	1	100.0	41,382	41,382	100.0						1	41,382	41,382
Illinois.....	84	13.7	1,942,660	23,127	5.2	413	67.3	1,192,691	2,888	3.2	614	37,413,145	60,933
Indiana.....	42	23.6	1,049,966	24,999	7.6	73	41.0	237,115	3,248	1.7	178	13,761,052	77,309
Iowa.....	36	14.9	861,128	23,920	27.0	190	78.5	521,175	2,743	16.3	242	3,194,983	13,202
Kansas.....	17	10.6	423,312	24,901	19.1	130	81.3	258,411	1,988	11.7	160	2,217,622	13,860
Kentucky:													
Eastern.....	70	24.2	2,165,239	30,932	7.7	79	27.4	225,397	2,853	8.8	289	28,265,332	97,804
Western.....	24	20.0	586,541	24,439	7.5	50	41.7	151,139	3,023	1.9	120	7,834,397	65,287
Maryland.....	14	17.3	284,759	20,340	18.6	54	66.7	167,511	3,102	10.9	81	1,530,748	18,898
Missouri.....	37	18.0	774,036	20,920	22.6	152	73.8	340,175	2,238	9.9	206	3,432,212	16,661
Montana.....	5	8.2	85,014	17,003	4.0	49	80.3	103,489	2,112	4.8	61	2,152,207	35,282
New Mexico.....	8	19.5	242,112	30,264	19.7	26	63.4	70,933	2,728	5.8	41	1,226,230	29,908
New Carolina.....						1	100.0	2,014	2,014	100.0	1	2,014	2,014
North Dakota.....	6	4.3	155,352	25,892	8.7	125	90.6	331,187	2,649	18.6	138	1,782,272	12,915
Ohio.....	66	11.0	1,445,448	21,901	7.4	459	76.3	1,142,165	2,488	5.8	602	19,588,763	32,539
Oklahoma.....	30	36.6	829,263	27,642	67.0	49	59.8	178,826	3,650	14.4	82	1,238,244	15,101
Pennsylvania.....	291	25.4	6,933,560	23,827	8.7	525	45.7	1,864,916	3,533	2.3	1,148	79,295,944	69,073
South Dakota.....	2	10.5	39,000	19,500	65.7	17	89.5	20,375	1,199	34.3	19	59,375	3,125
Tennessee.....	30	35.3	759,979	25,333	20.1	29	34.1	59,278	2,044	1.6	85	3,774,761	44,409
Texas.....	7	35.0	161,169	23,024	19.6	10	50.0	39,056	3,906	4.8	20	821,878	41,084
Utah.....	12	25.0	344,428	28,702	12.9	20	41.6	56,216	2,811	2.1	48	2,074,986	55,729
Virginia.....	22	27.5	631,585	28,708	7.7	19	23.8	36,440	1,918	.5	80	8,178,642	102,233
Washington.....	14	22.6	358,646	25,618	25.7	40	64.5	106,189	2,655	7.6	62	1,394,068	22,485
West Virginia.....	153	20.9	4,236,118	27,687	4.5	198	27.0	606,764	3,064	.6	733	94,343,535	128,709
Wyoming.....	9	13.9	213,238	23,693	5.3	32	49.2	76,744	2,398	1.9	65	4,013,167	61,741
Other States ¹	6	23.1	115,690	19,282	22.7	16	61.5	35,369	2,211	6.9	26	510,543	19,636
Total.....	1,075	19.3	26,765,871	24,898	8.0	3,025	54.5	8,501,189	2,810	2.6	5,555	333,630,533	60,060

¹ Includes Alaska, California, Idaho, Michigan, and Oregon.

LABOR STATISTICS

MEN EMPLOYED

The method of collecting employment statistics is explained in detail in Coal in 1929, pages 738 to 740. These statistics are believed to represent the most accurate returns obtainable under present conditions, both as to the records generally available in mine offices and as to the funds allotted to the Bureau of Mines for collecting data.

For a detailed explanation of the classification of mine employees see Coal in 1930, page 651. Table 2, page 84, shows the number of men employed underground and on the surface, by States, during 1933. Data for previous years may be found in Coal in 1930, page 653; 1931, page 426; and 1932 (Statistical Appendix), page 376.

LENGTH OF WORKING DAY

TABLE 9.—Number of bituminous-coal mines in the United States having established working days of certain length, and number of men employed in 1933, before and after October 2, the effective date of the Bituminous Coal Code

[A few of the mines returning 9 hours or 10 hours before Oct. 2 were probably reporting the time of men whose duties include the handling of man-trips, haulage animals, and coal in transit. A considerable number of others returning 9 or 10 hours before Oct. 2 are strip mines, especially in the Plains and Prairie States]

State	8 hours ¹		9 hours		10 hours		All others ²		Total	
	Mines	Men	Mines	Men	Mines	Men	Mines	Men	Mines	Men
Before Oct. 2:										
Alabama.....	57	3,468	31	7,323	34	5,538	32	1,365	154	17,694
Alaska.....	6	100							6	100
Arkansas.....	54	3,609			1	40	1	10	56	3,659
Arizona, California, Idaho, and Oregon.....	7	72					3	9	10	81
Colorado.....	177	7,674	1	2			55	209	233	7,885
Georgia.....	1	93							1	93
Illinois.....	451	42,197	2	9	1	3	147	1,352	601	43,561
Indiana.....	145	10,786	1	9	1	12	21	104	168	10,911
Iowa.....	194	6,910	1	21	5	156	34	411	234	7,498
Kansas.....	104	3,413	6	71			49	265	159	3,754
Kentucky.....	338	35,572	31	4,605	5	958	35	2,530	407	43,665
Maryland.....	65	2,708					15	102	80	2,810
Michigan.....	13	1,186							13	1,186
Missouri.....	157	5,131	8	184	1	74	36	194	202	5,583
Montana.....	41	1,180	2	11	2	11	14	109	59	1,311
New Mexico.....	30	1,945					11	395	41	2,340
North Carolina.....					1	10			1	10
North Dakota.....	76	786	2	8	11	318	47	180	136	1,292
Ohio.....	437	23,731	5	97	2	16	140	998	584	24,842
Oklahoma.....	68	2,616	4	191			6	31	78	2,838
Pennsylvania.....	1,007	109,159	32	2,412	5	158	94	3,580	1,138	115,309
South Dakota.....	11	127	1	3			7	17	19	147
Tennessee.....	68	6,421	2	89			13	522	83	7,032
Texas.....	9	263	7	346	1	172	2	17	19	798
Utah.....	34	2,650					14	256	48	2,906
Virginia.....	64	8,845	2	368	3	175	9	313	78	9,701
Washington.....	43	2,252					19	303	62	2,555
West Virginia.....	638	83,302	29	3,815	15	2,164	44	2,955	726	92,236
Wyoming.....	46	3,679					18	60	64	3,739
Total.....	4,339	369,880	167	19,564	88	9,805	866	16,287	5,460	415,536

¹ Includes outside employees working 9 or 10 hours a day before Oct. 2 at many mines where the established time for underground workers is 8 hours.

² Includes employees in mines where the working day was irregular or which failed to answer the inquiry. See also footnote 3.

TABLE 9.—Number of bituminous-coal mines in the United States having established working days of certain length, and number of men employed in 1933, before and after October 2, the effective date of the Bituminous Coal Code—Continued

State	8 hours		9 hours		10 hours		All others ²		Total	
	Mines	Men	Mines	Men	Mines	Men	Mines	Men	Mines	Men
After Oct. 2:										
Alabama.....	126	17,492	(3)	(3)			25	138	151	17,630
Alaska.....	6	100							6	100
Arkansas.....	55	3,511					1	10	56	3,521
Arizona, California, Idaho, and Oregon.....	6	67					4	14	10	81
Colorado.....	168	7,515	(3)	(3)			63	333	231	7,848
Georgia.....	1	93							1	93
Illinois.....	417	40,063	(3)	(3)	(3)	(3)	181	2,553	598	42,616
Indiana.....	142	9,710					30	676	172	10,386
Iowa.....	189	6,957	(3)	(3)	(3)	(3)	42	400	231	7,357
Kansas.....	100	3,346	(3)	(3)			57	451	157	3,797
Kentucky.....	366	42,631	(3)	(3)			29	534	395	43,165
Maryland.....	59	2,664	(3)	(3)			17	115	76	2,779
Michigan.....	9	990					4	196	13	1,186
Missouri.....	162	5,326	(3)	(3)			39	218	201	5,544
Montana.....	43	1,209	(3)	(3)	(3)	(3)	18	115	61	1,324
New Mexico.....	30	1,932					11	408	41	2,340
North Carolina.....							1	10	1	10
North Dakota.....	71	832	(3)	(3)	(3)	(3)	65	462	136	1,294
Ohio.....	414	23,988	(3)	(3)			153	840	567	24,828
Oklahoma.....	72	2,897	(3)	(3)			7	49	79	2,946
Pennsylvania.....	970	109,338			(3)	(3)	117	2,651	1,087	111,989
South Dakota.....	10	107	(3)	(3)			9	40	19	147
Tennessee.....	66	6,773					11	62	77	6,835
Texas.....	10	268	(3)	(3)	(3)	(3)	9	515	19	783
Utah.....	33	2,790					13	53	46	2,843
Virginia.....	68	9,497					8	131	76	9,628
Washington.....	43	2,252					19	303	62	2,555
West Virginia.....	662	90,548	(3)	(3)			41	1,293	703	91,841
Wyoming.....	42	3,567					21	75	63	3,642
Total.....	4,340	396,463	(3)	(3)	(3)	(3)	995	12,645	5,335	400,108

¹ Includes employees in mines where the working day was irregular or which failed to answer the inquiry. See also footnote 3.

² After Oct. 2 a total of 26 mines employing 408 men reported 9 hours and 14 mines employing 277 men reported 10 hours, but in most of these cases the inquiry seems to have been misunderstood and the data have therefore been included in the column "All others".

TABLE 10.—Percentage of men employed in bituminous-coal mines that had established working days of 8, 9, and 10 hours, 1913, 1923, and 1929-33¹

Year	Percent of total employees in—			Weighted average working day (hours)	Year	Percent of total employees in—			Weighted average working day (hours)
	8-hour mines	9-hour mines	10-hour mines			8-hour mines	9-hour mines	10-hour mines	
1913.....	61.9	15.2	22.9	8.60	1933:				
1923.....	94.7	4.2	1.1	8.06	Before Oct. 2.	92.6	4.9	2.5	8.10
1929.....	92.5	6.7	.8	8.08	After Oct. 2.	99.8	.1	.1	8.00
1930.....	92.4	6.6	1.0	8.09	Average for				
1931.....	93.0	6.1	.9	8.08	year ²	94.4	3.7	1.9	8.07
1932.....	91.9	6.2	1.9	8.10					

¹ Calculated on basis of total number of men in mines definitely reported as having 8-, 9-, or 10-hour day. A small number of mines that work more than 10 hours or less than 8 hours have been excluded, as have also all mines for which the reports were defective.

² In computing the average, the reported data for "before Oct. 2" have been weighted by 9 months and the data for "after Oct. 2" by 3 months.

OUTPUT PER MAN

TABLE 11.—*Bituminous coal produced underground per man employed underground, by States, in 1933*

State	Total mined underground (net tons)	Total number of underground men	Average number of days mines operated	Average per underground man (net tons)	
				Per year	Per day ¹
Alabama.....	8,708,025	15,440	146	564	3.87
Alaska.....	96,467	59	201	1,635	8.12
Arizona.....	10,345	19	271	544	2.01
Arkansas.....	853,365	3,150	94	271	2.87
Colorado.....	5,208,183	6,579	147	792	5.37
Georgia.....	41,882	78	234	531	2.27
Illinois.....	31,788,513	36,414	138	873	6.31
Indiana.....	3,695,976	8,023	160	1,084	6.79
Iowa.....	2,942,656	6,591	138	446	3.24
Kansas.....	778,093	2,629	142	296	2.09
Kentucky.....	36,099,729	37,195	170	971	5.72
Maryland.....	1,530,748	2,516	172	608	3.53
Michigan.....	400,584	1,046	128	389	3.04
Missouri.....	1,284,952	3,987	143	322	2.25
Montana.....	1,367,414	958	166	1,427	8.58
New Mexico.....	1,226,236	1,868	163	656	4.02
North Carolina.....	2,014	7	175	288	1.64
North Dakota.....	691,273	645	176	1,072	6.08
Ohio.....	18,582,559	22,110	169	840	4.96
Oklahoma.....	980,500	2,289	128	426	3.33
Pennsylvania.....	79,029,772	101,593	162	778	4.80
South Dakota.....	8,359	20	120	418	3.47
Tennessee.....	3,774,761	5,935	162	636	3.93
Texas.....	738,590	650	174	1,136	6.53
Utah.....	2,674,986	2,159	171	1,239	7.26
Virginia.....	8,178,842	8,134	185	1,005	5.45
Washington.....	1,394,068	2,101	158	664	4.19
West Virginia.....	94,339,703	77,722	197	1,214	6.17
Wyoming.....	3,918,965	2,893	165	1,355	8.21
Other States.....	7,492	46	73	163	2.22
Total.....	315,360,352	352,866	166	894	5.37

¹ Based upon (1) the "reported" number of man-shifts where the operator keeps a record thereof; otherwise upon (2) the "calculated" number of man-shifts obtained by multiplying the average number of men employed underground at each mine by the number of days worked by the mine. Using a "calculated" method throughout, the average output per man per day for the country as a whole was 5.36 tons in 1933, a figure that is strictly comparable with 5.85 in 1931 and 5.61 in 1930, previously published.

STRIKES, SUSPENSIONS, AND LOCKOUTS

TABLE 12.—*Strikes, suspensions, and lockouts in coal mines, by States, in 1933*

State	Total number of men employed	Number of men on strike	Man-days idle on account of strike	Average number of days lost on account of strike	
				Per man employed	Per man on strike
Alabama.....	18,237	1,200	17,783	1	15
Alaska.....	100				
Arizona.....	23				
Arkansas.....	3,671	1,225	8,241	2	7
California, Idaho, and Oregon.....	58				
Colorado.....	7,908	605	8,363	1	14
Georgia.....	93				
Illinois.....	44,145	3,187	130,197	3	41
Indiana.....	11,199	3,151	48,210	4	15
Iowa.....	7,695	4,462	186,763	24	42
Kansas.....	3,809	18	540	(²)	30
Kentucky.....	43,717	5,302	69,037	2	13
Maryland.....	2,880	40	80	(²)	2
Michigan.....	1,186	562	62,990	53	112
Missouri.....	5,690	463	8,040	1	17
Montana.....	1,324				
New Mexico.....	2,340	693	27,818	12	40
North Carolina.....	10				
North Dakota.....	1,301				
Ohio.....	25,442	3,647	45,942	2	13
Oklahoma.....	2,974	219	1,296	(²)	6
Pennsylvania, bituminous.....	115,453	86,832	2,896,545	25	33
South Dakota.....	147				
Tennessee.....	7,051	375	10,125	1	27
Texas.....	803				
Utah.....	2,906	653	9,975	3	15
Virginia.....	9,761	3,226	56,442	6	17
Washington.....	2,555	894	87,270	34	98
West Virginia.....	92,472	8,723	50,929	1	6
Wyoming.....	3,753	26	26	(²)	1
Total bituminous.....	418,703	125,503	3,726,612	9	30
Pennsylvania anthracite.....	104,633	50,948	686,692	7	13
Grand total.....	523,336	176,451	4,413,304	8	25

¹ Does not include men laid idle at certain mines through labor factional trouble due to jurisdictional claims of a rival union, which was reported by the operator as responsible for tonnage losses ranging from 15 to 88 percent.

² One-half day or less.

EQUIPMENT AND METHODS OF MINING AND PREPARATION
METHODS OF RECOVERY

TABLE 13.—*Bituminous coal mined by different methods, by States, in 1933*

State	Mined by hand		Shot off the solid		Cut by machines		From strip pits		Not specified		Total production (net tons)
	Net tons	Percent	Net tons	Percent	Net tons	Percent	Net tons	Percent	Net tons	Percent	
Alabama	508,751	5.8	1,311,346	15.0	6,880,145	78.5	51,964	0.6	7,783	0.1	8,759,989
Alaska	9,647	10.0	86,820	90.0							96,467
Arizona			10,345	100.0							10,345
Arkansas	913	1	273,754	31.0	578,698	65.5	29,559	3.4			882,924
Colorado	1,418,478	27.1	137,481	2.6	3,625,616	69.4	21,584	.4	26,608	.5	5,229,767
Georgia			41,382	100.0							41,382
Illinois	1,067,944	2.9	3,033,185	8.1	27,613,888	73.8	5,624,632	15.0	73,496	.2	37,413,145
Indiana	164,359	1.1	1,061,206	7.7	7,466,236	54.2	5,065,076	36.8	4,175	.2	13,761,052
Iowa	302,645	9.5	1,717,151	53.7	907,900	28.4	252,327	7.9	14,960	.5	3,194,983
Kansas	169,894	7.7	380,121	17.1	205,924	9.3	1,439,529	64.9	22,154	1.0	2,217,622
Kentucky:											
Eastern	919,881	3.2	252,662	.9	27,079,976	95.8			12,813	.1	28,265,332
Western	34,084	.4	210,133	2.7	7,584,030	96.8			6,150	.1	7,834,397
Maryland	1,014,066	66.3			514,594	33.6			1,788	.1	1,530,748
Michigan			13,090	3.2	393,494	96.8					406,584
Missouri	252,664	7.4	132,259	3.8	859,039	25.0	2,147,260	62.6	40,990	1.2	3,432,212
Montana	37,537	1.7	30,371	1.4	1,285,403	59.7	784,793	36.5	14,103	.7	2,152,207
New Mexico	464,161	37.9	435,213	35.5	325,073	26.5			1,789	.1	1,226,236
North Carolina	2,014	100.0									2,014
North Dakota	41,133	2.3	207,356	11.7	431,586	24.2	1,090,999	61.2	11,198	.6	1,782,272
Ohio	567,294	2.9	63,684	.3	17,923,732	91.5	1,006,204	5.1	27,849	.2	19,588,763
Oklahoma	51,056	4.1	157,153	12.7	770,680	62.3	257,744	20.8	1,611	.1	1,238,244
Pennsylvania	15,758,117	19.9	1,918,702	2.4	61,347,995	77.4	266,172	.3	5,558		79,295,944
South Dakota	6,275	10.6					51,016	85.9	2,084	3.5	59,375
Tennessee	446,636	11.8	782,260	20.7	2,545,865	67.5					3,774,761
Texas	116,017	14.1	622,573	75.8			83,288	10.1			821,878
Utah	57,775	2.2	436,614	16.3	2,180,597	81.5					2,674,986
Virginia	87,466	1.1	721,557	8.8	7,369,619	90.1					8,178,642
Washington	676,650	48.5	469,812	33.7	245,184	17.6			2,422	.2	1,394,068
West Virginia	6,838,047	7.2	1,962,874	2.1	85,521,741	90.7	3,832		17,041		94,343,535
Wyoming	58,520	1.5	518,246	12.9	3,342,199	83.3	94,202	2.3			4,013,167
Other States	161	2.1	6,260	83.6	1,071	14.3					7,492
Total	31,072,185	9.3	16,993,610	5.1	266,999,985	80.0	18,270,181	5.5	294,572	.1	333,630,533

¹ Includes some tonnage reported by the companies as "pillar coal"; the method of mining it, of course, differs materially from solid shooting in rooms or entries.

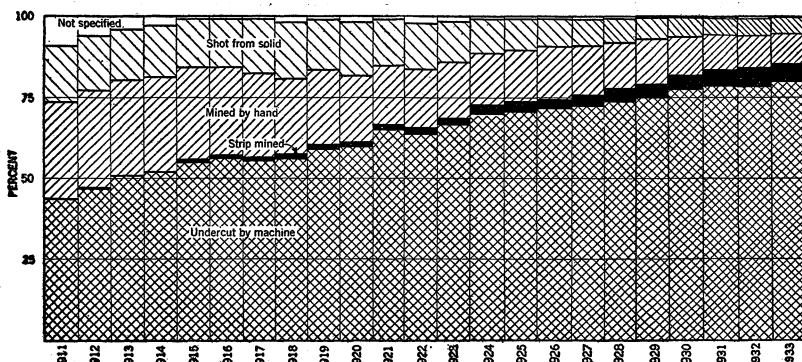


FIGURE 2.—Percentage of total output of bituminous coal mined by different methods, 1911-33.

UNDERCUTTING MACHINES

TABLE 14.—Number of coal-cutting machines in bituminous-coal mines, average output per machine, and percent of total product of underground mines cut by machines, by States, in 1933

State	Number of coal-cutting machines in use			Average output per machine (net tons)	Percent of total product of underground mines cut by machines
	"Permissible"	All others	Total		
Alabama.....	108	249	357	19, 272	79. 0
Arkansas.....	58	64	122	4, 743	67. 8
Colorado.....	161	229	390	9, 296	69. 6
Illinois.....	336	984	1, 320	20, 920	86. 9
Indiana.....	77	239	316	23, 627	85. 9
Iowa.....	66	27	93	9, 762	30. 9
Kansas.....	16	16	32	6, 435	26. 5
Kentucky.....	593	847	1, 440	24, 072	96. 0
Maryland.....	20	15	35	14, 711	33. 6
Michigan.....	10	35	45	8, 744	96. 8
Missouri.....	44	68	112	7, 670	66. 9
Montana.....	12	63	75	20, 403	94. 0
New Mexico.....	23	17	40	8, 127	26. 5
North Dakota.....	12	5	17	25, 387	62. 4
Ohio.....	390	530	920	19, 482	96. 5
Oklahoma.....	63	46	109	7, 070	78. 6
Pennsylvania.....	2, 148	1, 375	3, 523	17, 413	77. 6
Tennessee.....	29	91	120	21, 216	67. 5
Utah.....	38	73	111	19, 645	81. 5
Virginia.....	51	158	209	35, 261	90. 1
Washington.....	22	12	34	7, 211	17. 6
West Virginia.....	1, 042	1, 154	2, 196	38, 044	90. 7
Wyoming.....	33	206	239	13, 984	85. 3
Other States.....	2	-----	2	536	14. 3
Total.....	5, 354	1 6, 491	11, 845	22, 541	84. 7

¹ Probably includes some "permissible" machines not so specified by the operators.

STRIPPING OPERATIONS

TABLE 15.—Stripping operations of all types in the bituminous-coal fields, by States and counties, in 1933

[Returns for mines that recover coal both by stripping and by underground operations do not permit separating men engaged in stripping from those engaged in other work. For this reason the figures of men employed represent all persons working at these mines, including those underground. The total tons produced by both methods at these same mines are also shown]

State and county	Number of strip pits	Number of power shovels			Coal produced (net tons)		Total value at same mines	Average value per ton	Number of employees			Average number of days worked	Percent of county or State total mined by stripping	Man-days	Average tons per man per day	
		Steam	Elec- tric	All other	Mined by stripping	Total at same mines			Under- ground	Surface						Total
										In strip pits	All others					
Alabama: Blount, Walker, and Winston.....	5	8	-----	-----	51,964	51,964	\$79,000	\$1.52	-----	132	37	169	74	12.1	12,463	4.17
Colorado: Elbert, Jackson, and Routt.....	4	2	-----	-----	21,584	21,584	39,000	1.81	-----	19	-----	19	96	14.3	1,829	11.80
Illinois:																
Fulton.....	10	-----	11	4	619,339	619,339	786,000	1.27	-----	219	108	327	139	49.7	45,516	13.61
Grundy, Henry, Jackson, Knox, Livingston, McDonough, Peoria, Saline, Schuyler, Vermillion, and Will.....	15	7	21	8	2,629,605	2,629,605	3,852,000	1.46	-----	673	265	938	201	28.1	189,465	13.88
LaSalle.....	3	-----	-----	2	7,162	7,162	16,000	2.23	-----	14	3	17	131	2.1	2,230	3.21
Perry.....	5	7	11	1	2,181,283	2,181,283	2,577,000	1.18	-----	526	71	597	192	85.3	114,905	18.98
St. Clair.....	4	-----	2	4	84,510	84,510	95,000	1.12	-----	56	2	58	120	3.5	6,968	12.13
Williamson.....	11	2	-----	5	102,733	102,733	123,000	1.20	-----	61	36	97	129	5.2	12,495	8.22
Total, Illinois.....	48	16	45	24	5,624,632	5,624,632	7,449,000	1.32	-----	1,549	485	2,034	183	15.0	371,579	15.14
Indiana:																
Clay.....	13	12	3	13	577,375	577,375	776,000	1.34	-----	324	67	391	158	90.0	61,928	9.32
Greene.....	9	7	5	1	944,157	944,157	1,247,000	1.32	-----	282	56	338	196	55.7	66,129	14.28
Owens, Sullivan, Vermillion, and Vigo.....	7	6	9	2	1,265,642	1,265,642	1,519,000	1.20	-----	362	72	434	196	21.9	85,102	14.87
Pike.....	7	2	12	4	1,823,131	1,823,131	1,822,000	1.00	-----	418	131	549	170	88.1	93,056	19.59
Warrick.....	5	4	3	3	454,771	454,771	474,000	1.04	-----	187	39	226	178	49.3	40,230	11.30
Total, Indiana.....	41	31	32	23	5,065,076	5,065,076	5,838,000	1.15	-----	1,573	365	1,938	179	36.8	346,445	14.62

Iowa:																
Boone, Greene, Hamilton, Jefferson, Keokuk, Wapello, Warren, and Webster.....	13		2	12	134,456	134,456	343,000	2.55	172	18	190	175	17.1	33,231	4.05	
Davis.....	3			1	3,000	3,000	6,000	2.00	8	1	9	79	88.0	715	4.20	
Mahaska.....	8			5	20,209	20,209	43,000	2.13	35	6	41	128	34.7	5,249	3.85	
Marion.....	4	1		4	94,662	94,662	155,000	1.64	118		118	122	25.8	14,420	6.56	
Total, Iowa.....	28	1	2	22	252,327	252,327	547,000	2.17	333	25	358	150	20.8	53,615	4.71	
Kansas:																
Bourbon.....	3	3			11,656	11,656	19,000	1.63	17	3	20	122	98.9	2,433	4.79	
Cherokee.....	6	1	1	1	205,292	205,292	373,000	1.82	162	7	159	111	67.4	17,714	11.59	
Crawford.....	24	16	6	2	1,205,102	1,205,102	1,861,000	1.54	621	41	662	125	69.4	82,765	14.56	
Labetta.....	4	2		2	13,229	13,229	30,000	2.27	20	5	25	178	100.0	4,447	2.97	
Linn and Osage.....	3				4,250	4,250	10,000	2.35	12	4	16	130	6.4	2,085	2.04	
Total, Kansas.....	40	22	7	5	1,439,529	1,439,529	2,293,000	1.59	822	60	882	124	64.9	109,444	13.15	
Missouri:																
Barton.....	7	5	6		690,069	690,069	1,014,000	1.47	306	34	340	126	99.8	42,707	16.16	
Bates.....	5	4	4		722,758	722,758	1,128,000	1.56	346	3	349	230	97.4	80,113	9.02	
Boone, Callaway, Jasper, Johnson, and Randolph.....	6	5	1	1	297,886	297,886	521,000	1.75	137		137	255	56.7	34,952	8.52	
Henry.....	4	3	4		411,368	411,368	676,000	1.64	184	22	206	157	97.1	32,256	12.75	
Vernon.....	3	2			25,179	25,179	44,000	1.75	49		49	70	86.6	3,445	7.31	
Total, Missouri.....	25	19	15	1	2,147,260	2,147,260	3,383,000	1.58	1,022	59	1,081	179	62.6	193,473	11.10	
Montana: Rosebud and Valley.....	2		2	1	784,793	784,793	1,176,000	1.50	41	11	52	200	99.8	10,398	75.47	
North Dakota:																
Adams, Bowman, Burleigh, Mercer, Morton, Mountrail, Oliver, Stark, Ward, and Williams.....	13	4	4	3	605,508	605,508	730,000	1.21	135	63	198	175	49.1	34,648	17.48	
Burke.....	4	3	1	2	187,619	187,619	234,000	1.25	55	27	82	210	100.0	17,183	10.92	
Divide.....	3	1	1		193,987	193,987	231,000	1.19	41	19	60	190	95.9	11,380	17.05	
Grant.....	4			1	13,068	13,068	19,000	1.45	19	8	27	155	55.1	4,180	3.13	
Hettinger.....	7				8,957	8,957	11,000	1.23	16	4	20	131	63.8	2,623	3.41	
McLean.....	5	3		3	81,860	81,860	118,000	1.44	98	2	100	135	70.7	13,600	6.06	
Total, North Dakota.....	36	11	6	9	1,090,999	1,090,999	1,343,000	1.23	364	123	487	171	61.2	83,514	13.06	
Ohio:																
Columbiana, Coshocton, Holmes, Jackson, Jefferson, Mahoning, Medina, Perry, Stark, and Vinton.....	13	10	2	8	120,140	123,636	159,000	1.29	3	135	47	185	89	2.5	16,407	7.54
Harrison.....	5	17			731,544	731,544	698,000	.95	337		337	179	29.9	60,337	12.12	
Muskingum.....	4	2	1	2	143,115	143,115	192,000	1.34	54	21	75	273	27.7	20,504	6.98	
Tuscarawas.....	6	2		2	11,405	14,739	17,000	1.15	6	12	2	20	1.2	2,471	5.96	
Total, Ohio.....	28	31	3	12	1,006,204	1,013,034	1,066,000	1.05	9	538	70	617	162	11.5	99,719	10.16

1 Percent of county totals, not State.

TABLE 15.—Stripping operations of all types in the bituminous-coal fields, by States and counties, in 1933—Continued

[Returns for mines that recover coal both by stripping and by underground operations do not permit separating men engaged in stripping from those engaged in other work. For this reason the figures of men employed represent all persons working at these mines, including those underground. The total tons produced by both methods at these same mines are also shown]

State and county	Number of strip pits	Number of power shovels			Coal produced (net tons)		Total value at same mines	Average value per ton	Number of employees			Average number of days worked	Percent of county or State total mined by stripping	Man-days	Average tons per man per day	
		Steam	Elec- tric	All other	Mined by stripping	Total at same mines			Under- ground	Surface						Total
										In strip pits	All others					
Oklahoma:																
Craig, Haskell, Muskogee, Tulsa, and Wagoner.....	5	11	-----	-----	240,985	240,985	\$417,000	\$1.73	-----	188	17	205	136	78.0	27,951	8.62
Rogers.....	4	3	-----	1	16,759	16,759	25,000	1.49	-----	48	5	53	44	100.0	2,308	7.26
Total, Oklahoma.....	9	14	-----	1	257,744	257,744	442,000	1.71	-----	236	22	258	117	20.8	30,259	8.52
Pennsylvania: Cambria, Clarion, Fayette, Washington, and Westmoreland.	6	10	-----	1	266,172	488,754	615,000	1.26	273	226	46	545	174	.6	94,888	5.15
South Dakota:																
Corson and Ziebach.....	3	-----	-----	-----	3,220	3,220	6,000	1.86	-----	6	-----	6	108	100.0	648	4.97
Dewey.....	4	-----	-----	2	43,970	43,970	79,000	1.80	-----	81	30	111	89	100.0	9,857	4.46
Perkins.....	3	-----	-----	-----	3,826	3,826	6,000	1.57	-----	6	-----	6	206	55.0	1,238	3.09
Total, South Dakota.....	10	-----	-----	2	51,016	51,016	91,000	1.78	-----	93	30	123	95	85.9	11,743	4.34
Other States †.....	7	4	5	2	210,851	328,269	343,000	1.04	53	127	57	237	161	1.2	38,089	8.62
Total, United States.....	289	169	117	103	18,270,181	18,616,981	24,704,000	1.33	335	7,075	1,390	8,800	166	5.5	1,457,458	12.77

† Arkansas, Texas, West Virginia, and Wyoming.

TABLE 16.—Summary of operations of power strip pits proper in the bituminous-coal fields, by States, in 1933

State	Number of strip pits	Number of power shovels			Amount mined by stripping ¹ (net tons)	Average value per ton ²	Number of men employed ³	Average number of days mines operated ⁴	Average tons per man per day ⁴
		Steam	Electric	All others					
Power strip pits proper:									
Alabama.....	5	8			51,964	\$1.52	169	74	4.17
Colorado.....	2	2			18,804	1.86	14	75	17.93
Illinois.....	38	16	45	24	5,614,638	1.32	1,997	185	15.22
Indiana.....	41	31	32	23	5,065,076	1.15	1,938	179	14.62
Iowa.....	18	1	2	22	237,039	2.17	318	156	4.79
Kansas.....	29	22	7	5	1,425,632	1.59	819	126	13.86
Missouri.....	24	19	15	1	2,147,060	1.58	1,077	180	11.10
Montana.....	2			2	784,793	1.50	52	200	75.47
North Dakota.....	12	11	6	9	1,053,135	1.23	407	181	14.33
Ohio.....	24	30	3	11	1,001,972	1.05	601	162	10.29
Oklahoma.....	9	14		1	257,744	1.71	258	117	8.52
Pennsylvania.....	3	8		1	165,098	1.39	183	109	8.30
South Dakota.....	2			2	39,000	1.59	105	87	4.27
Other States ⁵	5	2	5		202,749	1.01	110	129	14.23
Total.....	214	164	117	100	18,064,704	1.33	8,048	165	13.59
Horse stripping operations.....	69				95,891	1.65	253	109	3.46
Mines combining stripping and underground methods in same operation ⁴	6	5		3	109,586	1.18	499	201	4.55
Grand total.....	289	169	117	103	18,270,181	1.33	8,800	166	12.77

¹ Exclusive of coal produced by underground mining in the same operation.

² Items in these columns include underground mining conducted in the same operation.

³ Includes Arkansas, Texas, and Wyoming.

⁴ Includes operations in Arkansas, Ohio, Pennsylvania, and West Virginia in which the output was obtained by both methods. In addition to the 109,586 tons produced by stripping, this group of 6 mines obtained 346,800 tons by underground methods, its total production by both methods being 456,386 tons.

LOADING MACHINES AND CONVEYORS

These figures refer only to mechanical devices designed to reduce the labor of hand shoveling into mine cars, although in a larger sense the introduction of any machine, such as a cutting machine or haulage locomotive, is a form of mechanization.

The figures are based upon complete reports courteously furnished by coal operators to the Bureau of Mines.¹

¹ The Bureau appreciates the cooperation of the manufacturers of loading equipment and of the Pennsylvania Department of Mines, the Illinois Department of Mines and Minerals, the State coal-mine inspector of Wyoming, and Jonas Waffle of Indiana in furnishing information used in the compilation.

BITUMINOUS COAL

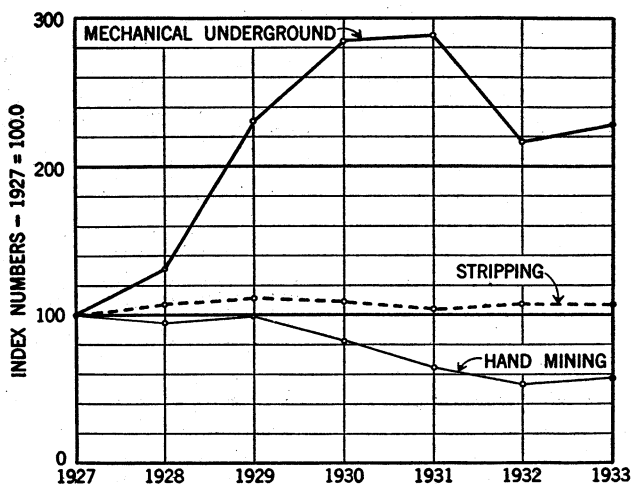


FIGURE 3.—Relative growth of mechanical mining, hand mining, and stripping in bituminous-coal mines since 1927. To facilitate comparison, the tonnages produced by each method have been converted to index numbers, in which 1927 is represented by 100.

TABLE 17.—Relative rate of growth of mechanical mining, hand mining, and stripping in bituminous-coal mines, 1927-33

[Mechanical mining includes coal handled on pit-car loaders and hand-loaded face conveyors]

Year	Mechanical mining underground	Stripping	Hand mining	Year	Mechanical mining underground	Stripping	Hand mining
Thousand net tons:				Index numbers:			
1927.....	1 16, 500	18, 378	482, 885	1927.....	100	100	100
1928.....	21, 559	19, 789	459, 397	1928.....	131	108	95
1929.....	37, 862	20, 268	476, 859	1929.....	230	110	99
1930.....	46, 982	19, 842	400, 702	1930.....	285	108	83
1931.....	47, 562	18, 932	315, 595	1931.....	288	103	65
1932.....	35, 817	19, 641	254, 252	1932.....	217	107	53
1933.....	37, 820	19, 573	272, 547	1933.....	229	107	56

¹ Complete returns were not collected in 1927, but the total has been estimated from the complete surveys made in 1926 and 1928.

TABLE 18.—*Tonnage of bituminous coal produced mechanically underground in 1933*

	Net tons	Percent
Loaded by machine:		
Mobile loading machines.....	17,865,000	87.1
Scraper loaders.....	990,000	4.8
Duckbills and other self-loading conveyors.....	1,656,000	8.1
Total loaded by machine.....	20,511,000	100.0
Handled by conveyors:		
Duckbills and other self-loading conveyors.....	1,656,000	8.7
Pit-car loaders.....	11,413,000	60.2
Other hand-loaded conveyors.....	5,896,000	31.1
Total handled by conveyors.....	18,965,000	100.0
Recapitulation, less duplications:		
Mobile loading machines.....	17,865,000	47.2
Scraper loaders.....	990,000	2.6
Pit-car loaders.....	11,413,000	30.2
Other conveyors, including duckbills.....	7,552,000	20.0
Grand total, mechanized mining.....	37,820,000	100.0

TABLE 19.—*Increase or decrease in tonnage mined mechanically underground, 1932-33*

State	1932 (net tons)	1933 (net tons)	Increase (+) or decrease (-), 1933	
			Net tons	Percent
Illinois.....	15,360,000	17,122,000	+1,762,000	+11.5
Indiana.....	3,225,000	4,222,000	+997,000	+30.9
Pennsylvania.....	7,414,000	6,682,000	-732,000	-9.9
Ohio.....	850,000	1,029,000	+179,000	+21.1
Wyoming.....	2,698,000	2,970,000	+272,000	+10.1
Utah.....	754,000	551,000	-203,000	-26.9
Montana.....	1,074,000	1,087,000	+13,000	+1.2
Kentucky.....	1,093,000	790,000	-303,000	-27.7
West Virginia.....	1,172,000	1,165,000	-7,000	-.6
Virginia.....				
Alabama.....	1,237,000	1,389,000	+152,000	+12.3
Other States ¹	940,000	813,000	-127,000	-13.5
Total.....	35,817,000	37,820,000	+2,003,000	+5.6

¹ Washington, Arkansas, Maryland, Missouri, Colorado, Tennessee, New Mexico, Michigan, and Iowa in order named.

TABLE 20.—*Comparative change in tonnage handled by principal types of machines, 1932-33*

	1932 (net tons)	1933 (net tons)	Increase (+) or decrease (-), 1933	
			Net tons	Percent
Mobile loading machines.....	14,825,000	17,865,000	+3,040,000	+20.5
Scraper loaders.....	1,132,000	990,000	-142,000	-12.5
Duckbills and other self-loading conveyors.....	1,630,000	1,656,000	+26,000	+1.6
Total, loaded by machines.....	17,587,000	20,511,000	+2,924,000	+16.6
Pit-car loaders.....	12,590,000	11,413,000	-1,177,000	-9.3
Other hand-loaded conveyors.....	5,640,000	5,896,000	+256,000	+4.5
Grand total.....	35,817,000	37,820,000	+2,003,000	+5.6

TABLE 21.—Total tonnage produced by loading machines, pit-car loaders, and other hand-loaded conveyors in 1933, by States

State	Loaded by machine	Handled on pit-car loaders and other hand-loaded conveyors	Total produced by mechanized mining
Illinois.....	10,351,000	6,771,000	17,122,000
Pennsylvania.....	1,380,000	5,302,000	6,682,000
Indiana.....	3,146,000	1,076,000	4,222,000
Wyoming.....	2,364,000	606,000	2,970,000
Alabama.....	176,000	1,213,000	1,389,000
West Virginia and Virginia.....	401,000	764,000	1,165,000
Montana.....	914,000	173,000	1,087,000
Ohio.....	(¹)	(¹)	1,029,000
Kentucky.....	60,000	730,000	790,000
Utah.....	(¹)	(¹)	551,000
Other States ²	163,000	650,000	813,000
Total.....	20,511,000	17,309,000	37,820,000

¹ Separation not made here.² Washington, Arkansas, Maryland, Missouri, Colorado, Tennessee, New Mexico, Michigan, and Iowa.

TABLE 22.—Percent of total bituminous deep-mined output produced by mechanized mining, 1932-33

[Figures show proportion of the total production from underground mines that was loaded by machine or handled on pit-car loaders and other hand-loaded conveyors]

State	Percent of State total mined mechanically			State	Percent of State total mined mechanically		
	1932	1933	Change (in points)		1932	1933	Change (in points)
Montana.....	76.3	80.8	+4.5	Ohio.....	6.7	5.7	-1.0
Wyoming.....	66.3	76.0	+9.7	West Virginia and Virginia.....	1.3	1.2	-.1
Illinois.....	59.3	58.9	-.4	Kentucky.....	3.1	2.2	-.9
Indiana.....	48.0	51.9	+3.9	Total.....	12.6	12.3	-.3
Utah.....	26.5	21.1	-5.4				
Alabama.....	15.9	15.9	-----				
Pennsylvania.....	10.0	8.4	-1.6				

TABLE 23.—Mechanical loading underground in bituminous-coal mines, by States, in 1933

State	Number of mines				Number of machines					Production mechanically mined (net tons)			Total production of mechanized mines (net tons)			
	Using loading machines only (including scrapers, duckbills, etc.)	Using conveyors only (that is, pit-car loaders and other hand-loaded conveyors)	Using both loading machines and conveyors	Total, less duplications	Mobile loading machines	Scrapers	Duck-bills and other self-loading conveyors	Pit-car loaders	Installations of hand-loaded conveyors ¹	Loaded by machine	Handled by pit-car loaders and other hand-loaded conveyors	Total	Mines using loading machines only (including scrapers, duckbills, etc.)	Mines using conveyors only (that is, pit-car loaders and other hand-loaded conveyors)	Mines using both loading machines and conveyors	Total, less duplications
Alabama.....	3	22	1	26	(?)	9		144	14	176, 547	1, 212, 761	1, 389, 308	877, 755	2, 497, 402	118, 442	3, 493, 599
Arkansas.....	2	5		7		(?)			5	(?)	(?)	144, 736	(?)	(?)		144, 736
Colorado.....	1	4	2	7	7			9	4	32, 938	35, 029	70, 967	115, 355	345, 233	129, 445	590, 033
Illinois.....	11	24	17	52	281			1, 444	1	10, 351, 282	6, 770, 344	17, 121, 626	3, 761, 178	6, 459, 511	8, 747, 947	18, 968, 636
Indiana.....	10	10	5	25	91			167	1	3, 146, 318	1, 076, 037	4, 222, 355	2, 849, 712	1, 141, 168	898, 362	4, 889, 242
Iowa.....		1		1					1	(?)	(?)	(?)	(?)	(?)		(?)
Kentucky.....	2	5		7	7	(?)		90	2	(?)	(?)	789, 755	(?)	(?)		3, 261, 898
Maryland.....		2		2					2	(?)	(?)	(?)	(?)	(?)		(?)
Michigan.....		1		1					1	(?)	(?)	(?)	(?)	(?)		(?)
Missouri.....		3		3					3	(?)	(?)	(?)	(?)	(?)		(?)
Montana.....	2	1	4	7	26		5	35	1	913, 885	173, 443	1, 087, 328	462, 126	10, 295	717, 773	1, 190, 194
New Mexico.....	1			1		(?)			1	(?)	(?)	(?)	(?)	(?)		(?)
Ohio.....	3		1	4	17	(?)		(?)		(?)	(?)	1, 028, 668	(?)	(?)	(?)	1, 552, 010
Pennsylvania.....	11	56	7	74	30	52	17	457	48	1, 380, 169	5, 302, 299	6, 682, 468	2, 863, 890	13, 967, 200	2, 255, 219	19, 086, 309
Tennessee.....		1		2	(?)				2	(?)	(?)	(?)	(?)	(?)		(?)
Utah.....	8	1	1	10	31	(?)		(?)	1	(?)	(?)	551, 172	(?)	(?)		1, 369, 461
Virginia.....		3		3					3	(?)	370, 305	370, 305		628, 831		628, 831
Washington.....	1	4		5		(?)			4	(?)	(?)	270, 858	(?)	(?)		321, 946
West Virginia.....	4	15	3	22	8	4	4	16	15	400, 789	303, 491	794, 280	547, 255	2, 602, 561	990, 980	4, 140, 796
Wyoming.....	9	8	7	24	22	10	104	88	6	2, 364, 188	605, 732	2, 969, 920	1, 194, 970	614, 595	1, 580, 647	3, 390, 212
Undistributed.....				3				2	3	1, 745, 405	1, 285, 576	245, 792	3, 719, 467	3, 013, 452	642, 011	724, 879
Total.....	68	166	49	233	523	93	132	2, 453	114	20, 511, 521	17, 308, 940	37, 820, 461	16, 391, 708	31, 361, 171	16, 080, 826	63, 833, 705

¹ Number of mines in which hand-loaded conveyors (other than pit-car loaders) were used.
² Included under "Undistributed" to avoid disclosing individual operations.

CONSUMPTION, STOCKS, AND DISTRIBUTION

CONSUMPTION

TABLE 24.—Consumption of bituminous coal by uses in 1929—a year of peak industrial activity

Item	Bituminous coal consumed (net tons)	Percent of total
Railroad fuel (all steam roads):¹		
Locomotive fuel.....	118, 600, 000	22.83
All other (shops, stations, etc.).....	12, 500, 000	2.40
Total, railroad fuel.....	131, 100, 000	25.23
Coke ovens:²		
By-product.....	76, 759, 000	14.77
Beehive.....	10, 028, 000	1.93
Total, coke ovens.....	86, 787, 000	16.70
Electric power utilities ³	42, 785, 000	8.24
Steel works and blast furnaces, gas and steam coal ⁴	23, 031, 000	4.43
General manufacturing industries:⁵		
1. Food and kindred products.....	12, 144, 000	2.34
2. Textiles and their products.....	7, 643, 000	1.47
3. Forest products.....	2, 968, 000	.57
4. Paper and allied products.....	10, 247, 000	1.97
5. Printing, publishing, and allied industries.....	403, 000	.08
6. Chemicals and allied products.....	10, 440, 000	2.01
7. Products of petroleum and coal (other than coke and gas) ⁶	3, 466, 000	.67
8. Rubber products.....	2, 306, 000	.44
9. Leather and its manufactures.....	1, 434, 000	.28
10. Stone, clay, and glass products.....	22, 046, 000	4.24
11. Miscellaneous iron and steel products, not including blast furnaces, steel works, and machinery ⁷	3, 120, 000	.60
12. Nonferrous metals and their products.....	3, 517, 000	.68
13. Machinery, not including transportation equipment.....	5, 990, 000	1.15
14. Transportation equipment, air, land, and water.....	3, 991, 000	.77
15. Miscellaneous manufacturing industries ⁸	1, 810, 000	.35
Total, general manufacturing.....	91, 525, 000	17.62
Coal-gas and water-gas plants ⁹	5, 274, 000	1.02
Coal-mine fuel ¹⁰	4, 662, 000	.90
Mines and quarries other than coal ¹¹	4, 272, 000	.82
Bunker:¹²		
Foreign.....	4, 287, 000	.82
Domestic (incomplete).....	3, 407, 000	.66
Total, bunker.....	7, 694, 000	1.48
Domestic and all other uses not elsewhere accounted for ¹³	122, 425, 000	23.56
Grand total consumed.....	519, 555, 000	100.00

¹ Based on records of Interstate Commerce Commission covering class I roads (Statistics of Railways Statement 49A). Includes allowances for classes II and III, switching, and terminal companies.

² U. S. Bureau of Mines, Coke in 1929, p. 574.

³ U. S. Geological Survey, Division of Power Resources.

⁴ Consumption by iron blast furnaces and steel works and rolling mills, as shown by Census of Manufactures, 1929. Does not include coal used in coke ovens.

⁵ Census of Manufactures: 1929, vol. 1, p. 161, deducting industries included elsewhere as noted.

⁶ Excluding coal used in coke ovens and in manufactured-gas plants.

⁷ Excluding coal used in iron blast furnaces, steel works, and rolling mills. See note 4.

⁸ Includes 77,534 tons consumed in electric-railroad repair shops. Note that steam-railroad repair shops are included under railroad fuel above.

⁹ Bituminous coal used for gas-making and for boiler, retort, and bench fuel, not including that charged in byproduct ovens operated by city gas companies.

¹⁰ U. S. Bureau of Mines, Coal in 1929, p. 687.

¹¹ Census of Mines and Quarries, 1929, p. 52.

¹² Bureau of Foreign and Domestic Commerce, Monthly Summary of Foreign Commerce.

¹³ Includes heating large buildings other than factories, such as hotels, apartments, stores, offices, theaters, garages, and service stations; also a number of other items that cannot be separated, such as waterworks, construction industry, threshing, public institutions, central heating plants, laundries, and very small industrial consumers not covered by the Census of Manufactures. Note that this item is obtained by the difference between the observed total consumption (production minus exports plus imports plus or minus changes in consumers' stocks) and the known consumption reported for other items. It thus includes any tonnages omitted in the enumeration of the other items. For these reasons the total for this group is not directly comparable with estimates of consumption for "domestic use" hitherto published.

TABLE 25.—Changes in the United States consumption of bituminous coal by such classes of consumers as report currently, and by all other consumers, 1929–33, in thousands of net tons

[Information on several other classes of consumers is available for certain years. The items shown in this table are selected because they are available in strictly comparable form for each year

Year	Consumed in the United States							Exported		Total of consumption and exports ⁷	
	Colliery fuel	Electric public utilities ¹	Bunkers, foreign trade ²	Locomotive fuel, class I roads ³	Coke beehive ovens ⁴	Coke by-product ovens ⁴	All other uses ⁵	Total consumption ⁶	To Canada and Mexico ²		To all other countries ²
1929	4,663	44,937	4,287	113,894	10,028	76,759	264,987	519,555	14,727	2,702	536,984
1930	3,993	42,898	3,497	98,400	4,284	65,521	236,397	454,990	13,667	2,210	470,867
1931	3,205	38,735	2,195	81,725	1,767	46,846	197,396	371,869	10,647	1,479	383,995
1932	2,781	30,290	1,350	66,498	1,030	30,887	174,081	306,917	8,429	385	315,731
1933	2,858	30,575	1,316	66,198	1,408	38,681	180,712	321,748	8,600	437	330,785

¹ U. S. Geological Survey. Includes a small amount of anthracite.

² Bureau of Foreign and Domestic Commerce.

³ Interstate Commerce Commission. Note that consumption in shops, roundhouses, and stations is excluded, also the entire consumption of class II and III roads.

⁴ U. S. Bureau of Mines.

⁵ Obtained by subtracting the known items from the total consumption. Includes general manufacturing, domestic, and many miscellaneous uses. From other sources it is known that consumption in steel works and general manufacturing is decreasing and that consumption for domestic uses is increasing.

⁶ Production plus imports minus exports, plus or minus changes in consumers' stocks.

⁷ Note that consumption includes the small amount imported.

FUEL ECONOMY

TABLE 26.—Indicators of the effect of fuel economy on consumption of coal per unit of performance since the World War

	Pounds	Reduction (percent)
Steam railroads:		
Pounds per 1,000 gross ton-miles freight service:		
Average, 1919–20	170	
Average, 1933	121	28.8
Pounds per passenger-train car-mile:		
Average, 1919–20	18.5	
Average, 1933	15.2	17.8
Electric public-utility power plants:		
Pounds per kilowatt-hour, 1919	3.2	
Pounds per kilowatt-hour, 1933	1.5	53.1
Iron and steel—pounds coking coal per ton of pig: ¹		
1918	3,577	
1933	2,876	19.6
Coke manufacture: Savings of heat values through recovery of gas, tar, light oils, and breeze by extension of byproduct in place of beehive coking, 1913–33, expressed as percent of coal used for all coke in 1933 ²		19.2

¹ Includes only savings through higher yields of merchantable coke per ton of coal charged and lower consumption of coke per ton of iron. Excludes economies through recovery of byproducts, which are treated in next item.

² These byproducts are used in part for boiler fuel, in part for metallurgical purposes, in part for domestic heating and cooking, and to a small extent for automotive fuel.

STOCKS OF COAL HELD BY CONSUMERS

TABLE 27.—Stocks of bituminous coal in hands of commercial consumers and stocks of anthracite and bituminous coal in retail dealers' yards in 1933

Date	Total stock of bituminous coal, estimated (net tons)	Days' supply at current rate of consumption on date of stock taking								
		By-product coke plants	Steel plants	Other industrial	Coal-gas plants	Electric utilities	Retail yards, bituminous	Railroads	Total bituminous	Retail yards, anthracite
Jan. 1.....	29,666,000	53	38	30	68	56	18	23	27	34
Feb. 1.....	29,046,000	49	38	31	67	58	21	24	30	(1)
Mar. 1.....	26,288,000	43	31	26	62	56	13	19	24	(1)
Apr. 1.....	23,608,000	40	37	25	63	65	21	21	27	32
May 1.....	22,494,000	37	33	26	60	69	33	21	31	(1)
June 1.....	21,756,000	33	31	26	59	65	40	21	31	(1)
July 1.....	22,750,000	31	23	27	63	58	36	20	30	53
Aug. 1.....	24,737,000	30	25	30	74	54	39	21	32	(1)
Sept. 1.....	30,556,000	40	35	34	76	53	43	28	37	(1)
Oct. 1.....	34,137,000	44	41	40	70	58	43	30	40	63
Nov. 1.....	33,547,000	46	40	38	70	57	35	24	37	52
Dec. 1.....	34,178,000	54	39	35	75	61	32	23	36	50
Dec. 31.....	32,714,000	53	33	32	71	57	23	24	32	34

¹ Not available.

DISTRIBUTION

Tables showing the movement of coal to the Great Lakes, to tide-water, and to New England and certain other major currents of distribution have been included in earlier reports of this series (see Coal in 1928, pp. 512-27) and are this year published in the Monthly Coal Distribution Report of the Bureau of Mines. Table 28 records one feature of the distribution of bituminous coal which bears closely on the statistics of production.

BITUMINOUS COAL LOADED FOR SHIPMENT BY INDIVIDUAL RAILROADS AND WATERWAYS, AS REPORTED BY OPERATORS

The table shows the quantity so originated on each railroad and waterway, as reported by mine operators in answer to the following inquiry:

Railroads or waterways on which product was first loaded for shipment:

Name of road or waterway-----

(Give shipments over each road separately)

Tons

As these statistics include nonrevenue railroad fuel they may differ from statistics compiled by the railroad companies, which often show only revenue freight and include coal received from connecting lines or coal shipped off the Lake docks, as well as that originating at mines on the lines reporting.

Where the road serving the district is a subsidiary of a larger road some operators may report their coal as loaded on the subsidiary and others as loaded on the parent system (a few subsidiaries have been consolidated under the name of the parent road).

In general, the figures are given under the name reported by the operator; and the Bureau of Mines does not attempt to combine them under the name of the larger system, believing that such combina-

tion can best be made by those using the figures, as they are probably familiar with coal-traffic problems. If such combination is made, the total will usually be found to check reasonably well with the statistics issued by railroads that keep records of total coal originated.

TABLE 28.—*Bituminous coal loaded for shipment in 1933, by individual railroads and waterways, as reported by operators, in net tons*

Route	State	Quantity		
		By State	Total for route	
RAILROADS				
Alabama Central.....	Alabama.....	41, 143	41, 143	
Alabama Great Southern.....	do.....	81, 100	81, 100	
Alaska.....	Alaska.....	90, 700	90, 700	
Algiers, Winslow & Western.....	Indiana.....	1, 272, 538	1, 272, 538	
Alton.....	Illinois.....	1, 231, 423	1, 292, 225	
Artemus-Jellico.....	Missouri.....	60, 802		
	Kentucky.....	276, 786	276, 786	
	Colorado.....	165, 084	1, 811, 825	
	Illinois.....	235, 495		
	Kansas.....	305, 802		
	Missouri.....	199, 061		
	New Mexico.....	905, 544		
Atchison, Topeka & Santa Fe.....	Oklahoma.....	2, 839	23, 658, 236	
	Illinois.....	216, 512		
	Indiana.....	433, 470		
	Maryland.....	14, 432		
	Ohio.....	3, 106, 442		
	Pennsylvania.....	9, 469, 083	1, 783, 433	
	West Virginia.....	10, 418, 297		
Bessemer & Lake Erie.....	Pennsylvania.....	1, 783, 433		
Bevier & Southern.....	Missouri.....	50, 341		50, 341
Buffalo Creek & Gauley.....	West Virginia.....	553, 242		553, 242
Cambria & Indiana.....	Pennsylvania.....	3, 014, 341	3, 014, 341	
Campbell's Creek.....	West Virginia.....	815, 117	815, 117	
Carbon County.....	Utah.....	148, 221	148, 221	
Caseyville.....	Illinois.....	118, 690	118, 690	
Central of Georgia.....	Alabama.....	621, 709	661, 971	
	Georgia.....	40, 262		
Chesapeake & Ohio.....	Kentucky.....	7, 061, 357	41, 264, 662	
	Ohio.....	835, 349		
	West Virginia.....	33, 367, 956		
Cheswick & Harmar.....	Pennsylvania.....	537, 145	537, 145	
Chicago & Eastern Illinois.....	Illinois.....	1, 575, 780	3, 623, 586	
	Indiana.....	2, 047, 806		
Chicago & Illinois Midland.....	Illinois.....	3, 296, 081	3, 296, 081	
Chicago & North Western.....	do.....	1, 812, 102	1, 933, 184	
	Iowa.....	104, 954		
	Wyoming.....	16, 128		
Chicago, Burlington & Quincy.....	Colorado.....	272, 712	6, 106, 918	
	Illinois.....	5, 013, 129		
	Iowa.....	161, 718		
	Missouri.....	87, 855		
	Wyoming.....	596, 504		
Chicago, Great Western.....	Iowa.....	16, 192	16, 192	
Chicago, Indianapolis & Louisville.....	Indiana.....	922, 199	922, 199	
	do.....	3, 777, 644	4, 986, 705	
	Iowa.....	518, 714		
	Missouri.....	42, 177		
	Montana.....	571, 547		
	North Dakota.....	35, 376		
	South Dakota.....	33, 610	1, 621, 901	
	Washington.....	6, 637		
	Illinois.....	599, 191		
	Iowa.....	693, 162		
	Missouri.....	157, 694		
Chicago, Rock Island & Pacific.....	Oklahoma.....	171, 854	171, 854	
Chicago, Springfield & St. Louis.....	Illinois.....	397, 651	397, 651	
Cleveland, Cincinnati, Chicago & St. Louis.....	do.....	2, 842, 078	3, 803, 592	
	Indiana.....	961, 514		
	Kentucky.....	41, 097		
	Virginia.....	1, 573, 313		
	Colorado.....	170, 995		
Clinchfield.....	do.....	639, 810	639, 810	
Colorado & Southeastern.....	do.....	189, 766	189, 766	
Colorado & Southern.....	do.....	28, 532	28, 532	
Colorado & Wyoming.....	do.....	28, 483	28, 483	
Conemaugh & Black Lick.....	Pennsylvania.....	28, 532	28, 532	
Crystal River & San Juan.....	Colorado.....	483	483	
Cumberland & Pennsylvania.....	Maryland.....	678, 000	678, 000	
Dardanelle & Russellville.....	Arkansas.....	36, 671	36, 671	
Dents Run.....	Pennsylvania.....	4, 500	4, 500	

TABLE 28.—*Bituminous coal loaded for shipment in 1933, by individual railroads and waterways, as reported by operators, in net tons—Continued*

Route	State	Quantity	
		By State	Total for route
RAILROADS—continued			
Denver & Intermountain.....	Colorado.....	116,000	116,000
	do.....	1,018,815	
Denver & Rio Grande Western.....	New Mexico.....	16,542	2,454,149
	Utah.....	1,418,792	
	Colorado.....	426,744	
Denver & Salt Lake.....	Iowa.....	84,722	426,744
Des Moines & Central Iowa.....	Ohio.....	10,513	84,722
Detroit, Toledo & Ironton.....	Pennsylvania.....	587,600	10,513
East Broad Top Railroad & Coal Co.....	Washington.....	9,636	587,600
Eastern Railway & Lumber Co.....	Ohio.....	1,957	9,636
Erie.....	Pennsylvania.....	980,655	982,612
Evansville & Ohio Valley.....	Indiana.....	24,160	24,160
Evansville, Indianapolis & Terre Haute.....	do.....	113,501	113,501
Evansville, Suburban & Newburgh.....	do.....	70,312	70,312
Fort Dodge, Des Moines & Southern.....	Iowa.....	32,078	32,078
Fort Smith & Western.....	Oklahoma.....	66,933	66,933
Fort Smith, Subiaco & Rock Island.....	Arkansas.....	123	123
	Montana.....	290,151	718,102
Great Northern.....	North Dakota.....	360,747	
	Washington.....	67,204	
Huntingdon & Broad Top Mountain Railroad & Coal Co.....	Pennsylvania.....	239,433	239,433
Illinois Central.....	Alabama.....	242,161	11,323,459
	Illinois.....	5,931,045	
	Indiana.....	142,838	
	Kentucky.....	5,007,415	
	Illinois.....	799,665	
Illinois Terminal.....	Texas.....	31,903	799,665
International-Great Northern.....	Kentucky.....	46,348	31,903
Interstate.....	Virginia.....	1,604,776	1,651,124
Iowa Southern Utilities Co.....	Iowa.....	116,037	116,037
Johnstown & Stony Creek.....	Pennsylvania.....	110,766	110,766
Ioplin-Pittsburg.....	Kansas.....	297,632	297,632
Kanawha Central.....	West Virginia.....	157,218	157,218
Kanawha, Glen Jean & Eastern.....	do.....	289,272	289,272
	Arkansas.....	250	746,878
Kansas City Southern.....	Kansas.....	76,879	
	Missouri.....	626,425	
	Oklahoma.....	43,324	
	Kansas.....	51,013	
Kansas, Oklahoma & Gulf.....	West Virginia.....	427,888	427,888
Kelley's Creek.....	do.....	539,953	539,953
Kelley's Creek & Northwestern.....	Kentucky.....	502,480	502,480
Kentucky & Tennessee.....	Pennsylvania.....	87,447	87,447
Lake Erie, Franklin & Clarion.....	Colorado.....	21,067	21,067
Laramie, North Park & Western.....	Illinois.....	242	242
LaSalle & Bureau County R. R.....	Pennsylvania.....	137,613	137,613
Ligonier Valley.....	Illinois.....	471,509	471,509
Litchfield & Madison.....	Alabama.....	2,103,957	20,992,855
	Illinois.....	70,284	
	Kentucky.....	18,040,322	
	Tennessee.....	512,917	
	Virginia.....	265,375	
Mary Lee.....	Alabama.....	597,233	597,233
Michigan Central.....	Michigan.....	120,080	120,080
Midland Valley.....	Arkansas.....	92,789	342,316
	Oklahoma.....	249,527	
	Illinois.....	387,010	
Minneapolis & St. Louis.....	Iowa.....	3,158	390,168
Minneapolis, St. Paul & Sault Ste. Marie.....	North Dakota.....	437,971	437,971
Missouri-Illinois.....	Illinois.....	83,913	83,913
	Kansas.....	196,904	560,175
Missouri-Kansas-Texas.....	Missouri.....	78,274	
	Oklahoma.....	203,677	
	Texas.....	81,320	
	Arkansas.....	605,022	
Missouri Pacific.....	Illinois.....	2,962,353	5,076,259
	Kansas.....	760,083	
	Missouri.....	748,801	
	Alabama.....	80,743	
Mobile & Ohio.....	Illinois.....	211,039	291,782
	Pennsylvania.....	2,383,800	
	West Virginia.....	6,784,421	
Monongahela.....	Arkansas.....	18,888	18,888
Montana.....	Montana.....	388,563	388,563
Montana, Wyoming & Southern.....	Pennsylvania.....	4,156,881	4,156,881
Montour.....			

TABLE 28.—Bituminous coal loaded for shipment in 1933, by individual railroads and waterways, as reported by operators, in net tons—Continued

Route	State	Quantity	
		By State	Total for route
RAILROADS—continued			
Nashville & Atlantic	Tennessee	8,885	8,885
Nashville, Chattanooga & St. Louis	do.	851,076	851,076
New York Central (includes some coal shipped over subsidiary roads: Kanawha & Michigan, Toledo & Ohio Central, and Zanesville & Western).	Ohio	4,929,884	9,063,721
New York, Chicago & St. Louis	Pennsylvania	3,400,643	
Nicholas, Fayette & Greenbrier	West Virginia	733,194	
Norfolk & Western	Illinois	51,381	51,381
	West Virginia	1,628,371	1,628,371
	Kentucky	3,249,194	28,559,996
	Virginia	2,879,653	
	West Virginia	22,431,149	
Northeast Oklahoma	Kansas	9,294	9,294
Northern Alabama	Alabama	318,093	318,093
Northern Pacific	Montana	786,841	2,042,069
	North Dakota	514,314	
	Washington	740,914	
Ohio & Kentucky	Kentucky	2,783	2,783
Oklahoma City-Ada-Atoka	Oklahoma	37,405	37,405
Oneida & Western	Tennessee	13,000	13,000
Oregon Short Line	Wyoming	314,603	314,603
Oregon-Washington Railroad & Navigation Co.	Washington	21,915	21,915
Pacific Coast	do.	197,835	197,835
	Illinois	314,142	33,530,916
	Indiana	1,477,233	
Pennsylvania (includes Pittsburgh, Cincinnati, Chicago & St. Louis).	Ohio	4,808,099	
	Pennsylvania	25,983,083	
	West Virginia	953,359	
Peoria & Eastern	Illinois	77,544	77,544
Peoria & Pekin Union	do.	130,343	130,343
Peoria Terminal	do.	935,639	935,639
Perre Marquette	Michigan	121,276	121,276
Pittsburg & Shawmut	Pennsylvania	1,025,038	1,025,038
Pittsburg County	Oklahoma	31,808	31,808
Pittsburg, Shawmut & Northern	Pennsylvania	423,336	423,336
Pittsburg & Lake Erie	do.	3,214,058	3,214,058
	Ohio	44,663	2,104,257
	Pennsylvania	2,018,102	
Pittsburgh, Chartiers & Youghiogheny	West Virginia	41,492	21,734
	Pennsylvania	21,734	
Pittsburgh, Lisbon & Western	Ohio	1,200	1,530
	Pennsylvania	330	
Preston	West Virginia	133,808	133,808
Quincy, Omaha & Kansas City	Missouri	76,410	76,410
Rio Grande & Eagle Pass	Texas	11,326	11,326
Rio Grande Southern	Colorado	5,946	5,946
Rockdale, Sandow & Southern	Texas	81,010	81,010
Rutland, Toluca & Northern	Illinois	37,498	37,498
St. Louis & Belleville Electric	do.	4,690	4,690
St. Louis & Hannibal	Missouri	4,005	4,005
St. Louis & O'Fallon	Illinois	407,340	407,340
	Alabama	1,048,941	2,197,547
	Arkansas	108,970	
St. Louis-San Francisco	Kansas	308,906	
	Missouri	404,856	
	Oklahoma	325,874	
St. Louis Southwestern of Texas	Texas	551,331	551,331
San Antonio Southern	do.	3,688	3,688
Seaboard Air Line	Alabama	2,445	2,445
	do.	1,418,927	6,395,974
	Illinois	213,030	
Southern	Indiana	1,168,749	
	Kentucky	566,374	
	Tennessee	1,532,769	
	Virginia	1,496,125	
	California	2,071	
Southern Pacific	New Mexico	198,901	201,643
	Oregon	671	
Springfield Terminal	Illinois	305,611	305,611
Susquehanna & New York	Pennsylvania	18,966	18,966
Tennessee	Tennessee	482,233	482,233
Tennessee Central	do.	173,873	173,873
Tennessee Coal, Iron & Railroad Co.	Alabama	881,956	881,956
Texas & Pacific	Texas	5,271	5,271
Texas Short Line	do.	27,310	27,310
Thomas & Sayreton	Alabama	460,902	460,902

TABLE 28.—*Bituminous coal loaded for shipment in 1933, by individual railroads and waterways, as reported by operators, in net tons—Continued*

Route	State	Quantity	
		By State	Total for route
RAILROADS—continued			
Toledo, Peoria & Western.....	Illinois.....	71,257	71,257
Twin City Electric.....	Washington.....	3,770	3,770
Uintah.....	Colorado.....	6,144	6,144
Union.....	Pennsylvania.....	31,750	31,750
	Colorado.....	892,028	
	Idaho.....	2,850	
Union Pacific.....	Kansas.....	25,969	} 3,733,426
	Utah.....	36,400	
	Wyoming.....	2,776,179	
Unity.....	Pennsylvania.....	442,218		442,218
Utah.....	Utah.....	922,820	922,820
Virginian.....	Virginia.....	73,305	} 7,739,138
	West Virginia.....	7,665,833	
	Illinois.....	1,174,952	
Wabash.....	Iowa.....	72,459	} 1,577,018
	Missouri.....	329,607	
Western Allegheny.....	Pennsylvania.....	130,208		130,208
	Maryland.....	658,882	} 3,740,705
Western Maryland.....	Pennsylvania.....	583,496	
	West Virginia.....	2,498,327	
West Virginia Northern.....	do.....	161,330	161,330
Wheeling & Lake Erie.....	Ohio.....	3,154,548	3,154,548
Winfield.....	Pennsylvania.....	9,248	9,248
Winifrede.....	West Virginia.....	43,674	43,674
Woodward Iron Co.....	Alabama.....	413,560	413,560
Youngstown & Suburban.....	Ohio.....	1,050	1,050
Total railroad shipments.....		293,258,534	293,258,534
WATERWAYS			
Allegheny River.....	Pennsylvania.....	756,428	756,428
Black Warrior River.....	Alabama.....	152,818	152,818
Green River.....	Kentucky.....	74,722	74,722
Kanawha River.....	West Virginia.....	627,845	627,845
Monongahela River.....	Pennsylvania.....	9,724,624	9,724,624
Muskingum River.....	Ohio.....	353,350	353,350
	Kentucky.....	245,453	} 1,309,344
Ohio River.....	Ohio.....	6,700	
	West Virginia.....	1,057,191	
Youghiogheny River.....	Pennsylvania.....	22,000	22,000
Total waterway shipments.....		13,021,131	13,021,131
Grand total, loaded at mines for shipment by railroads and waterways.....		306,279,665	306,279,665
Commercial sales by truck or wagon.....		15,462,739	15,462,739
Other sales to local trade, or used by employees, or taken by locomotives at tipple.....		7,589,672	7,589,672
Used at mines for power and heat.....		2,857,721	2,857,721
Made into coke at mines.....		1,440,736	1,440,736
Total production.....		333,630,533	333,630,533

IMPORTS AND EXPORTS

IMPORTS

TABLE 29.—*Bituminous coal imported, by countries and districts, 1932-33, in net tons*

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Country and district	1932	1933	Country and district	1932	1933
COUNTRY			DISTRICT OF ENTRY—contd.		
North America:			Dakota.....	4,208	5,158
Canada.....	175,104	161,463	Duluth-Superior.....	262	414
Mexico.....	134	17	Maine and New Hampshire.....	53,223	64,261
Europe:			Massachusetts.....	156	40,709
Germany.....	113		Michigan.....	27	964
Netherlands.....	6		Montana-Idaho.....	72,121	50,083
United Kingdom.....	11,552	41,141	New York.....	119	432
Total.....	186,909	202,621	Puerto Rico.....	5,942	
DISTRICT OF ENTRY			St. Lawrence.....	7	29
Alaska.....	12,463	15,690	San Antonio.....	134	17
Buffalo.....	9,947	16,480	Vermont.....	5,599	61
			Washington.....	22,701	8,323
			Total.....	186,909	202,621

EXPORTS

TABLE 30.—*Exports of bituminous coal to (1) Canada and Mexico, (2) the West Indies and Central America, and (3) "overseas" destinations, 1929-33, in thousands of net tons*

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Year	(1) Canada and Mexico	(2) West Indies and Central America ¹	(3) "Overseas" (all other countries)							Grand total
			New- found- land, Mique- lon, and Ber- mudas	South Amer- ica	Europe	Asia	Africa	Oceania	Total "over- seas"	
1929.....	14,727	1,500	211	332	567	8	84		1,202	17,429
1930.....	13,667	1,180	95	353	469	14	97	2	1,030	15,877
1931.....	10,647	755	98	306	246	18	56		724	12,126
1932.....	8,429	235	6	108	3	8	25	(1)	150	8,814
1933.....	8,600	223	21	174	7	6	6		214	9,037

¹ Includes Bahamas, Virgin Islands, and Panama.² tons.

TABLE 31.—*Bituminous coal exported, by countries, 1932-33, in net tons*¹

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Country	1932	1933	Country	1932	1933
North America:			South American—Continued.		
Bermudas.....	5,949	1,498	Brazil.....	82,122	94,442
British Honduras.....	177	129	Colombia.....	92	71
Canada.....	8,426,886	8,598,807	Ecuador.....	22	50
Central America:			Guiana:		
Costa Rica.....		2,788	British.....	99	108
Guatemala.....	472	665	Surinam (Nether- land).....	3,186	1,784
Honduras.....	480	430	Peru.....	2,313	
Nicaragua.....	62	95	Uruguay.....	7,267	26,984
Panama.....	71	47,096	Venezuela.....	37	52
Salvador.....	20	17			
Mexico.....	1,943	972		108,291	174,378
Miquelon and St. Pierre Islands.....		11,840	Europe:		
Newfoundland and Lab- rador.....		7,884	France.....	2,787	
West Indies:			Italy.....		7,170
British:				2,787	7,170
Jamaica.....	4,283	10,679	Asia:		
Trinidad and To- bago.....	1,840	5,420	British Malaya.....	1,120	
Other British.....	37	34	Ceylon.....	538	
Cuba.....	158,699	118,647	East Indies: Netherland: Java and Madura.....	6,810	6,248
Dominican Republic.....	130	109	Philippine Islands.....	13	7
French.....	61,280	17,138		8,481	6,255
Haiti.....	2	28	Africa:		
Netherlands.....	4,309	3,088	Egypt.....	24,504	6,231
Virgin Islands of the United States.....	3,342	15,549	Oceania: British:		
	8,669,982	8,842,913	Other than Australia and New Zealand.....	2	
South America:			Grand total.....	8,814,047	9,036,947
Argentina.....	13,153	48,661			
Bolivia.....		2,226			

¹ Amounts stated do not include fuel or bunker coal loaded on vessels engaged in the foreign trade, which aggregated 2,195,089 tons in 1931, 1,348,837 tons in 1932, and 1,315,592 tons in 1933.

TABLE 32.—*Bituminous coal exported, by districts and ports, 1932-33, in net tons*

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Customs district	1932	1933	Customs district	1932	1933
North Atlantic:			Rail gateways on Canadian border:		
New York.....	338	470	Eastern:		
Philadelphia.....	5,571	12,365	Maine and New Hampshire.....	112	206
Maryland.....	32,617	15,962	Vermont.....	1,167	325
Virginia.....	330,848	378,964	St. Lawrence.....	417,015	303,251
South Atlantic:			Rochester.....	753,891	677,622
South Carolina.....	19,786	26,751	Buffalo.....	1,881,624	1,732,864
Georgia.....	2		Michigan.....	891,104	900,358
Florida.....	971	933	Western:		
Mobile.....	5,838	8,337	Duluth, Superior and International Falls.....	14,108	3,993
New Orleans.....	3,782	5,036	Dakota.....	12,190	11,476
Mexican border:			Montana-Idaho.....	8	270
Arizona.....	607	152	Miscellaneous:		
El Paso.....	920	371	Alaska.....	4	1,412
San Antonio.....	53	195	Puerto Rico.....	66	97
Pacific coast:			Hawaii.....	2	
Washington ¹	5,323	7,942	Total.....	8,814,047	9,036,947
San Francisco.....	78	154			
San Diego.....	65	19			
Lake Erie ports: Ohio².....	4,435,957	4,947,442			

¹ Both rail to Canada and by tide to foreign ports.

² Lower lake docks as follows: Toledo, Sandusky, Huron, Lorain, Cleveland, Fairport, Ashtabula, Conneaut, and Erie.

³ Rail, car ferry, and Lake Ontario.

SHIPMENTS TO ALASKA, HAWAII, AND PUERTO RICO

In addition to the export trade proper, the United States supplies a small tonnage to the Territories of Alaska, Hawaii, and Puerto Rico. In 1933, 21,524 tons were shipped to Alaska, 1,627 tons to Hawaii, and 33,779 tons to Puerto Rico.

WORLD PRODUCTION OF COAL

TABLE 33.—Coal and lignite produced in the principal countries of the world in the calendar years 1931–33, in thousand metric tons

[Compiled by L. M. Jones, of the Bureau of Mines]

Country	1931	1932	1933
North America:			
Canada:			
Coal.....	8,466	7,507	110,798
Lignite.....	2,640	3,142	5
Greenland.....	5	5	647
Mexico.....	922	987	
United States:			
Anthracite.....	54,109	45,228	44,943
Bituminous and lignite.....	346,624	280,963	302,663
South America:			
Argentina.....	(1)	(1)	(1)
Brazil.....	461	2,450	2,400
Chile.....	1,100	1,085	1,537
Colombia.....	(1)	(1)	(1)
Peru.....	141	(1)	(1)
Venezuela.....	3	5	5
Europe:			
Albania: Lignite.....	3	3	3
Austria:			
Coal.....	228	221	239
Lignite.....	2,982	3,104	3,014
Belgium.....	27,042	21,424	25,298
Bulgaria:			
Coal.....	86	98	80
Lignite.....	1,437	1,663	1,493
Czechoslovakia:			
Coal.....	13,103	10,961	10,532
Lignite.....	17,932	15,858	15,063
France:			
Coal.....	50,011	46,262	46,873
Lignite.....	1,035	1,012	1,068
Germany:			
Coal.....	118,640	104,741	109,921
Lignite.....	133,311	122,647	126,796
Saar.....	11,367	10,438	10,561
Greece: Lignite.....	105	338	330
Hungary:			
Coal.....	776	895	800
Lignite.....	6,111	5,931	5,907
Irish Free State.....	93	(1)	107
Italy:			
Coal.....	236	255	334
Lignite.....	364	376	383
Netherlands:			
Coal.....	12,901	12,756	12,574
Lignite.....	122	424	47
Poland:			
Coal.....	36,265	28,835	27,356
Lignite.....	41	33	33
Portugal:			
Coal.....	201	241	208
Lignite.....	26	17	11
Rumania:			
Coal.....	287	188	197
Lignite.....	1,632	1,464	1,311
Spain:			
Coal.....	7,091	6,854	5,989
Lignite.....	341	336	301
Svalbard (Spitsbergen).....	243	266	300
Sweden.....	343	333	(1)
Switzerland.....	4	4	4
United Kingdom: Great Britain.....	222,981	212,063	210,436
U. S. S. R. (Russia):			
Coal.....	50,460	53,600	66,000
Lignite.....			
Yugoslavia:			
Coal.....	406	368	379
Lignite.....	4,589	4,107	3,377

See footnotes at end of table.

TABLE 33.—Coal and lignite produced in the principal countries of the world in the calendar years 1931–33, in thousand metric tons—Continued

[Compiled by L. M. Jones, of the Bureau of Mines]

Country	1931	1932	1933
Asia:			
British Borneo.....	48	(¹)	(¹)
China.....	27,682	² 28,000	(¹)
Chosen.....	936	1,104	(¹)
Federated Malay States.....	409	282	222
India, British.....	22,065	20,477	20,107
Indo-China:			
Coal.....	1,704	1,691	1,591
Lignite.....	23	23	
Japan:			
Japan proper:			
Coal.....	27,807	27,774	32,000
Lignite.....	118	109	116
Karafuto.....	648	688	(¹)
Taiwan.....	1,422	1,355	(¹)
Netherland India.....	1,404	1,050	1,042
Philippine Islands.....	19	(¹)	(¹)
Turkey:			
Coal.....	1,574	1,519	⁶ 1,323
Lignite.....	8	14	30
U. S. S. R. (Russia):			
Coal.....	8,200	10,400	10,700
Lignite.....			
Sakhalin: Coal.....			
Africa:			
Algeria.....	26	25	30
Belgian Congo; Coal.....	86	17	20
Morocco, French.....	6	15	27
Nigeria.....	333	257	239
Portuguese East Africa.....	(¹)	20	16
Southern Rhodesia.....	587	438	484
Union of South Africa.....	10,881	9,921	10,714
Oceania:			
Australia:			
New South Wales.....	6,536	6,893	7,233
Queensland.....	855	855	890
Tasmania.....	126	114	118
Victoria:			
Coal.....	581	404	531
Lignite.....	2,230	2,654	2,621
Western Australia.....	439	422	466
New Zealand:			
Coal.....	995	943	857
Lignite.....	1,197	928	993
Total, all grades.....	1,258,000	1,126,000	1,172,000
Lignite (total of items shown above).....	181,000	169,000	172,000
Bituminous and anthracite (by subtraction).....	1,077,000	957,000	1,000,000

¹ Estimate included in total.² Approximate production.³ Includes a small quantity of asphaltite.⁴ Exclusive of mines in the Saar under French control.⁵ Mines under French control.⁶ Shipments.

DETAILED STATISTICS OF BITUMINOUS COAL, BY STATES AND COUNTIES

TABLES OF PRODUCTION, VALUE, MEN EMPLOYED, DAYS WORKED, AND OUTPUT PER MAN IN 1933

Table 34 presents detailed statistics for each coal-producing county from which 3 or more operators reported production. If less than 3 reports were received the figures for 2 or more counties have been combined to avoid disclosing individual returns, unless permission to publish has been granted by the producers.

The series gives the details of total value of product, average value per ton, men employed by broad occupational groups, average number of days worked by the mines, and output per man per day. The figures include stripping operations as well as deep mines. Separate particulars for the stripping operations in each county are given in

table 15. If the reader will deduct the stripping figures as given in that table from the totals for all mines in the following table he will find that the remainder represents the operations of the deep mines. By this means figures can be obtained for the deep mines separately in any State or county desired.

In response to many requests for data on the amount of coal shipped from mine to consumer by motor truck the Bureau of Mines in 1932 for the first time asked the mine operators to supply the information for that year, and again for 1933. In the latter year this tonnage is shown as "Commercial sales by truck or wagon" (see column 2 of table 34).

Because of a change in the method of reporting, the statistics of average production per man per day in 1932 and 1933 are not precisely comparable with those for earlier years. Hitherto they have been based on the calculated number of man-shifts, obtained by multiplying the average number of men employed at each mine by the number of days worked at the mine. In 1932 and 1933 operators were asked to make a special report of the number of man-shifts actually worked wherever the necessary record was kept. The number of operators who were able to furnish this information was small, except for certain Far Western States. The "reported" man-shifts were utilized wherever possible, to improve the accuracy of the record. Otherwise, the man-shifts were calculated by multiplying the number employed underground and on the surface by the number of days worked by the mine and tipple, respectively.

To facilitate comparisons with former years the Bureau has also computed the output per man per day for 1933, using the "calculated" method throughout. The result for Alabama was 3.48 tons; Alaska, 4.82; Arizona, 1.68; Arkansas, 2.54; California, Idaho, and Oregon, 1.65; Colorado, 4.68; Georgia, 1.9; Illinois, 5.9; Indiana, 7.71; Iowa, 3.03; Kansas, 4.15; Kentucky, 4.91; Maryland, 3.11; Michigan, 2.63; Missouri, 4.1; Montana, 10.4; New Mexico, 3.21; North Carolina, 1.15; North Dakota, 7.91; Ohio, 4.56; Oklahoma, 3.26; Pennsylvania, bituminous, 4.23; South Dakota, 4.04; Tennessee, 3.44; Texas, 6.31; Utah, 6.75; Virginia, 4.54; Washington, 3.55; West Virginia, 5.18; and Wyoming, 7.12.

In this form the 1933 figures are precisely comparable with those for the years before 1932.

For certain years in the past the Bureau of Mines has attempted to collect data on the production of wagon mines producing less than 1,000 tons. Such a canvass was made in 1923 and again in 1933.

Small mines were canvassed in 1933 in all States except Alabama, Illinois, Indiana, Michigan, Texas, and Utah. A total of 3,300 schedules was mailed out, and reports were received from 563 active producers. These producers reported an output of 180,000 net tons. The average value at the mine was \$1.74 per net ton. The average number of men employed amounted to 1,376; average days worked 88; and output per man per day, 1.49 net tons. The above figures should not be added to the total for the United States, as this would impair the comparability of the data with previous years. Lists of small mines were not available in the States not canvassed.

The Department of Mines and Minerals of Illinois reported a group of 687 mines producing less than 1,000 tons, with a total output of 218,565 tons in 1933.

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933

[Note that figures relate only to active mines of commercial size, excluding wagon mines producing less than 1,000 tons. Waste and refuse are not included in tonnage. The statistics of average tons per man per day in 1933 are based upon (1) the "reported" number of man-shifts, where the operator keeps a record, thereof; otherwise, upon (2) the "calculated" number of man-shifts, obtained by multiplying the average number of men employed underground and on the surface at each mine by the number of days worked by the mine and tippie, respectively. They are not precisely comparable with the figures published for the years prior to 1932, which were based on a "calculated" method throughout, but in most States the discrepancy is slight]

ALABAMA

County	Net tons						Value		Number of employees				Average number of days mines operated	Average tons per man per day
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Underground	Surface		Total		
										In strip pits	All others			
Bibb.....	458,696	4,813	6,052	7,698	-----	477,259	\$753,000	\$1.58	791	-----	168	959	157	3.17
Blount.....	64,819	7,270	3,794	1,145	-----	77,028	129,000	1.67	235	12	67	314	74	3.32
Etowah and St. Clair.....	473,328	2,660	12,596	11,971	-----	500,555	916,000	1.83	809	-----	157	966	121	4.27
Jefferson.....	4,298,242	92,275	35,181	17,412	-----	4,443,110	7,059,000	1.59	8,408	-----	1,286	9,694	151	3.04
Marion.....	242,161	6,824	4,467	-----	-----	253,452	443,000	1.75	454	-----	64	518	114	4.30
Shelby.....	450,370	27,551	2,162	487	-----	480,570	871,000	1.81	839	-----	173	1,012	150	3.17
Tuscaloosa.....	77,698	3,119	2,500	-----	-----	83,317	132,000	1.58	187	-----	29	216	109	3.54
Walker.....	2,300,209	3,364	33,347	1,977	-----	2,338,897	3,282,000	1.40	3,510	99	679	4,288	164	3.53
Other counties (Cullman, Fayette, and Winston).....	100,165	5,059	345	232	-----	105,801	173,000	1.64	207	21	42	270	162	2.43
Total 1933.....	8,465,688	152,935	100,444	40,922	-----	8,759,969	13,758,000	1.57	15,440	132	2,665	18,237	148	3.26
Total 1932.....	7,551,144	(1)	(1)	53,117	-----	7,856,939	12,138,000	1.54	17,734	112	2,597	18,243	107	3.60

ALASKA

Total 1933.....	90,700	-----	4,817	950	-----	96,467	\$481,000	\$4.99	59	-----	41	100	199	4.86
Total 1932.....	96,500	-----	5,170	1,030	-----	102,700	514,000	5.00	100	-----	20	120	189	4.53

ARIZONA

Total 1933.....			10,345			10,345	\$52,000	\$5.03	19		4	23	268	1.68
Total 1932.....		(¹)	(²)			6,877	33,000	4.80	13		4	17	251	1.61

ARKANSAS

Franklin.....	118,980	10	433	3,135		122,558	\$287,000	\$2.34	350	40	41	431	76	3.76
Johnson.....	91,814	2,096	471	1,179		95,560	323,000	3.38	711		138	849	49	2.28
Logan.....	238,951	2,697	41	2,250		243,839	799,000	3.28	745		105	850	116	2.47
Pope and Scott.....	36,921	1,140	103	238		38,402	154,000	4.01	248		23	271	105	1.34
Sebastian.....	376,047	2,129	253	4,136		382,565	785,000	2.05	1,096		167	1,270	112	2.69
Total 1933.....	862,713	7,972	1,301	10,938		882,924	2,348,000	2.66	3,150	47	474	3,671	94	2.57
Total 1932.....	1,000,908	(³)	(⁴)	7,823		1,033,471	2,831,000	2.74	3,736	50	539	4,325	92	2.61

CALIFORNIA, IDAHO, AND OREGON

Total 1933.....	5,592	1,688	212			7,492	\$27,000	\$3.60	46		12	58	79	1.65
Total 1932.....	6,460	(⁵)	(⁶)	4,020		16,319	60,000	3.68	88		53	141	69	1.69

¹ In 1932 there were 54,954 tons reported by the operator as "trucked 10 miles or more from mine" and 197,724 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 252,678 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 253,379 tons.

² In 1932 there were 3,877 tons reported by the operator as "trucked 10 miles or more from mine" and 3,000 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 6,877 tons, is exactly comparable with column (3) in 1933.

³ In 1932 there were 60 tons reported by the operator as "trucked 10 miles or more from mine" and 24,680 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 24,740 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 9,273 tons.

⁴ In 1932 there were 464 tons reported by the operator as "trucked 10 miles or more from mine" and 5,385 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 5,849 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 1,900 tons.

COAL

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TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

County	Net tons						Value		Number of employees				Average number of days mines operated	Average tons per man per day
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface		Total			
									Underground	In strip pits		All others		
Boulder.....	216,549	221,183	3,809	18,339		459,880	\$1,174,000	\$2.55	562		90	652	175	4.03
Delta.....	22,527	19,399	1,646	400		43,972	97,000	2.21	47		18	65	133	5.07
Elbert.....		3,806		74		3,880	6,000	1.55	2	5	1	8	138	3.61
El Paso.....	118,626	162,117	7,508	11,103		299,354	637,000	2.13	290		40	330	224	4.04
Fremont.....	189,260	151,397	3,268	2,890		346,815	924,000	2.66	757		143	900	162	2.38
Garfield.....	8,393	17,079	780	1,910		28,162	66,000	2.34	41		14	55	135	3.79
Gunnison.....	377,378	14,752	2,858	9,885		404,573	776,000	1.92	439		100	539	144	5.23
Huerfano.....	529,414	31,564	6,483	5,372		572,833	1,271,000	2.22	855		215	1,070	159	3.38
Jefferson.....	116,000	23,119	659	1,814		141,592	277,000	1.96	144		25	169	232	3.61
La Plata.....	7,682	14,225		11		21,918	48,000	2.19	38		8	46	151	3.16
Larimer.....		4,147		270		4,417	11,000	2.49	9		4	13	166	2.05
Las Animas.....	729,102	36,975	22,000	13,014	54,478	855,569	1,765,000	2.06	1,479		235	1,714	131	3.81
Mesa.....	32,391	33,181	339	3,008		68,919	137,000	1.99	85		29	114	152	3.98
Moffatt.....		2,606				2,606	5,000	1.92	5			5	154	3.38
Montezuma.....	575	2,721		8		3,304	12,000	3.63	9		5	14	138	1.71
Rio Blanco.....		4,264				4,264	7,000	1.64	8			8	169	3.15
Routt.....	426,744	10,175	4,615	26,017		467,551	1,129,000	2.41	580	5	190	775	74	8.11
Weid.....	1,129,403	255,083	47,922	38,005		1,470,413	2,955,000	2.01	1,216		184	1,400	157	6.69
Other counties (Jackson and Pitkin).....	21,550	6,588	707	900		29,745	53,000	1.78	13	9	9	31	124	7.76
Total 1933.....	3,925,594	1,014,381	102,594	132,729	54,478	5,229,767	11,360,000	2.17	6,579	19	1,310	7,908	148	4.46
Total 1932.....	4,156,106	(^b)	(^b)	139,474	36,137	5,598,721	12,237,000	2.19	7,346	14	1,389	8,749	142	4.61

GEORGIA														
Total 1933.....	40,262		340	780		41,382	\$77,000	\$1.86	78		15	93	234	1.90
Total 1932.....	26,348		185	725		27,203	48,000	1.76	53		11	64	208	2.04

ILLINOIS

Bureau		17,195		676		18,021	\$36,000	\$2.00	60		13	73	187	1.47
Cass, Morgan, and Scott		3,465				3,465	8,000	2.31	19		4	23	104	1.45
Christian	3,509,309	63,781	38,933	20,386		3,632,409	6,170,000	1.70	1,741		572	2,313	188	8.36
Clinton	103,837	83,306	6,298	15,593		209,034	278,000	1.33	310		45	355	147	4.00
Edgar		15,274	20	1,497		16,791	27,000	1.61	28		6	34	119	4.16
Franklin	6,431,878	17,932	37,834	95,563		6,583,207	9,558,000	1.45	6,418		1,359	7,777	122	6.93
Fulton	1,044,603	189,307	6,276	6,982		1,247,168	1,878,000	1.35	875	219	214	1,308	152	6.27
Gallatin	50	11,152	19,232	4,580		34,994	63,000	1.80	35		10	45	171	4.64
Greene		10,816		966		11,782	26,000	2.21	36		10	46	165	1.55
Grundy	97,665		28,440	1,053		127,158	300,000	2.36	173	18	20	211	203	2.96
Hancock and Warren		8,297		305		8,602	29,000	3.37	22		7	29	184	1.61
Henry	553,597	90,717	4,621	6,023		654,958	1,053,000	1.61	334	72	79	485	184	7.34
Jackson	1,156,881	47,736	6,557	1,485		1,212,659	1,456,000	1.20	502	85	299	886	134	10.24
Knox	248,199	140,388	2,650	1,827		393,064	756,000	1.92	390	12	52	454	189	4.59
LaSalle	93,987	148,136	94,720	1,446		338,289	758,000	2.24	610	14	59	683	192	2.58
Livingston		24,784	449	364		25,597	68,000	2.66	47	12	13	72	151	2.36
Logan and Macon	32,327	15,085	121,953	5,276		174,641	399,000	2.28	538		40	578	143	2.11
McDonough		6,594				6,594	18,000	2.73	21	10	4	35	150	1.26
Macoupin	2,860,166	52,407	19,495	95,171		3,027,329	3,796,000	1.25	2,787		287	3,054	188	5.27
Madison	1,014,139	211,841	34,428	43,666		1,304,074	1,458,000	1.12	1,790		234	2,024	127	5.06
Marshall		6,690				6,690	9,000	1.35	24		7	31	143	1.61
Menard	3,050	82,930		3,051		89,031	184,000	2.07	148		30	178	161	3.11
Mercer		30,871	50	1,755		32,476	66,000	2.03	86		20	106	159	1.93
Montgomery	607,420	35,721	2,691	13,252		659,084	829,000	1.26	1,084		170	1,254	127	4.14
Peoria	1,106,036	248,547	45,603	3,117		1,403,303	2,200,000	1.57	1,512	7	142	1,661	191	4.43
Perry	2,448,560	43,946	26,374	37,919		2,556,799	3,073,000	1.20	1,051	526	236	1,813	110	12.78
Putnam and Woodford	82,285	70,662	6,402	7,686		167,035	448,000	2.68	652		48	700	115	2.07
Randolph	329,351	41,169	7,911	14,293		392,724	604,000	1.54	643		110	758	83	6.21
Rock Island		64,829	800	365		65,994	155,000	2.35	126		12	138	207	2.31
St. Clair	1,251,717	1,024,451	52,462	78,565		2,407,195	2,955,000	1.23	2,635	56	397	3,088	130	5.99
Saline	2,375,967	23,541	43,035	43,650		2,486,193	3,797,000	1.53	2,760	70	355	3,185	125	6.26
Sangamon	1,680,697	193,489	174,402	28,080		2,076,308	3,205,000	1.54	2,823		299	3,122	147	4.64
Schnyler		29,557		804		30,361	41,000	1.35	71	6	16	93	177	1.85
Shelby		14,881	215	256		15,352	52,000	3.39	121		18	139	90	1.22
Stark		12,733		250		12,983	28,000	2.16	42		9	51	192	1.33
Tazewell	138,783	184,592	910	1,081		325,366	570,000	1.75	375		47	422	185	4.18
Vermilion	1,735,878	203,306	73,522	14,066		2,026,772	3,268,000	1.61	2,518	202	255	2,975	131	5.22

* In 1932 there were 839,321 tons reported by the operator as "trucked 10 miles or more from mine" (including 59,720 tons, a part of which went less than 10 miles, separation not possible) and 427,683 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 1,267,004 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 1,116,975 tons.

COAL

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TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

ILLINOIS—Continued

County	Net tons						Value		Number of employees			Average number of days mines operated	Average tons per man per day
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface		Total		
									In strip pits	All others			
Wabash.....		13,225		495		13,720	\$19,000	\$1.38	28		35	136	2.87
Washington.....	188,723	30,373	28,576	13,336		261,008	350,000	1.34	268		57	325	6.56
Williamson.....	1,743,231	160,623	8,874	44,533		1,957,261	2,580,000	1.32	2,284	61	475	107	6.47
Other counties (Jersey, Johnson, Marion, White, and Will).....	1,240,928	115,887	24,915	15,924		1,397,654	2,210,000	1.58	442	179	145	205	8.89
Total 1933.....	31,981,599	3,887,791	918,438	625,317		37,413,145	54,578,000	1.46	36,414	1,549	6,182	44,145	6.00
Total 1932.....	28,793,563	(?)	(?)	489,537		33,474,553	51,316,000	1.53	39,998	1,693	5,906	47,597	6.30

INDIANA

Clay.....	564,952	58,187	2,780	15,614		641,633	\$871,000	\$1.36	130	324	94	548	138	8.50
Daviess.....		13,218	3,045	888		17,151	29,000	1.69	37		11	48	133	2.68
Dubois and Martin.....		7,650				7,650	11,000	1.44	12		3	15	186	2.74
Fountain, Parke, and Warren.....		24,005		1,460		25,465	43,000	1.69	57		10	67	180	2.11
Gibson.....	981,086	98,385		18,392		1,097,863	1,424,000	1.30	697		156	853	174	7.42
Greene.....	1,628,352	44,149	11,575	10,611		1,694,687	2,303,000	1.36	808	282	118	1,208	171	8.20
Knox.....	1,214,636	127,613	8,761	17,624		1,368,634	1,623,000	1.19	687		189	876	173	9.02
Owen.....	47,724		44	410		48,178	71,000	1.47	18	20	14	52	86	10.80
Perry and Spencer.....		6,675	2,809	72		9,556	19,000	1.99	16		3	19	166	3.03
Pike.....	2,056,315	7,831		3,640		2,068,234	2,097,000	1.01	85	418	160	663	182	17.17
Sullivan.....	2,046,675	15,101	13,159	29,512		2,104,447	3,136,000	1.49	1,739	121	244	2,104	160	6.26
Vanderburgh.....	46,956	82,295		6,000		135,251	147,000	1.09	315		53	368	76	4.85
Vermillion.....	1,274,706	39,912		29,815		1,344,433	1,865,000	1.39	1,301	130	146	1,577	165	5.16
Vigo.....	1,783,755	84,074	363,727	43,053		2,274,609	2,921,000	1.28	1,548	91	270	1,909	171	6.96
Warrick.....	766,827	117,662	28,686	10,186		923,361	1,007,000	1.09	573	187	132	892	164	6.30
Total 1933.....	12,411,984	726,757	435,034	187,277		13,761,052	17,567,000	1.28	8,023	1,573	1,603	11,199	163	7.52
Total 1932.....	12,186,044	(?)	(?)	200,130		13,323,573	17,267,000	1.30	7,629	1,592	1,418	10,639	145	8.65

IOWA

Adams.....		16,901	1,612	65		18,578	\$51,000	\$2.75	84		10	94	162	1.22
Appanoose.....	249,050	65,320	5,135	509		320,014	684,000	2.14	1,399		173	1,572	79	2.59
Boone.....	316,711	95,947	3,216	2,157		418,031	1,044,000	2.50	912	3	91	1,006	156	2.66
Dallas.....	212,135	76,264	12,979	1,476		302,854	709,000	2.34	491		37	528	178	3.23
Davis.....		3,350		60		3,410	7,000	2.05	4	8	3	15	74	3.09
Greene.....		45,396				45,396	115,000	2.53	58	8	12	78	116	5.02
Guthrie.....		9,835		22		9,857	36,000	3.65	76		10	86	105	1.09
Jasper.....		50,554		1,921		52,475	122,000	2.32	129		23	152	108	3.19
Keokuk.....		16,549		5		16,554	34,000	2.05	18	30	7	55	163	1.84
Lucas.....	420,466	6,148	2,077			436,273	976,000	2.24	595		58	653	177	3.78
Mahaska.....	1,300	53,695	2,386	814		58,195	124,000	2.13	105	35	27	167	144	2.41
Marion.....	291,417	66,705	2,634	5,668		366,424	627,000	1.71	649	118	80	847	116	3.74
Monroe.....	210,672	20,703	3,394	1,852		236,521	488,000	2.06	491		52	543	132	3.31
Page.....		30,827	1,238			32,065	110,000	3.43	100		10	110	172	1.69
Polk.....	75,891	379,929	71,742	4,845		532,407	1,215,000	2.28	894		78	970	179	3.07
Taylor.....	202	10,800	1,200	24		12,226	39,000	3.19	36		5	41	132	2.26
Van Buren.....		6,587		842		7,429	14,000	1.88	22		6	28	137	1.94
Wapello.....	5,407	74,998	715	1,529		82,649	185,000	2.24	175	4	36	215	170	2.26
Warren.....	16,492	155,489	280	4,066		176,327	437,000	2.48	198	80	25	303	159	3.65
Wayne.....	2,085	17,095	268	419		19,867	41,000	2.06	88		12	100	116	1.71
Webster.....	1,466	34,553				36,019	133,000	3.69	54	25	12	91	182	2.17
Other counties (Hamilton, Jefferson, and Scott).....		11,382		30		11,412	26,000	2.28	13	22	6	41	111	2.50
Total 1933.....	1,803,194	1,249,027	108,876	33,886		3,194,983	7,217,000	2.26	6,591	333	771	7,695	138	3.01
Total 1932.....	2,651,754	(⁹)	(⁹)	32,252		3,862,435	9,254,000	2.40	7,183	107	796	8,086	151	3.17

⁹ Much of the output of the State is obtained from strip pits or by the use of loading machines, in which types of operations the production per man per day is large.

⁷ In 1932 there were 1,069,634 tons reported by the operator as "trucked 10 miles or more from mine" (including 208,709 tons, a part of which went less than 10 miles, separation not possible) and 3,121,819 tons reported as "sales to local trade, used by employees, or taken by locomotives at tipple (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 4,191,453 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 4,806,229 tons.

⁸ In 1932 there were 206,519 tons reported by the operator as "trucked 10 miles or more from mine" (including 66,122 tons, a part of which went less than 10 miles, separation not possible) and 730,880 tons reported as "sales to local trade, used by employees, or taken by locomotives at tipple (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 937,399 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 1,161,791 tons.

⁹ In 1932 there were 248,225 tons reported by the operator as "trucked 10 miles or more from mine" (including 20,348 tons, a part of which went less than 10 miles, separation not possible) and 930,204 tons reported as "sales to local trade, used by employees, or taken by locomotives at tipple (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 1,178,429 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 1,357,903 tons.

COAL

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

KANSAS

County	Net tons						Value		Number of employees				Average number of days mines operated	Average tons per man per day
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface			Total		
									Underground	In strip pits	All others			
Bourbon.....		11,405		381		11,786	\$19,000	\$1.61	2	17	4	23	110	4.67
Cherokee.....	252,052	51,819	35	594		304,500	538,000	1.77	243	152	60	455	122	5.48
Crawford.....	1,660,546	61,422	1,233	13,623		1,736,824	2,838,100	1.63	1,593	621	157	2,371	109	6.74
Labette.....	3,030	9,644		555		13,229	30,000	2.27		20	5	25	178	2.97
Linn.....		17,490	110	410		18,010	33,000	1.83	57	2	13	72	143	1.75
Osage.....	13,903	33,172	1,545	25		48,645	164,000	3.17	299	10	34	343	102	1.39
Other counties (Franklin and Leavenworth).....	51,938	22,590	10,100			84,628	269,000	3.18	435		85	520	325	.50
Total 1933.....	1,981,469	207,542	13,023	15,588		2,217,622	3,881,000	1.75	2,629	822	358	3,809	140	4.15
Total 1932.....	1,695,950	(10)	(10)	21,297		1,952,885	3,420,000	1.75	2,630	625	336	3,591	130	4.19

KENTUCKY

Eastern district:														
Bell.....	1,222,681	36,103	10,222	2,391		1,271,397	\$1,518,000	\$1.19	1,695		327	2,022	180	3.50
Boyd.....	50,850	10,673	7,877			69,400	87,000	1.25	146		25	171	173	2.34
Breathitt.....	71,036	1,385		1,050		73,471	102,000	1.39	135		22	157	154	3.04
Carter.....	2,091	3,794	5,602			11,487	17,000	1.48	56		8	64	82	2.20
Clay.....	44,805	2,596	235			47,636	50,000	1.05	153		28	181	142	1.85
Floyd.....	3,160,930	337	12,961	5,234		3,179,462	3,537,000	1.11	3,101		476	3,577	202	4.40
Harlan.....	8,763,373	10,487	48,784	8,361		8,831,005	11,118,000	1.26	7,599		1,359	8,958	182	5.41
Jackson.....		39,565				39,565	73,000	1.85	95		16	111	178	2.00
Johnson.....	684,494	5,678	7,992	2,441		700,605	903,000	1.29	710		107	817	139	6.17
Knott.....	546,788		3,706	4,098		554,592	618,000	1.11	476		81	557	189	5.28
Knox.....	376,558		900	6,909		384,067	422,000	1.10	368		96	464	216	3.83
Laurel.....		9,396		5		9,401	13,000	1.38	36		8	44	165	1.29
Letcher.....	3,814,083	3,904	33,582	60,092		3,911,661	4,366,000	1.12	4,458		525	4,983	174	4.50
Martin.....	235,595		553			236,148	232,000	.98	246		53	299	118	6.70

Perry.....	3,792,099	809	63,804	4,060	3,860,772	4,296,000	1.11	3,652	859	4,511	182	4.70	
Pike.....	4,185,979	5,278	16,617	15,880	4,226,754	5,382,000	1.27	4,025	898	4,923	190	4.51	
Whitley.....	244,166	2,262	83	2,448	248,959	338,000	1.36	670	72	642	115	3.38	
Other counties (Lee, McCreary, Magoffin, Morgan, and Rock- castle).....	589,463	5,431	6,465	7,601	608,960	801,000	1.32	899	150	1,049	124	4.67	
Total 1933.....	27,797,991	137,688	219,388	120,279	28,265,332	33,873,000	1.20	28,420	5,110	33,580	179	4.70	
Total 1932.....	25,286,285	(11)	(11)	131,632	25,759,534	26,921,000	1.05	26,495	4,968	31,463	156	5.24	
Western district:													
Butler.....	6,760	7,800			14,560	15,000	1.03	53	11	64	132	1.72	
Davless.....		61,456	4,720	1,064	67,240	79,000	1.17	77	18	95	171	4.13	
Henderson.....	55,086	61,671	16,731	7,489	141,277	190,000	1.34	241	49	290	152	3.21	
Hopkins.....	2,186,248	26,696	20,670	10,253	2,243,767	2,150,000	.96	2,510	336	2,846	146	5.39	
Muhlenberg.....	2,684,699	11,911	84,228	74,716	2,825,554	2,314,000	.82	2,969	508	3,477	127	6.38	
Ohio.....	519,628	8,867	4,940	6,702	539,532	441,000	.82	779	117	896	129	4.68	
Union.....	530,330	34,502	16,100	18,306	599,240	539,000	.90	615	142	757	161	4.93	
Webster.....	1,339,925	10,050	2,922	13,759	1,366,686	1,107,000	.81	1,439	210	1,649	135	6.16	
Other counties (Christian and McLean).....	33,669	2,500	402		36,571	40,000	1.09	92	21	113	78	4.16	
Total 1933.....	7,326,340	225,753	150,013	132,291	7,834,397	6,875,000	.88	8,775	1,412	10,187	137	5.61	
Total 1932.....	8,943,159	(11)	(11)	114,139	9,540,048	7,971,000	.84	9,265	1,509	10,804	149	5.92	
Total all Kentucky 1933.....	35,114,331	363,441	369,396	252,561	36,099,729	40,748,000	1.13	37,195	6,522	43,717	170	4.87	
Total all Kentucky 1932.....	34,229,444	(11)	(11)	245,821	35,299,582	34,892,000	.99	35,760	30	6,477	42,267	155	5.41

MARYLAND

Allegheny.....	908,964	83,976	73,957	1,355	1,068,252	\$1,555,000	\$1.46	1,804	251	2,055	178	2.92
Garrett.....	442,350	7,070	3,165	9,911	462,496	579,000	1.25	712	113	825	156	3.58
Total 1933.....	1,351,314	91,046	77,122	11,266	1,530,748	2,134,000	1.39	2,516	364	2,880	172	3.09
Total 1932.....	1,267,696	(12)	(12)	7,492	1,428,937	1,827,000	1.28	2,748	357	3,105	150	3.07

¹⁰ In 1932 there were 32,659 tons reported by the operator as "trucked 10 miles or more from mine" and 202,979 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 235,638 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 220,563 tons.

¹¹ In 1932, for the State as a whole, there were 67,820 tons reported by the operator as "trucked 10 miles or more from mine" (including 15,278 tons, a part of which went less than 10 miles, separation not possible) and 454,497 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 522,317 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 732,567 tons.

¹² In 1932 there were 11,101 tons reported by the operator as "trucked 10 miles or more from mine" and 122,789 tons, reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 133,890 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 163,163 tons.

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

County	Net tons						Value		Number of employees				Average number of days mines operated	Average tons per man per day
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Underground	Surface		Total		
										In strip pits	All others			
Bay.....	62,886	47,628	2,278	8,033	-----	120,825	\$341,000	\$2.82	281	-----	36	317	130	2.94
Saginaw.....	120,080	56,744	850	6,135	-----	183,809	544,000	2.96	436	-----	66	502	151	2.43
Other counties (Eaton, Ingham, Midland, and Shiawassee).....	58,390	32,202	6,919	4,439	-----	101,950	286,000	2.81	329	-----	38	367	103	2.70
Total 1933.....	241,356	136,574	10,047	18,607	-----	406,584	1,171,000	2.88	1,046	-----	140	1,186	130	2.63
Total 1932.....	341,416	(¹)	(¹)	19,806	-----	446,149	1,219,000	2.73	852	-----	88	940	159	2.98

MISSOURI

Adair.....	107,188	24,906	1,075	4,154	-----	137,323	\$254,000	\$1.85	275	-----	54	329	175	2.38
Audrain.....	-----	6,865	-----	210	-----	7,075	19,000	2.69	27	-----	6	33	168	1.28
Barton.....	688,299	1,828	392	650	-----	691,169	1,016,000	1.47	4	306	35	345	126	¹⁴ 15.89
Bates.....	722,018	18,549	100	1,071	-----	741,738	1,163,000	1.57	47	346	16	409	216	¹⁴ 8.38
Boone.....	-----	49,260	-----	2	-----	49,262	115,000	2.33	87	19	20	126	184	2.13
Caldwell and Platte.....	6,764	16,621	990	2,995	-----	27,370	104,000	3.80	126	-----	13	139	126	1.56
Callaway and Warren.....	-----	29,299	2,570	28	-----	31,897	78,000	2.45	55	19	13	87	196	1.87
Chariton and Howard.....	-----	2,100	-----	2,100	-----	5,000	5,000	2.38	11	-----	3	14	103	1.46
Clay.....	14,800	67,998	2,954	2,162	-----	87,914	225,000	2.56	302	-----	42	344	185	1.38
Dade and Jasper.....	-----	7,538	-----	7,538	-----	18,000	18,000	2.39	13	7	3	23	122	2.69
Grundy, Harrison, and Schuyler.....	153	8,997	-----	50	-----	9,200	39,000	4.24	67	-----	13	80	116	9.99
Henry.....	355,420	14,255	50,252	3,696	-----	423,623	705,000	1.66	26	184	29	239	160	¹⁴ 11.07
Johnson.....	-----	4,933	-----	25	-----	4,958	10,000	2.02	15	10	2	27	122	1.50
Lafayette.....	246,859	64,620	5,629	3,436	-----	320,544	688,000	2.15	956	-----	89	1,045	151	2.03
Linn.....	20,254	20,625	-----	83	-----	40,962	100,000	2.44	226	-----	24	250	104	1.57
Macon.....	63,127	17,169	92	2,471	-----	82,859	152,000	1.83	242	-----	74	316	94	2.80
Putnam.....	-----	16,132	-----	16,132	-----	25,000	25,000	1.55	74	-----	14	88	118	1.55
Ralls.....	4,005	6,569	132	-----	-----	10,706	25,000	2.34	34	-----	5	39	234	1.17

Randolph.....	401,604	29,758	5,376	-----	-----	436,738	743,000	1.70	359	-----	74	515	205	4.13
Ray.....	180,941	83,307	7,765	2,000	-----	274,013	640,000	2.34	1,030	-----	150	1,180	117	1.98
Vernon.....	24,876	4,065	100	50	-----	29,091	51,000	1.75	11	49	2	62	81	14 5.80
Total 1933	2,836,308	495,394	77,427	23,083	-----	3,432,212	6,175,000	-1.80	3,987	1,022	681	5,690	150	4.02
Total 1932	3,470,056	(15)	(15)	32,020	-----	4,069,598	6,654,000	1.64	4,111	890	676	5,677	161	4.45

MONTANA

Blaine and Chouteau.....	-----	11,019	330	200	-----	11,549	\$30,000	\$2.60	24	-----	5	29	192	2.08
Carbon.....	392,363	5,356	6,450	1,085	-----	405,254	627,000	1.55	246	-----	100	346	173	6.78
Cascade.....	281,732	26,926	1,098	185	-----	309,941	442,000	1.43	178	-----	34	212	213	6.87
Daniels, Roosevelt, and Valley.....	-----	8,597	-----	50	-----	8,647	11,000	1.27	13	1	2	16	174	3.10
Dawson and Wibaux.....	-----	3,410	-----	20	-----	3,430	5,000	1.46	6	-----	1	7	128	3.84
Fergus.....	-----	2,361	-----	-----	-----	2,361	6,000	2.54	6	-----	2	8	156	1.89
Golden Valley and Judith Basin.....	-----	3,507	-----	61	-----	3,568	11,000	3.08	10	-----	3	13	150	1.83
Hill.....	-----	9,586	-----	130	-----	9,716	23,000	2.37	17	-----	6	23	185	2.29
Musselshell.....	571,547	9,730	1,659	2,047	-----	584,983	925,000	1.58	391	-----	147	538	133	8.17
Pandora and Toole.....	-----	1,876	-----	25	-----	1,901	11,000	5.79	9	-----	2	11	241	.72
Richland.....	8,419	6,005	1,185	-----	15,609	27,000	1.73	35	-----	6	41	186	2.05	
Rosebud.....	783,041	1,200	794	-----	785,005	1,177,000	1.50	8	-----	40	13	61	195	16 65.98
Sheridan.....	-----	10,203	-----	30	10	10,243	14,000	1.37	15	-----	4	19	226	2.39
Total 1933	2,037,102	99,776	11,516	3,813	-----	2,152,207	3,309,000	1.54	958	41	325	1,324	166	9.80
Total 1932	2,001,413	(11)	(11)	10,407	-----	2,125,225	3,527,000	1.66	1,139	47	339	1,525	145	9.64

¹³ In 1932 there were 37,667 tons reported by the operator as "trucked 10 miles or more from mine" (including some coal, a part of which went less than 10 miles, separation not possible) and 47,260 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 84,927 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 146,621 tons.

¹⁴ The output is chiefly obtained from strip pits, in which the production per man per day is large.

¹⁵ In 1932 there were 96,488 tons reported by the operator as "trucked 10 miles or more from mine" (including 12,863 tons, a part of which went less than 10 miles, separation not possible) and 471,034 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 567,522 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 572,821.

¹⁶ The output of this county is chiefly obtained from strip pits, in which the production per man per day is large.

¹⁷ In 1932 there were 10,739 tons reported by the operator as "trucked 10 miles or more from mine" (including 4,518 tons, a part of which went less than 10 miles, separation not possible) and 102,666 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 113,405 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 111,292 tons.

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

NEW MEXICO

County	Net tons						Value		Number of employees			Average number of days mines operated	Average tons per man per day	
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tipples	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface		Total			
									Underground	In strip pits				All others
Colfax.....	599,633	14,304	5,671	1,840	-----	621,448	\$1,575,000	\$2.53	770	-----	171	941	130	5.07
McKinley.....	404,947	9,796	18,644	27,174	-----	460,561	1,061,000	2.30	748	-----	207	955	180	2.69
Rio Arriba.....	16,542	1,680	14	209	-----	18,445	40,000	2.17	37	-----	10	47	177	2.21
San Juan.....	-----	4,536	-----	-----	-----	4,536	10,000	2.20	6	-----	1	7	300	2.16
Other counties (Lincoln, Santa Fe, and Socorro).....	99,865	4,546	5,861	10,974	-----	121,246	385,000	3.18	307	-----	83	390	227	1.37
Total 1933.....	1,120,987	34,862	30,190	40,197	-----	1,226,236	3,071,000	2.50	1,868	-----	472	2,340	168	3.12
Total 1932.....	1,147,766	(19)	(18)	54,952	-----	1,263,386	3,321,000	2.63	2,225	-----	377	2,602	127	3.82

NORTH CAROLINA

Total 1933.....	-----	1,514	-----	500	-----	2,014	\$7,000	\$3.48	7	-----	3	10	175	1.15
Total 1932.....	150	(19)	(19)	200	-----	1,900	6,000	3.16	20	-----	6	26	55	1.33

NORTH DAKOTA (LIGNITE)

Adams.....	22,377	22,012	556	1,020	-----	45,965	\$75,000	\$1.63	47	10	20	77	133	4.49
Bowman.....	3,366	14,013	1,754	460	-----	19,583	25,000	1.28	18	4	6	28	200	3.49
Burke.....	176,899	10,625	-----	95	-----	187,619	234,000	1.25	-----	55	27	82	210	14 10.92
Burleigh.....	201,048	33,860	70	460	-----	235,438	304,000	1.29	36	34	28	98	200	14 12.04
Divide.....	183,679	12,690	5,854	-----	-----	202,223	246,000	1.22	7	41	20	68	196	14 15.20
Grant.....	10,757	11,572	1,395	-----	-----	23,724	36,000	1.52	17	19	13	49	163	2.97
Hettinger.....	1,524	12,450	88	-----	-----	14,042	19,000	1.35	14	16	7	37	131	2.90
McLean.....	72,851	83,199	5,780	3,907	-----	115,728	164,000	1.42	42	98	16	166	144	5.15
Mercer.....	401,148	6,618	4,127	53,288	-----	465,161	557,000	1.20	230	24	71	325	169	14 8.47

Morton.....	14, 276	10, 573	5	5	24, 854	37, 000	1. 49	25	6	9	40	124	5. 02
Montrail.....		4, 005	40	40	4, 045	6, 000	1. 48	6	8	2	16	106	2. 40
Stark.....	2, 260	12, 190	40, 197	1, 100	55, 747	64, 000	1. 15	41	1	13	55	193	5. 24
Ward.....	258, 010	92, 309	432	366	351, 117	427, 000	1. 22	100	45	43	188	207	14 9. 04
Williams.....	1, 213	29, 471		112	30, 796	46, 000	1. 49	55	2	14	71	142	3. 05
Other counties (Dunn, Golden Valley, and Oliver).....		6, 230			6, 230	8, 000	1. 28	7	1	3	11	212	2. 67
Total 1933.....	1, 349, 408	311, 838	60, 203	60, 823	1, 782, 272	2, 248, 000	1. 26	645	364	292	1, 301	173	7. 93
Total 1932.....	1, 344, 621	(¹⁰)	(²⁰)	57, 997	1, 739, 658	2, 200, 000	1. 26	696	304	311	1, 311	186	7. 12

OHIO

Athens.....	2, 030, 415	38, 854	2, 995	22, 497	2, 094, 761	\$2, 656, 000	\$1. 27	3, 847	-----	443	4, 290	120	4. 05
Belmont.....	5, 644, 735	166, 245	97, 537	21, 479	5, 929, 996	6, 318, 000	1. 07	6, 193	-----	623	6, 816	179	4. 85
Carroll.....	197, 683	39, 056	11, 067	50	247, 886	334, 000	1. 35	315	-----	43	358	166	4. 16
Columbiana.....	96, 183	88, 575	7, 057	2, 198	194, 013	278, 000	1. 43	321	12	50	383	164	3. 08
Coshocton.....	64, 918	103, 994	1, 273	2, 280	172, 465	241, 000	1. 40	213	9	50	272	181	3. 60
Gallia and Scioto.....		5, 850		20	5, 870	8, 000	1. 36	17	-----	3	20	170	1. 73
Guernsey.....	1, 093, 896	81, 136	5, 030	4, 038	1, 184, 100	1, 329, 000	1. 12	1, 356	-----	128	1, 484	172	4. 63
Harrison.....	2, 396, 166	19, 480	724	26, 672	2, 443, 042	2, 694, 000	1. 10	999	337	200	1, 536	224	7. 11
Hocking.....	130, 399	40, 058	18, 577	8	189, 042	266, 000	1. 41	462	-----	73	535	90	3. 91
Holmes.....		12, 443		44	12, 487	21, 000	1. 68	30	8	6	44	151	1. 89
Jackson.....	54, 133	26, 743	18, 748	79	99, 703	156, 000	1. 56	159	31	52	242	117	3. 61
Jefferson.....	2, 936, 521	191, 518	90, 325	14, 680	3, 233, 044	3, 980, 000	1. 23	3, 036	11	370	3, 417	200	4. 72
Lawrence.....		26, 855	47, 483		74, 338	124, 000	1. 67	131	-----	28	159	149	3. 14
Mahoning.....	337	118, 276	1, 841	3, 319	123, 773	253, 000	2. 04	265	1	46	312	152	2. 61
Medina.....		7, 976	60	370	8, 406	27, 000	3. 21	11	2	3	16	188	2. 79
Meigs.....	250, 177	27, 645	6, 432	10	284, 264	338, 000	1. 36	509	-----	58	567	162	3. 09
Morgan and Washington.....	390, 414	3, 296	590	100	394, 300	491, 000	1. 25	491	-----	45	536	200	3. 67
Muskingum.....	429, 982	80, 986	150	5, 908	517, 026	726, 000	1. 40	365	54	71	490	218	4. 83
Noble.....	341, 814	3, 548	1, 950	8, 654	355, 966	419, 000	1. 18	488	-----	37	525	166	4. 09
Perry.....	567, 609	94, 437	1, 906	280	664, 212	863, 000	1. 30	1, 039	25	136	1, 200	136	4. 06
Stark.....	30, 257	269, 268	20, 630	1, 589	321, 744	594, 000	1. 85	443	10	84	537	186	3. 22

COAL

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¹⁴ The output is chiefly obtained from strip pits, in which the production per man per day is large.

¹⁵ In 1932 there were 4,325 tons reported by the operator as "trucked 10 miles or more from mine" and 56,343 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 60,668 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 65,052 tons.

¹⁶ In 1932 there were 450 tons reported by the operator as "trucked 10 miles or more from mine" and 1,100 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 1,550 tons, is exactly comparable with column (2) in 1933.

¹⁷ In 1932 there were 41,690 tons reported by the operator as "trucked 10 miles or more from mine" (including 3,990 tons, a part of which went less than 10 miles, separation not possible) and 295,350 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 337,040 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 372,041 tons.

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and countries in 1933—Continued

OHIO—Continued

County	Net tons					Value		Number of employees			Average number of days mines operated	Average tons per man per day		
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface				Total	
									Underground	In strip pits				All others
Summit.....		25,251		845		26,096	\$51,000	\$1.95	56		8	64	202	2.02
Tuscarawas.....	569,791	238,620	136,796	1,947		947,154	1,225,000	1.29	1,181	12	170	1,363	187	3.71
Vinton.....	23,325	8,861	98	862		33,146	42,000	1.27	125	26	54	205	62	2.63
Other counties (Portage, Trumbull, and Wayne).....		25,885	5,179	865		31,929	65,000	2.04	58		13	71	153	2.94
Total 1933.....	17,248,755	1,744,816	476,418	118,774		19,588,763	23,549,000	1.20	22,110	538	2,794	25,442	169	4.55
Total 1932.....	11,972,845	(²¹)	(²¹)	70,408		13,909,451	15,418,000	1.11	20,254	300	2,726	23,280	127	4.71

OKLAHOMA

Coal.....	40,244	6,352	75			46,671	\$122,000	\$2.61	78		9	87	212	2.54
Craig.....		1,644	1,300	500		3,444	7,000	2.03	5	5	2	12	130	2.21
Haskell.....	87,596	801	1,119	1,960		90,476	161,000	1.78	84	27	19	130	171	4.07
Latimer.....	91,566	700	340	860		93,466	190,000	2.03	203		40	243	146	2.63
LeFlore.....	332,585	3,844	1,213	2,420		340,062	846,000	2.49	863		176	1,039	116	2.82
Muskogee and Wagoner.....	118,520	1,018	1,858	1,250		122,144	215,000	1.76	4	121	1	126	116	14 8.36
Okmulgee.....	223,403	2,239	1,893	1,893		227,628	394,000	1.60	502		78	580	105	3.73
Pittsburg.....	195,245	3,368	886	5,120		204,619	512,000	2.50	467		75	542	162	2.33
Rogers.....	10,472	6,187		16,759		27,418	25,000	1.49			48	55	44	14 7.26
Tulsa.....	84,623	3,203	1,200	3,948		92,974	174,000	1.87	93	35	34	162	93	14 6.15
Total 1933.....	1,184,254	29,354	6,585	18,051		1,238,244	2,616,000	2.11	2,290	236	439	2,974	128	3.26
Total 1932.....	1,190,101	(²²)	(²²)	18,311		1,255,466	2,646,000	2.11	2,389	217	457	3,063	120	3.40

PENNSYLVANIA (BITUMINOUS)

Allegheny.....	9, 201, 233	1, 326, 432	991, 922	63, 415	-----	11, 583, 002	\$14, 924, 000	\$1. 29	11, 875	-----	1, 345	13, 220	188	4. 67
Armstrong.....	2, 381, 019	62, 469	31, 610	576	-----	2, 475, 674	2, 874, 000	1. 16	3, 261	-----	468	3, 729	148	4. 49
Beaver.....	330	51, 323	32, 607	88	-----	84, 348	173, 000	2. 05	181	-----	31	212	189	2. 10
Bedford.....	170, 223	56, 702	157, 063	790	2, 359	387, 137	698, 000	1. 80	682	-----	93	775	135	3. 71
Blair.....	101, 029	138, 905	395	2, 340	1, 100	243, 769	399, 000	1. 64	497	-----	68	565	175	2. 47
Butler.....	430, 352	129, 597	5, 348	731	-----	566, 028	816, 000	1. 44	1, 056	-----	132	1, 188	150	3. 18
Cambria.....	10, 737, 103	312, 149	831, 938	126, 904	38, 879	12, 046, 973	17, 095, 000	1. 42	15, 516	3	2, 053	17, 572	174	3. 93
Center.....	444, 963	97, 927	18, 432	454	-----	561, 776	813, 000	1. 45	949	-----	98	1, 047	179	3. 00
Clarion.....	1, 112, 240	58, 027	7, 533	1, 823	-----	1, 179, 623	1, 601, 000	1. 36	1, 444	19	172	1, 635	202	3. 58
Clearfield.....	2, 685, 695	38, 889	41, 987	7, 270	-----	2, 773, 841	3, 629, 000	1. 31	4, 795	-----	519	5, 314	149	3. 51
Clinton.....	10, 001	18, 399	8, 691	569	-----	37, 660	62, 000	1. 65	78	-----	19	97	140	2. 77
Elk.....	691, 643	27, 499	3, 778	14, 744	-----	737, 664	965, 000	1. 31	1, 323	-----	149	1, 472	145	3. 45
Fayette.....	9, 067, 698	147, 377	62, 146	115, 527	683, 112	10, 075, 860	16, 010, 000	1. 59	14, 328	91	2, 287	16, 706	128	4. 73
Greene.....	2, 713, 711	582	18, 093	12, 830	-----	2, 742, 216	4, 184, 000	1. 53	3, 157	-----	598	3, 755	159	4. 59
Huntingdon.....	474, 546	47, 476	5, 776	12, 341	-----	540, 138	925, 000	1. 71	856	-----	103	959	205	2. 75
Indiana.....	4, 807, 857	28, 764	187, 714	56, 668	21, 424	5, 102, 427	6, 740, 000	1. 32	5, 996	-----	738	6, 794	156	4. 85
Jefferson.....	1, 614, 288	30, 287	6, 973	8, 209	-----	1, 659, 757	2, 107, 000	1. 27	2, 074	-----	257	2, 381	175	4. 07
Lawrence.....	114, 695	42, 210	1, 741	13, 143	-----	171, 789	359, 000	2. 09	332	-----	65	387	162	2. 74
Lycoming.....	17, 462	22, 589	-----	15	-----	40, 066	86, 000	2. 15	80	-----	21	101	183	2. 17
Mercer.....	122, 195	78, 322	10, 979	14, 629	-----	226, 125	444, 000	1. 96	411	-----	55	466	170	2. 86
Somerset.....	5, 284, 919	50, 673	61, 323	90, 962	-----	5, 487, 877	7, 103, 000	1. 29	6, 958	-----	1, 017	7, 975	170	4. 05
Tioga.....	120, 546	54, 661	9, 969	4, 535	-----	189, 711	494, 000	2. 60	449	-----	76	525	140	2. 58
Washington.....	11, 203, 866	198, 795	155, 815	29, 135	-----	11, 587, 111	14, 902, 000	1. 29	14, 386	99	1, 431	15, 916	171	4. 27
Westmoreland.....	7, 633, 837	355, 164	219, 611	88, 367	292, 407	8, 589, 286	10, 647, 000	1. 24	10, 644	14	1, 810	12, 468	151	4. 57
Other counties (Bradford, Fulton, McKean, and Venango).....	185, 040	20, 670	180	196	-----	206, 086	368, 000	1. 79	265	-----	39	304	219	3. 10
Total 1933.....	71, 326, 491	3, 395, 888	2, 868, 023	666, 261	1, 039, 281	79, 295, 944	108, 418, 000	1. 37	101, 593	226	13, 634	115, 453	162	4. 24
Total 1932.....	68, 022, 893	(²¹)	(²²)	657, 057	776, 600	74, 775, 862	100, 361, 000	1. 34	92, 927	97	11, 508	104, 532	154	4. 66

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¹⁴ The output is chiefly obtained from strip pits, in which the production per man per day is large.

²¹ In 1932 there were 227,967 tons reported by the operator as "trucked 10 miles or more from mine" and 1,638,231 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 1,866,198 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 2,321,234 tons.

²² In 1932 there were 1,864 tons reported by the operator as "trucked 10 miles or more from mine" and 45,190 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 47,054 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 35,939 tons.

²³ In 1932 there were 1,055,485 tons reported by the operator as "trucked 10 miles or more from mine" (including 150,978 tons, a part of which went less than 10 miles, separation not possible) and 4,263,827 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 5,319,312 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 6,263,911 tons.

TABLE 34—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

SOUTH DAKOTA (LIGNITE)

County	Net tons						Value		Number of employees			Average number of days mines operated	Average tons per man per day	
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface		Total			
									In strip pits	All others				
Dewey.....	33,460	7,500	3,000	10	-----	43,970	\$79,000	\$1.80	-----	81	30	111	89	4.46
Meade.....	-----	1,040	-----	19	-----	1,059	3,000	2.83	7	-----	2	9	110	1.07
Perkins.....	-----	6,951	-----	-----	-----	6,951	10,000	1.44	8	6	1	15	167	2.78
Other counties (Carson, Harding, and Ziebach).....	150	7,025	200	20	-----	7,395	12,000	1.62	5	6	1	12	113	5.47
Total 1933.....	33,610	22,516	3,200	49	-----	59,375	104,000	1.75	20	93	34	147	100	4.04
Total 1932.....	26,494	(24)	(24)	25	-----	49,074	87,000	1.77	16	49	19	84	126	4.65

TENNESSEE

Anderson.....	710,041	4,865	3,356	6,632	-----	724,894	\$934,000	\$1.29	909	-----	217	1,126	159	4.04
Bledsoe.....	21,816	3,825	-----	-----	-----	25,641	44,000	1.72	29	-----	6	35	214	3.42
Campbell.....	881,419	2,273	11,244	6,781	-----	901,717	1,289,000	1.43	1,457	-----	310	1,767	142	3.59
Claborne.....	656,356	4,913	7,452	3,925	-----	672,646	897,000	1.33	1,046	-----	164	1,210	162	3.43
Fentress.....	175,355	5,413	2,355	10,380	-----	193,723	202,000	1.04	305	-----	55	360	202	2.67
Hamilton.....	3,594	47,780	2,319	380	-----	54,073	75,000	1.39	107	-----	21	128	159	2.66
Marion.....	301,118	6,718	1,899	375	-----	310,101	536,000	1.73	467	-----	92	559	197	2.81
Morgan.....	238,226	8,185	706	1,180	10,000	258,297	351,000	1.36	515	-----	84	599	155	2.78
Overton.....	-----	1,776	-----	-----	-----	1,776	3,000	1.69	13	-----	3	16	55	2.02
Other counties (Cumberland, Grundy, Putnam, Rhea, Roane, Scott, Sequatchie, Van Buren, and White).....	586,828	8,495	16,041	14,438	6,091	631,893	924,000	1.46	1,087	-----	164	1,251	162	3.12
Total 1933.....	3,874,753	94,243	45,368	44,311	16,091	3,774,761	5,255,000	1.39	5,935	-----	1,116	7,051	161	3.33
Total 1932.....	3,343,651	(25)	(25)	42,028	22,320	3,537,882	4,670,000	1.32	6,445	-----	1,080	7,525	148	3.18

TEXAS

Bituminous: Brewster, Palo Pinto, and Webb.....	16,347	1,490	2,908	2,046	-----	22,791	\$59,000	\$2.59	178	-----	64	242	100	0.94
Total bituminous 1933.....	16,347	1,490	2,908	2,046	-----	22,791	59,000	2.59	178	-----	64	242	100	.94
Total bituminous 1932.....	18,141	(26)	(26)	1,800	-----	22,942	55,000	2.40	156	-----	59	215	100	1.07
Lignite:														
Anderson, Henderson, and Houston.....	546,731	3	24	3,922	-----	550,680	551,000	1.00	273	17	15	305	229	7.88
Bastrop, Bexar, and Milam.....	158,111	-----	22	895	-----	159,028	113,000	.71	123	25	16	164	130	7.46
Harrison, Titus, and Wood.....	71,970	15,164	1	2,244	-----	89,379	110,000	1.23	76	-----	16	92	160	6.08
Total lignite 1933.....	776,812	15,187	47	7,061	-----	799,087	774,000	.97	472	42	47	561	189	7.55
Total lignite 1932.....	605,931	-----	(26)	5,869	-----	613,648	849,000	1.38	409	27	48	484	175	7.25
State total 1933.....	793,159	16,657	2,955	9,107	-----	821,878	833,000	1.01	650	42	111	803	162	6.32
State total 1932.....	624,072	(26)	(26)	7,669	-----	636,590	904,000	1.42	565	27	107	699	152	6.00

UTAH

Carbon.....	2,220,732	53,075	14,961	4,572	21,916	2,315,256	\$4,377,000	\$1.89	1,877	-----	637	2,514	177	5.22
Emery.....	195,229	31,086	956	571	-----	227,842	462,000	2.03	123	-----	52	175	206	6.32
Summit.....	36,400	8,702	50	400	-----	45,552	69,000	1.51	68	-----	17	85	148	3.63
Uintah.....	-----	2,372	-----	50	-----	2,422	12,000	4.95	10	-----	2	12	177	1.14
Other counties (Grand, Iron, Kane, Sanpete, and Sevier).....	73,872	4,904	607	4,531	-----	83,914	189,000	2.25	81	-----	39	120	140	4.98
Total 1933.....	2,526,233	100,139	16,574	10,124	21,916	2,674,986	5,109,000	1.91	2,159	-----	747	2,906	176	5.23
Total 1932.....	2,768,545	(27)	(27)	9,648	13,098	2,852,127	5,685,000	1.99	2,155	-----	687	2,842	176	5.69

²⁴ In 1932 there were 10,886 tons reported by the operator as "trucked 10 miles or more from mine" (including some coal, a part of which went less than 10 miles, separation not possible) and 11,669 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 22,555 tons is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 25,716 tons.

²⁵ In 1932 there were 41,359 tons reported by the operator as "trucked 10 miles or more from mine" and 88,524 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 129,883 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 139,606 tons.

²⁶ In 1932 there were 626 tons reported by the operator as "trucked 10 miles or more from mine" and 4,223 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 4,849 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 19,612 tons.

²⁷ In 1932 there were 20,045 tons reported by the operator as "trucked 10 miles or more from mine" and 40,791 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 60,836 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 116,713 tons.

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and countries in 1933—Continued

County	Net tons						Value		Number of employees			Average number of days mines operated	Average tons per man per day	
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Surface		Total			
									In strip pits	All others				
Buchanan.....	278,346		507			278,853	\$326,000	\$1.17	211		73	284	226	4.34
Dickenson.....	951,893	110	11,741	292		964,036	1,007,000	1.04	756		143	899	213	5.04
Lee.....	1,192,207	16,934	10,258	800		1,220,199	1,595,000	1.31	1,383		267	1,650	180	4.11
Montgomery and Pulaski.....	162,634		1,962	688		165,284	488,000	2.95	550		128	678	150	1.63
Russell.....	732,888	6,092	13,466	352		752,798	805,000	1.07	924		209	1,133	147	4.53
Tazewell.....	1,940,518	3,042	37,279	20		1,980,859	2,364,000	1.19	1,533		316	1,849	216	4.95
Wise.....	2,634,061	16,271	22,517	22,687	121,077	2,816,613	3,444,000	1.22	2,777		491	3,268	177	4.87
Total 1933.....	7,892,547	42,449	97,730	24,839	121,077	8,178,642	10,029,000	1.23	8,134		1,627	9,761	184	4.55
Total 1932.....	7,461,381	(²⁰)	(²⁰)	31,452	95,486	7,692,180	9,280,000	1.21	8,760		1,616	10,376	144	5.16
WASHINGTON														
King.....	307,769	229,296	6,865	627		544,557	\$1,468,000	\$2.70	707		167	874	207	3.01
Kittitas.....	453,538	29,278	10,516	5,440		498,772	1,347,000	2.70	836		150	986	127	4.01
Lewis.....	38,340	17,671	4,926	1,153		62,090	134,000	2.16	102		25	127	146	3.35
Pierce.....	159,145	12,011	1,334	1,234	622	174,346	613,000	3.52	247		68	315	218	2.54
Whatcom.....	67,204	18,000	1,765	2,742		89,711	303,000	3.38	183		36	219	168	2.81
Other counties (Cowlitz and Thurston).....	21,915	2,477		200		24,592	51,000	2.07	26		8	34	125	5.79
Total 1933.....	1,047,911	308,733	25,406	11,396	622	1,394,068	3,916,000	2.81	2,101		454	2,555	168	3.25
Total 1932.....	1,300,028	(²⁰)	(²⁰)	16,939	1,206	1,591,426	4,759,000	2.99	2,284		4	2,816	161	3.51

WEST VIRGINIA

Barbour.....	978, 368	11, 686	2, 994	340	-----	993, 388	\$928, 000	\$0.93	1, 069	-----	161	1, 230	133	6.06
Boone.....	2, 305, 236	1, 059	15, 235	2, 986	-----	2, 324, 616	2, 785, 000	1.20	1, 943	-----	507	2, 450	187	5.07
Braxton and Lewis.....	12, 643	3, 800	10, 100	-----	-----	26, 543	27, 000	1.02	25	-----	5	30	162	5.47
Brooke.....	483, 154	67, 596	588, 293	131	-----	1, 139, 174	1, 632, 000	1.43	1, 143	-----	166	1, 309	190	4.58
Clay.....	632, 838	16, 823	13, 595	-----	-----	663, 256	732, 000	1.11	753	-----	101	854	233	3.33
Fayette.....	9, 821, 353	7, 470	98, 145	33, 362	135, 549	10, 095, 879	13, 577, 000	1.34	9, 373	-----	1, 414	10, 787	217	4.32
Gilmer.....	11, 377	3, 338	-----	271	-----	14, 986	19, 000	1.27	64	-----	12	76	71	2.78
Grant and Tucker.....	435, 873	1, 639	10, 085	24, 485	-----	472, 082	661, 000	1.40	687	-----	96	763	146	4.25
Greenbrier.....	1, 628, 371	2, 529	13, 270	7, 430	-----	1, 651, 600	1, 921, 000	1.16	1, 351	-----	226	1, 577	228	4.59
Hancock.....	-----	15, 821	626	981	-----	17, 428	27, 000	1.55	88	-----	9	87	184	2.01
Harrison.....	2, 989, 824	136, 516	18, 448	1, 515	291	3, 146, 594	2, 907, 000	1.02	2, 623	-----	414	3, 037	158	6.56
Kanawha.....	4, 882, 794	10, 108	72, 388	8, 239	-----	4, 973, 529	5, 686, 000	1.14	4, 641	-----	802	5, 443	188	4.86
Lincoln and Wayne.....	74, 614	-----	-----	-----	-----	74, 614	66, 000	0.88	54	-----	15	69	132	8.17
Logan.....	13, 590, 629	4, 878	78, 068	6, 736	-----	13, 673, 309	13, 760, 000	1.01	8, 583	-----	1, 661	10, 244	201	6.63
McDowell.....	15, 735, 672	20, 160	153, 895	95, 760	-----	16, 005, 487	18, 867, 000	1.18	13, 122	20	3, 173	16, 315	182	5.39
Marion.....	6, 811, 330	23, 282	143, 420	32, 402	-----	7, 010, 434	6, 927, 000	0.99	4, 746	-----	663	5, 409	197	6.59
Marshall.....	585, 720	72, 963	137, 083	7, 066	-----	802, 332	1, 028, 000	1.28	833	-----	116	999	185	4.33
Mason.....	8, 390	39, 680	50	2, 788	-----	50, 908	61, 000	1.20	90	-----	20	110	166	2.79
Mercer.....	3, 344, 321	8, 001	26, 389	6, 637	-----	3, 385, 348	3, 867, 000	1.14	2, 591	-----	794	3, 385	203	4.93
Mineral.....	220, 907	31, 794	1, 689	334	-----	254, 724	323, 000	1.27	451	-----	80	531	166	2.89
Mingo.....	3, 184, 847	623	22, 072	1, 824	-----	3, 209, 366	3, 435, 000	1.07	2, 958	-----	612	3, 570	163	5.50
Monongalia.....	4, 694, 150	85, 975	16, 136	2, 853	-----	4, 799, 114	4, 126, 000	0.86	3, 741	-----	607	4, 348	199	5.54
Nicholas.....	92, 287	6, 631	-----	6, 417	-----	105, 335	184, 000	1.75	136	-----	51	187	183	3.07
Ohio.....	1, 933, 829	155, 264	39, 789	8, 117	-----	2, 136, 999	2, 358, 000	1.10	1, 954	-----	198	2, 152	274	3.62
Preston.....	517, 060	8, 362	2, 626	9, 690	51, 181	588, 919	648, 000	1.10	1, 047	-----	190	1, 237	141	3.38
Putnam.....	417, 459	8, 351	3, 100	-----	-----	428, 910	432, 000	1.01	452	-----	128	580	164	4.52
Raleigh.....	12, 041, 006	25, 229	116, 253	59, 864	-----	12, 242, 352	15, 373, 000	1.26	9, 714	1, 772	11, 486	213	5.00	
Randolph.....	292, 991	21, 142	20, 672	7, 155	-----	341, 960	397, 000	1.16	516	-----	88	604	135	4.18
Taylor.....	1, 104, 495	13, 959	7, 900	6	-----	1, 126, 360	1, 007, 000	0.89	861	-----	98	959	229	5.12
Upshur.....	117, 685	5, 470	463	3, 190	250	126, 958	105, 000	0.83	128	-----	58	186	103	6.63
Webster.....	701, 919	2, 591	27, 042	3, 129	-----	734, 681	1, 019, 000	1.39	645	-----	118	763	213	4.52
Wyoming.....	1, 677, 895	5, 103	10, 313	27, 639	-----	1, 720, 950	2, 232, 000	1.30	1, 360	-----	375	1, 735	227	4.36
Total 1932.....	91, 328, 937	817, 841	1, 648, 139	361, 347	187, 271	94, 343, 535	107, 124, 000	1.14	77, 722	20	14, 730	92, 472	106	5.20
Total 1932.....	82, 952, 472	(³⁰)	(³⁰)	399, 543	83, 611	85, 608, 735	90, 786, 000	1.06	72, 679	-----	13, 086	85, 765	168	5.93

²⁸ In 1932 there were 5,836 tons reported by the operator as "trucked 10 miles or more from mine" and 98,025 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mines)." The sum of these 2 items in 1932, which amounted to 103,861 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 140,179 tons.

²⁹ In 1932 there were 93,957 tons reported by the operator as "trucked 10 miles or more from mine" and 179,296 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 273,253 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 334,139 tons.

³⁰ In 1932 there were 32,036 tons reported by the operator as "trucked 10 miles or more from mine" and 2,141,023 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 2,173,109 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 2,465,980 tons.

TABLE 34.—Production, value, men employed, days operated, and output per man per day at bituminous-coal mines in specified States and counties in 1933—Continued

WYOMING

County	Net tons						Value		Number of employees				Average number of days mines operated	Average tons per man per day
	Loaded at mines for shipment	Commercial sales by truck or wagon	Other sales to local trade, or used by employees, or taken by locomotives at tippie	Used at mines for power and heat	Made into coke at mines	Total quantity	Total	Average per ton	Underground	Surface		Total		
										In strip pits	All others			
Campbell and Crook.....	75,399	12,008	416	7,984	-----	95,807	\$112,000	\$1.17	4	18	11	33	303	9.59
Carbon.....	342,045	26,270	3,808	17,072	-----	389,195	913,000	2.35	220	-----	88	308	200	6.32
Converse.....	-----	6,619	-----	-----	-----	6,619	15,000	2.27	10	-----	2	12	191	2.88
Fremont.....	16,128	893	4,294	3,786	-----	25,101	54,000	2.15	38	-----	7	45	83	6.74
Hot Springs.....	140,005	11,010	2,467	21,708	-----	175,190	438,000	2.50	185	-----	99	284	143	4.32
Johnson.....	-----	2,011	7,477	529	-----	10,017	18,000	1.80	12	-----	3	15	141	4.73
Lincoln.....	380,813	2,533	4,080	15,814	-----	403,240	931,000	2.31	397	-----	154	551	153	4.77
Sheridan.....	381,100	37,163	-----	21,397	-----	442,371	607,000	1.37	279	-----	78	367	136	9.08
Sweetwater.....	2,361,493	-----	24,015	64,580	-----	2,450,088	5,511,000	2.25	1,727	-----	395	2,122	179	6.46
Other counties (Big Horn, Park, and Uinta).....	6,431	9,058	-----	50	-----	15,539	37,000	2.38	21	-----	5	26	187	3.20
Total 1933.....	3,703,414	107,565	67,954	134,234	-----	4,013,167	8,636,000	2.15	2,893	18	842	3,753	170	^a 6.29
Total 1932.....	3,858,098	(^a)	(^a)	149,709	-----	4,170,963	9,317,000	2.23	3,370	10	793	4,173	150	^a 6.65

^a Much of the output of the State is obtained from strip pits or by the use of loading machines, in which types of operations the production per man per day is large.

^b In 1932 there were 34,165 tons reported by the operator as "trucked 10 miles or more from mine" and 123,991 tons reported as "sales to local trade, used by employees, or taken by locomotives at tippie (including sales by truck within 10 miles of mine)." The sum of these 2 items in 1932, which amounted to 163,156 tons, is exactly comparable with the sum of columns (2) and (3) in 1933—namely, 175,519 tons.

COAL PRODUCED AND CONSUMED IN ALASKA

TABLE 35.—Coal produced and consumed in Alaska, 1929-33

Year	Produced in Alaska, chiefly subbituminous and lignite ¹		Imported from States, chiefly bituminous coal from Washington ² (net tons)	Imported from foreign countries, chiefly bituminous coal from British Columbia ² (net tons)	Total coal consumed (net tons)
	Net tons	Value			
1929	100,600	\$528,000	36,693	27,073	164,366
1930	120,100	631,000	37,128	23,892	181,120
1931	105,900	556,000	30,772	17,796	164,468
1932	102,700	514,000	28,422	12,463	143,585
1933	96,467	481,000	21,524	14,009	132,000

¹ Compiled by the Alaska Branch of the U. S. Geological Survey.
² Compiled from records of the Bureau of Foreign and Domestic Commerce.

DETAILED STATISTICS OF ANTHRACITE AND SEMIANTHRACITE OUTSIDE OF PENNSYLVANIA

Table 36 analyzes the production of anthracite and semianthracite from fields outside of Pennsylvania. Although statistics for these coals are included with those for bituminous coal in the primary tables of this report they are shown here separately. For a detailed analysis of the hard-coal industry outside of Pennsylvania, see Coal in 1930, pp. 721 to 726.

TABLE 36.—Production, value, men employed, days mines operated, and output per man per day at the principal hard-coal mines outside of Pennsylvania in 1933

	Virginia	Arkansas, Colorado, and New Mexico	Total
Production:			
Loaded at mines for shipment.....net tons..	162,634	175,268	337,902
Commercial sales by truck or wagon.....do.....		3,892	3,892
Other sales to local trade, or used by employees, or taken by locomotives at tipples.....net tons..	1,962	607	2,569
Used at mines for power and heat.....do.....	688	5,017	5,705
Total production.....do.....	165,284	184,784	350,068
Value:			
Total.....	\$489,000	\$694,000	\$1,183,000
Average per ton.....	\$2.96	\$3.76	\$3.38
Number of employees:			
Underground.....	550	1,098	1,648
Surface.....	128	209	337
Total employees.....	678	1,307	1,985
Average number of days mines operated.....	150	80	104
Average production per man per day.....net tons..	1.63	1.77	1.70

Part 2.—PENNSYLVANIA ANTHRACITE

By H. L. BENNETT AND W. H. YOUNG

The essential facts of the statistical record in Pennsylvania anthracite in 1933 are presented in the following tables. The reader is referred to the chapter on Coal in the Minerals Yearbook, 1934, pages 577 to 584, for a discussion of the developments in the anthracite industry in 1933.

STATISTICAL SUMMARY

TABLE 1A.—*Salient statistics of the Pennsylvania anthracite industry, 1929-33*

	1929	1930	1931	1932	1933	
Production:						
Loaded at mines for shipment:						
Breakers.....net tons.....	64,203,900	59,839,838	51,264,291	42,994,291	41,730,739	
Washeries.....do.....	766,288	994,199	1,295,190	648,086	1,231,984	
Dredges.....do.....	324,390	368,020	199,268	252,346	322,686	
Sold to local trade and used by employees.....net tons.....	3,233,024	3,144,434	2,901,117	2,810,337	3,249,552	
Used at collieries for power and heat.....net tons.....	5,300,593	5,038,346	3,985,786	3,150,161	2,956,383	
Total production.....do.....	73,828,195	69,384,837	59,645,652	49,855,221	49,541,344	
Value at breaker, washery, or dredge.....	\$385,643,000	\$354,574,000	\$296,355,000	\$222,375,000	\$206,718,000	
		1929 ¹ basis	Actual ² reports			
Average sales realization per net ton on breaker shipments:						
Stove.....	\$7.79	\$7.73	\$7.68	\$7.37	\$6.53	\$6.25
Pea.....	\$4.16	\$4.13	\$4.18	\$4.76	\$4.55	\$4.22
Total domestic.....	\$7.14	\$7.08	\$7.05	\$6.87	\$6.09	\$5.78
Buckwheat No. 1.....	\$2.35	\$2.46	\$2.49	\$2.79	\$2.83	\$2.84
Buckwheat No. 2.....	\$1.58	\$1.51	\$1.51	\$1.52	\$1.52	\$1.50
Total steam.....	\$1.82	\$1.85	\$1.87	\$2.00	\$1.98	\$1.93
All sizes.....	\$5.63	\$5.54	\$5.52	\$5.35	\$4.74	\$4.46
Percentage by sizes in total breaker shipments:						
Broken.....percent.....	0.6	0.5	0.3	0.3	0.4	
Egg.....do.....	11.4	10.5	9.6	9.1	8.5	
Stove.....do.....	25.8	25.7	23.6	23.7	22.8	
Chestnut.....do.....	25.6	25.7	25.0	24.3	24.0	
Pea.....do.....	8.1	8.2	10.3	9.9	10.2	
Steam sizes.....do.....	28.5	29.4	31.2	32.7	34.1	
Exports.....net tons.....	3,406,000	2,552,000	1,778,000	1,303,000	1,035,000	
Imports.....do.....	487,000	675,000	638,000	607,000	456,000	
Consumption (calculated).....do.....	71,457,000	67,627,000	58,408,000	50,500,000	49,600,000	
Capacity in operation (calculated).....do.....	100,000,000	101,000,000	100,000,000	94,000,000	83,000,000	
Average number of days worked.....	225	208	181	162	182	
Man-days lost on account of strikes and lockouts.....	272,511	112,398	570,664	289,523	686,692	
Number of men on strike during year.....	39,777	18,202	65,907	34,259	50,948	
Average number of men employed.....	151,501	150,804	139,431	121,243	104,633	
Output per man per day.....net tons.....	2.17	2.21	2.37	2.54	2.60	

See footnotes at end of table.

TABLE 1A.—Salient statistics of the Pennsylvania anthracite industry, 1929-33—
Continued

	1929	1930	1931	1932	1933
Output per man per year.....net tons..	487	460	428	411	473
Quantity mined by cutting machines net tons..	1, 159, 910	1, 410, 123	1, 587, 265	1, 674, 223	1, 648, 249
Quantity mined by stripping.....do.....	1, 911, 766	2, 536, 288	3, 813, 237	3, 980, 973	4, 932, 069
Quantity produced by mechanized mining.....net tons..	3, 470, 158	4, 467, 750	4, 384, 780	5, 433, 340	6, 557, 267
Distribution:					
Total receipts in New England ³ net tons..	9, 039, 000	8, 387, 000	7, 064, 000	5, 639, 000	5, 252, 000
Exports to Canada.....do.....	3, 376, 000	2, 532, 000	1, 772, 000	1, 301, 000	1, 027, 000
Loaded into vessels at Lake Erie ⁴ net tons..	1, 321, 000	1, 232, 000	761, 000	294, 000	425, 000
Receipts at Duluth-Superior ⁵ do.....	401, 000	461, 000	300, 000	66, 000	135, 000

¹ Includes 122,894 tons of coal stored at collieries in 1931 and 33,060 tons in 1932.

² The figures under the heading "1929 basis" are so calculated as to be exactly comparable with 1929; those under the heading "Actual reports" are affected by a change in status of a company that formerly sold its output direct and in 1930 was merged with a larger company selling through a separately incorporated sales company.

³ From records of the Massachusetts Department of Labor and Industries, division on the necessities of life.

⁴ From records of the Ore and Coal Exchange.

⁵ From records of the United States Engineer Office, Duluth, Minn.

TABLE 2A.—Statistical summary of monthly developments in the Pennsylvania anthracite industry in 1933

[All tonnage figures represent thousands of net tons]

	1933												Total, 1932	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		Total
Production, including mine fuel, local sales, and dredge coal:														
Monthly total.....	3,818	4,287	4,532	2,899	2,975	3,939	3,688	4,409	5,007	4,725	4,825	4,437	49,541	49,855
Average per working day.....	152.7	182.4	167.9	120.8	114.4	151.5	147.5	163.3	200.3	189.0	201.0	177.5	163.8	163.7
Shipments, breakers and washeries only: ¹														
Monthly total, all sizes.....	3,274	3,744	3,820	2,460	2,495	3,521	3,239	3,990	4,222	4,147	4,098	4,012	43,022	43,849
Distribution:														
Lake loadings.....				7	26	77	82	73	45	93	22		425	294
Receipts at Duluth-Superior.....					7	22	17	21	25	34	9		135	66
Shipments from Lake docks.....	34	42	18	17	29	79	40	87	43	64	44	44	541	512
New England receipts—														
By tide.....	163	155	120	108	117	144	175	130	141	171	119	147	1,690	1,659
By rail.....	275	291	289	191	183	238	224	422	397	358	387	307	3,562	3,980
Exports.....	75	89	68	42	35	93	114	111	140	95	93	80	1,035	1,303
Imports.....	59	62	41	31	22	25	14	36	37	61	20	48	456	607
Industrial consumption by—														
Railroads (class I only).....	149	138	141	122	112	104	107	107	108	130	135	160	1,513	(²)
Electric power utilities.....	116	110	121	102	101	117	127	134	121	145	139	135	1,468	(²)
Stocks at end of period shown:														
Railroads (class I only).....	162	157	157	143	145	172	163	157	162	153	155	156	156	165
Electric power utilities.....	1,161	1,152	1,126	1,148	1,123	1,063	1,250	1,285	1,285	1,322	1,349	1,323	1,323	1,189
Upper lake docks.....	355	313	296	286	274	261	304	295	295	319	300	257	257	389
Retail stocks, 163 representative dealers.....	367	(³)	254	264	(³)	346	379	(³)	497	490	497	461	461	422
Producers' stocks ¹	1,240	792	515	458	435	533	736	977	1,267	1,351	1,293	1,106	1,106	1,732
Prices at mines, average per net ton: ⁴														
Company stove.....	\$7.25	\$7.25	\$7.25	\$7.25	\$6.25	\$6.25	\$6.50	\$6.75	\$7.25	\$7.25	\$7.25	\$7.25	\$6.98	\$7.06
Independent stove.....	\$7.25	\$7.25	\$7.25	\$7.25	\$6.25	\$6.25	\$6.50	\$6.75	\$7.25	\$7.25	\$7.25	\$7.25	\$6.98	\$6.93
Company buckwheat No. 1.....	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25
Independent buckwheat No. 1.....	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25	\$3.25
Retail prices (average per net ton, 25 cities): ⁵														
Stove.....	\$13.82	\$13.75	\$13.70	\$13.22	\$12.44	\$12.18	\$12.47	\$12.85	\$13.33	\$13.44	\$13.46	\$13.45	\$13.18	\$13.91
Chestnut.....	\$13.61	\$13.53	\$13.48	\$13.00	\$12.25	\$12.00	\$12.26	\$12.65	\$13.12	\$13.23	\$13.26	\$13.24	\$12.97	\$13.74
Labor conditions: ⁶														
Men on pay rolls at 159 mines.....	52.5	58.7	54.6	51.6	43.2	39.5	43.8	47.7	56.8	56.9	61.0	54.5	51.7	62.5
Index of pay-roll totals.....	43.2	56.8	48.8	37.4	30.0	34.3	38.2	46.6	60.7	61.6	47.8	44.3	45.8	53.7

¹ As reported by the Anthracite Bureau of Information.² Comparable figures for 1932 not available.³ Data not available.⁴ Quoted by trade journals in New York market.⁵ Bureau of Labor Statistics, white ash, sidewalk delivery.⁶ Bureau of Labor Statistics, index number — 1929 average=100.0.

COMPETITION FROM OTHER FUELS

TABLE 3A.—Total supplies of fuels commonly used for domestic purposes in the United States, 1924 and 1930-33

[Wherever available the figures represent the quantity actually consumed for domestic heating or for heating offices, apartments, hotels, schools, hospitals, etc. Where such figures are not available but where the fuel is known to be used chiefly for domestic purposes, the total production (or imports) is shown to indicate the trend of growth]

	1924	1930	1931	1932	1933
<i>Solid fuels (net tons)</i>					
Pennsylvania anthracite production:					
Shipments of domestic sizes.....	56, 576, 296	42, 508, 088	35, 437, 946	29, 096, 962	27, 755, 333
Shipments of buckwheat No. 1 ¹	9, 510, 508	8, 570, 032	7, 956, 978	6, 735, 313	6, 625, 755
Shipments of smaller steam sizes.....	11, 160, 695	10, 123, 937	9, 240, 931	8, 029, 388	8, 954, 321
Local sales.....	3, 043, 939	3, 144, 434	2, 901, 117	2, 810, 337	3, 249, 552
Total commercial production.....	80, 291, 438	64, 346, 491	55, 536, 972	46, 672, 000	46, 584, 961
Anthracite exported.....	4, 017, 785	2, 551, 659	1, 778, 308	1, 303, 355	1, 034, 562
Anthracite imported, chiefly from United Kingdom and Russia.....	117, 951	674, 812	637, 951	607, 097	456, 252
Fuel briquets produced.....	580, 470	1, 028, 865	698, 316	470, 604	530, 430
Fuel briquets imported.....	38	73, 418	60, 950	80, 288	42, 395
Byproduct coke sold for domestic use.....	2, 812, 771	7, 886, 432	8, 376, 652	9, 422, 343	10, 215, 360
Beehive coke sold for domestic use.....	139, 886	141, 391	118, 665	207, 857	275, 677
Coke imported.....	82, 833	132, 674	103, 563	117, 275	160, 873
Gas-house coke sold.....	² 1, 400, 000	² 1, 300, 000	1, 273, 000	² 1, 250, 000	498, 000
Petroleum coke produced ³	761, 100	1, 940, 000	2, 032, 000	1, 789, 000	1, 576, 000
Anthracite and semianthracite produced outside of Pennsylvania.....	704, 513	708, 221	507, 140	454, 028	350, 068
Bituminous coal for domestic use.....	(⁴)	(⁴)	(⁴)	(⁴)	(⁴)
<i>Oil (barrels)⁵</i>					
Domestic heating oils: ⁶					
Range oil.....	(⁷)	(⁷)	4, 549, 000	6, 841, 000	9, 849, 000
Other light fuel oils.....	⁸ 5, 021, 000	25, 771, 000	⁸ 24, 848, 000	29, 264, 000	34, 140, 000
Commercial heating oils ⁹	(⁷)	17, 508, 000	15, 731, 000	(⁷)	(⁷)
<i>Gas (million cubic feet)</i>					
Natural gas consumed for domestic use ¹⁰	285, 152	376, 407	380, 897	385, 887	368, 774
Manufactured gas sold for domestic and house heating purposes.....	(⁷)	(⁷)	¹¹ 275, 318	(⁷)	¹¹ 226, 557

¹ A considerable part of the buckwheat No. 1 is used for domestic purposes.

² Partly estimated.

³ How much petroleum coke was used for house fuel prior to 1928 is not known. For that year 235,000 tons were reported to have been consumed for domestic heating, according to E. B. Swanson in Economic Paper 9, Bureau of Mines.

⁴ Between 56,000,000 and 77,000,000 tons a year.

⁵ Based on surveys made by the Petroleum Economics Division, Bureau of Mines.

⁶ Oil used for heating houses.

⁷ Data not available.

⁸ Revised.

⁹ Oil used for heating offices, hotels, apartments, schools, hospitals, and buildings other than houses.

¹⁰ Includes heating of apartments and commercial buildings.

¹¹ From Census of Manufactures.

PRODUCTION, BY WEEKS AND MONTHS

The following tables summarized the statistics of the weekly and monthly production of anthracite first published in the Bureau of Mines weekly coal reports. The weekly output is estimated from records of cars of anthracite loaded by the nine railroads that serve the region. In table 4A the original weekly estimates have been adjusted to the annual total ascertained by direct canvass of the operators at the end of the year.

TABLE 4A.—Estimated weekly production of anthracite in 1933, in net tons

Week ended	Weekly production	Number of working days	Daily average	Week ended	Weekly production	Number of working days	Daily average
Jan. 7.....	649,000	5	129,800	July 15.....	745,000	6	124,200
Jan. 14.....	1,032,000	6	172,000	July 22.....	871,000	6	145,200
Jan. 21.....	1,004,000	6	167,300	July 29.....	1,047,000	6	174,500
Jan. 28.....	816,000	6	136,000	Aug. 5.....	886,000	6	147,700
Feb. 4.....	932,000	6	155,300	Aug. 12.....	892,000	6	148,700
Feb. 11.....	1,244,000	6	207,300	Aug. 19.....	964,000	6	160,700
Feb. 18.....	1,283,000	6	213,800	Aug. 26.....	1,035,000	6	172,500
Feb. 25.....	851,000	5.5	154,700	Sept. 2.....	1,238,000	6	206,300
Mar. 4.....	970,000	6	161,700	Sept. 9.....	1,022,000	5	204,400
Mar. 11.....	973,000	6	162,200	Sept. 16.....	1,254,000	6	209,000
Mar. 18.....	932,000	6	155,300	Sept. 23.....	1,114,000	6	185,700
Mar. 25.....	1,001,000	6	166,800	Sept. 30.....	1,205,000	6	200,800
Apr. 1.....	1,008,000	5	201,600	Oct. 7.....	1,129,000	6	188,200
Apr. 8.....	876,000	6	146,000	Oct. 14.....	1,293,000	6	206,000
Apr. 15.....	719,000	6	119,800	Oct. 21.....	1,093,000	6	182,200
Apr. 22.....	571,000	6	95,200	Oct. 28.....	1,076,000	6	179,300
Apr. 29.....	677,000	6	112,800	Nov. 4.....	728,000	5	145,600
May 6.....	666,000	6	111,000	Nov. 11.....	851,000	5	170,200
May 13.....	726,000	6	121,000	Nov. 18.....	1,321,000	6	220,200
May 20.....	666,000	6	111,000	Nov. 25.....	1,402,000	6	233,700
May 27.....	690,000	6	115,000	Dec. 2.....	906,000	5	181,200
June 3.....	596,000	5	119,200	Dec. 9.....	882,000	6	147,000
June 10.....	737,000	6	122,800	Dec. 16.....	1,086,000	6	181,000
June 17.....	827,000	6	137,800	Dec. 23.....	1,323,000	6	220,500
June 24.....	1,018,000	6	169,700	Dec. 30.....	953,000	5	190,600
July 1.....	1,140,000	6	190,000				
July 8.....	678,000	5	135,600				
				Total.....	49,541,000	302.5	163,806

TABLE 5A.—Estimated monthly production of anthracite, 1930-33¹

[Production figures represent thousands of net tons]

Month	1930			1931			1932			1933		
	Month-ly production	Number of working days	Daily average	Month-ly production	Number of working days	Daily average	Month-ly production	Number of working days	Daily average	Month-ly production	Number of working days	Daily average
January....	6,996	26	269	6,183	26	238	3,937	25	157	3,313	25	153
February....	6,120	23.5	260	5,400	23.5	230	4,061	24.5	166	4,287	23.5	182
March.....	4,524	26	174	4,754	26	183	4,838	27	179	4,532	27	168
April.....	4,887	25	196	5,709	25	228	5,686	25	227	2,899	24	121
May.....	5,911	26	227	5,013	25	201	3,311	25	132	2,975	26	114
June.....	5,152	25	206	4,552	26	175	2,576	26	99	3,939	26	152
July.....	5,624	26	216	3,960	26	152	3,052	25	122	3,688	25	148
August.....	6,153	26	237	4,324	26	166	3,500	27	130	4,409	27	163
September....	5,261	25	210	4,362	25	175	4,151	25	166	5,007	25	200
October.....	7,531	26	301	6,561	26	252	5,287	25	212	4,725	25	189
November....	5,176	23	199	4,149	23	180	4,315	24	180	4,825	24	201
December....	6,050	26	233	4,679	26	180	5,141	26	198	4,437	25	178
Total.....	69,385	303.5	229	59,646	303.5	197	49,855	304.5	164	49,541	302.5	164

¹ Production is estimated from weekly car loadings as reported by the American Railway Association and includes mine fuel, coal sold locally, dredge coal, and the output of the Bernice Basin in Sullivan County. In computing the average rates per working day, New Year's, Eight-Hour Day (Apr. 1), Memorial Day, Independence Day, Labor Day, Mitchell Day (Oct. 29), Thanksgiving Day, Christmas, and, since the war, Armistice Day, have been counted as holidays. Beginning with 1927, Washington's Birthday is counted as a half holiday. No allowance, however, has been made for church holy days, which are observed by many of the miners. Monthly statistics from 1905 to 1925 will be found in Coal in 1925, pp. 427-428, and from 1926 to 1929 in Coal in 1928, p. 833.

PRODUCTION BY REGIONS

TABLE 6A.—Anthracite produced, by regions, 1932-33

Region	Shipments		Local sales		Colliery fuel		Total	
	Net tons	Value ¹	Net tons	Value	Net tons	Value	Net tons	Value ¹
1932								
Lehigh:								
Breaker product...	6,944,868	\$31,109,280	275,250	\$1,328,543	459,299	\$697,647	7,679,417	\$33,135,470
Dredge product...	42,091	49,584	-----	-----	-----	-----	42,091	49,854
Total.....	6,986,959	31,158,864	275,250	1,328,543	459,299	697,647	7,721,508	33,185,054
Schuylkill:								
Breaker product...	12,270,801	52,717,646	833,667	3,909,792	788,630	1,161,184	13,893,098	57,788,622
Washery product...	459,993	795,404	7,560	18,728	2,700	3,947	470,253	818,079
Dredge product...	210,255	125,045	217,636	258,473	33	33	427,924	383,560
Total.....	12,941,049	53,638,095	1,058,863	4,186,993	791,363	1,165,173	14,791,275	58,990,261
Wyoming:								
Breaker product...	23,710,697	119,797,337	1,448,214	6,745,268	1,780,082	2,439,000	26,938,993	128,981,605
Washery product...	188,093	642,919	7,348	35,146	110,184	156,446	834,511	834,511
Dredge product...	-----	-----	9,735	12,355	300	300	10,035	12,655
Total.....	23,898,790	120,440,256	1,465,297	6,792,769	1,890,566	2,595,746	27,254,653	129,828,771
Total breaker product (including Sullivan County).....	42,994,291	203,927,747	2,568,058	12,042,229	3,036,944	4,306,764	48,599,293	220,276,740
Total washery product.....	648,086	1,438,323	14,908	53,874	112,884	160,393	775,878	1,652,590
Total dredge product.....	252,346	174,629	227,371	270,828	333	342	480,050	445,799
Grand total.....	43,894,723	205,540,699	2,810,337	12,366,931	3,150,161	4,467,499	49,855,221	222,375,129
1933								
Lehigh:								
Breaker product...	6,752,322	28,959,018	345,367	1,596,054	498,841	758,500	7,596,530	31,313,572
Washery product...	-----	-----	7,500	34,650	596	906	8,096	35,556
Dredge product...	51,083	46,831	-----	-----	-----	-----	51,083	46,831
Total.....	6,803,405	29,005,849	352,867	1,630,704	499,437	759,406	7,655,709	31,395,959
Schuylkill:								
Breaker product...	12,014,530	48,820,239	1,003,480	4,663,096	646,166	948,694	13,664,176	54,432,029
Washery product...	878,270	1,671,013	14,351	49,340	15,516	13,216	908,137	1,733,569
Dredge product...	271,603	132,772	197,260	252,109	988	1,501	469,851	386,382
Total.....	13,164,403	50,624,024	1,215,091	4,964,545	662,670	963,411	15,042,164	56,551,980
Wyoming:								
Breaker product...	22,964,066	108,518,999	1,604,329	7,094,592	1,541,180	1,634,426	26,109,575	117,248,017
Washery product...	353,714	853,534	27,615	59,188	221,196	223,406	602,525	1,136,128
Dredge product...	-----	-----	17,990	18,940	-----	-----	17,990	18,940
Total.....	23,317,780	109,372,533	1,649,934	7,172,720	1,762,376	1,857,832	26,730,090	118,403,085
Total breaker product (including Sullivan County).....	41,780,739	186,475,746	2,984,836	13,511,733	2,718,087	3,373,520	47,483,662	203,360,999
Total washery product.....	1,231,984	2,524,547	49,466	143,178	237,306	237,528	1,518,758	2,905,253
Total dredge product.....	322,686	179,603	215,250	271,049	988	1,501	538,924	452,153
Grand total.....	43,335,409	189,179,896	3,249,552	13,925,960	2,956,383	3,612,549	49,541,344	206,718,405

¹ Value given is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated sales companies.
² Includes 33,060 tons of coal, with a value of \$99,821, stored at collieries.

PRODUCTION, BY FIELDS AND COUNTIES

The classification by trade regions—Lehigh, Schuylkill, and Wyoming—is most commonly used by the trade. It is paralleled by the organization of the United Mine Workers, in which district 1 corresponds to the Wyoming trade region, district 7 to the Lehigh region, and district 9 to the Schuylkill region. In studies of costs of production and reserves, however, a classification adopted by geologists is more useful because it corresponds more closely to the natural conditions that largely govern mining costs. The geologic classification recognizes four fields. The Northern field is identical with the Wyoming region. That part of the Southern field lying east of Tamaqua, known as the Panther Creek Valley, and the Eastern Middle field make up the Lehigh region. That part of the Southern field west of Tamaqua and the Western Middle field compose the Schuylkill region. The Bernice Basin in Sullivan County is sometimes grouped with the Northern field.

Table 7A shows the production by fields. For those interested in production by political units figures by counties are given in table 8A.

TABLE 7A.—Anthracite produced, by fields, 1929–33, in net tons

[The figures of breaker product include a certain quantity of culm-bank coal, which in 1933 amounted to 1,543,000 tons. Data for 1913–25 will be found in *Coal in 1925*, p. 517, and for 1926–28 in *Coal in 1928*, p. 586.]

	1929	1930	1931	1932	1933
Northern:¹					
Breakers.....	41,679,000	37,756,000	31,933,000	27,026,778	26,222,956
Washeries.....	412,000	466,000	403,000	305,625	602,525
Dredges.....				10,035	17,990
Total Northern.....	42,091,000	38,222,000	32,336,000	27,342,438	26,843,471
Eastern Middle:					
Breakers.....	6,780,000	² 6,508,000	² 6,075,000	5,417,755	5,536,113
Washeries.....		(²)	(²)		8,096
Total Eastern Middle.....	6,780,000	6,508,000	6,075,000	5,417,755	5,544,209
Western Middle:					
Breakers.....	13,575,000	13,918,000	11,912,000	9,153,447	9,450,345
Washeries.....	270,000	522,000	916,000	441,243	836,361
Dredges.....	224,000	265,000	161,000	190,067	233,210
Total Western Middle.....	14,069,000	14,705,000	12,989,000	9,784,757	10,513,916
Southern:					
Breakers.....	10,268,000	9,471,000	7,883,000	7,001,313	6,274,248
Washeries.....	127,000	100,000	65,000	29,010	77,776
Dredges.....	493,000	379,000	298,000	279,948	287,724
Total Southern.....	10,888,000	9,950,000	8,246,000	7,310,271	6,639,748
Grand total.....	73,828,000	69,385,000	59,646,000	49,855,221	49,541,344

¹ Includes Sullivan County, which in 1933 contributed 113,381 tons of breaker product.

² A small amount of washery product is included with the breaker product.

TABLE 8A.—Anthracite produced in 1933, by counties

County	Shipments		Local sales	
	Net tons	Value ¹	Net tons	Value
Carbon.....	1, 510, 176	\$6, 065, 029	64, 473	\$296, 844
Columbia.....	468, 765	2, 060, 769	36, 009	95, 634
Dauphin.....	544, 401	2, 274, 083	142, 427	395, 092
Lackawanna.....	9, 706, 715	44, 490, 775	822, 404	3, 846, 202
Luzerne.....	17, 013, 844	79, 745, 387	1, 019, 011	4, 203, 847
Northumberland.....	4, 938, 661	17, 886, 617	294, 466	1, 127, 493
Schuylkill.....	8, 679, 877	34, 637, 878	781, 293	3, 709, 881
Sullivan.....	49, 821	177, 490	31, 660	157, 991
Susquehanna and Wayne.....	372, 013	1, 794, 997	2, 290	11, 605
Berks, Cumberland, Lebanon, Montour, Northampton, and York ²	51, 136	46, 871	55, 519	81, 371
Total.....	43, 335, 409	189, 179, 896	3, 249, 552	13, 925, 960

County	Colliery fuel		Total		Men employed
	Net tons	Value	Net tons	Value ¹	
Carbon.....	57, 267	\$129, 238	1, 631, 916	\$6, 491, 111	4, 000
Columbia.....	54, 344	79, 145	559, 118	2, 235, 548	1, 055
Dauphin.....	78, 029	113, 421	764, 857	2, 782, 596	1, 351
Lackawanna.....	676, 431	721, 356	11, 205, 550	49, 058, 333	23, 215
Luzerne.....	1, 441, 554	1, 620, 726	19, 474, 409	85, 569, 960	45, 277
Northumberland.....	96, 371	122, 600	5, 329, 498	19, 136, 710	8, 074
Schuylkill.....	502, 579	775, 102	9, 963, 749	39, 122, 861	20, 453
Sullivan.....	31, 900	31, 900	113, 381	367, 381	370
Susquehanna and Wayne.....	17, 832	18, 901	392, 135	1, 825, 503	771
Berks, Cumberland, Lebanon, Montour, Northampton, and York ²	76	160	106, 731	128, 402	67
Total.....	2, 956, 333	3, 612, 549	49, 541, 344	206, 718, 405	104, 633

¹ Value given for shipments is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.

² Counties producing dredge coal only.

FRESH-MINED AND CULM-BANK COAL, BREAKER AND WASHERY PRODUCT

Anthracite is produced from three sources—from mines, from old culm banks, and from the rivers that drain the anthracite region. As all contribute to the country's supply, it is important to consider them all to ascertain the total production. No difficulty is experienced in separating the figures of production by dredges. It has been difficult, however, to draw a sharp line between the fresh-mined coal and the culm-bank coal, particularly as the practice of preparing and sizing culm-bank coal in a breaker plant has increased to considerable proportions. As the best solution of this problem the Bureau of Mines has, for the past 2 years, asked the producing company to state the source of coal prepared at each breaker, washery, and dredge. The results are shown in the two tables that follow. Table 9A shows clearly that, in addition to the 1,495,420 tons of culm-bank coal prepared at washer plants during 1933, 1,542,820 tons were handled at breaker plants. It also shows that a relatively small tonnage of fresh-mined coal and a small tonnage of strip-pit coal was handled at washery plants. Table 10A shows the same data classified by fields and the changes during 1933 compared with 1932. Thus, while the quantity of hand-mined underground coal decreased 10.2 percent, all other types of coal increased substantially, the grand total for 1933 being but 0.6 percent less than that for 1932.

TABLE 9A.—Anthracite produced in 1933, classified as fresh-mined, culm-bank, and river coal and as breaker, washery, and dredge product, by regions, in net tons

Region and type of plant	From mines			From culm banks	From river dredging	Total
	Underground		Strip pits			
	Mechanically mined	Hand mined				
Lehigh:						
Breakers.....	291,791	5,094,151	1,917,462	293,126	.....	7,596,530
Washeries.....				8,096	.....	8,096
Dredges.....					51,083	51,083
Total Lehigh.....	291,791	5,094,151	1,917,462	301,222	51,083	7,655,709
Schuylkill:						
Breakers.....	589,255	10,257,461	2,047,017	770,443	.....	13,664,176
Washeries.....			15,621	892,516	.....	908,137
Dredges.....					469,851	469,851
Total Schuylkill.....	589,255	10,257,461	2,062,638	1,662,959	469,851	15,042,164
Wyoming:						
Breakers.....	5,674,851	19,003,504	951,969	479,251	.....	26,109,575
Washeries.....		7,717		594,808	.....	602,525
Dredges.....					17,990	17,990
Total Wyoming.....	5,674,851	19,011,221	951,969	1,074,059	17,990	26,730,090
Total, including Sullivan County:						
Breakers.....	6,557,267	34,467,127	4,916,448	1,542,820	.....	47,483,662
Washeries.....		7,717	15,621	1,495,420	.....	1,518,753
Dredges.....					538,924	538,924
Grand total.....	6,557,267	34,474,844	4,932,069	3,038,240	538,924	49,541,344

TABLE 10A.—Anthracite produced in 1933, classified as fresh-mined, culm-bank, and river coal and as breaker, washery, and dredge product, by fields, in net tons

Field and type of plant	From mines			From culm banks	From river dredging	Total
	Underground		Strip pits			
	Mechanically mined	Hand mined				
Eastern Middle:						
Breakers.....	287,591	3,715,218	1,321,289	212,015	.....	5,536,113
Washeries.....				8,096	.....	8,096
Total Eastern Middle.....	287,591	3,715,218	1,321,289	220,111	.....	5,544,209
Western Middle:						
Breakers.....	452,332	7,235,505	1,204,087	558,421	.....	9,450,345
Washeries.....			15,621	814,740	.....	830,361
Dredges.....					233,210	233,210
Total Western Middle.....	452,332	7,235,505	1,219,708	1,373,161	233,210	10,513,916
Southern:						
Breakers.....	141,123	4,400,889	1,439,103	293,133	.....	6,274,248
Washeries.....				77,776	.....	77,776
Dredges.....					287,724	287,724
Total Southern.....	141,123	4,400,889	1,439,103	370,909	287,724	6,639,748
Northern:¹						
Breakers.....	5,676,221	19,115,515	951,969	479,251	.....	26,222,956
Washeries.....		7,717		594,808	.....	602,525
Dredges.....					17,990	17,990
Total Northern¹.....	5,676,221	19,123,232	951,969	1,074,059	17,990	26,843,471
Grand total, 1933.....	6,557,267	34,474,844	4,932,069	3,038,240	538,924	49,541,344
Grand total, 1932.....	5,433,340	38,400,820	3,980,973	1,560,038	480,050	49,855,221
Change, 1933..... percent.....	+20.7	-10.2	+23.9	+94.8	+12.3	-0.6

¹Includes Sullivan County, which contributed 113,381 tons of underground coal

TABLE 11A.—Culm-bank coal put through breakers, by fields, 1929-33, in net tons

Year	Northern ¹	Eastern Middle	Western Middle	Southern	Total
1929.....	73,000	15,000	116,000	223,000	427,000
1930.....	75,000	7,000	58,000	52,000	192,000
1931.....	96,000	70,000	57,000	307,000	530,000
1932.....	159,000	82,000	328,000	215,000	784,000
1933.....	479,000	212,000	559,000	293,000	1,543,000

¹ Includes Sullivan County.

SHIPMENTS, BY REGIONS AND SIZES

TABLE 12A.—Anthracite shipped, by regions and sizes, in 1933

[Figures of shipments from breakers include 1,543,000 tons of culm-bank coal handled in the breakers]

Size	Breaker shipments				Washery shipments	Dredge shipments	Grand total
	Lehigh region	Schuylkill region	Wyoming region	Total (including Sullivan County)			
<i>Net tons</i>							
Lump ¹ and broken.....	29,482	68,090	65,903	164,322	4	.....	164,326
Egg.....	393,894	845,860	2,331,504	3,575,181	605	.....	3,575,786
Stove.....	1,456,791	2,357,758	5,689,146	9,512,106	41,102	.....	9,553,208
Chestnut.....	1,544,886	2,614,998	5,843,876	10,013,952	123,014	.....	10,136,966
Pea.....	799,193	1,222,126	2,227,027	4,256,147	68,900	.....	4,325,047
Total domestic.....	4,224,246	7,108,832	16,157,456	27,521,708	233,625	.....	27,755,333
Buckwheat No. 1.....	1,106,549	2,024,165	3,201,655	6,336,620	289,135	.....	6,625,755
Buckwheat No. 2 (rice).....	654,233	1,175,155	1,917,698	3,747,821	281,502	694	4,030,017
Buckwheat No. 3 (barley).....	612,577	1,276,968	1,377,607	3,267,602	386,726	174,513	3,828,841
Buckwheat No. 4.....	153,690	403,811	470,227	727,728	4,612	114,824	847,164
Boiler.....	.....	.....	38,774	38,774	438	21,304	60,516
Other.....	1,027	25,599	100,649	140,486	35,946	11,351	187,783
Total steam.....	2,528,076	4,905,698	6,806,610	14,259,031	998,359	322,686	15,580,076
Grand total.....	6,752,322	12,014,530	22,964,066	41,780,739	1,231,984	322,686	43,335,409
<i>Value</i>							
Lump ¹ and broken.....	\$139,036	\$372,688	\$378,560	\$891,978	\$26	.....	\$892,004
Egg.....	2,288,840	4,897,278	13,900,938	21,107,191	3,007	.....	21,110,198
Stove.....	9,028,097	14,555,584	35,811,240	59,436,996	202,796	.....	59,639,792
Chestnut.....	9,202,303	15,484,698	34,881,722	59,620,881	591,044	.....	60,211,925
Pea.....	3,338,430	5,067,013	9,511,988	17,948,347	271,075	.....	18,219,422
Total domestic.....	23,996,706	40,377,261	94,484,448	159,005,393	1,067,948	.....	160,073,341
Buckwheat No. 1.....	3,181,228	5,516,709	9,274,163	17,986,925	741,602	.....	18,728,527
Buckwheat No. 2 (rice).....	1,044,206	1,633,240	2,939,196	5,617,767	352,789	\$796	5,971,352
Buckwheat No. 3 (barley).....	637,306	1,078,935	1,553,866	3,270,616	328,148	108,131	3,706,895
Buckwheat No. 4.....	99,053	208,649	93,584	401,286	2,011	47,319	450,616
Boiler.....	.....	.....	48,052	48,052	1,071	14,053	63,181
Other.....	519	5,445	125,690	145,707	30,978	9,299	185,984
Total steam.....	4,962,312	8,442,978	14,034,551	27,470,353	1,456,599	179,603	29,106,555
Grand total.....	28,959,018	48,820,239	108,518,999	186,475,746	2,524,547	179,603	189,179,896
<i>Average value per ton</i>							
Lump ¹ and broken.....	4.72	5.47	5.74	5.43	6.50	.....	5.43
Egg.....	5.81	5.80	5.96	5.90	4.97	.....	5.96
Stove.....	6.20	6.17	6.29	6.25	4.93	.....	6.24
Chestnut.....	5.96	5.92	5.97	5.95	4.80	.....	5.94
Pea.....	4.18	4.15	4.27	4.22	3.93	.....	4.21
Total domestic.....	5.68	5.68	5.85	5.78	4.57	.....	5.77

¹ The quantity of lump included is insignificant.

TABLE 12A.—Anthracite shipped, by regions and sizes, in 1933—Continued

[Figures of shipments from breakers include 1,543,000 tons of culm-bank coal handled in the breakers]

Size	Breaker shipments				Washery shipments	Dredge shipments	Grand total
	Lehigh region	Schuylkill region	Wyoming region	Total (including Sullivan County)			
<i>Average value per ton—Con.</i>							
Buckwheat No. 1.....	\$2.87	\$2.73	\$2.90	\$2.84	\$2.56	-----	\$2.83
Buckwheat No. 2 (rice).....	1.60	1.39	1.53	1.50	1.25	\$1.15	1.48
Buckwheat No. 3 (barley).....	1.04	.84	1.13	1.00	.85	.62	.97
Buckwheat No. 4.....	.64	.52	.55	.55	.44	.41	.53
Boiler.....	-----	-----	1.24	1.24	2.45	.66	1.04
Other.....	.51	.21	1.25	1.04	.86	.82	.99
Total steam.....	1.96	1.72	2.06	1.93	1.46	.56	1.87
Grand total.....	4.29	4.06	4.73	4.46	2.05	.56	4.37

TRENDS IN SIZES SHIPPED

TABLE 13A.—Sizes of anthracite shipped from breakers, by regions, 1930-33, in percent of total

[Note that shipments of dredge and washery coal are not included]

Size of coal	Percent of total shipments							
	Lehigh region				Schuylkill region			
	1930	1931	1932	1933	1930	1931	1932	1933
Lump ¹ and broken.....	0.2	0.2	0.2	0.4	0.6	0.4	0.4	0.6
Egg.....	7.1	6.4	6.5	5.9	8.6	8.0	7.2	7.0
Stove.....	24.6	22.2	22.5	21.6	22.2	20.4	20.5	19.6
Chestnut.....	26.3	24.9	22.5	22.9	24.4	23.2	22.5	21.8
Pea.....	8.9	11.3	11.6	11.8	8.7	10.0	9.4	10.2
Total domestic.....	67.1	65.0	63.3	62.6	64.5	62.0	60.0	59.2
Buckwheat No. 1.....	15.3	16.0	17.0	16.4	15.4	17.0	17.5	16.8
Buckwheat No. 2 (rice).....	7.8	9.7	9.2	9.7	8.0	9.2	9.6	9.8
Buckwheat No. 3 (barley).....	9.1	8.6	8.8	9.0	10.8	10.4	10.6	10.6
Boiler.....	-----	.7	.2	-----	.3	(?)	-----	-----
Other, including Buckwheat No. 4.....	.7	(?)	1.5	2.3	1.0	1.4	2.3	3.6
Total steam.....	32.9	35.0	36.7	37.4	35.5	38.0	40.0	40.8
	Wyoming region				Total, including Sullivan County			
Lump ¹ and broken.....	0.5	0.4	0.4	0.3	0.5	0.3	0.3	0.4
Egg.....	12.4	11.3	10.7	10.2	10.5	9.6	9.1	8.5
Stove.....	27.9	25.7	25.7	24.8	25.7	23.6	23.7	22.8
Chestnut.....	26.2	26.1	25.8	25.4	25.7	25.0	24.3	24.0
Pea.....	7.8	10.1	9.7	9.7	8.2	10.3	9.9	10.2
Total domestic.....	74.8	73.6	72.3	70.4	70.6	68.8	67.3	65.9
Buckwheat No. 1.....	13.0	13.5	13.9	13.9	14.0	14.9	15.5	15.2
Buckwheat No. 2 (rice).....	7.2	8.0	8.0	8.4	7.6	8.6	8.6	8.9
Buckwheat No. 3 (barley).....	4.2	4.2	4.9	6.0	6.8	6.7	7.2	7.8
Boiler.....	(?)	.1	.3	.2	.1	.2	.2	.1
Other, including Buckwheat No. 4.....	.8	.6	.6	1.1	.9	.8	1.2	2.1
Total steam.....	25.2	26.4	27.7	29.6	29.4	31.2	32.7	34.1

¹ The quantity of lump included is insignificant.

² Less than 0.1 percent.

TRENDS IN VALUES AND PRICES

SOURCES OF INFORMATION AND METHODS OF ANALYSIS

Margins of sales agents not included.—The valuation figures in this study represent value at the breaker or washery reported by the operating companies. In making its report the company is requested to "estimate value of the product not sold" and to "exclude selling expenses."

From this it will be seen that where a producing company sells its output to a separately organized sales company—the practice of many, including certain of the larger producers—the value reported will exclude the margin of the sales company and may therefore be somewhat less than the circular price at which the coal in question is placed on the general market. This fact should be borne in mind in considering the variations in value between different regions shown in the tables for the same sizes of coal. (See table 14A.)

Estimates included in figures of value.—The reports are furnished in writing and signed by responsible officers of the mining companies. Complete reports on tonnage produced and physical operation of the mines have been received from all operators. A few companies did not reply on the value of the product, however, and estimates of these values have been made to round out the totals. The estimates represent only 10.2 percent of the value shown in 1933 because, aside from a few extremely small producers, only one company failed to report. The values for this company, a producer in the Wyoming region, were estimated in 1933 as follows: The tonnage it reported of each size from broken to pea was multiplied by the company's average circular price for that size as quoted in the trade journals for the year. The tonnage reported for buckwheat No. 1 and for each smaller size was multiplied by the average sales realization obtained on that size by all other producers in the Wyoming region.

AVERAGE SALES REALIZATIONS

The average sales realizations on each size from 1930 to 1933 are given in table 14A. To insure comparability the table is based on shipments of breaker coal only, the dredge and washery product being excluded.

TABLE 14A.—Average sales realization per net ton on anthracite shipments from breakers, by regions and sizes, 1930-33

[Value does not include margins of separately incorporated sales companies]

Size	Lehigh region				Schuylkill region			
	1930	1931	1932	1933	1930	1931	1932	1933
Lump ¹ and broken.....	² \$6.86	\$6.35	\$5.58	\$4.72	\$7.12	\$6.76	\$6.03	\$5.47
Egg.....	² 7.22	6.87	5.92	5.81	7.23	6.84	5.99	5.80
Stove.....	² 7.71	7.26	6.38	6.20	7.71	7.26	6.45	6.17
Chestnut.....	² 7.26	7.16	6.18	5.96	7.24	7.13	6.18	5.92
Pea.....	² 4.08	4.77	4.57	4.18	3.96	4.55	4.48	4.15
Total domestic.....	² 7.00	6.74	5.92	5.68	6.96	6.71	5.98	5.68
Buckwheat No. 1.....	² 2.47	2.80	2.85	2.87	2.32	2.70	2.70	2.73
Buckwheat No. 2 (rice) ²	² 1.48	1.53	1.56	1.60	1.41	1.44	1.41	1.39
Buckwheat No. 3 (barley).....	² 1.13	1.05	1.01	1.04	1.05	.91	.83	.84
Total steam ⁴	² 1.81	1.97	1.98	1.96	1.66	1.82	1.77	1.72
Total, all sizes.....	² 5.29	5.07	4.48	4.29	5.08	4.85	4.30	4.06
	Wyoming region				Total, including Sullivan County			
Lump ¹ and broken.....	² \$6.96	\$6.79	\$5.54	\$5.74	² \$7.02	\$6.74	\$5.69	\$5.43
Egg.....	² 7.27	7.11	6.28	5.96	² 7.26	7.01	6.17	5.90
Stove.....	² 7.65	7.44	6.60	6.29	² 7.68	7.37	6.53	6.25
Chestnut.....	² 7.26	7.26	6.31	5.97	² 7.25	7.21	6.26	5.95
Pea.....	² 4.35	4.89	4.58	4.27	² 4.18	4.76	4.55	4.22
Total domestic.....	² 7.10	6.97	6.18	5.85	² 7.05	6.87	6.09	5.78
Buckwheat No. 1.....	² 2.60	2.86	2.90	2.90	² 2.49	2.79	2.83	2.84
Buckwheat No. 2 (rice) ³	² 1.57	1.57	1.57	1.53	² 1.51	1.52	1.52	1.50
Buckwheat No. 3 (barley).....	² 1.24	1.20	1.11	1.13	² 1.13	1.03	.97	1.00
Total steam ⁴	² 2.04	2.15	2.13	2.06	² 1.87	2.00	1.98	1.93
Total, all sizes.....	² 5.83	5.70	5.05	4.73	² 5.52	5.35	4.74	4.46

¹ The quantity of lump included is insignificant.

² In 1930 a producer in the Lehigh and Wyoming regions, which formerly sold its output direct, was merged with a larger producer selling through a separately incorporated sales company. As the values do not include margins of separately incorporated sales companies, the averages for 1930, as reported above, are not exactly comparable with those for other years. The effect of this change is fully discussed in Coal in 1930, pp. 759-61, which also gives the figures recalculated to the 1929 basis. The discrepancy is not serious.

³ Includes birdseye.

⁴ Includes all other steam sizes.

AVERAGE VALUES OF SHIPMENTS, LOCAL SALES, AND COLLIERY FUEL

TABLE 15A.—Average value per net ton of anthracite shipped, local sales, colliery fuel, and total production, by regions, 1932-33¹

[Note that values in this table include washery and dredge coal]

Year and region	1932				1933			
	Shipments	Local sales	Colliery fuel	Total production	Shipments	Local sales	Colliery fuel	Total production
Lehigh.....	\$4.46	\$4.83	\$1.52	\$4.30	\$4.26	\$4.62	\$1.52	\$4.10
Schuylkill.....	4.14	3.95	1.47	3.99	3.85	4.09	1.45	3.76
Wyoming.....	5.04	4.64	1.37	4.76	4.69	4.35	1.05	4.43
Total ²	4.68	4.40	1.42	4.46	4.37	4.29	1.22	4.17

¹ Value given for shipments is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.

² Includes Sullivan County.

NUMBER OF OPERATIONS

The following table showing the number of active anthracite plants in 1932 and 1933 has been compiled in response to numerous requests from the anthracite trade for a total count of active breakers and mines. Due to the many changes in anthracite practices during the past few years, particularly with regard to centralization of breakers, it is not possible to make the figures comparable with those published in earlier reports of this series, which accounted for the number of active breakers, washeries, and dredges.

TABLE 16A.—Number of active operations in the anthracite industry, 1932-33

	Total active plants reporting ¹	Reporting as washeries	Reporting as culm banks in conjunction with breakers	Reporting as dredges	Reporting strip-pit tonnage	Reporting men employed at preparation plants ²
1932						
Lehigh:						
Breakers or mines.....	42		14		26	(3)
Washeries.....						(3)
Dredges.....	2			2		(3)
Total, Lehigh.....	44		14	2	26	(3)
Schuylkill:						
Breakers or mines.....	71		15		28	(3)
Washeries.....	4	4				(3)
Dredges.....	33			33		(3)
Total, Schuylkill.....	108	4	15	33	28	(3)
Wyoming:						
Breakers or mines.....	161		14		33	(3)
Washeries.....	17	17				(3)
Dredges.....	1			1		(3)
Total, Wyoming.....	179	17	14	1	33	(3)
Sullivan County: Breakers or mines.....	4					(3)
Total:						
Breakers or mines.....	278		43		87	(3)
Washeries.....	21	21				(3)
Dredges.....	36			36		(3)
Grand total.....	335	21	43	36	87	(3)
1933						
Lehigh:						
Breakers or mines.....	39		16		29	29
Washeries.....	1	1				
Dredges.....	1			1		1
Total, Lehigh.....	41	1	16	1	29	30
Schuylkill:						
Breakers or mines.....	73		19		33	53
Washeries.....	8	8			1	8
Dredges.....	32			32		20
Total, Schuylkill.....	113	8	19	32	34	81
Wyoming:						
Breakers or mines.....	185		14		35	86
Washeries.....	16	16				7
Dredges.....	1			1		1
Total, Wyoming.....	202	16	14	1	35	94
Sullivan County: Breakers or mines.....	6					4
Total:						
Breakers or mines.....	303		49		97	172
Washeries.....	25	25			1	15
Dredges.....	34			34		22
Grand total.....	362	25	49	34	98	209

¹ The number of active plants contains numerous duplications, that is, successions known and unknown, and lessees and sublessees. Each report received which was tabulated for production or for employment has been counted separately.

² The number shown does not represent active breakers, for which there are no definite data. The number reported for dredges represents reports showing men employed at tipple.

³ Data not available.

LABOR STATISTICS

TABLE 17A.—Men employed and days worked in the anthracite field, by regions, in 1933

Region	Average number of men employed							Grand total
	Underground			Surface				
	Miners and their laborers	Other	Total underground	In strip pits	In preparation plant	Other	Total surface	
Lehigh:								
Breaker product.....	8,027	4,355	12,382	1,536	1,753	2,521	5,810	18,192
Washery product.....						10	10	10
Dredge product.....					3	17	20	20
Total.....	8,027	4,355	12,382	1,536	1,756	2,548	5,840	18,222
Schuylkill:								
Breaker product.....	11,963	5,948	17,911	1,094	2,185	4,238	7,517	25,428
Washery product.....				15	212	240	467	467
Dredge product.....					72	163	235	235
Total.....	11,963	5,948	17,911	1,109	2,469	4,641	8,219	26,130
Wyoming:								
Breaker product.....	34,641	14,513	49,154	738	4,653	5,114	10,505	59,659
Washery product.....					101	143	244	244
Dredge product.....					4	4	8	8
Total.....	34,641	14,513	49,154	738	4,758	5,261	10,757	59,911
Sullivan County: Breaker product...	186	68	254		41	75	116	370
Total:								
Breaker product.....	54,817	24,884	79,701	3,368	8,632	11,948	23,948	103,649
Washery product.....				15	313	393	721	1,721
Dredge product.....					79	184	263	263
Grand total.....	54,817	24,884	79,701	3,383	9,024	12,525	24,932	104,633
	Number of days worked							
Lehigh:								
Breaker product.....	148		148	189	141	155	160	152
Washery product.....						98	98	98
Dredge product.....					147	147	147	147
Total.....	148		148	189	141	155	160	152
Schuylkill:								
Breaker product.....	193		193	209	217	185	198	195
Washery product.....				75	246	227	231	231
Dredge product.....					174	127	141	141
Total.....	193		193	207	218	185	198	195
Wyoming:								
Breaker product.....	185		185	188	170	214	192	186
Washery product.....					109	106	107	107
Dredge product.....					109	106	109	109
Total.....	185		185	188	168	211	190	186
Sullivan County: Breaker product...	123		123		152	89	111	119
Total:								
Breaker product.....	181		181	195	176	190	186	182
Washery product.....				75	202	179	187	187
Dredge product.....					170	129	141	141
Total average.....	181		181	195	176	189	185	182

¹ The men shown for "breaker product" include a considerable number of washery employees who could not be separated from breaker employees. The tonnage reported for the 721 washery men amounted to 1,118,000 tons, about 75 percent of the total washery product, and about 37 percent of the total culm-bank coal. (See tables 9A and 10A.)

TABLE 18A.—*Strikes, suspensions, and lockouts in the anthracite region in 1933*

	Lehigh	Schuyl-kill	Wyoming	Sullivan County	Total
Total number employed.....	18, 222	26, 130	59, 911	370	104, 633
Men on strike.....	7, 628	5, 875	37, 445	-----	50, 948
Man-days lost on account of strike.....	108, 067	62, 911	515, 714	-----	686, 692
Average days lost—					
Per man employed.....	5.9	2.4	8.6	-----	6.6
Per man on strike.....	14.2	10.7	13.8	-----	13.5

EQUIPMENT AND METHODS OF MINING

Since 1929 the Bureau of Mines has collected data on the tonnage of anthracite produced by mechanized mining.

PENNSYLVANIA ANTHRACITE

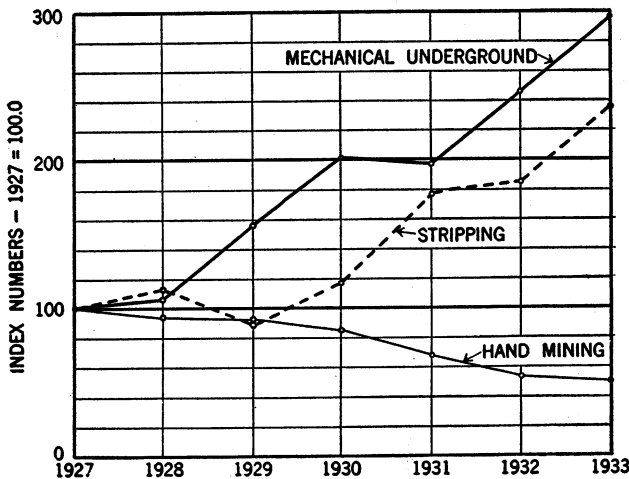


FIGURE 4.—Relative growth of mechanical mining, hand mining, and stripping in anthracite mines since 1927. To facilitate comparison, the tonnages produced by each method have been converted to index numbers, in which 1927 is represented by 100.

TABLE 19A.—*Relative growth of mechanical mining, hand mining, and stripping in anthracite mines, 1927-33*

[Mechanical mining includes coal handled on pit-car loaders and hand-loaded face conveyors]

Year	Mechanical mining underground	Stripping	Hand mining	Year	Mechanical mining underground	Stripping	Hand mining
Net tons:				Index numbers:			
1927.....	2, 223, 000	2, 153, 000	71, 435, 000	1927.....	100	100	100
1928.....	2, 351, 000	2, 423, 000	67, 374, 000	1928.....	106	113	94
1929.....	3, 470, 000	1, 912, 000	66, 494, 000	1929.....	156	89	93
1930.....	4, 468, 000	2, 536, 000	60, 458, 000	1930.....	201	118	85
1931.....	4, 385, 000	3, 813, 000	49, 075, 000	1931.....	197	177	69
1932.....	5, 433, 000	3, 981, 000	38, 401, 000	1932.....	244	185	54
1933.....	6, 557, 000	4, 932, 000	34, 475, 000	1933.....	295	229	48

¹ As reported by the Commonwealth of Pennsylvania, Department of Mines.

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TABLE 20A.—*Pennsylvania anthracite produced by mechanized mining, 1927-33*

Year	Scrapers and mobile loaders		Conveyors and pit-car loaders ¹		Total mechanized mining	
	Number of units	Net tons loaded	Number of units	Net tons handled	Number of units	Net tons handled
1927 ²	305	(³)	159	(³)	464	2, 223, 281
1928 ²	302	(³)	184	(³)	486	2, 351, 074
1929.....	350	2, 450, 279	355	1, 019, 879	705	3, 470, 158
1930.....	384	2, 927, 088	421	1, 540, 662	805	4, 467, 750
1931.....	462	2, 462, 370	576	1, 922, 410	1, 038	4, 384, 780
1932.....	490	2, 651, 591	859	2, 781, 749	1, 349	5, 433, 340
1933.....	464	• 2, 395, 403	965	4, 161, 864	1, 429	6, 557, 267

¹ Includes duckbills and other self-loading conveyors, which account for only a small part of the total.

² Figures for 1927 and 1928, as reported by the Commonwealth of Pennsylvania, Department of Mines.

³ Not separately reported; see total.

TABLE 21A.—*Change in tonnage of anthracite handled by principal types of machines, 1931-33*

	1931	1932	1933	Increase (+) or decrease (-), 1933 over 1931	
	Net tons	Net tons	Net tons	Net tons	Percent
Mobile loading machines.....	30, 500	60, 561	48, 078	+17, 578	+57. 6
Scraper loaders.....	2, 431, 870	2, 591, 030	2, 347, 325	-84, 545	-3. 5
Pit-car loaders.....	30, 537	30, 874	62, 586	+32, 049	+105. 0
Hand-loaded face conveyors ¹	1, 891, 873	2, 750, 875	4, 099, 278	+2, 207, 405	+116. 7
Total.....	4, 384, 780	5, 433, 340	6, 557, 267	+2, 172, 487	+49. 5

¹ Shaker chutes, etc., including those equipped with duckbills.

TABLE 22A.—*Anthracite handled by mobile loaders and scrapers and by all types of conveyors in 1933, by fields, in net tons*

Field	Mobile loaders	Scraper loaders	Pit-car loaders	Hand-loaded face conveyors, all types ¹	Total produced by mechanized mining underground
Northern.....	38, 600	2, 044, 779	34, 584	3, 553, 258	5, 676, 221
Eastern Middle.....		56, 592	17, 671	213, 799	287, 591
Western Middle.....	9, 478	227, 309		218, 924	452, 332
Southern.....		18, 645	10, 331	108, 297	141, 123
Total.....	48, 078	2, 347, 325	62, 586	4, 099, 278	6, 557, 267

¹ Shaker chutes, etc., including a small number equipped with duckbills.

TABLE 23A.—*Anthracite cut by machines, 1932-33*

Region	1932			1933		
	Number of cutting machines		Net tons cut by machines	Number of cutting machines		Net tons cut by machines
	Permissible	All other types		Permissible	All other types	
Lehigh.....	1	2	4, 000	1	-----	700
Schuykill.....	3	5	30, 653	2	6	52, 549
Wyoming (Including Sullivan County).....	137	59	1, 639, 570	138	21	1, 595, 000
Total.....	141	66	1, 674, 223	141	27	1, 648, 249

TABLE 24A.—Relative growth of anthracite mined from strip pits, 1915–33, in net tons

Year	Number of power shovels in use	Quantity mined by stripping		Percent of fresh-mined total that was stripped	Number of men employed	Average number of days worked
		Total	Average per shovel			
1915.....	57	1,121,603	19,677	(1)	(1)	(1)
1920.....	96	2,054,441	21,400	2.5	(1)	(1)
1925.....	97	1,578,478	16,273	2.7	(1)	(1)
1930.....	108	2,536,288	23,484	3.7	(1)	(1)
1931.....	189	3,813,237	20,176	6.7	2,232	(1)
1932.....	234	3,980,973	17,013	8.3	2,407	190
1933:						
Lehigh district.....	103	1,917,462	18,616	26.3	1,536	189
Schuylkill district.....	107	2,062,638	19,277	16.0	1,109	207
Wyoming district.....	109	951,969	8,734	3.7	738	188
Total, 1933.....	* 319	4,932,069	15,461	10.7	3,383	195

¹ Data not available.

² Includes 131 gasoline, 74 steam, 71 electric, and 43 other types of shovels.

DREDGE OPERATIONS

Average receipts per net ton on all dredge coal sold, 1930–33

1930.....	\$0.84	1932.....	\$0.93
1931.....	.83	1933.....	.84

TABLE 25A.—Anthracite produced by dredges, by rivers, 1932–33

River (including tributaries)	1932			1933		
	Number of dredges	Net tons	Value	Number of dredges	Net tons	Value
Lehigh.....	2	42,091	\$49,584	1	51,083	\$46,831
Schuylkill.....	5	105,990	99,313	5	106,004	89,190
Susquehanna.....	29	331,969	296,902	28	381,837	316,132
Total.....	36	480,050	445,799	34	538,924	452,153

IMPORTS AND EXPORTS

TABLE 26A.—Anthracite imported, by countries, 1932–33, in net tons

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Country	1932	1933	Country	1932	1933
Belgium.....	23,050	-----	Soviet Russia in Europe.....	231,961	229,151
China.....	6	6	United Kingdom.....	281,727	200,291
Germany.....	62,628	26,800	Total.....	607,097	456,252
French Indo-China.....	7,731	2			
Netherlands.....	2	2			

TABLE 27A.—Anthracite imported, by customs district, 1932-33, in net tons

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Customs district	1932	1933	Customs district	1932	1933
Connecticut.....	7,375	7,392	Rhode Island.....	96,599	79,905
Maine and New Hampshire.....	50,261	13,864	San Francisco.....	840	3
Massachusetts.....	419,468	336,830	Virginia.....	190	-----
New York.....	23,029	13,246	Washington.....	1,026	4
Oregon.....	-----	8	Total.....	607,097	456,252
Puerto Rico.....	8,309	-----			

TABLE 28A.—Anthracite exported, by countries, 1932-33, in net tons

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Country	1932	1933	Country	1932	1933
North America:			South America:		
Bermudas.....	34	815	Guiana: British.....	245	-----
Canada.....	1,301,020	1,027,107	Surinam.....	212	-----
Central America:			Venezuela.....	13	3
Guatemala.....	-----	17	Europe:		
Honduras.....	95	74	France.....	-----	1
Panama.....	-----	44	Germany.....	-----	8
Salvador.....	-----	1	Asia: Philippine Islands.....	-----	7
Mexico.....	213	224	Total.....	1,303,355	1,034,562
Miquelon and St. Pierre Islands.....	271	-----			
Newfoundland and Lab- rador.....	979	6,063			
West Indies:					
British:					
Trinidad and Tobago.....	-----	11			
Other British.....	80	113			
Cuba.....	186	56			
Dominican Repub- lic.....	7	2			
French.....	-----	11			

TABLE 29A.—Anthracite exported, by customs districts and ports, 1932-33, in net tons

[Compiled from records of the Bureau of Foreign and Domestic Commerce]

Customs district	1932	1933	Customs district	1932	1933
North Atlantic:			Rail gateways on Canadian border:		
Massachusetts.....	6	-----	Eastern:		
New York.....	30,673	32,365	Maine and New Hampshire.....	41	95
Philadelphia.....	46,075	51,167	Vermont.....	2,896	1,385
South Atlantic:			St. Lawrence.....	469,892	335,552
Florida.....	8	30	Rochester.....	69,021	48,926
Mobile.....	457	141	Buffalo.....	673,988	541,978
New Orleans.....	329	-----	Michigan.....	374	431
Mexican border:			Western:		
Arizona.....	58	93	Duluth, Superior, and International Falls.....	3,145	4,767
El Paso.....	98	58	Dakota.....	1,107	675
San Antonio.....	-----	2	Miscellaneous: Alaska.....	-----	6
Pacific coast:			Total.....	1,303,355	1,034,562
Washington.....	-----	50			
San Francisco.....	-----	8			
Los Angeles.....	8	1			
San Diego.....	8	20			
Lake Erie ports: Ohio ¹	5,179	16,812			

¹ Chiefly Buffalo and Erie.

² Rail, car ferry, and Lake Ontario.

NATURAL GASOLINE

(DETAILED STATISTICS)

By G. R. HOPKINS AND E. M. SEELEY

SUMMARY OUTLINE

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SUMMARY

Salient statistics for natural gasoline in the United States, 1920, 1926, 1931-33

	1920	1926	1931	1932	1933
Number of plants operating	1, 154	1, 102	937	830	779
Production:					
By States:					
California..... millions of gallons	48	389	680	552	496
Texas..... do.....	33	243	427	371	367
Oklahoma..... do.....	179	476	455	379	360
West Virginia..... do.....	59	64	53	44	46
Louisiana..... do.....	11	44	58	46	37
Other..... do.....	55	147	159	132	120
	385	1, 363	1, 832	1, 524	1, 420
By types of process:					
Compression process..... do.....	281	243	212	182	161
Absorption and combination processes..... do.....	104	1, 100	1, 609	1, 333	1, 251
Charcoal..... do.....		20	11	9	8
	385	1, 363	1, 832	1, 524	1, 420
Stocks at natural-gasoline plants at end of year.. do....	(1)	19	27	19	28
Value:					
Total (at plants)..... millions of dollars.....	72	136	64	49	54
Average per gallon (at plant)..... cents.....	18.7	10.0	3.5	3.2	3.8
Average spot price, Oklahoma natural gasoline. do....	21.3	9.5	3.2	2.3	2.9
Natural gas treated..... millions of cubic feet.....	496, 431	1, 206, 300	1, 790, 119	1, 499, 756	1, 551, 464
Average yield per thousand cubic feet..... gallons.....	0.78	1.13	1.02	1.02	0.92

¹ Figures not available.

² Grade A.

³ Grade 26-70.

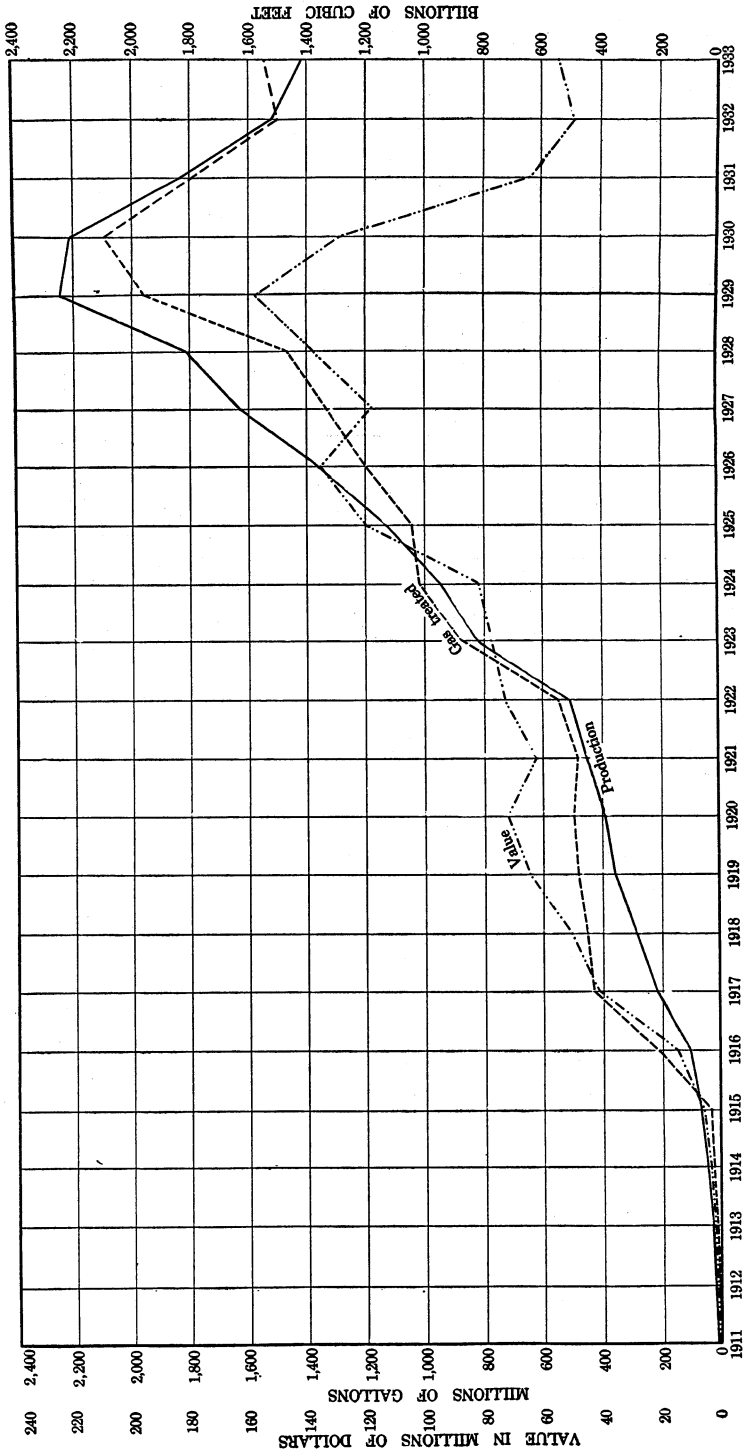


FIGURE 1.—Quantity and value of natural gasoline produced and volume of natural gas treated at plants, 1911-33.

PRODUCTION

Natural gasoline produced in the United States, 1920, 1926, 1931-33, by States, in thousands of gallons

Year	Alaska	Arkansas	California	Colorado	Illinois	Indiana	Kansas	Kentucky	Louisiana	Michigan	Montana	New Mexico
1920.....			48,208		6,055		4,331	4,497	10,610			
1926.....	33	30,385	389,366	276	9,987		25,369	7,689	43,557			1,488
1931.....	32	26,282	680,339	659	5,024	1	32,690	5,464	58,034			17,775
1932.....	25	18,653	551,897	472	4,558	1	24,792	4,877	46,199			17,507
1933.....	25	15,215	496,293	408	3,673		24,869	4,514	36,973	188	1,295	19,149

Year	New York	Ohio	Oklahoma	Pennsylvania	Texas	West Virginia	Wyoming	Total			
								Thousands of gallons	Value at plant		
									Thousands of dollars	Average per gallon (cents)	
1920.....		411	10,016	178,857	21,151	32,956	58,941	8,711	384,744	71,788	18.7
1926.....		539	10,817	475,716	20,343	243,093	63,807	40,625	1,363,090	136,412	10.0
1931.....		132	5,199	454,886	14,339	426,695	52,844	51,523	1,831,918	63,732	3.5
1932.....		117	5,163	378,584	11,685	371,106	43,773	44,391	1,523,800	49,244	3.2
1933.....		96	4,662	360,488	11,686	366,515	39,848	34,103	1,420,000	54,368	3.8

Natural gasoline produced and natural gas treated in the United States in 1933, by States

State	Number of operators ¹	Number of plants operating	Natural gasoline produced			Natural gas treated	
			Thousands of gallons	Value at plants		Millions of cubic feet	Average yield per M cubic feet (gallons)
				Thousands of dollars	Average per gallon (cents)		
Alaska.....	1	1	25	4	16.0	20	1.25
Arkansas.....	9	11	15,215	602	4.0	4,949	3.07
California.....	42	97	496,293	22,820	4.6	326,016	1.52
Colorado.....	1	2	408	14	3.4	547	.75
Illinois.....	21	77	3,673	194	5.3	1,701	2.16
Kansas.....	12	18	24,869	841	3.4	52,939	.47
Kentucky.....	5	6	4,514	224	5.0	22,244	.20
Louisiana.....	15	28	36,973	1,149	3.1	80,891	.46
Michigan.....	1	1	188	6	3.2	444	.42
Montana.....	1	1	1,295	100	7.7	4,358	.30
New Mexico.....	2	2	19,149	654	3.4	10,399	1.84
New York.....	2	2	96	5	5.2	406	.24
Ohio.....	12	22	4,662	258	5.5	21,901	.21
Oklahoma.....	75	185	360,488	12,177	3.4	351,989	1.02
Pennsylvania.....	63	108	11,686	568	4.9	31,810	.37
Texas.....	59	116	366,515	11,562	3.2	532,148	.69
West Virginia.....	28	92	39,848	1,803	4.5	90,072	.44
Wyoming.....	7	10	34,103	1,387	4.1	18,630	1.83
Total, 1933.....	291	779	1,420,000	54,368	3.8	1,551,464	.92
Total, 1932.....	302	830	1,523,800	49,244	3.2	1,499,756	1.02

¹ A producer operating in more than 1 State is counted only once in arriving at total for all States.

Summary of monthly natural-gasoline statistics in the United States in 1933, in millions of gallons

	1933												1932 (total)	
	Janu- ary	Febru- ary	March	April	May	June	July	August	Sep- tember	Octo- ber	No- vember	De- cember		Total
Production by fields:														
Appalachian.....	6.1	5.7	6.0	5.0	3.9	3.0	3.3	3.3	3.9	5.1	5.4	5.6	56.3	60.7
Kentucky, Illinois, Indiana, and Michigan ¹.....	.8	.8	.8	.7	.6	.5	.6	.6	.6	.8	.8	.8	8.4	9.4
Oklahoma:														
Oklahoma City.....	6.7	6.8	7.5	5.5	6.8	8.2	8.7	9.0	8.6	9.4	9.4	9.9	96.5	78.4
Osage County.....	3.4	3.0	3.5	3.5	3.6	3.3	3.4	3.4	3.5	3.8	3.4	3.3	41.1	49.0
Seminole.....	9.3	8.0	9.3	8.9	8.9	8.9	10.0	10.1	9.9	9.7	8.9	8.9	110.8	130.0
Rest of State.....	9.4	7.7	9.6	9.3	9.6	9.2	9.6	9.4	9.4	10.0	9.4	9.5	112.1	121.2
Total, Oklahoma.....	28.8	25.5	29.9	27.2	28.9	29.6	31.7	31.9	31.4	32.9	31.1	31.6	360.5	378.6
Kansas.....	2.4	2.2	2.1	2.2	1.9	1.8	1.7	1.8	1.9	2.2	2.4	2.3	24.9	24.8
Texas:														
East Texas.....	1.2	1.2	1.7	.9	1.9	1.8	1.9	1.9	1.7	2.0	1.9	2.1	20.2	10.4
North Texas.....	2.3	2.0	2.4	2.0	2.2	2.0	1.9	1.9	2.1	2.3	2.2	2.4	25.7	30.2
Panhandle.....	14.0	12.4	14.8	14.6	15.1	14.6	14.8	14.8	14.6	17.0	18.2	18.9	183.8	182.6
West central.....	6.4	5.4	6.4	6.3	6.7	6.4	6.9	6.9	6.5	6.5	6.5	6.9	77.8	85.9
Rest of State.....	5.2	4.8	5.2	5.3	5.1	5.0	4.9	4.9	4.6	4.9	4.5	4.6	59.0	62.0
Total, Texas.....	29.1	25.8	30.5	29.1	31.0	29.8	30.4	30.4	29.5	32.7	33.3	34.9	366.5	371.1
Louisiana.....	3.4	3.4	3.1	3.2	3.1	2.9	3.0	2.9	2.8	3.0	3.0	3.2	37.0	46.2
Arkansas.....	1.4	1.1	1.3	1.4	1.4	1.3	1.2	1.3	1.2	1.2	1.2	1.2	15.2	18.7
Rocky Mountain.....	4.8	4.2	4.7	4.3	4.5	4.4	4.4	4.4	4.6	4.8	5.2	4.6	54.9	62.4
California:														
Huntington Beach.....	1.4	1.3	1.3	1.5	1.7	1.8	2.2	2.8	2.5	2.8	3.1	3.0	25.4	16.4
Kettleman Hills.....	13.6	10.8	10.9	10.1	10.5	9.3	8.7	9.9	10.9	12.6	12.6	13.6	133.5	135.2
Long Beach.....	7.9	7.2	6.9	7.9	8.2	7.6	8.1	8.2	7.2	6.2	6.6	6.4	88.4	111.7
Santa Fe Springs.....	7.1	6.4	6.6	6.9	7.5	7.2	7.4	7.1	6.8	6.3	5.5	5.6	80.4	99.9
Ventura Avenue.....	4.2	3.8	4.1	3.6	3.5	3.3	3.3	3.5	3.7	3.9	4.0	4.1	45.0	43.7
Rest of State.....	10.5	9.3	8.9	9.9	10.6	10.3	11.0	11.2	10.9	11.4	9.6	10.0	123.6	145.0
Total, California.....	44.7	38.8	38.7	39.9	42.0	39.5	40.7	42.7	42.0	43.2	41.4	42.7	496.3	551.9
Total, United States.....														
Daily average.....	121.5	107.5	117.1	113.0	117.3	112.8	117.0	119.3	117.9	125.9	123.8	126.9	1,420.0	1,523.8
Stocks at plants at end of period.....	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.9	4.1	4.1	4.1	3.9	4.2
Indicated deliveries.....	22.6	27.3	31.6	34.2	38.9	36.7	39.9	35.6	27.8	24.0	25.9	27.6	27.6	18.8
Dotted deliveries.....	117.7	102.8	112.8	110.4	112.6	115.0	113.8	123.6	125.7	129.7	121.9	125.2	1,411.2	1,532.1

¹ None produced in Indiana in 1933; none in Michigan in 1932.

NATURAL GASOLINE

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Natural gasoline produced in the United States in 1933, by States and by counties

State	County	Thousands of gallons	Thousands of dollars
Alaska	Third division	25	4
Arkansas	Ouachita	2,395	80
	Union	12,820	522
		15,215	602
California	Fresno	23,601	1,098
	Kern	35,406	1,481
	Kings	109,885	6,986
	Los Angeles	224,727	9,544
	Orange	41,228	1,631
	Santa Barbara	14,167	531
	Ventura	47,279	1,949
		496,293	22,820
Colorado	Larimer	408	14
Illinois	Clark and Cumberland	422	23
	Crawford	1,730	91
	Lawrence	1,521	80
		3,673	194
Kansas	Anderson, Butler, Chautauq, and Sumner	1,850	65
	Barber, McPherson, Sedgwick, and Stevens	13,135	455
	Cowley	4,312	147
	Greenwood	5,572	174
		24,869	841
Kentucky	Boyd, Clark, and Martin	3,673	184
	Estill and Lee	841	40
		4,514	224
Louisiana	Caddo	7,489	255
	Claiborne	9,149	300
	DeSoto, Morehouse, Red River, and Webster	3,391	108
	Ouachita	2,474	63
	Richland	14,470	423
		36,973	1,149
Michigan	Midland	188	6
Montana	Glacier	1,295	100
New Mexico	Lea	19,149	654
New York	Allegany	96	5
Ohio	Fairfield, Licking, Richland, and Wayne	3,675	214
	Jefferson and Noble	237	14
	Monroe	129	5
	Washington	621	25
			4,662	258
Oklahoma	Beckham, Custer, and Harmon	5,678	147
	Carter	8,124	241
	Creek	55,181	1,896
	Garfield	5,222	177
	Hughes	5,958	215
	Kay	3,756	117
	Lincoln and Logan	6,015	196
	Muskogee	419	13
	Noble	6,061	184
	Nowata	428	19
	Okfuskee	2,376	78
	Oklahoma	96,465	3,287
	Okmulgee	4,331	156
	Osage	41,114	1,425
	Pawnee	3,415	112
	Payne	3,288	98
	Pottawatomie	20,810	687
	Seminole	89,953	3,063
	Tulsa	858	29
	Wagoner and Washington	1,036	37
		360,488	12,177

Natural gasoline produced in the United States in 1933, by States and by counties—
Continued

State	County	Thousands of gallons	Thousands of dollars
Pennsylvania.....	Allegheny.....	892	44
	Armstrong, Elk, and Lawrence.....	25	2
	Beaver and Crawford.....	204	9
	Butler.....	325	15
	Clarion.....	398	17
	Forest.....	366	19
	Greene.....	3,685	152
	McKean.....	1,393	74
	Venango.....	2,232	127
	Warren.....	1,264	58
	Washington.....	902	51
			11,686	568
Texas.....	Anderson, Panola, and Van Zandt.....	16,357	435
	Archer, Clay, and Jack.....	2,375	78
	Austin, Montgomery, and Refugio.....	14,810	441
	Brown and Comanche.....	2,977	79
	Carson.....	25,210	841
	Coleman and Shackelford.....	2,984	91
	Crane, Ector, Pecos, and Reagan.....	27,806	749
	Eastland.....	33,874	1,056
	Erath and Palo Pinto.....	3,539	85
	Gray.....	71,197	2,232
	Gregg.....	4,977	151
	Hutchinson.....	71,260	2,537
	Moore and Potter.....	10,664	359
	Rusk.....	15,236	496
	Stephens.....	34,404	1,040
	Wheeler.....	5,463	167
	Wichita.....	15,193	490
Wilbarger and Young.....	7,689	235	
		366,515	11,562
West Virginia.....	Brooke and Marshall.....	348	18
	Clay, Doddridge, and Gilmer.....	535	21
	Harrison.....	1,523	50
	Jackson and Lincoln.....	3,223	161
	Kanawha.....	13,293	642
	Lewis.....	3,784	150
	Marion.....	672	33
	Monongalia.....	490	21
	Pleasants.....	1,029	40
	Ritchie.....	1,153	41
	Roane.....	1,468	67
	Tyler.....	1,454	59
	Wetzel.....	10,866	500
		39,843	1,803
Wyoming.....	Carbon and Sweetwater.....	3,298	108
	Fremont, Hot Springs, Niobrara, and Weston.....	499	28
	Natrona.....	30,306	1,251
		34,103	1,387
United States.....		1,420,000	54,368

Natural gasoline produced in the United States in 1933, by States and by methods of manufacture

State	Number of plants operating			Production (thousands of gallons)		
	Compression	Absorption ¹	Charcoal	Compression	Absorption ¹	Charcoal
Alaska.....		1			25	
Arkansas.....	2	7	2	1,742	12,558	915
California.....	2	95		1,812	494,481	
Colorado.....	1	1		194	214	
Illinois.....	77			3,673		
Kansas.....	6	12		2,827	22,042	
Kentucky.....	2	3	1	141	3,775	598
Louisiana.....	6	22		3,537	33,436	
Michigan.....		1			188	
Montana.....		1			1,295	
New Mexico.....		2			19,149	
New York.....	1	1		31	65	
Ohio.....	16	5	1	176	3,780	706
Oklahoma.....	57	128		65,032	295,456	
Pennsylvania.....	90	17	1	3,464	8,101	121
Texas.....	35	81		40,381	326,134	
West Virginia.....	61	24	7	10,938	23,050	5,860
Wyoming.....	4	6		26,938	7,165	
Total, 1933.....	360	407	12	160,886	1,250,914	8,200
Total, 1932.....	367	451	12	181,465	1,333,351	8,984

¹ Includes combination of absorption process with compression and charcoal processes.

CONSUMPTION

Distribution of natural gasoline in 1933, by months, in thousands of gallons

	January	February	March	April	May	June
Production.....	121,500	107,500	117,100	113,000	117,300	112,800
Decrease in stocks.....	205					4,387
	121,705	107,500	117,100	113,000	117,300	117,187
Blended at refineries.....	90,090	69,090	73,500	72,870	69,300	81,984
Run through pipe lines in California.....	4,914	4,830	4,032	4,536	3,822	3,654
Blended at plants ¹	221	329	417	359	431	508
Exports and sales to jobbers.....	15,666	14,826	22,554	21,924	20,118	18,144
Increase in stocks.....		8,372	6,309	1,817	11,689	
Losses.....	10,814	10,053	10,288	11,494	11,940	12,897
	121,705	107,500	117,100	113,000	117,300	117,187

	July	August	September	October	November	December	The year
Production.....	117,000	119,300	117,900	125,900	123,800	126,900	1,420,000
Decrease in stocks.....	1,768		9,959	10,773	6,547		
	118,768	119,300	127,859	136,673	130,347	126,900	1,420,000
Blended at refineries.....	73,710	82,110	96,768	105,546	108,318	87,192	1,010,478
Run through pipe lines in California.....	4,410	4,368	4,410	4,704	5,082	5,292	54,054
Blended at plants ¹	382	521	517	596	633	591	5,505
Exports and sales to jobbers.....	23,226	15,666	11,592	14,700	8,274	11,928	198,618
Increase in stocks.....		2,386				7,862	4,796
Losses.....	17,040	14,249	14,572	11,127	8,040	14,035	146,549
	118,768	119,300	127,859	136,673	130,347	126,900	1,420,000

¹ East of California.

Natural gasoline blended at refineries in the United States in 1933, by districts and months, in thousands of gallons

District	January	February	March	April	May	June
East coast.....	5,040	1,134	1,176	1,428	1,092	1,848
Appalachian.....	1,050	798	588	588	714	630
Indiana, Illinois, Kentucky, etc.....	6,804	5,838	4,662	4,872	3,864	4,914
Oklahoma, Kansas, and Missouri.....	15,624	14,658	16,548	14,154	14,826	18,060
Texas:						
Gulf coast.....	11,466	5,880	8,484	8,526	8,568	9,282
Rest of State.....	11,550	9,450	10,206	12,348	10,374	12,138
Total, Texas.....	23,016	15,330	18,690	20,874	18,942	21,420
Louisiana-Arkansas:						
Louisiana Gulf coast.....	630	378	1,806	756	1,050	1,008
Northern Louisiana and Arkansas.....	1,680	1,386	1,344	1,386	1,554	1,344
Total, Louisiana and Arkansas.....	2,310	1,764	3,150	2,142	2,604	2,352
Rocky Mountain.....	3,528	2,814	3,024	2,436	3,108	2,898
California ¹	37,632	31,584	29,694	30,912	27,972	33,516
Total, United States:						
1933.....	95,004	73,920	77,532	77,406	73,122	85,638
1932.....	100,674	79,254	80,640	83,916	89,208	87,906

District	July	August	September	October	November	December	The year
East coast.....	2,142	672	4,494	7,182	12,894	7,476	46,578
Appalachian.....	672	672	1,134	882	1,092	1,134	9,954
Indiana, Illinois, Kentucky, etc.....	4,746	4,788	8,358	9,324	9,660	7,140	74,970
Oklahoma, Kansas, and Missouri.....	16,674	18,018	21,084	22,302	20,706	16,002	208,656
Texas:							
Gulf coast.....	9,450	8,484	10,458	11,298	6,636	6,972	105,504
Rest of State.....	10,962	12,180	11,886	14,070	13,398	14,406	142,968
Total, Texas.....	20,412	20,664	22,344	25,368	20,034	21,378	248,472
Louisiana-Arkansas:							
Louisiana Gulf coast.....	1,008	1,260	966	672	1,134	1,260	11,928
Northern Louisiana and Arkansas.....	1,386	1,638	1,176	1,554	1,428	1,218	17,094
Total, Louisiana and Arkansas.....	2,394	2,898	2,142	2,226	2,562	2,478	29,022
Rocky Mountain.....	2,436	2,688	2,856	2,982	2,730	2,898	34,398
California ¹	28,644	36,078	38,766	39,984	43,722	33,978	412,482
Total, United States:							
1933.....	78,120	86,478	101,178	110,250	113,400	92,484	1,064,532
1932.....	87,024	89,880	103,404	108,948	100,338	94,752	1,105,944

¹ Includes natural gasoline run through pipe lines.

Natural gasoline and naphtha used in motor blends at natural-gasoline plants in the United States (east of California) in 1933, by districts and months, in thousands of gallons

	January	February	March	April	May	June
Natural gasoline:						
Appalachian.....	27	26	26	28	50	51
Oklahoma-Kansas.....	59	36	41	37	61	77
Texas.....	88	90	96	75	149	194
Louisiana-Arkansas.....	47	177	254	219	171	186
	221	329	417	359	431	508
Naphtha:						
Appalachian.....	44	36	36	37	34	37
Oklahoma-Kansas.....	14	24	20	16	21	98
Texas.....	98	82	128	93	187	178
Louisiana-Arkansas.....	10	6	17	11		1
	166	148	201	157	242	314

	July	August	September	October	November	December	The year
Natural gasoline:							
Appalachian.....	53	53	157	163	139	153	926
Oklahoma-Kansas.....	70	70	71	43	70	60	695
Texas.....	91	254	139	291	332	272	2,071
Louisiana-Arkansas.....	168	144	150	99	92	106	1,813
	382	521	517	596	633	591	5,505
Naphtha:							
Appalachian.....	35	35	34	36	33	32	429
Oklahoma-Kansas.....	82	97	116	107	111	110	816
Texas.....	272	569	792	617	555	810	4,381
Louisiana-Arkansas.....	13	64	285	511	539	548	2,005
	402	765	1,227	1,271	1,238	1,500	7,631

STOCKS

Stocks of natural gasoline held at plants and at refineries in the United States at end of each month of 1933, by refining districts, in thousands of gallons

District	January	February	March	April	May	June
East coast:						
At refineries.....	5,334	4,242	3,654	2,142	2,016	1,344
Appalachian:						
At plants.....	1,975	4,065	6,059	7,719	7,723	6,046
At refineries.....	210	126	84	84	42	42
Indiana, Illinois, Kentucky, etc.:						
At plants.....	205	230	599	803	775	639
At refineries.....	1,638	1,386	1,512	1,428	1,638	1,260
Oklahoma, Kansas, and Missouri:						
At plants.....	7,877	8,050	10,437	11,616	16,098	17,011
At refineries.....	1,092	1,596	1,134	1,260	840	672
Texas:						
At plants.....	7,029	9,954	9,781	8,774	9,389	8,314
At refineries.....	9,030	9,534	7,896	7,686	7,644	5,544
Louisiana-Arkansas:						
At plants.....	1,035	934	907	1,226	1,271	1,349
At refineries.....	210	210	336	336	126	420
Rocky Mountain:						
At plants.....	1,011	1,075	1,096	1,132	1,091	1,109
At refineries.....	252	168	42	168	84	84
California:						
At plants.....	3,493	3,035	2,715	2,897	2,537	2,213
At refineries.....	93,660	97,818	102,480	103,278	110,964	111,804
Total, 1933:						
At plants.....	22,625	27,343	31,594	34,167	38,884	36,681
At refineries.....	111,426	115,080	117,138	116,382	123,354	121,170
Total, 1932:						
At plants.....	33,974	36,763	39,778	44,584	44,279	34,106
At refineries.....	90,384	110,586	129,486	137,718	134,862	129,360

Stocks of natural gasoline held at plants and at refineries in the United States at end of each month of 1933, by refining districts, in thousands of gallons—Continued

District	July	August	September	October	November	December
East coast:						
At refineries.....	840	1,470	2,814	3,066	3,654	6,426
Appalachian:						
At plants.....	4,769	3,957	1,723	2,045	2,840	3,288
At refineries.....	42		42	42	42	42
Indiana, Illinois, Kentucky, etc.:						
At plants.....	561	427	227	203	180	305
At refineries.....	1,008	420	630	1,134	1,596	2,184
Oklahoma, Kansas, and Missouri:						
At plants.....	19,980	19,062	14,312	11,967	12,063	12,191
At refineries.....	840	714	1,344	1,260	1,638	1,512
Texas:						
At plants.....	9,701	7,393	6,945	5,420	6,512	7,801
At refineries.....	5,586	6,426	3,696	4,032	4,452	10,542
Louisiana-Arkansas:						
At plants.....	1,178	854	936	836	922	796
At refineries.....	420	210	84	84	126	294
Rocky Mountain:						
At plants.....	1,101	1,360	1,022	842	851	910
At refineries.....	42	126	168	168	294	210
California:						
At plants.....	2,621	2,524	2,595	2,730	2,486	2,293
At refineries.....	107,394	113,526	111,972	103,908	93,534	90,258
Total, 1933:						
At plants.....	39,911	35,577	27,760	24,043	25,854	27,584
At refineries.....	116,172	122,892	120,750	113,694	105,336	111,468
Total, 1932:						
At plants.....	31,809	25,888	24,628	24,200	20,078	18,840
At refineries.....	131,586	129,108	122,472	121,002	107,982	115,416

Stocks of motor blends held at natural-gasoline plants in the United States at end of each month of 1933, by districts, in thousands of gallons

District	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Appalachian.....	91	102	95	97	59	51	41	33	46	52	80	65
Oklahoma-Kansas.....	68	66	58	88	78	85	72	56	71	84	65	49
Texas.....	100	37	44	128	102	35	123	95	221	114	79	54
Louisiana-Arkansas.....	13	50	94	72	47	33	63	70	43	85	104	87
Total, 1933.....	272	255	291	385	286	204	299	254	381	335	328	255
Total, 1932.....	242	222	217	217	217	202	204	194	218	261	210	249

LIQUEFIED PETROLEUM GASES

Marketed production of liquefied petroleum gases in the United States, 1922-33

Year	Gallons	Year	Gallons	Year	Gallons	Year	Gallons
1922.....	222,641	1925.....	403,674	1928.....	4,522,899	1931.....	28,769,576
1923.....	276,863	1926.....	465,085	1929.....	9,930,964	1932.....	34,114,767
1924.....	376,488	1927.....	1,091,005	1930.....	18,017,347	1933.....	33,931,008

¹ Revised figures.

Marketed production of liquefied petroleum gases in the United States in 1933, by classes, uses, and methods of shipment, in gallons

	1933					1932 (total)	
	Propane	Butane	Pentane and propane-butane mixtures	Total		Gallons	Percent
				Gallons	Per cent		
Use:							
Domestic.....	14,334,412	705,894	1,585,282	16,625,588	42.7	16,244,103	147.6
Gas manufacturing.....	199,534	6,170,570	1,948,221	8,318,325	21.4	9,703,470	128.5
Industrial and miscellaneous.....	1,300,784	12,179,766	506,545	13,987,095	35.9	8,167,194	123.9
	15,834,730	19,056,230	4,040,048	38,931,008	100.0	34,114,767	100.0
Shipped in—							
Cylinders or drums.....	13,299,883	124,680	991,000	14,415,563	37.0	14,396,969	142.2
Tank cars, tank wagons, or pipe lines.....	2,534,847	18,931,550	3,049,048	24,515,445	63.0	19,717,798	157.8
	15,834,730	19,056,230	4,040,048	38,931,008	100.0	34,114,767	100.0

¹ Revised figures.

PRICES

Spot price of Oklahoma natural gasoline, grade 26-70, on specified dates in 1933, with monthly and yearly averages, in cents per gallon

[National Petroleum News]

Date	Cents	Date	Cents	Date	Cents
Jan. 1.....	2.50-2.63	May 1.....	1.38	Sept. 5.....	3.50
Jan. 3.....	2.25-2.38	May 8.....	1.25-1.38	Sept. 11.....	4.50
Jan. 9.....	2.13-2.25	May 15.....	1.25	Sept. 18.....	5.00
Jan. 16.....	2.13	May 22.....	1.13	Sept. 25.....	5.00
Jan. 23.....	2.13	May 29.....	1.00	Average.....	4.50
Jan. 30.....	2.00	Average.....	1.21	Oct. 2.....	5.00
Average.....	2.15	June 5.....	1.00	Oct. 9.....	5.00-5.25
Feb. 6.....	2.00	June 12.....	1.25-1.38	Oct. 16.....	5.25
Feb. 13.....	2.00	June 19.....	2.50-2.75	Oct. 23.....	5.25
Feb. 20.....	2.13	June 26.....	3.00	Oct. 30.....	5.25-5.38
Feb. 27.....	2.00-2.13	Average.....	1.98	Average.....	5.19
Average.....	2.05	July 3.....	3.00	Nov. 6.....	5.25
Mar. 6.....	2.00	July 10.....	3.00	Nov. 13.....	5.13
Mar. 13.....	1.75-1.88	July 17.....	3.00	Nov. 20.....	5.00
Mar. 20.....	1.63	July 24.....	3.00	Nov. 27.....	4.75-4.88
Mar. 27.....	1.38	July 31.....	3.00	Average.....	5.05
Average.....	1.70	Average.....	3.00	Dec. 4.....	4.25-4.50
Apr. 3.....	1.38	Aug. 7.....	3.00	Dec. 11.....	4.00-4.13
Apr. 10.....	1.25-1.38	Aug. 14.....	3.00	Dec. 18.....	3.75-3.88
Apr. 17.....	1.13-1.25	Aug. 21.....	3.00	Dec. 26.....	3.50
Apr. 24.....	1.25	Aug. 28.....	3.25	Average.....	3.94
Average.....	1.28	Average.....	3.06	Average, 1933.....	2.93
				1932.....	2.25

SUMMARY OF STATISTICS FOR NATURAL GAS

Summary of statistics for natural gas in the United States, 1920, 1926, 1931-1933

	1920	1926	1931	1932	1933
Produced and delivered to consumers:					
Arkansas..... millions of cubic feet..	9, 027	43, 566	13, 300	10, 235	8, 288
California..... do.....	66, 041	204, 915	305, 930	263, 484	259, 799
Kansas..... do.....	21, 158	38, 095	38, 742	40, 690	41, 596
Kentucky..... do.....	3, 345	10, 410	27, 870	29, 005	31, 380
Louisiana..... do.....	58, 274	157, 423	224, 155	201, 561	197, 826
Ohio..... do.....	58, 938	47, 363	56, 326	51, 466	47, 929
Oklahoma..... do.....	154, 467	286, 421	263, 685	255, 487	245, 759
Pennsylvania..... do.....	125, 787	107, 089	74, 797	61, 611	63, 579
Texas..... do.....	37, 063	175, 392	464, 580	456, 832	475, 691
West Virginia..... do.....	239, 719	180, 223	124, 797	100, 540	100, 653
Wyoming..... do.....	10, 312	46, 567	39, 770	28, 938	25, 830
Other..... do.....	14, 079	15, 555	52, 484	56, 141	57, 144
	798, 210	1, 313, 019	1, 686, 436	1, 555, 990	1, 555, 474
Consumed:					
Domestic..... do.....	286, 001	289, 175	294, 406	298, 520	283, 197
Commercial..... do.....			86, 491	87, 367	85, 577
Industrial:					
Field..... do.....	202, 108	478, 188	571, 365	529, 378	494, 459
Carbon-black plants..... do.....	40, 599	130, 321	195, 396	168, 237	186, 781
Petroleum refineries..... do.....	(¹)	121, 449	75, 548	67, 467	66, 333
Electric public-utility power plants ² do.....	24, 702	53, 207	138, 343	107, 239	102, 601
Portland cement plants ³ do.....	(¹)	(¹)	31, 381	21, 440	22, 001
Other industrial..... do.....	244, 800	240, 513	291, 319	274, 687	312, 450
	798, 210	1, 312, 853	1, 684, 249	1, 554, 335	1, 553, 399
Domestic..... percent.....	36	22	18	19	18
Commercial..... do.....			5	6	6
Industrial..... do.....			64	78	77	75
Treated for natural gasoline:					
Total..... millions of cubic feet.....	496, 431	1, 206, 300	1, 790, 119	1, 499, 756	1, 551, 464
Percent of total consumption.....	62	92	106	96	100
Consumers:					
Domestic..... thousands.....	2, 615	3, 731	6, 443	6, 506	6, 629
Commercial..... do.....			518	531	537
Industrial..... do.....			21	(⁴)	28	30
Value (at wells) of gas produced:					
Total..... thousands of dollars.....	(⁵)	124, 693	117, 505	98, 985	97, 096
Average per M cubic feet..... cents.....	(⁵)	9.5	7.0	6.4	6.2
Value (at points of consumption) of gas consumed:					
Total..... thousands of dollars.....	196, 194	300, 055	392, 156	384, 123	368, 119
Domestic..... do.....	109, 302	168, 870	208, 262	223, 377	209, 699
Commercial..... do.....			41, 347	44, 000	42, 582
Industrial..... do.....			86, 892	131, 185	142, 547	116, 746
Average per M cubic feet:					
Domestic..... cents.....	(⁵)	(⁵)	70.7	74.8	74.0
Commercial..... do.....	(⁵)	(⁵)	47.8	50.4	49.8
Industrial..... do.....	17.0	12.8	10.9	10.0	9.8
Domestic and commercial..... do.....	38.2	58.4	65.5	69.3	68.4
Domestic, commercial, and industrial..... do.....	24.6	22.9	23.3	24.7	23.7

¹ Included under "Other industrial"; separate figures not available.² U. S. Geological Survey.³ Bagley, B. W., Mineral Resources and Statistical Appendix to Minerals Yearbook, chapters on Cement.⁴ Exceeds 100 percent, as part of the natural gas treated for natural gasoline is blown to the air and not included in total consumption.⁵ Figures not available.⁶ Exclusive of oil- and gas-field operators.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN MONTANA

(DETAILED STATISTICS—MINE REPORT)

By T. H. MILLER ¹

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Cascade County	395	Sanders County	405
Deer Lodge County	395	Silver Bow County	405
Fergus County	396	Butte or Summit Valley district	406
Gallatin County	396	Stillwater County	407
Granite County	396	Sweet Grass County	407
Jefferson County	397	Toole County	407
Judith Basin County	398		

The output of gold, silver, copper, lead, and zinc from mines in Montana in 1933, in terms of recovered metals, was 57,822.20 fine ounces of gold, 2,660,700 fine ounces of silver, 65,476,375 pounds of copper, 13,163,432 pounds of lead, and 41,448,905 pounds of zinc. There were 426 lode mines and 276 placers producing in 1933 compared with 390 lode mines and 232 placers in 1932.

The total value of the gold, silver, copper, lead, and zinc produced from Montana mines from 1862 to 1933, inclusive, is estimated at \$2,809,576,447.² Since 1904, when detailed records were begun, the output has been as follows: Ore, old tailings, etc., 137,876,521 short tons; gold, 3,854,163.70 fine ounces; silver, 340,340,224 fine ounces; copper, 7,135,193,328 pounds; lead, 574,814,248 pounds; and zinc, 2,736,679,301 pounds. The total value of this output has been \$1,710,556,748,² of which \$79,672,636² represents the value of gold.

Premium on newly mined gold.—There were four epochs of gold prices for newly mined gold in the United States in 1933: (1) The period of the legal coinage value of \$20.671835, from January 1 to August 9 to all producers; (2) that of (a) \$20.671835 to the majority of producers and (b) the fluctuating world price as secured by export by some producers, to August 29; (3) the period of fluctuating world price as secured through the agency of the Federal Reserve Banks, to October 25 (period of actual Bank sales, from September 8 to November 1); and (4) the period of the Reconstruction Finance Corporation arbitrarily fixed, gradually rising price (generally above the world price), from October 25 to December 31, 1933. For further details see chapter of Minerals Yearbook, 1934, on Gold and Silver (pp. 25 to 52), by Chas. W. Henderson.

¹ Assisted by Paul Luff and Jeannette Froiseth.

² Value of gold calculated at \$20.671835 per ounce.

Following is a table on mine production of gold in Montana, 1929-33, in terms of recovered metal; two values are given for 1933—(1) at legal coinage value (\$20.67+ per ounce) and (2) at average weighted price (\$25.56 per ounce).

Mine production of gold in Montana, 1929-33, in terms of recovered metal

Year	Fine ounces	Value ¹	Year	Fine ounces	Value ¹
1929.....	54,758.03	\$1,131,949	1932.....	40,602.01 ¹	\$839,318
1930.....	43,489.17	899,001	1933.....	57,822.20	{ ² 1,195,291
1931.....	40,112.16	829,192			{ ³ 1,477,935

¹ 1929-32: At legal value (\$20.67+ per ounce); 1933: At both legal coinage value (\$20.67+ per ounce) and average weighted price (\$25.56 per ounce).

² At legal coinage value (\$20.67+ per ounce).

³ At average weighted price (\$25.56 per ounce).

Calculation of value of metal production.—The value of metal production hereinafter reported has been calculated at the figures given in the table that follows. Gold is figured at the mint value for fine gold, that is, \$20.671835 an ounce. The silver price is the average New York price for bar silver. The copper, lead, and zinc prices are weighted averages, for each year, of all grades of primary metal sold by producers.

Prices of silver, copper, lead, and zinc, 1929-33

Year	Silver	Copper	Lead	Zinc	Year	Silver	Copper	Lead	Zinc
	<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>		<i>Per fine ounce</i>	<i>Per pound</i>	<i>Per pound</i>	<i>Per pound</i>
1929.....	\$0.533	\$0.176	\$0.063	\$0.066	1932.....	\$0.282	\$0.063	\$0.030	\$0.030
1930.....	.385	.130	.050	.048	1933.....	.350	.064	.037	.042
1931.....	.290	.091	.037	.038					

Mine production of gold, silver, copper, lead, and zinc in Montana, 1929-33, in terms of recovered metals

Year	Mines producing		Ore, old tailings, etc. (short tons)	Gold		Silver	
	Lode	Placer		Fine ounces	Value	Fine ounces	Value
1929.....	212	40	4,723,445	54,758.03	\$1,131,949	12,716,977	\$6,778,149
1930.....	193	73	2,686,669	43,489.17	899,001	7,052,889	2,715,362
1931.....	243	118	2,085,683	40,112.16	829,192	3,829,837	1,110,653
1932.....	390	232	765,014	40,602.01	839,318	1,686,213	475,512
1933.....	426	276	862,486	57,822.20	1,195,291	2,660,700	931,245

Year	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
1929.....	297,725,973	\$52,399,771	39,213,707	\$2,470,464	136,351,734	\$8,999,214	\$71,779,547
1930.....	196,187,523	25,504,378	21,306,044	1,065,302	52,841,108	2,536,373	32,720,416
1931.....	184,555,735	16,794,572	8,860,186	327,827	13,494,986	512,809	19,575,053
1932.....	84,847,349	5,345,383	2,157,766	64,733	4,393,034	131,791	6,856,737
1933.....	65,476,375	4,190,488	13,163,432	487,047	41,448,905	1,740,854	8,544,925

Gold and silver produced at placer mines in Montana, 1929-33

Year	Gold		Silver		Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value		Fine ounces	Value	Fine ounces	Value
1929-----	596.66	\$12,334	71	\$38	1932-----	3,537.42	\$73,125	422	\$119
1930-----	720.74	14,899	86	33	1933-----	8,705.08	179,950	1,223	428
1931-----	1,907.86	39,439	233	68					

Gold.—The quantity of gold produced in Montana in 1933 increased 17,220.19 ounces (42 percent) over 1932. A gain of more than 14,200 ounces in gold was recorded from mines producing siliceous ore, old tailings, etc., and an increase of nearly 5,200 ounces from placers; gains were also recorded from lead-zinc ore and lead ore, but gold from copper ore declined nearly 4,100 ounces. Siliceous ore, etc., yielded 72.43 percent of the total gold; placers, 15.05 percent; copper ore and old tailings, 7.92 percent; and lead ore and old tailings and lead-zinc ore, 4.59 percent.

The sharp increase in price of gold resulted in a substantial increase in the number of lode-gold mines operating in 1933, and nearly all the increases in gold output were made at gold properties, both lode and placer. Substantial increases in gold output were made at the Jardine, August, Boss Tweed & Clipper, Gould, Midas, Gold Coin, Golden Sunlight, Jib (Hope & Katie), Holdfast, Southern Cross, and Ermont mines. These gains were partly offset by losses at the Ohio-Keating, Mammoth (Liberty Montana Mines Co.), Sleeping Princess, and Anaconda properties. There were also more placers operated in 1933, but nearly all of the increase in output from this source came from three new operations: The Story dredge in Madison County, the Winston Bros. dredge operations in Jefferson County near East Helena, and the dredge of the Yuba Associated Engineers, Ltd., in Powell County.

The leading producers of gold in Montana in 1933 were the Jardine, August (Little Ben Mining Co.), Mammoth (Liberty Montana Mines Co.), Boss Tweed & Clipper, Story dredge, Anaconda (copper and zinc mines), Gold Coin, Southern Cross, Gould, Midas, Golden Sunlight, and Sleeping Princess properties.

Silver.—The output of silver in Montana increased nearly 58 percent—from 1,686,213 ounces in 1932 to 2,660,700 ounces in 1933. Most (more than 785,000 ounces) of the increase came from lead-zinc ore as a result of the resumption of mining at lead-zinc properties near Butte and Philipsburg; a substantial gain was also recorded in silver from siliceous material, and smaller gains were noted from copper ore and lead ore. Copper ore and old tailings yielded 60.64 percent of the total silver; lead-zinc ore, 29.71 percent; and siliceous ore, etc., 7.62 percent.

The Anaconda Copper Mining Co. was again by far the largest silver producer in Montana, showing a sharp increase over its output in 1932. A small part of the increase was in silver from copper ore, but most of it was due to the output of lead-zinc ore from the Orphan Girl, a new producer owned by the company, and from the Emma, owned by the Butte Copper & Zinc Co. and operated by the Anaconda

Copper Mining Co. These two properties and the Anaconda Copper mines produced 88 percent of the total silver output of the State. Other silver producers, each having a production of more than 20,000 ounces, were the Trout mine near Philipsburg, the Jib (Hope & Katie) property in Jefferson County, the Lone Pine & Argyle Silver property in Beaverhead County, and the Blue Eyed Maggie property in Powell County.

Copper.—The output of copper in Montana decreased nearly 23 percent—from 84,847,349 pounds in 1932 to 65,476,375 pounds in 1933. The output in 1933 was less than 32 percent of the average annual output (207,398,339 pounds) for the decade 1924–33 and, except for 1921 when a general shut-down at all copper mines was in effect, was by far the smallest in any year since detailed records were begun in 1904. The value of the copper output declined nearly 22 percent in 1933, as the average sales price (6.4 cents a pound) was only slightly greater than that (6.3 cents) in 1932.

As in the past, copper ore, old tailings, etc., yielded nearly all the copper (99.25 percent in 1933). Lead-zinc ore yielded 0.52 percent, and other materials less than one-fourth of 1 percent.

The Anaconda Copper Mining Co. was the only large producer of copper in Montana in 1933, and the decrease in State output was due entirely to further curtailment in output at the company's copper properties at Butte. There was a substantial gain in copper from lead-zinc ore, mostly from the Emma and Orphan Girl mines at Butte, both operated by the Anaconda Copper Mining Co. The Emma ranked second and the Orphan Girl third in production of copper; they were followed by the Mammoth (Liberty Montana Mines Co.) mine at Jefferson Island and the Jib (Hope & Katie) property at Basin.

Concentrates of all classes (mostly copper concentrates from copper ore and old tailings) yielded 83.29 percent of the copper, crude ore to smelters 2.70 percent, and miscellaneous material (mostly copper precipitates) 14.01 percent.

Lead.—The output of lead in Montana in 1933 was 13,163,432 pounds valued at \$487,047, or more than six times the quantity and seven times the value of that in 1932; it was, however, only 48 percent of the average annual output (27,367,194 pounds) for the decade 1924–33. The larger relative increase in value was due to improvement in the average sales price of lead from 3 cents a pound in 1932 to 3.7 cents in 1933. Nearly 82 percent of the increase in lead output came from lead-zinc ore, and most of the remainder from lead ore, old tailings, etc., and from slag treated at the East Helena fuming plant. Lead-zinc ore yielded 77 percent of the total lead; lead ore, old tailings, etc., 15.55 percent; and zinc ore concentrated and slag fumed, 6.57 percent. Concentrates of all classes yielded 78.41 percent of the total lead, crude ore smelted 15.15 percent, and miscellaneous material including old slag fumed 6.44 percent.

The Emma and Orphan Girl properties at Butte, both producers of lead-zinc ore and operated by the Anaconda Copper Mining Co., held first and second place, respectively, in lead output in 1933; they were followed by the Jack Waite mine in Sanders County and the slag dump at East Helena. Other producers of more than 30,000 pounds of lead each, in order of output, were the Jack Rabbit mine

near Melrose, the Trout mine at Philipsburg, the Hazel T. mine near Libby, the Comet mine near Basin, the August No. 2 property in Judith Basin County, and the Jib tailings dump at Basin.

Zinc.—The output of zinc in Montana was 41,448,905 pounds valued at \$1,740,854 in 1933 compared with 4,393,034 pounds valued at \$131,791 in 1932. The improvement in the average sales price of zinc from 3 cents a pound in 1932 to 4.2 cents in 1933 resulted in renewed activity at zinc mines near Butte and Philipsburg and an increased output from other zinc producers, but the total output in 1933 was only about 43 percent of the average annual output (96,584,-541 pounds) for the decade 1924-33. More than 85 percent of the increase in zinc came from lead-zinc ore and the remainder from zinc ore and slag. Lead-zinc ore yielded 76.27 percent of the total zinc and zinc ore and slag 23.73 percent. Nearly 77 percent of the total zinc came from concentrates and the remainder from slag fumed at East Helena.

The Orphan Girl mine at Butte was the largest producer of zinc in Montana in 1933, followed by the Emma mine at Butte and the slag fuming plant at East Helena. These three producers were operated by the Anaconda Copper Mining Co., and their combined output accounted for more than 97 percent of the State total. Other large producers of zinc were the Trout mine at Philipsburg, the Jack Waite mine in Sanders County, and the old Butte & Superior mine at Butte.

MINE PRODUCTION BY COUNTIES

Mine production of gold, silver, copper, lead, and zinc in Montana in 1933, by counties, in terms of recovered metals

County	Gold				Silver (lode and placer)		
	Lode		Placer		Total value	Fine ounces	Value
	Fine ounces	Value	Fine ounces	Value			
Beaverhead.....	3, 164. 69	\$65, 420	64. 87	\$1, 341	\$66, 761	46, 120	\$16, 142
Broadwater.....	2, 310. 73	47, 767	316. 42	6, 541	54, 308	9, 126	3, 194
Carbon.....			6. 63	137	137		
Cascade.....	3. 05	63			63	360	126
Deer Lodge.....	5, 617. 50	116, 124	27. 91	577	116, 701	4, 860	1, 701
Feigus.....	213. 33	4, 410	18. 77	388	4, 798	143	50
Gallatin.....			7. 55	156	156		
Granite.....	1, 255. 96	25, 963	266. 84	5, 516	31, 479	48, 037	16, 813
Jefferson.....	4, 589. 00	94, 863	1, 360. 06	23, 115	122, 978	61, 240	21, 434
Judith Basin.....	3. 00	62			62	2, 280	798
Lewis and Clark.....	5, 075. 02	104, 910	278. 11	5, 749	110, 659	36, 240	12, 684
Lincoln.....	2, 208. 61	45, 656	198. 19	4, 097	49, 753	13, 840	4, 844
Madison.....	10, 188. 50	210, 615	2, 791. 96	57, 715	268, 330	28, 937	10, 128
Meagher.....	37. 54	776	96. 36	1, 992	2, 768	163	57
Mineral.....	25. 54	528	695. 78	14, 383	14, 911	2, 100	735
Missoula.....	370. 60	7, 661	289. 38	5, 982	13, 643	200	70
Park.....	5, 473. 68	113, 151	631. 05	13, 045	126, 196	1, 723	603
Phillips.....	3, 676. 79	76, 006	51. 86	1, 072	77, 078	3, 557	1, 245
Powell.....	632. 26	13, 070	1, 159. 89	23, 977	37, 047	25, 457	8, 910
Ravalli.....	30. 72	635	83. 40	1, 724	2, 359	20	7
Sanders.....	58. 29	1, 205	60. 81	1, 257	2, 462	14, 957	5, 235
Silver Bow.....	4, 170. 36	86, 209	294. 36	6, 085	92, 294	2, 361, 320	826, 462
Stillwater.....			1. 98	41	41		
Sweet Grass.....	11. 95	247			247	20	7
Toole.....			2. 90	60	60		
Total, 1932.....	49, 117. 12	1, 015, 341	8, 705. 08	179, 950	1, 195, 291	2, 660, 700	931, 245
	37, 064. 59	766, 193	3, 537. 42	73, 125	839, 318	1, 686, 213	475, 512

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Mine production of gold, silver, copper, lead, and zinc in Montana in 1933, by counties, in terms of recovered metals—Continued

County	Copper		Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	Pounds	Value	
Beaverhead.....	12,094	\$774	67,730	\$2,506			\$86,183
Broadwater.....	6,297	403	88,865	3,288			61,193
Carbon.....							137
Cascade.....	734	47	8,567	317	8,071	\$339	892
Deer Lodge.....	10,500	672					119,074
Fergus.....	31	2					4,850
Gallatin.....							156
Granite.....	23,656	1,514	117,487	4,347	613,381	25,762	79,915
Jefferson.....	69,922	4,475	153,513	5,680	4,881	205	154,772
Judith Basin.....	344	22	56,162	2,078	8,405	353	3,313
Lewis and Clark.....	9,625	616	920,973	34,076	9,660,095	405,724	563,759
Lincoln.....	1,734	111	108,216	4,004			58,712
Madison.....	78,719	5,038	220,270	8,150			291,646
Meagher.....	94	6	649	24			2,855
Mineral.....	750	48	3,595	133			15,827
Missoula.....	1,281	82					13,795
Park.....	500	32					126,831
Phillips.....							78,323
Powell.....	3,297	211	6,027	223			46,391
Ravalli.....							2,366
Sanders.....	17,781	1,138	3,041,135	112,522	191,143	8,028	129,385
Silver Bow.....	65,239,000	4,175,296	8,370,243	309,699	30,962,929	1,300,443	6,704,194
Stillwater.....							41
Sweet Grass.....	16	1					255
Toole.....							60
Total, 1932.....	65,476,375	4,190,488	13,163,432	487,047	41,448,905	1,740,854	8,544,925
	84,847,349	5,345,383	2,157,766	64,733	4,393,034	131,791	6,856,737

Ore, old tailings, etc., sold or treated and lode mines producing in Montana, 1932-33, by counties

County	Ore, old tailings, etc. (short tons)		Lode mines producing		County	Ore, old tailings, etc. (short tons)		Lode mines producing	
	1932	1933	1932	1933		1932	1933	1932	1933
	Beaverhead.....	16,338	20,041	18		23	Mineral.....	37	120	4	2
Broadwater.....	17,944	2,526	57	64	Missoula.....	138	574	6	5
Cascade.....	59	51	4	3	Park.....	3,048	22,995	3	5
Deer Lodge.....	5,900	11,977	11	14	Phillips.....	172	4,984	1	1
Fergus.....	1,470	700	4	4	Powell.....	614	1,093	27	12
Granite.....	601	7,780	18	25	Ravalli.....	61	44	1	2
Jefferson.....	3,261	57,090	44	59	Sanders.....	8,854	13,730	2	3
Judith Basin.....		100		4	Silver Bow.....	652,967	613,752	19	19
Lewis and Clark.....	26,630	56,055	51	51	Sweet Grass.....		29		1
Lincoln.....	1,152	6,987	6	5	Toole.....	2		1	
Madison.....	25,754	41,780	112	121					
Meagher.....	12	78	1	3					
						765,014	862,486	390	426

Gold and silver produced at placer mines in Montana in 1933, by counties

County	Mines			Gold (fine ounces)	Silver (fine ounces)	Total value
	Drift	Dredge	Hydraulic and sluicing			
Beaverhead.....	1		9	64.87	3	\$1,342
Broadwater.....	3		17	316.42	43	6,556
Carbon.....			2	6.63		137
Deer Lodge.....			4	27.91		577
Fergus.....			4	18.77		388
Gallatin.....			3	7.55		156
Granite.....	2		19	266.84	40	5,530
Jefferson.....		1	19	1,360.06	283	28,214
Lewis and Clark.....	1		32	278.11	40	5,763
Lincoln.....			8	198.19	20	4,104
Madison.....		1	25	2,791.96	417	57,861
Meagher.....	1		13	96.36	3	1,993
Mineral.....	2		18	695.78	17	14,389
Missoula.....			13	289.38		5,982
Park.....	1		12	631.05	100	13,080
Phillips.....			6	51.86	17	1,078
Powell.....	2	1	20	1,159.89	137	24,025
Ravalli.....	1		5	83.40	3	1,725
Sanders.....			4	60.81	17	1,263
Silver Bow.....	2		22	294.36	83	6,114
Stillwater.....			1	1.98		41
Toole.....			1	2.90		60
	16	3	257	8,705.08	1,223	180,378
Total, 1932.....	14		218	3,537.42	422	73,244

MINING INDUSTRY

The outstanding features of the mining industry in Montana in 1933 were the resumption of lead-zinc ore mining at Butte and the general increase in activity at gold properties, both lode and placer, throughout the State. During the latter half of the year the Anaconda Copper Mining Co. resumed shipments of lead-zinc ore from the Emma mine (owned by the Butte Copper & Zinc Co. and inactive, except for production of manganese ore, since 1930) and began large-scale mining of lead-zinc ore at the Orphan Girl mine, a new property, at Butte. The output of these two mines, with the lead-zinc ore from the reopened Algonquin mine of the Trout Mining Co. at Philipsburg, resulted in a marked increase in the output of silver, lead, and zinc, especially zinc. The slag-treatment plant at East Helena also contributed to the increase in zinc output.

The general increase in activity at lode-gold mines resulted in a larger number of producers and an increased recovery of gold, as reflected by increased receipts of custom material at both the East Helena smelter of the American Smelting & Refining Co. and the Anaconda smelter of the Anaconda Copper Mining Co. Several properties, reopened and equipped with new or reconditioned milling plants, attained an important gold production. These included the Jib property of Roy E. Miller, Inc., at Basin; the Tousley property of the Bell Boy Gold Mining Co. and the Gould property of the Standard Silver-Lead Mining Co., both near Marysville; the Midas group of the Midas Gold Mining & Milling Co. near Libby; the Prospect group of the Virginia City Gold Mining Co. at Virginia City; the Boss Tweed & Clipper group of the Pacific Gold Mining Co. near Pony; the August mine of the Little Ben Mining Co. near Landusky; and the Hidden Lake property of the Lakes Mining & Milling Syndi-

cate in Granite County. There was also a marked increase in output from the Jardine property in Park County.

An increase in placer-mining activity was recorded in 1933 in almost every producing county in the State, but interest was centered chiefly on three operations: The Story dredge in Norwegian Gulch, Madison County; the Prickly Pear Creek operations of Winston Bros. Co. near East Helena; and especially the new 6,500-cubic yard dredge of the Yuba Associated Engineers, Ltd., at the Pioneer placer of the Gold Creek Mining Co. in Powell County, which was placed in operation November 27.

ORE CLASSIFICATION

Ore, old tailings, etc., sold or treated in Montana in 1933, with content in terms of recovered metals

Source	Mines producing	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
			<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Dry gold ore.....	342	<i>Short tons</i> 1 163, 832	41, 270. 73	114, 958	117, 250	105, 338	-----
Dry gold and silver ore.....	9	2 1, 600	494. 08	35, 277	5, 082	-----	-----
Dry silver ore.....	16	3 1, 805	116. 67	52, 416	7, 191	-----	-----
Copper ore.....	8	4 491, 893	4, 578. 93	1, 613, 340	64, 987, 580	-----	-----
Lead ore.....	54	6 7, 425	1, 175. 80	42, 742	8, 493	2, 046, 666	-----
Zinc ore.....	2	7 43, 289	3. 25	9, 376	2, 919	864, 804	9, 834, 082
Copper-lead ore.....	2	60	1. 50	867	6, 250	11, 353	-----
Lead-zinc ore.....	9	152, 582	1, 476. 16	790, 501	341, 610	10, 135, 271	31, 614, 823
Total, lode mines.....	426	862, 486	49, 117. 12	2, 659, 477	65, 476, 375	13, 163, 432	41, 448, 905
Total, placers.....	276	-----	8, 705. 08	1, 223	-----	-----	-----
Total, 1932.....	702	862, 486	57, 822. 20	2, 660, 700	65, 476, 375	13, 163, 432	41, 448, 905
	622	765, 014	40, 602. 01	1, 686, 213	84, 847, 349	2, 157, 766	4, 393, 034

¹ Includes 8 tons of old tailings and 2 tons of old slag amalgamated, 2,934 tons of old tailings cyanided, 2,174 tons of old tailings amalgamated and concentrated, 48,680 tons of old tailings concentrated, and 3,707 tons of old tailings and 90 tons of old mill clean-up sold to a smelter.

² Includes 1 ton of old mill clean-up sold to a smelter.
³ Includes 3 tons of old tailings sold to a smelter.
⁴ Includes 100 tons of old tailings concentrated.
⁵ Includes 9,167,018 pounds of copper saved from precipitates.
⁶ Includes 140 tons of old tailings concentrated and 2 tons of old mill clean-up sold to a smelter.
⁷ Includes 42,510 tons of current slag fumed.
⁸ A mine producing more than one class of ore is counted but once in arriving at total for all classes.
⁹ Includes 9,474,300 pounds of copper saved from precipitates.

Value of metals from ore, old tailings, etc., sold or treated in Montana in 1933, by classes of ore

Class	Ore, old tailings, etc. (short tons)	Gold	Silver	Copper	Lead	Zinc	Total value
Dry gold ore.....	163, 832	\$853, 142	\$40, 235	\$7, 504	\$3, 897	-----	\$904, 778
Dry gold and silver ore.....	1, 600	10, 213	12, 347	325	-----	-----	22, 885
Dry silver ore.....	1, 805	2, 412	18, 346	460	-----	-----	21, 218
Copper ore.....	491, 893	94, 655	564, 669	14, 159, 205	-----	-----	4, 818, 529
Lead ore.....	7, 425	24, 306	14, 960	544	75, 727	-----	115, 537
Zinc ore.....	43, 289	67	3, 282	187	31, 998	\$413, 031	448, 565
Copper-lead ore.....	60	31	303	400	420	-----	1, 154
Lead-zinc ore.....	152, 582	30, 515	276, 675	21, 863	375, 005	1, 327, 823	2, 031, 881
Total, 1932.....	862, 486	1, 015, 341	930, 817	14, 190, 488	487, 047	1, 740, 854	8, 364, 547
	765, 014	766, 193	475, 393	2 5, 345, 383	64, 733	131, 791	6, 783, 493

¹ Includes value of 9,167,018 pounds of copper saved from precipitates.
² Includes value of 9,474,300 pounds of copper saved from precipitates.

Gold ore.—The output of gold ore, old tailings, etc., was 163,832 tons from 342 properties in 1933 compared with 65,050 tons from 334 properties in 1932; it represented 19 percent of the State output of ore, old tailings, etc., in 1933. The increase of nearly 99,000 tons resulted from re-treatment of more than 48,000 tons of old tailings from the Jib property at Basin and increased output from nearly all the gold mines, including the Jardine, Boss Tweed & Clipper, Gold Coin, Gould, August, and Midas. A large decrease in production of gold ore from the Ohio-Keating property was reported for 1933. The Jib property was the largest producer of gold material in Montana in 1933, followed by the Jardine mine in Park County, the Boss Tweed & Clipper group in Madison County, the Sleeping Princess (I. B.) mine in Beaverhead County, the Gold Coin mine and tailings dump in Deerlodge County, the August mine in Phillips County, the Golden Sunlight property in Jefferson County, the Gould mine in Lewis and Clark County, the Midas mine in Lincoln County, and the Prospect group at Virginia City in Madison County.

Gold and silver ore.—Nine mines produced 1,600 tons of siliceous gold and silver material in 1933 compared with eight properties producing 379 tons in 1932. Nearly all the ore in 1933 came from the Jib mine at Basin in Jefferson County, the Flint Creek property in Silver Bow County, and the Blue Eyed Maggie mine in Powell County.

Silver ore.—Sixteen properties produced 1,805 tons of siliceous silver ore and old tailings in 1933 compared with six mines producing 157 tons of ore in 1932. About one-third of the ore in 1933 came from five properties in Silver Bow County, including the Agnes-Highland (Ardsley Butte Mines Corporation) and Lavena mines; most of the remainder came from the Lone Pine & Argyle Silver mine in Beaverhead County and the Morning Glory mine in Jefferson County.

Copper ore.—The output of copper ore and old tailings declined from 668,679 tons from seven mines in 1932 to 491,893 tons from eight properties in 1933; it represented 57 percent of the State output of ore, etc., in 1933. The decrease was due almost entirely to further curtailment in output from the mines of the Anaconda Copper Mining Co. at Butte, the largest producer of copper material in Montana in 1933. The Liberty Montana Mines Co. at Jefferson Island, Madison County, was the only other large producer of copper ore in the State during the year. Of the total copper ore produced, 12,431 tons (nearly all sulphide) were smelted; the remainder was concentrated.

Lead ore.—Fifty-four properties produced 7,425 tons of lead material (including 140 tons of old tailings reconcentrated and 2 tons of mill clean-up smelted) in 1933 compared with 40 properties producing 1,907 tons of ore and old tailings in 1932. The output in 1933 consisted of 464 tons of oxidized ore and 1,854 tons of sulphide ore smelted, 4,965 tons of ore and 140 tons of old tailings concentrated and yielding 261 tons of concentrates, and 2 tons of clean-up material smelted. The Tousley mine of the Bell Boy Gold Mining Co. near Marysville, Lewis and Clark County, was the largest producer of lead ore in 1933, followed by the Hazel T. mine near Libby, Lincoln County, and the Jack Waite mine in Sanders County.

Zinc ore.—Zinc material treated in Montana in 1933 consisted of 42,510 tons of current slag from the lead smelter at East Helena

treated in the fuming plant and 779 tons of ore from the old Butte & Superior property at Butte concentrated.

Copper-lead ore.—Two properties—the Basin Bell in Jefferson County and the Hecla in Beaverhead County—produced 60 tons of copper-lead ore in 1933 compared with three mines producing 104 tons in 1932; all of this ore was smelted.

Lead-zinc ore.—Nine mines produced 152,582 tons of lead-zinc ore in 1933 compared with one mine producing 7,880 tons in 1932; the output represented nearly 18 percent of the State total in 1933. The ore in 1933 was treated at flotation plants and yielded 3,904 tons of lead concentrates, 871 tons of zinc concentrates, 32,277 tons of lead-zinc concentrates, and 41 tons of iron (siliceous) concentrates. The Orphan Girl and Emma properties at Butte were the largest producers of lead-zinc ore in 1933, followed by the Jack Waite mine in Sanders County and the Trout mine near Philipsburg.

Ore, old tailings, etc., sold or treated in Montana in 1933, by counties, with content in terms of recovered metals

DRY GOLD ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Beaverhead.....	¹ 18,943	2,933.95	15,020	6,703	12,136	-----
Broadwater.....	2,116	2,165.07	4,880	5,470	25,179	-----
Cascade.....	2	2.90	57	-----	28	-----
Deer Lodge.....	² 11,858	5,607.50	798	10,216	-----	-----
Fergus.....	700	213.33	143	31	-----	-----
Granite.....	2,669	1,166.79	1,111	3,275	54	-----
Jefferson.....	³ 55,582	4,276.68	37,813	58,559	37,681	-----
Lewis and Clark.....	⁴ 10,097	4,831.76	26,322	7,697	252	-----
Lincoln.....	5,287	1,812.81	4,079	1,381	22,183	-----
Madison.....	⁵ 25,996	7,151.16	15,235	17,885	7,122	-----
Meagher.....	75	36.38	3	-----	-----	-----
Mineral.....	100	23.22	3	-----	-----	-----
Missoula.....	574	370.60	200	1,281	-----	-----
Park.....	⁶ 22,995	5,473.68	1,623	5,500	-----	-----
Phillips.....	4,984	3,676.79	3,540	-----	-----	-----
Powell.....	736	316.20	2,200	797	703	-----
Ravalli.....	44	30.72	17	-----	-----	-----
Sanders.....	1	2.13	-----	-----	-----	-----
Silver Bow.....	1,044	1,167.11	1,894	3,439	-----	-----
Sweet Grass.....	729	11.95	20	16	-----	-----
Total, 1932.....	163,832	41,270.73	114,958	117,250	105,338	-----
	65,050	27,313.45	55,480	37,840	90,706	-----

DRY GOLD AND SILVER ORE

Beaverhead.....	88	6.00	520	190	-----	-----
Broadwater.....	⁸ 1	.14	6	-----	-----	-----
Granite.....	19	6.92	440	47	-----	-----
Jefferson.....	680	130.00	7,746	1,566	-----	-----
Powell.....	343	306.00	22,600	2,500	-----	-----
Silver Bow.....	469	45.02	3,965	779	-----	-----
Total, 1932.....	1,600	494.08	35,277	5,082	-----	-----
	379	341.35	19,667	4,160	-----	-----

SILVER ORE

Beaverhead.....	849	16.59	28,137	4,750	-----	-----
Deer Lodge.....	⁹ 119	10.00	4,062	284	-----	-----
Granite.....	2	.32	30	40	-----	-----
Jefferson.....	238	54.12	8,666	608	-----	-----
Silver Bow.....	597	35.64	11,521	1,509	-----	-----
Total, 1932.....	1,805	116.67	52,416	7,191	-----	-----
	157	4.50	6,371	691	200	-----

Footnotes at end of table.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN MONTANA 383

Ore, old tailings, etc., sold or treated in Montana in 1933, by counties, with content in terms of recovered metals—Continued

COPPER ORE

County	Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Broadwater.....	3	3.00	7	240		
Granite.....	10 100	4.00	259	3,653		
Madison.....	15,557	2,990.90	7,053	60,519		
Meagher.....	1	1.16	17	94		
Sanders.....	50	5.90	43	9,859		
Silver Bow.....	476,182	1,573.97	1,605,961	11 64,913,215		
Total, 1932.....	491,893 668,679	4,578.93 8,657.76	1,613,340 1,574,071	11 64,987,580 12 84,786,145		118

LEAD ORE

Beaverhead.....	156	208.05	2,183	170	53,108	
Broadwater.....	406	142.52	4,190	587	63,686	
Cascade.....	11	.10	231	269	1,240	
Jefferson.....	13 493	119.35	5,796	2,985	101,826	
Judith Basin.....	65	1.63	1,665	191	47,468	
Lewis and Clark.....	14 3,328	232.32	3,400	1,381	57,564	
Lincoln.....	1,700	395.80	9,741	353	86,033	
Madison.....	227	46.44	6,232	315	213,148	
Meagher.....	2		140		649	
Mineral.....	20	2.32	2,080	750	3,595	
Powell.....	14	10.06	520		5,324	
Sanders.....	1,003	17.21	6,564	1,492	1,413,025	
Total, 1932.....	7,425 1,907	1,175.80 710.70	42,742 16,084	8,493 5,178	2,046,666 643,054	

ZINC ORE

Lewis and Clark.....	15 42,510		4,877		847,460	9,642,595
Silver Bow.....	779	3.25	4,499	2,919	17,344	191,487
Total, 1932.....	15 43,289 15 20,858	3.25	9,376 3,025	2,919	864,804 263,300	9,834,082 4,336,667

COPPER-LEAD ORE

Beaverhead.....	5	0.10	257	281	2,486	
Jefferson.....	55	1.40	610	5,969	8,867	
Total, 1932.....	60 104	1.50 17.30	867 5,629	6,250 5,770	11,353 38,235	

LEAD-ZINC ORE

Cascade.....	38	0.05	72	465	7,299	8,071
Granite.....	4,990	77.93	46,157	16,641	117,433	613,381
Jefferson.....	42	7.45	326	235	5,139	4,881
Judith Basin.....	35	1.37	615	153	8,694	8,405
Lewis and Clark.....	120	10.94	1,601	547	15,697	17,500
Sanders.....	12,676	33.05	8,333	6,430	1,628,110	191,143
Silver Bow.....	134,681	1,345.37	733,397	317,139	8,352,899	30,771,442
Total, 1932.....	152,582 7,880	1,476.16 19.53	790,501 5,464	341,610 7,565	10,135,271 1,117,153	31,614,823 56,367

¹ Includes 8 tons of old mill clean-up sold to a smelter.

² Includes 1,850 tons of old tailings cyanided, 80 tons of old tailings concentrated, and 1 ton of old mill clean-up sold to a smelter.

³ Includes 3 tons of old tailings amalgamated, 48,300 tons of old tailings concentrated, and 3,457 tons of old tailings sold to a smelter.

⁴ Includes 5 tons of old tailings amalgamated, 674 tons of old tailings cyanided, 300 tons of old tailings concentrated, and 221 tons of old tailings and 62 tons of old mill clean-up sold to a smelter.

⁵ Includes 2 tons of old slag amalgamated, 410 tons of old tailings cyanided, and 12 tons of old mill clean-up sold to a smelter.

⁶ Includes 2,174 tons of old tailings amalgamated and concentrated and 7 tons of old mill clean-up sold to a smelter.

⁷ Old tailings sold to a smelter.

⁸ Old mill clean-up sold to a smelter.

⁹ Includes 3 tons of old tailings sold to a smelter.

¹⁰ Old tailings concentrated.

¹¹ Includes 9,167,013 pounds of copper saved from precipitates.

¹² Includes 9,474,300 pounds of copper saved from precipitates.

¹³ Includes 2 tons of old mill clean-up sold to a smelter.

¹⁴ Includes 140 tons of old tailings concentrated.

¹⁵ Current slag fumed.

¹⁶ Includes 42,510 tons of current slag fumed.

Zinc products (as marketed from Montana mines and mills) sold to smelters and electrolytic plants in 1933

Classification	County	Quantity (dry weight)	Gross zinc	Average assay of concentrates	Recovered zinc
Zinc concentrates.....	Cascade, Granite, Jefferson, Judith Basin, Lewis and Clark, Sanders, and Silver Bow.	<i>Short tons</i> 1, 076	<i>Pounds</i> 1, 143, 036	<i>Percent</i> 53. 12	<i>Pounds</i> 1, 030, 725
Lead-zinc concentrates ..	Judith Basin and Silver Bow ..	32, 277	34, 195, 094	52. 97	30, 775, 585
Total, 1932.....		33, 353 64	35, 338, 130 1 61, 178	52. 98 47. 80	31, 806, 310 1 56, 367

¹ Exclusive of zinc recovered from the treatment of current slag at East Helena.

METALLURGIC INDUSTRY

Of the 862,486 tons of ore, old tailings, etc., produced in 1933 in Montana, 69,973 tons (8.11 percent) were treated at gold and silver mills and 708,313 tons (82.12 percent) at concentration plants; the remainder consisted of 41,690 tons of ore, old tailings, etc., shipped direct to smelters and 42,510 tons of slag treated at a fuming plant.

There were 60 gold and silver mills in operation in Montana in 1933—38 straight amalgamation plants, 10 straight cyanidation plants, 7 combined amalgamation and gravity concentration plants, 4 combined amalgamation and flotation concentration plants, and 1 combined amalgamation-cyanidation-gravity concentration plant. There were 23 concentration plants—12 straight gravity concentration plants (8 treating gold ore and 4 lead ore) and 11 straight flotation plants (4 treating gold ore, 3 copper ore, 2 lead ore, 1 lead-zinc ore, and 1 zinc ore). Lead-zinc ore was also shipped to 1 plant in Idaho and 1 in Utah for milling. In addition to the foregoing, there were 4 miscellaneous plants in operation—2 electrolytic zinc plants, 1 slag fuming plant, and 1 mine-water precipitation plant. The total was 87 plants, exclusive of the copper smelter at Anaconda and the lead smelter at East Helena.

Of the total material treated at gold and silver mills, 14.63 percent (10,229 tons of ore, 8 tons of old tailings, and 2 tons of old slag) was treated at straight amalgamation plants; 49.16 percent (32,221 tons of ore and 2,174 tons of old tailings) was treated at combined amalgamation and concentration plants (including 1 plant using combined amalgamation, cyanidation, and concentration); and 36.21 percent (22,405 tons of ore and 2,934 tons of old tailings) was treated at straight cyanidation plants. Compared with 1932 there was a decrease in ore treated at cyanidation mills due to the closing of the Ohio-Keating mill, but there was a good increase in ore treated at combined amalgamation and concentration mills due to the larger tonnage treated at the Jardine mill and to operations of the Midas Gold Mining & Milling Co. and the Virginia City Gold Mining Co. The following table summarizes data for operations at gold and silver mills in 1933, by counties.

GOLD, SILVER, COPPER, LEAD, AND ZINC IN MONTANA 385

Mine production of metals from gold and silver mills in Montana in 1933, by counties, in terms of recovered metals

County	Ore, old tailings, etc., treated (dry weight)		Recovered in bullion			
			Amalgamation		Cyanidation	
	Ore	Old tailings, etc.	Gold	Silver	Gold	Silver
	<i>Short tons</i>	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Fine ounces</i>
Beaverhead	15,124		1.06		1,315.54	12,584
Broadwater	101		102.38	49		
Cascade	1		1.00			
Deer Lodge	7,658	1,850	2,124.31	36	294.21	14
Fergus	671				163.34	79
Granite	1,422		30.93	8	371.32	8
Jefferson	1,128	2 3	378.52	79		
Lewis and Clark	1,069	3 679	140.95	172	160.88	1,707
Lincoln	5,273		1,203.75	241		
Madison	7,072	4 412	1,079.47	403	29.26	1,031
Meagher	75		36.38	3		
Mineral	100		23.22	3		
Park	20,249	2,174	2,635.09	407		
Phillips	4,779				2,476.75	2,540
Powell	113		9.48			
Ravalli	18		26.22			
Silver Bow	2		4.16			
Total, 1932	64,855	5,118	7,796.92	1,401	4,811.30	17,963
	50,379	2,044	5,378.47	4,254	7,207.60	7,652

County	Concentrates and recovered metal				
	Concentrates produced	Gold	Silver	Copper	Lead
	<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>
Broadwater	5	20.70	10		
Jefferson	3	12.65	16		203
Lewis and Clark	5	8.40	14	120	
Lincoln	66	595.88	3,783	1,381	21,981
Madison	68	410.98	2,632	850	4,258
Park	1,011	2,205.00	493		
Total, 1932	1,158	3,253.61	6,948	2,351	26,442
	605	1,530.44	2,009	1,993	395

¹ Old tailings cyanided.

² Old tailings amalgamated.

³ Comprises 5 tons of old tailings amalgamated and 674 tons of old tailings cyanided.

⁴ Comprises 2 tons of old slag amalgamated and 410 tons of old tailings cyanided.

⁵ Old tailings amalgamated and concentrated.

Ore and old tailings treated at concentration plants increased from 640,424 tons in 1932 to 708,313 tons in 1933. There was a decrease of nearly 152,000 tons in copper ore milled, due to further curtailment by the Anaconda Copper Mining Co., but this loss was almost balanced by an increase of nearly 145,000 tons in lead-zinc ore milled, due to the reopening of the Emma and Trout mines and the starting of shipments from the Orphan Girl mine. There was also a marked increase in siliceous gold material treated, due to the re-treatment of 48,300 tons of old tailings from the Jib property. The following tables present ore-concentration data for 1933.

Montana ore and old tailings concentrated in 1933, by classes of ore, etc., methods of concentration, and classes of concentrates

Class of material concentrated	Method of concentration	Ore and old tailings concentrated	Gross content of mill feed				
			Gold	Silver	Copper	Lead	Zinc
Siliceous gold ore and old tailings.....	Flotation.....	<i>Short tons</i> 1 69, 778	<i>Fine ounces</i> 6, 652. 00	<i>Fine ounces</i> 68, 920	<i>Pounds</i> 88, 050	<i>Pounds</i> 47, 300	<i>Pounds</i>
Copper sulphide ore and old tailings.....	do.....	2 479, 462	5, 341. 70	1, 595, 701	57, 920, 662		
Lead sulphide ore.....	do.....	4, 700	655. 00	11, 310	1, 095	106, 400	
Lead-zinc sulphide ore.....	do.....	152, 582	2, 264. 29	883, 811	558, 443	11, 673, 707	37, 397, 861
Zinc sulphide ore.....	do.....	779	5. 00	5, 032	4, 754	19, 995	224, 423
		707, 301	14, 917. 99	2, 564, 774	58, 573, 004	11, 847, 402	37, 622, 284
Siliceous gold ore and old tailings.....	Gravity.....	3 607	224. 40	622	580		
Lead sulphide ore and old tailings.....	do.....	4 405	80. 65	1, 725	480	28, 900	
		1, 012	305. 05	2, 347	1, 060	28, 900	
		3 708, 313	15, 223. 04	2, 567, 121	58, 574, 064	11, 876, 302	37, 622, 284

Class of material concentrated	Method of concentration	Concentrates produced		Gross content of concentrates				
		Class	Quantity	Gold	Silver	Copper	Lead	Zinc
Siliceous gold ore and old tailings.....	Flotation.....	Siliceous gold.....	<i>Short tons</i> 6 2, 542	<i>Fine ounces</i> 5, 586. 11	<i>Fine ounces</i> 42, 200	<i>Pounds</i> 63, 405	<i>Pounds</i> 33, 198	<i>Pounds</i>
Copper sulphide ore and old tailings.....	do.....	Copper sulphide.....	7 108, 645	4, 478. 90	1, 567, 578	55, 429, 130		
Lead sulphide ore.....	do.....	Lead sulphide.....	197	558. 40	9, 909	701	93, 183	
Lead-zinc sulphide ore.....	do.....	(Siliceous gold.....	41	6. 76	112	208	895	
		Lead sulphide.....	3, 904	126. 36	98, 185	124, 486	5, 421, 199	
		Zinc sulphide.....	871	79. 28	41, 379	13, 822	85, 703	930, 283
		Lead-zinc sulphide.....	32, 277	1, 263. 76	650, 825	241, 425	5, 123, 726	34, 195, 094
Zinc sulphide ore.....	do.....	Zinc sulphide.....	37, 093	1, 476. 16	790, 501	379, 941	10, 631, 523	35, 125, 377
			205	3. 25	4, 499	3, 232	18, 209	212, 753
			148, 682	12, 102. 82	2, 414, 687	55, 876, 409	10, 776, 113	35, 338, 130

Siliceous gold ore and old tailings.....	Gravity.....	Siliceous gold.....	⁸ 87	170.98	472	449	-----
Lead sulphide ore and old tailings.....	do.....	Lead sulphide.....	⁹ 64	64.12	1,371	426	23,204
				151	235.10	1,843	23,204
				¹⁰ 148,833	12,337.92	2,416,530	55,877,284
							10,799,317
							35,338,130

¹ Includes 48,300 tons of old tailings.

² Includes 100 tons of old tailings.

³ Includes 380 tons of old tailings.

⁴ Includes 140 tons of old tailings.

⁵ Figures do not include ore treated at gold and silver mills.

⁶ Includes 1,382 tons of concentrates from old tailings.

⁷ Includes 6 tons of concentrates from old tailings.

⁸ Includes 49 tons of concentrates from old tailings.

⁹ Includes 10 tons of concentrates from old tailings.

¹⁰ Figures do not include concentrates from ore treated at gold and silver mills.

Mine production of metals from concentrating mills in Montana in 1933, by counties, in terms of recovered metals

County	Ore and old tailings treated (dry weight)		Concentrates and recovered metal					
	Ore	Old tailings	Concentrates produced	Gold	Silver	Copper	Lead	Zinc
	Short tons	Short tons	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Broadwater.....	358		85	88.02	1,344	407	20,116	
Cascade.....	38		20	0.05	72	465	7,299	8,071
Deer Lodge.....		80	4	3.00	1	139		
Granite.....	4,990	100	685	81.93	46,416	20,294	117,433	613,381
Jefferson.....	54	48,300	1,402	983.20	24,389	44,179	36,639	4,881
Judith Basin.....	35		16	1.37	615	153	8,694	8,405
Lewis and Clark.....	7,983	440	179	1,927.13	16,182	917	20,692	17,500
Lincoln.....	1,700		181	395.80	9,741	353	86,033	
Madison.....	31,791		2,176	5,836.85	10,830	66,736		
Powell.....	500		30	148.90	413	391	207	
Sanders.....	12,676		1,500	33.05	8,333	6,430	1,628,110	191,143
Silver Bow.....	599,268		142,555	2,838.62	2,298,194	54,391,973	8,370,243	30,962,929
Total, 1932.....	659,393	48,920	148,833	12,337.92	2,416,530	54,532,437	10,295,466	31,806,310
	640,264	160	139,978	8,554.73	1,520,601	72,393,968	1,151,625	56,367

Gross metal content of Montana concentrates produced in 1933, by classes of concentrates

Class of concentrates	Concentrates produced (dry weight)	Gross metal content				
		Gold	Silver	Copper	Lead	Zinc
		Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Dry and siliceous.....	3,791	8,943.77	47,890	65,797	42,838	
Copper.....	108,645	4,478.90	1,567,578	55,429,130		
Lead.....	4,202	822.57	111,307	126,907	5,556,531	
Zinc.....	1,076	82.53	45,878	17,054	103,912	1,143,036
Lead-zinc.....	32,277	1,263.76	650,825	241,425	5,123,726	34,195,094
Total, 1932.....	149,991	15,591.53	2,423,478	55,880,313	10,827,007	35,338,130
	140,583	10,085.17	1,522,610	73,479,396	1,200,313	61,178

Mine production of metals from Montana concentrates in 1933, in terms of recovered metals

BY COUNTIES

	Concentrates	Gold	Silver	Copper	Lead	Zinc	
		Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
		Broadwater.....	90	108.72	1,354	407	20,116
Cascade.....	20	0.05	72	465	7,299	8,071	
Deer Lodge.....	4	3.00	1	139			
Granite.....	685	81.93	46,416	20,294	117,433	613,381	
Jefferson.....	1,405	995.85	24,405	44,179	36,642	4,881	
Judith Basin.....	16	1.37	615	153	8,694	8,405	
Lewis and Clark.....	184	1,935.53	16,196	1,037	20,692	17,500	
Lincoln.....	247	991.68	13,524	1,734	108,014		
Madison.....	2,244	6,247.83	13,462	67,586	4,258		
Park.....	1,011	2,205.00	493	391			
Powell.....	30	148.90	413	391	207		
Sanders.....	1,500	33.05	8,333	6,430	1,628,110	191,143	
Silver Bow.....	142,555	2,838.62	2,298,194	54,391,973	8,370,243	30,962,929	
Total, 1932.....	149,991	15,591.53	2,423,478	54,534,788	10,321,908	31,806,310	
	140,583	10,085.17	1,522,610	72,395,961	1,152,020	56,367	

GOLD, SILVER, COPPER, LEAD, AND ZINC IN MONTANA 389

Mine production of metals from Montana concentrates in 1933, in terms of recovered metals—Continued

BY CLASSES OF CONCENTRATES

	Concentrates	Gold	Silver	Copper	Lead	Zinc
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds	Pounds
Dry and siliceous.....	3, 791	8, 943. 77	47, 860	52, 732	40, 605	-----
Copper.....	108, 645	4, 478. 90	1, 567, 578	54, 135, 827	-----	-----
Lead.....	4, 202	822. 57	111, 307	100, 950	5, 314, 968	-----
Zinc.....	1, 076	82. 53	45, 878	15, 925	98, 765	1, 030, 725
Lead-zinc.....	32, 277	1, 263. 76	650, 825	229, 354	4, 867, 540	30, 775, 585

Gross metal content of Montana crude ore shipped to smelters in 1933, by classes of ore

Class of ore	Quantity (dry weight)	Gross metal content			
		Gold	Silver	Copper	Lead
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds
Dry and siliceous.....	23, 078	18, 784. 67	125, 236	73, 493	50, 614
Copper.....	12, 431	100. 03	45, 762	1, 725, 230	-----
Lead.....	2, 318	550. 04	31, 427	9, 819	2, 017, 240
Copper-lead.....	60	1. 50	867	7, 893	11, 863
	37, 887	19, 436. 24	203, 292	1, 816, 435	2, 079, 717
Total, 1932.....	36, 555	13, 444. 71	137, 434	2, 831, 516	770, 581

Mine production of metals from Montana crude ore shipped to smelters in 1933, in terms of recovered metals

BY COUNTIES

	Ore	Gold	Silver	Copper	Lead
	Short tons	Fine ounces	Fine ounces	Pounds	Pounds
Beaverhead.....	4, 909	1, 776. 30	33, 486	12, 094	67, 730
Broadwater.....	2, 066	2, 089. 49	7, 674	5, 890	68, 749
Cascade.....	12	2. 00	288	269	1, 268
Deer Lodge.....	2, 385	3, 175. 98	4, 337	10, 361	-----
Fergus.....	29	49. 99	64	31	-----
Granite.....	1, 268	771. 78	1, 565	3, 362	54
Jefferson.....	4, 146	2, 280. 02	30, 417	18, 510	116, 371
Judith Basin.....	65	1. 63	1, 665	191	47, 468
Lewis and Clark.....	3, 061	2, 423. 52	11, 444	8, 092	52, 731
Lincoln.....	14	13. 18	55	-----	202
Madison.....	2, 493	2, 812. 44	13, 563	10, 854	216, 012
Meagher.....	3	1. 16	157	94	649
Mineral.....	20	2. 32	2, 080	750	3, 595
Missoula.....	574	370. 60	200	1, 281	-----
Park.....	565	624. 59	723	500	-----
Phillips.....	205	1, 200. 04	1, 000	-----	-----
Powell.....	480	473. 88	24, 907	2, 906	5, 820
Ravalli.....	26	4. 50	17	-----	-----
Sanders.....	1, 054	25. 24	6, 607	11, 351	1, 413, 025
Silver Bow.....	14, 482	1, 327. 58	63, 043	1, 680, 009	-----
	37, 887	19, 436. 24	203, 292	1, 766, 545	1, 993, 674
Total, 1932.....	36, 555	13, 444. 71	137, 434	2, 784, 421	736, 928

BY CLASSES OF ORE

Dry and siliceous.....	23, 078	18, 784. 67	125, 236	67, 974	47, 099
Copper.....	12, 431	100. 03	45, 762	1, 684, 735	-----
Lead.....	2, 318	550. 04	31, 427	7, 586	1, 935, 222
Copper-lead.....	60	1. 50	867	6, 250	11, 353

Miscellaneous material treated in Montana in 1933, not included in the tables under "Metallurgic Industry", consisted of 42,510 tons of lead-smelter slag treated in a zinc fuming plant; mine-water precipitates shipped for smelting and yielding 9,167,018 pounds of copper; and 3,710 tons of old tailings and 93 tons of mill clean-up shipped to smelters.

REVIEW BY COUNTIES AND DISTRICTS

Mine production of gold, silver, copper, lead, and zinc in Montana in 1933, by counties and districts, in terms of recovered metals

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Beaverhead County:			<i>Short tons</i>	<i>Fine ounces</i>	<i>Fine ounces</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	
Argenta.....	10	2	3,837	1,620.18	4,343	5,188	41,838		\$36,892
Bannack.....	6	6	15,250	1,536.29	12,803	1,734	1,838		36,418
Blue Wing.....	1		76	2.03	1,057	188			424
Bryant.....	1		5	.10	257	281	2,486		202
Chinatown.....	1	2	40	4.40	563		21,568		1,086
Vipond.....	3		773	14.56	27,080	4,562			10,071
Wise River.....	1		60	52.00	17	141			1,090
Broadwater County:									
Backer.....	13	14	160	392.85	137		54		8,171
Beaver.....	13		682	470.35	5,223	875	47,243		13,355
Cedar Plains.....	23		1,273	1,323.83	797	3,391	2,865		27,968
Park.....	15	6	411	440.12	2,969	2,031	38,703		11,699
Carbon County: Clark Fork River.....		2		6.63					137
Cascade County: Montana.....	3		51	3.05	360	734	8,567	8,071	892
Deer Lodge County:									
California Gulch.....		1		8.13					168
Dry Gulch.....		2		17.80					368
French Gulch.....		1		1.98					41
Georgetown.....	10		11,954	5,599.84	2,677	10,484			117,367
Haggin.....	1		1	8.66					179
Oro Fino.....	3		22	9.00	2,183	16			951
Fergus County:									
Cone Butte.....	1		9	13.93	17	31			296
North Moccasin.....	1	3	3	26.75	3				554
Warm Springs.....	2	1	688	191.42	123				4,000
Gallatin County:									
Jefferson River.....		1		1.98					41
West Fork of Gallatin River.....		1		2.52					52
West Yellowstone.....		1		3.05					63
Granite County:									
Alps.....	1		67	19.11	3				396
Big Spring Creek.....		1		3.97					82
First Chance.....	12	8	1,127	799.54	948	2,984	54		17,053
Flint Creek.....	1		4,990	77.93	46,157	16,641	117,433	613,381	48,938
Gold Creek.....		2		37.93	6				786
Harvey Creek.....	1		5	2.03					42
Henderson.....	3		169	29.80	280	3,734			953
Medicine Lake.....	1		19	6.92	440	47			300

Red Lion.....	1	1	1,370	407.51	23				8,432
Rock Creek.....	1	2	4	65.26	20				1,356
South Boulder.....	4	2	39	42.23	160	250			945
Upper Willow Creek.....		4		24.86					514
Welcome Gulch.....		1		(1)					(1)
Jefferson County:									
Amazon.....	1		39	12.58	883	438	8,108		897
Bigfoot.....	4		102	80.40	537	250	19,405		2,584
Boulder.....		2		4.06					84
Cataract.....	12	5	49,974	1,567.25	44,494	55,141	92,378	4,881	55,123
Colorado.....	3		80	15.24	1,463	234	21,162		1,625
Elkhorn.....	4		865	226.25	23				4,685
Golconda.....	2		13	6.77	3				141
Helena 1.....	2		25	32.99	20		78		694
Homestake.....	6	2	122	76.58	723	172			1,847
Lowland Creek.....		1		2.56					53
Lump Gulch.....	1	3	14	34.54	167	125	4,189		932
McClellan Creek.....	1		2	2.42	17		27		57
Mitchell.....	5	3	361	368.86	1,003	750			8,024
Pipestone.....	5		17	23.27	177	203	3,000		667
Prickly Pear Creek.....		2		1,190.12	243				24,687
Tiger Lake.....		1		2.18					45
Upper Big Pipestone.....	1		(1)	(1)	(1)	(1)			(1)
Whitehall.....	11	1	5,412	2,245.18	11,397	12,328	4,757		51,366
Woodland Park.....	1		18	42.86	37	31	487		919
Judith Basin County:									
Barker.....	3		97	3.00	1,983	313	55,432	8,405	3,180
Running Wolf Creek.....	1		(1)		(1)	(1)	(1)		(1)
Lewis and Clark County:									
Bald Butte.....	3		14	39.62	20	31			828
Dry Gulch.....	1	5	5	44.02	20		54		919
Greenhorn.....	2	3	5	29.22	20				611
Heddeleston.....	3		18	4.74	597	16	7,919		601
Helena 2.....	5	11	34	244.63	37	47	108		5,077
Lincoln.....	1	4	8	56.31	3				1,165
Ophir Gulch.....	3		16	18.14	43	219	1,459		458
Ottawa.....	16	(8)	6,893	2,454.50	11,503	5,609	20,270		55,874
Scratch Gravel.....	6	2	1,008	521.58	1,340	2,812			11,431
Silver Creek.....		2		5.95					123
Smelter.....	1		42,510		4,877		847,460	9,642,595	488,652
Stemple.....	6	1	5,318	1,897.85	14,557				44,327
Vaughn.....	4	2	221	36.57	3,223	891	43,703	17,500	4,293
Lincoln County:									
Libby.....	4	7	6,287	2,189.50	11,940	734	90,135		52,822
Sylvanite.....	1	1	700	217.30	1,900	1,000	18,081		5,890
Madison County:									
Alder Gulch.....	7	5	4,737	832.05	4,337	2,047	3,108		18,964
Bone Basin.....	3		62	54.13	193	344			1,177
Lower Hot Springs.....	2		133	54.18	137	531	3,514		1,332
McCarthy Mountain.....	8		70	124.95	243	375			2,692
Mineral Hill.....	6	1	31,856	6,072.56	11,063	67,750			183,739
Norwegian.....	7	1	316	3,082.65	1,037	2,531			64,249

Footnotes at end of table.

Mine production of gold, silver, copper, lead, and zinc in Montana in 1933, by counties and districts, in terms of recovered metals—Continued

County and district	Mines producing		Ore, old tailings, etc.	Gold	Silver	Copper	Lead	Zinc	Total value
	Lode	Placer							
Madison County—Continued.									
Rabbit.....	19		<i>Short tons</i> 441	<i>Fine ounces</i> 118.81	<i>Fine ounces</i> 6,197	<i>Pounds</i> 719	<i>Pounds</i> 196,162		\$11,929
Ramshorn.....	11	12	544	453.37	1,457	984			9,945
Red Mountain.....		1		(1)					(1)
Ruby Creek.....			8	2.90					60
Sand Creek.....	4		37	61.68	140				1,324
Sheridan.....	15	2	838	377.18	683	875	3,486		8,221
Silver Star.....	8	2	104	186.39	83	594			3,920
Summit.....	4		1,600	485.49	1,497	63	108		10,568
Tidal Wave.....	18		830	629.02	820	1,281	12,514		13,835
Upper Hot Springs.....	5		70	49.34	83	344			1,071
Washington.....	3		134	375.15	1,057	281	1,378		8,194
West Fork of Madison River.....		2		6.87					142
Meagher County:									
Atlanta Creek.....		3		8.56					177
Beaver Creek.....		4		38.07	3				788
Camas Creek.....		3		8.90					184
Little Belt.....	1		75	36.38	3				753
Musselshell.....	1		1	1.16	17	94			36
Newland Creek.....	1		2		140		649		73
Thompson Gulch.....		3		38.51					796
Watson.....		1		2.32					48
Mineral County:									
Cedar Creek.....	1	20	100	719.00	20				14,870
Keystone.....	1		20	2.32	2,080	750	3,595		957
Missoula County:									
Coloma.....	5	1	574	374.52	200	1,281			7,894
Elk Creek.....		5		45.91					949
Nine Mile.....		7		239.55					4,952
Park County:									
Cowles.....		1		3.97					82
Crevasse.....	1		(1)	(1)					(1)
Emigrant Creek.....		6		414.28	63				8,586
Livingston.....		1		7.06					146
New World.....	3	3	566	821.94	760	500			17,289
Sheepcreek.....	1	2	22,422	4,848.48	900				100,542
Phillips County: Little Rockies.....	1	6	4,984	3,728.65	3,557				78,323
Powell County:									
Big Blackfoot.....		1		58.34	17				1,212
Blossburg.....	1		113	9.48					196
Deep Gulch.....	1		2	6.00					124
Douglas Creek.....		2		20.56					425

Nigger Hill.....	3		14	10.06	520		5,324		587
Ophir.....	1	3	100	22.01	63	16			478
Pioneer.....		7		747.20	83				15,475
Snowshoe.....		2		15.58					322
Washington Gulch.....	2	7	411	492.12	397	375	595		10,358
Zozell.....	4	1	453	410.80	24,377	2,906	108		17,214
Ravalli County:									
Eight Mile Creek.....	1		(¹)	(¹)	(¹)				(¹)
Overwich.....	1	5	18	107.73	3				2,228
Stevensville.....		1		1.89					39
Sanders County:									
Eagle.....	1		13,679	50.26	14,897	7,922	3,041,135	191,143	127,310
Plains.....	1		1	2.13					44
Revais Creek.....	1		50	5.90	43	9,859			768
Vermillion.....		4		60.81	17				1,263
Silver Bow County:									
Butte or Summit Valley.....	10	8	612,316	3,167.74	2,356,720	65,235,250	8,370,243	30,962,929	6,675,533
Divide Creek.....	2		2	4.16					86
Flint Creek.....	1		(¹)	(¹)	(¹)	(¹)			(¹)
German Gulch.....		3		44.94	3				930
Highland.....	4	8	820	851.35	337	2,297			17,864
Independence.....	1	2	120	299.25	323	672			6,342
Lost Child.....	1		(¹)	(¹)	(¹)	(¹)			(¹)
Silverbow Creek.....		3		46.10	20				960
Stillwater County: Yellowstone River.....		1		1.98					41
Sweet Grass County: Independence.....	1		29	11.95	20	16			255
Toole County: Goldbutte.....		1		2.90					60
Undistributed ²			576	99.08	4,294	984	730		3,641
Total, Montana.....	426	276	862,486	57,822.20	2,660,700	65,476,375	13,163,432	41,448,905	8,544,925

¹ Included under "Undistributed."

² Helena district lies in both Jefferson and Lewis and Clark Counties.

³ Includes items entered as "(¹)" above.

BEAVERHEAD COUNTY

Argenta district.—The entire output from lode mines in the Argenta district in 1933 was ore of smelting grade. The Ermont property was by far the largest producer in the district; its output was more than 3,000 tons of siliceous ore shipped to Anaconda for smelting. Other producers of siliceous ore included the Midnight, Argenta & Gladstone, Badger, Goldfinch, Oro Fino, Stanley, and Jack Rabbit properties. Lead ore of smelting grade was produced at the Goldfinch, Argenta & Gladstone, Hayseed, and Little Bear properties. The placer output from two properties was 4.84 ounces of gold.

Bannack district.—The Sleeping Princess property at Bannack was operated by the I. B. Mining Co. from January to March 1933, after which the mine and mill were idle until September when operations were resumed by the Thompson Gold Milling Co. The combined output of the two companies in 1933 comprised more than 15,000 tons of gold ore treated by cyanidation and a little mill clean-up material sold to a smelter; the output of gold decreased more than 2,300 ounces from 1932. Most of the remainder of the lode-mine output of the Bannack district was gold ore from the Gold Crown, Gold Bug, and Hendricks mines. The placer output (56.84 ounces of gold and 3 ounces of silver) came chiefly from the Bonnie Court, Jamie's Bar, and Gulch placers.

Blue Wing district.—A lessee shipped 2 cars of silver ore in 1933 from the New Departure mine.

Bryant district.—A test lot of copper-lead ore from the Hecla mine was marketed in 1933.

Chinatown district.—One car of lead ore from the Hattie J. and Hamilton placers were produced in the Chinatown district in 1933.

Vipond district.—The Lone Pine & Argyle Silver property, operated in 1933 by the Quartz Hill Mining Co., produced more than 750 tons of silver ore shipped to Anaconda for smelting. Small lots of silver ore were shipped from the Aurora and Nancy Ann properties.

Wise River district.—A lessee operating the Star mine near Wise River shipped 60 tons of gold ore in 1933 to Anaconda for smelting.

BROADWATER COUNTY

Backer district.—Except for 1 ton of mill clean-up sold to a smelter, the entire output from lode mines in the Backer district in 1933 was siliceous gold ore. Gold ore from the Blind Mike (Three Sisters) was treated by amalgamation and concentration; ore from the Molly Gibson, Slim Jim, and Queen Bee mines was amalgamated; crude ore from the Hard Cash, Humming Bird, Mississippi, Cooper, Anna May, Kettle of Beans, Queen Bee, and Buckingham properties was shipped to smelters; and a little ore from the Ninety-Nine mine was concentrated. The placer output of the Backer district was 227.36 ounces of gold and 37 ounces of silver; it came chiefly from the Diamond City (Consolidated), Mylroie, and Snowshoe placers in Confederate Gulch.

Beaver district.—The Mountain View property of the Sullivan Gold Mining Co. was the chief producer of gold ore in the Beaver district in 1933, and the Tramway mine of the Vosburgh Syndicate was the chief producer of gold; the entire output of both mines was gold ore of

smelting grade. Other producers of gold ore shipped for smelting were the Custer, Midas, Gray Rock & Sunshine, Black Tail, Martha Washington, Grecian Fraction, and Martha properties. Lead ore from the East Pacific mine was concentrated, and lead ore of smelting grade was produced at the Stray Horse (Vosburgh Syndicate), Marion, and Hyantha mines.

Cedar Plains district.—The Ohio-Keating property of the Montana Keating Gold Mining Co. was in 1933 again the chief producer in the Cedar Plains district; several hundred tons of siliceous gold ore were shipped to East Helena for smelting, but there was a large decrease in the mine output as the cyanide mill was idle. Lessees of the Keating mine shipped several cars of gold ore to smelters and treated gold ore in a small concentration mill. Other producers of gold ore of smelting grade were the Cyclone, Hard Cash, Hidden Treasure, Laura Mae, Quartz Site, Beauty, Pinchback, Black Friday, Crosscut, Barnato, Allen, Black Diamond, Leviathan, Granite Mountain, Gold Queen, Harding, and Krome properties. The remainder of the district output comprised small lots of gold ore from two prospects, treated by amalgamation, and a test lot of copper ore from the Kahoka property and a small lot of lead ore from a prospect, shipped to smelters.

Park (Indian Creek, Hassel) district (Townsend).—Gold ore of smelting grade was shipped in 1933 from the Copper Knob, Blacksmith, Green Horn, Marietta, Williams, Silver Mountain, Lost Treasure, Valley View, John L., and Big Four properties. Lead ore of smelting grade was produced at the Park, Little Annie, Springhill, Silver Mountain, and White Elephant properties, and a little lead ore from the Park and King properties was concentrated. The placer production (89.06 ounces of gold and 6 ounces of silver) of the Park district came from operations of the Indian Creek Gold Placer Co., Inc., and from the Big Lemon, Jim Long, Humphrey, Wilson, and various other small placer workings on Indian Creek.

CARBON COUNTY

The entire output from mines in Carbon County in 1933 consisted of placer gold from the Henry placer and a prospect, both on Clark's Fork of the Yellowstone River near Belfry.

CASCADE COUNTY

The output from mines in Cascade County in 1933 consisted of lead ore and lead-zinc ore from the Minute Man property and gold ore from the Gold Reef claim and a prospect, all in the Montana district.

DEER LODGE COUNTY

Georgetown district.—The Gold Coin Mines Co. continued to operate its property during 1933 and treated 7,650 tons of gold ore by amalgamation; in addition to the ore milled the company shipped 1 car of gold ore for smelting. The C. & F. Mining & Milling Co. treated material from the Gold Coin tailings dump by cyanidation and shipped bullion to a mint and a small lot of mill clean-up to a smelter. Nearly 2,000 tons of gold ore from the Southern Cross and Holdfast mines were shipped to Anaconda for smelting. Other producers of gold ore of smelting grade were the Short Shift, Montana, Pyrenees, and Hub properties. Old tailings from the Cable dumps

were treated in a small concentration mill, and a little gold ore from the Hub was amalgamated. A test lot of silver ore from the Silver Reef mine was shipped to Anaconda for smelting.

Oro Fino district.—A test lot of gold ore from the Independent mine, 1 car of silver ore from the Franklin group, and a small lot of old silver tailings from the Oregon property were shipped in 1933 to Anaconda for smelting.

Placer output in Deerlodge County was reported at several small operations in California Gulch, Dry Gulch (Modesty Creek), and French Gulch.

FERGUS COUNTY

Cone Butte district.—A small lot of gold ore from the Golden Jack mine was shipped in 1933 to Anaconda for smelting.

North Moccasin (Kendall) district.—A test lot of gold ore from the Kendall lode mine and bullion from three placer properties in the North Moccasin district were marketed in 1933.

Warm Springs district.—Most of the output from Fergus County in 1933 came from the Tail Holt mine, which produced 604 tons of gold ore treated by cyanidation. From the Spotted Horse property gold ore was treated by cyanidation, and a little gold ore was sent to a smelter. A small quantity of gold was recovered at the Alpine placer.

GALLATIN COUNTY

Placer gold output in 1933 was reported from three localities in Gallatin County—the Jefferson River near Three Forks, the Jewel placer on the West Fork of Gallatin River near Gallatin Gateway, and the West Yellowstone River near Jardine.

GRANITE COUNTY

Alps district.—Gold ore from the Gold Bug mine 20 miles southeast of Clinton was treated in 1933 by amalgamation.

Big Spring Creek district.—A little placer gold was marketed in 1933 from the Boulder claim on Big Spring Creek.

First Chance district (Garnet).—The entire output in 1933 from lode mines in the First Chance district was siliceous gold ore of smelting grade. The chief producers were the Lead King (Mitchell-Mussigbrod) property, the Grant & Hartford property of the Garnet-Butte Gold Mining Co., and the Nancy Hanks mine of the Garnet Leasing Co.; other lode producers were the Lynx, Red Cloud, Homestake, Sierra, Free Coinage, Blue Bird, Gold Bug, Atlas, and Lion properties. The placer output (93.12 ounces of gold and 11 ounces of silver) came from the Ben, Donlon Bar, Potlatch, Lodge Pole, Little Dick, Cayuse, and Grubstake placers and an unnamed prospect—chiefly in Deep Gulch.

Flint Creek district.—The Algonquin mine of the Trout Mining Co. near Philipsburg was the only producer in the Flint Creek district in 1933. The property was reopened late in the year after being idle since 1930, and nearly 5,000 tons of lead-zinc ore were shipped to Anaconda for milling. The mine was by far the largest producer in Granite County in 1933 and contributed materially to the substantial increase in State output of lead and zinc.

The production of manganese ore from the Trout property in 1933 is included in the figures given in the chapter of Minerals Yearbook, 1934, on Manganese and Manganiferous Ores.

Red Lion district.—Operations were continued in 1933 at the Hidden Lake property of the Lakes Mining & Milling Syndicate 12 miles west of Anaconda; 1,324 tons of gold ore were treated by cyanidation, and 1 car of gold ore was shipped to a smelter. The 25-ton cyanide plant was built during the year, and milling operations were begun in October. Placer bullion was recovered from the Warm Springs property.

South Boulder (Royal) district.—Gold ore of smelting grade was shipped in 1933 from the Goat Mountain mines, the Blue Bird (Ethel B.) mine, and a prospect, and a test lot of silver ore was shipped from the Tussle property. Nearly all the placer output came from the Montana-Tonopah property in Princeton Gulch.

Other districts.—The remainder of the output in 1933 from lode mines in Granite County consisted of gold ore from the Iron Age mine in the Harvey Creek district, from the Bunker Hill mine and a prospect in the Henderson district, and from a prospect in the Rock Creek district; a little gold and silver ore from the Little Klondyke (Kent) group in the Medicine Lake (Russ Creek) district; and old tailings from the Black Pine property in the Henderson district treated by flotation. The remainder of the placer output came from the Friday & Pure Gold property on Gold Creek; the Basin placer in Basin Gulch (Rock Creek district); the Rocky Point, Corpp, and Alder placers on Upper Willow Creek; the Big 8 placer in Welcome Gulch; and various small placer operations.

JEFFERSON COUNTY

Amazon district.—One car of lead ore from the Bismark mine near Amazon was shipped in 1933 to East Helena for smelting.

Bigfoot district.—The output from mines in the Bigfoot district in 1933 consisted of gold ore from the State mine treated by amalgamation, lead ore from the Big Four group shipped to a smelter, gold ore of smelting grade from the Last Chance & Lucrative property, and gold ore from a prospect near Boulder treated in a small concentration mill.

Boulder district.—A little gold from the Lulla placer and from a prospect, both on Wilson Creek, was marketed in 1933.

Cataract district (Basin).—The output from mines in the Cataract district increased notably in 1933. A large part of the increase was due to renewed activity at the old Jib (Hope & Katie) property at Basin, which was taken over by Roy E. Miller, Inc. The Jib mill was remodeled, and during the latter half of the year the company re-treated 48,300 tons of old tailings by flotation. Siliceous gold concentrates were shipped to East Helena for smelting, and shipments of siliceous gold and silver ore of smelting grade were started in December after the mine was unwatered. The property was by far the largest producer in the district. The Boulder mine was operated by Basin Goldfields, Ltd., and more than 100 tons of gold ore were shipped to Anaconda for smelting. The Comet property near Basin was operated by lessees who shipped 1 car of lead-zinc ore to a custom plant at Midvale, Utah, for milling and several hundred tons of lead ore and gold ore to smelters at East Helena and Anaconda. Nearly 300 tons of silver ore and gold and silver ore were shipped from the Morning Glory mine. Gold ore from the Mantle & South Mantle group and the Bonanza Jack claim was treated by amalgamation

and concentration. The remainder of the output from lode mines in the district consisted of gold ore of smelting grade from the Rock of Ages and South Sirius properties, small lots of gold ore and old tailings from three properties treated by amalgamation, and 1 car of copper-lead ore from the Basin Bell mine. The placer output (59.21 ounces of gold and 17 ounces of silver) came chiefly from the Park & Anderson and Nancy properties on Basin Creek.

Lump Gulch district.—One car of lead ore was shipped in 1933 from the Minnesota property. Most of the placer output came from the Lump Gulch and Botkin placers.

Mitchell district.—Siliceous gold ore of smelting grade was shipped in 1933 from the John & Jim, Last Chance, Haystack Butte, Garneau, and Golden Ridge mines. Most of the placer output came from the Lewis placer in Mitchell Gulch.

Pipestone and Upper Big Pipestone districts.—Siliceous gold ore from the Alturas, Blue Rock, Sunrise, and Clara mines, a test lot of silver ore from the Musketeer property, and a little lead ore from the Blue Bell claim were shipped in 1933 to smelters.

Prickly Pear Creek district (East Helena).—The Winston Bros. Co. acquired about 35 acres of placer ground on Prickly Pear Creek about 2 miles south of East Helena, installed a dragline excavator and a floating gravel-washing plant during the summer, and treated about 150,000 cubic yards of gravel between August 21, 1933, and the end of the year. The remainder of the district output came from various small placer operations nearby.

Whitehall district.—Operations were continued during 1933 at the Golden Sunlight property 7 miles northeast of Cardwell; nearly 1,500 tons of gold ore and more than 3,450 tons of old tailings, together yielding more than 1,400 ounces of gold and nearly 9,200 ounces of silver, were shipped to Anaconda for smelting. Gold ore of smelting grade was also shipped from the Blue Moose, Ohio, Lucky Hit, Lone Eagle, Sunny Corner, Wegener, Excelsior, Emigrant, and Gold Star properties; gold ore from the Lone Eagle and New Year properties was amalgamated. All the placer production came from the Dry Ridge property east of Cardwell.

Woodland Park district.—Gold ore was produced in 1933 at the Deer Horn property of the Callaghan Gold Mining Co. near Jefferson City.

JUDITH BASIN COUNTY

Barker district (Hughesville).—One car of lead-zinc ore from the Emerald property was shipped in 1933 to Midvale, Utah, for milling and one of lead ore to the lead plant at East Helena for smelting. Lead ore of smelting grade from the August No. 2 and Dr. Kallock properties was also shipped to East Helena, and a small lot of lead-zinc ore from the Dr. Kallock was shipped to Anaconda for milling.

LEWIS AND CLARK COUNTY

Bald Butte district.—The Bald Butte mine about 15 miles southwest of Silver was taken over by the Bald Butte Gold Mines in March 1933, and about 800 feet of development were done in addition to reopening the old workings; a test lot of rich gold ore and a little mill clean-up material were shipped to a smelter. A test lot of gold ore was also shipped from the Fake mine and a little mill clean-up material from the Penobscoot property.

Dry Gulch (York) district.—A test lot of gold ore was shipped in 1933 from the Golden Mist mine to a smelter. The output from placer mines came chiefly from the Mable, York, No. 368, and Buck Horn.

Greenhorn district.—A test lot of gold ore was shipped in 1933 from the Gold Hill mine, and a little gold ore from a prospect was amalgamated. The placer production (22.35 ounces of gold and 3 ounces of silver) came from the Evans & Jones, Greenhorn, and Food Producer placers.

Heddeleston district.—Small lots of lead ore of smelting grade were shipped in 1933 from three properties in the Heddeleston district.

Helena (Unionville, Spring Hill) district.—The Spring Hill flotation plant of the Montana Consolidated Mines Corporation was destroyed by fire in the spring of 1933; the only output from the property was mill clean-up material. The remainder of the output from lode mines in the Helena district consisted of small lots of gold ore of smelting grade from the Keystone, Lindsay, and Ida properties and a little gold ore from the Ida mine and a prospect treated by amalgamation. The output from 11 placers in Grizzly, Nelson, and Last Chance Gulches was 134.48 ounces of gold and 17 ounces of silver.

Lincoln district.—A little gold ore from the Sun Rise mine was treated in 1933 by amalgamation. The placer output marketed (46.49 ounces of gold and 3 ounces of silver) came chiefly from the Bloom & Billy Williams, Harvey, and Stonewall placers.

Ophir Gulch district.—Gold ore from the Nora Darling property was treated in 1933 by amalgamation and concentration, and test lots of lead ore from the Hope mine and gold ore from the Lucky Boy mine were shipped to a smelter.

Ottawa district (Marysville).—The Drumlummon property of the St. Louis Mining & Milling Co. was by far the largest producer of gold and silver in the Ottawa district in 1933. Lessees working at the Drumlummon mine shipped 1,116 tons of ore and 131 tons of old tailings to a smelter and treated 200 tons of old tailings by concentration and a little ore by amalgamation; the total output (1,592 tons of ore and old tailings) yielded more than 1,000 ounces of gold and nearly 5,000 ounces of silver. The Piegan-Gloster & Shannon property of the Barnes-King Development Co. was operated by lessees also who shipped for smelting about 500 tons of ore and old tailings yielding several hundred ounces of gold. The Bell Boy Gold Mining Co. built a 100-ton flotation plant at the Tousley mine and treated 3,000 tons of lead ore during 1933; concentrates containing more than 10 ounces of gold to the ton were shipped to East Helena for smelting. The Belmont Mines, Inc., cyanided more than 600 tons of ore and old tailings from the Cruse & Bald Mountain property and more than 100 tons of ore and old tailings from the Lucky Girl mine. Old tailings from the Empire property were treated in a small concentration plant, and the concentrates together with a little mill clean-up were shipped to a smelter. Several hundred tons of old tailings from the old Drumlummon dumps were treated by cyanidation, and a little gold ore from the M. & L. property and from a prospect was amalgamated. The remainder of the district lode-mine output consisted of 2 cars of lead ore from the Big Ox & Little Ox property shipped to a smelter and siliceous gold ore of smelting grade from the Gold Bar, Calumet & Staples, Compromise, General Francis Meagher, North Star, and Horseshoe properties. The placer output came from three small properties.

Scratch Gravel district.—Siliceous gold ore of smelting grade was shipped in 1933 from the Scratch Gravel, Julia, Franklin, and Ella properties, and a little gold ore from the Albatross & Yellow Jacket mine and a prospect was amalgamated. Gold was marketed from two small placers.

Smelter district.—The East Helena lead smelter of the American Smelting & Refining Co. was closed part of 1933, but the total receipts for the year showed a marked increase over 1932. They consisted chiefly of lead ore and concentrates from the Coeur d'Alene region, Idaho; zinc-plant residues from Great Falls and Anaconda, Mont.; lead concentrates from Anaconda, Mont.; and siliceous ore and concentrates from various points in Montana.

The fuming plant of the Anaconda Copper Mining Co. at East Helena handled current slag from the lead smelter when the latter was in operation. The output of lead and zinc from the plant increased markedly over 1932.

Stemple district.—The Gould property 20 miles northwest of Silver City was operated in 1933 by the Standard Silver-Lead Mining Co., and nearly 4,900 tons of gold ore were treated in a small flotation plant; 50 tons of concentrates averaging about 33 ounces of gold and 280 ounces of silver to the ton were shipped to East Helena for smelting. Gold ore from the Irma mine was treated in a small amalgamation and concentration mill. Old tailings from the Hubbard mill site were concentrated, and the concentrates with 1 car of mill clean-up were shipped to East Helena for smelting. The remainder of the lode output comprised a test lot of gold ore from the Bachelor mine sent to a smelter and a little gold ore from the Klondike and old tailings from the Raster dump amalgamated. A little placer gold was marketed from the Padbury property.

Vaughn district (Rimini).—Operations were continued in 1933 at the Montana Lead group by Montana Lead, Inc.; 120 tons of lead-zinc ore were shipped to Midvale, Utah, for milling and 76 tons of lead ore to East Helena for smelting. Lead ore was also shipped to East Helena from the Loeber and Kelly properties, and a test lot of gold ore was shipped from the Woodrow Wilson property. Placer gold was marketed from the Black Eagle placer and a prospect.

LINCOLN COUNTY

Libby district.—The Midas Gold Mining & Milling Co. continued operations in 1933 at the Midas property near Libby and treated nearly 4,500 tons of gold ore by amalgamation and flotation; in addition to the bullion and concentrates (the latter averaging about 17 ounces of gold to the ton), 1 car of gold ore of smelting grade was shipped. The Glacier Silver-Lead Mining Co. treated lead ore from the Hazel T. mine in the 300-ton flotation mill and marketed several cars of lead concentrates rich in gold. Gold ore from the Tip Top mine and a prospect was amalgamated. The placer output of the Libby district was 186.92 ounces of gold and 17 ounces of silver; it came from the Liberty, Nugget, Red Gulch, Brophy, and Hard Time properties and from two prospects.

Sylvanite district.—The Sylvanite Mining Co. treated 700 tons of gold ore from the Sylvanite mine in 1933 by amalgamation and flotation. A little bullion was marketed from the Contract placer.

MADISON COUNTY

Alder Gulch district (Virginia City).—The Virginia City Gold Mining Co. built a 50-ton amalgamation and flotation plant at the Prospect group near Virginia City and during the latter part of 1933 treated nearly 4,500 tons of gold ore in the new milling plant; the flotation concentrates contained nearly 9 ounces of gold and 60 ounces of silver to the ton. The remaining lode-mine output of the Alder Gulch district consisted of a little slag from the Gilman dump (amalgamated) and siliceous gold ore of smelting grade from the Mapleton, Prosperity (Mayo Mining Co.), Marietta, Alder Gulch, and High Top properties. The placer output (79.72 ounces of gold and 17 ounces of silver) came from the Alder Gulch placer and other small operations in Alder Gulch.

Bone Basin district.—The entire output from mines in the Bone Basin district in 1933 was gold ore of smelting grade from the Gold Hill, Colorado, and Last Chance Fraction mines.

Lower Hot Springs district (Norris).—A test lot of lead ore was shipped in 1933 from the Galena property and gold ore of smelting grade was produced at the Jim, Moonlight, Boaz, Montana Boy, Lipton, Josephine, and Long Chance properties.

McCarthy Mountain district.—Two cars of gold ore from the Hidden Treasure mine were shipped in 1933 to Anaconda for smelting, and a test lot of gold ore from the Little Maudie mine was treated by amalgamation.

Mineral Hill district.—The Liberty Montana Mines Co. continued operations in 1933 at the Mammoth property at Jefferson Island and treated 15,554 tons of copper ore in the flotation mill; the concentrates (1,090 tons containing 2,984.90 ounces of gold, 7,022 ounces of silver, and 63,439 pounds of copper) were shipped to Anaconda for smelting. The Pacific Gold Mining Co. operated the Boss Tweed & Clipper group near Pony, treated 16,215 tons of gold ore in a 100-ton flotation mill, and shipped 1,081 tons of gold concentrates (containing 2,841.85 ounces of gold, 3,782 ounces of silver, and 8,073 pounds of copper) to East Helena for smelting; a little mill clean-up was also shipped to a smelter. The remainder of the Mineral Hill district output consisted of siliceous gold ore of smelting grade from the Strawberry (Keystone), Ben Harrison Fraction, and Arizona (Boyd) properties, a little gold ore from a prospect treated by amalgamation, and a little placer gold from South Boulder Creek.

Norwegian district.—The Mascot property in the Norwegian district 6 miles west of Norris produced 189 tons of gold ore of smelting grade in 1933 and the Old Norwegian mine 105 tons of similar material. Small lots of gold ore were also shipped from the Minnie, Opportunity & Red Chief, Bachelor, and Pauline properties, and a little gold ore from the Wellington mine was treated in a small concentrator.

The chief output of the district was placer bullion (2,552.12 ounces of gold and 380 ounces of silver) from the dredge of the Story Gold Dredging Co. at the Norwegian placer in Norwegian Gulch. The dredge was operated from January until September, when dismantling was started.

Rabbit district.—Operators at the Jack Rabbit mine in 1933 shipped 176 tons of rich lead ore to Midvale, Utah, for smelting; test lots of lead ore were shipped from the Dickey lode property and a prospect.

Siliceous gold ore was shipped for smelting from the Elgin, Champion, Eagle, Carpenter, Gold Nugget, Montrose, Chicksaw, D. & J., May Day, Picard, California, Combination, and Short Shift properties; gold ore from the Carpenter and Watseca mines and from two prospects was amalgamated; and gold ore from the Picard was treated by amalgamation and concentration.

Ramshorn district.—Lessees operating the Ella Jay property in 1933 shipped nearly 300 tons of gold ore to Anaconda for smelting. Gold ore of smelting grade was also shipped from the Betsy Baker, Safe-way, Golden Eagle, Goldsmith, and Modoc properties and from a prospect. Siliceous gold ore from the Goldsmith, First Chance, Blue Bird, and two prospects was amalgamated. The placer output (116.15 ounces of gold and 20 ounces of silver) came from the Canyon, McKay, Halloran, and various smaller operations in Harris Gulch.

Sand Creek district.—Gold ore of smelting grade was shipped in 1933 from the McVey, Fraction, Whip-poor-will, and Good Enough properties.

Sheridan district.—The Emma B. mine was operated in 1933 by the Smuggler Mining Co., and 600 tons of gold ore were treated by amalgamation and concentration; in addition to the bullion and concentrates from the mill, the company shipped 1 car of gold ore of smelting grade. Gold ore of smelting grade was also shipped from the Red Pine, Gold Era, Fairview, Star of Hope, Cousin Jennie, Little Jane, Nettie, Red Bird, Tamarack, and Belle properties. Gold ore from the Ruby and Lone Pine & Bubble properties was amalgamated, and a little gold ore from the Sunnyside was treated in a small concentration plant. One car of lead ore was shipped from the Fairview group, and a test lot of copper ore came from the Sarge Hall mine. A little placer gold was marketed from two properties in Wisconsin Gulch.

Silver Star district.—The entire output from lode mines in the Silver Star district in 1933 was gold ore of smelting grade from the Broadway, Strawn, Independent, Aurora, Governor Hayes, Hudson, New Deal, and Golden Rod mines. Placer gold was recovered at two properties in Nugget Gulch.

Summit district.—The Winnetka property was active in 1933, and about 1,125 tons of gold ore treated in the amalgamation and concentration mill yielded nearly 440 ounces of gold in bullion and concentrates. Gold ore from the Valley View mine was treated by amalgamation, cyanidation, and concentration; gold ore from the Apex mine was amalgamated; and about 410 tons of old tailings from the Mountain Flower dumps were cyanided.

Tidal Wave district (Twin Bridges).—Gold ore of smelting grade was shipped in 1933 from the Corncracker, Pete & Joe, Carolina, Edmond Forrest, Topeka, Mountain View, High Ridge Fraction, Thrush, Alfreda, Beck, Golden Shower, Moonlight, Daisy, Sheridan, and Union properties. Nearly 460 tons of gold ore from the Agitator mine were treated by amalgamation. Small lots of lead ore were shipped from the Ella, Irish Fraction, and Alfreda properties.

Upper Hot Springs district.—Gold ore of smelting grade was shipped in 1933 from the Blue Grouse, Bull Moose, Dixie, and White Feather properties, and a little ore from the Liburgh mine was amalgamated.

Washington (Meadow Creek) district.—The Lehigh Gold Mining Co. treated 45 tons of ore from the Lehigh mine in 1933 by amalga-

mation and shipped a test lot of gold ore to a smelter. Gold ore of smelting grade was shipped from the Highland Lady No. 2 and the Snowslide properties.

MEAGHER COUNTY

Beaver Creek district.—Four placers on Beaver Creek produced 38.07 ounces of gold and 3 ounces of silver in 1933; most of the bullion came from the Klondike placer.

Little Belt district.—Gold ore (about 75 tons) from the Beverly Hills group was treated in 1933 in a small amalgamation mill.

Thompson Gulch district.—The entire metal output of the Thompson Gulch district in 1933 was placer bullion, chiefly from the Camp Robber and Corner Stone properties.

MINERAL COUNTY

Cedar Creek district (Iron Mountain, Quartz).—The Old Sierra (J. B.) mine was the only producing lode mine in the Cedar Creek district in 1933; about 100 tons of gold ore were treated by amalgamation. The placer output was 695.78 ounces of gold and 17 ounces of silver; it came from 20 properties (on various creeks), including the Dakota, Oregon Creek, Stockholm, Meadow Creek, Calumet, Stemwinder, Irene Lu, Cedar Creek, and Little Bear Creek claims and other properties.

Keystone district.—One car of lead ore was shipped in 1933 from the property of the Little Pittsburgh Mining Co. 3 miles north of Ashmore.

MISSOULA COUNTY

Coloma (Garnet) district.—The Big Six Mining Co. operated the Big Six (Dandy) property 12 miles northwest of Bearmouth and shipped more than 500 tons of gold ore in 1933 to Anaconda for smelting. Small lots of gold ore of smelting grade were shipped from the East Garnet, Idaho, Portia, and Arm & Hammer properties. A little gold was recovered at the Summit placer.

Elk Creek district.—The entire output of the Elk Creek district in 1933 was placer gold (45.91 ounces); most of it came from the Depression & Old Cabin, Hopeless Hole, and Piegan placers.

Nine Mile district.—The Boyd placer on Eustache Creek was by far the largest producer in the Nine Mile district in 1933. The remainder of the output came from the Jameson, Liberty, Petty Creek, Kennedy Creek, Marion Creek (Easy Find), and Chrysalis (P. R. Mc.) placers.

PARK COUNTY

Emigrant Creek district.—The Emigrant Gold Mining Co. produced nearly 266 ounces of gold and 44 ounces of silver in 1933 from the Fairhaven & Key placer in Emigrant Gulch. Most of the remainder of the Emigrant Creek district output came from the Upper Falls & Hy-grade placer of the Yellowstone Gold Mining Co. and the Pittsburgh and Gold Bug placers.

New World district.—The New Year's Gift mine 6 miles northeast of Cooke was operated in 1933 by the McLaren Gold Mines Co., and 321 tons of gold ore were shipped to smelters. The Glengarry Mining Co. shipped 185 tons of gold ore from the Lizzie, etc., group and mar-

keted a little bullion from gold ore amalgamated. Operators of the Melrose mine shipped 59 tons of gold ore to smelters. Most of the placer output came from the treatment of surface material on the Melrose property.

Sheepeater district.—The output from mines in the Sheepeater district increased from 1,393.25 ounces of gold and 305 ounces of silver in 1932 to 4,848.48 ounces of gold and 900 ounces of silver in 1933 due to marked increase in gold production at the Jardine property 6 miles northeast of Gardiner, operated by the Jardine Mining Co. The company treated 20,248 tons of ore and 2,174 tons of old tailings in the 200-ton amalgamation and concentration mill and marketed bullion and calcines (from the roasting of concentrates) yielding more than 4,800 ounces of gold and 900 ounces of silver. The property was the largest producer of gold in Montana in 1933. A little placer gold (10.69 ounces) was marketed from two placers.

PHILLIPS COUNTY

Little Rockies district.—The Little Ben Mining Co. continued operations in 1933 at the August property 65 miles south of Dodson and shipped 205 tons of gold ore to East Helena for smelting and treated 4,779 tons of ore in the 75-ton cyanidation plant, yielding in all nearly 3,700 ounces of gold and more than 3,500 ounces of silver. The placer output of the Little Rockies district was 51.86 ounces of gold and 17 ounces of silver, chiefly from the Illinois Tunnel, Dorothy, Annex, Grand Forks, and Zortman placers.

POWELL COUNTY

Big Blackfoot district.—The output from the Big Blackfoot district in 1933 came from the Gold Dust (McCormick) property of the Kilburn Placer Mining Co. on Ogden Mountain.

Nigger Hill district (Elliston).—Small lots of lead ore of smelting grade were shipped in 1933 from the Carbonate King, Bob Cat (Brainstorm), and Pioneer properties.

Pioneer district (Gold Creek).—A new 6,500-cubic yard, electric-driven dredge was installed at the Pioneer property of the Gold Creek Mining Co. during the summer of 1933 and was placed in operation by the Yuba Associated Engineers, Ltd., November 27. Nearly 134,000 cubic yards of gravel had been treated by the end of the year, and the property was by far the largest producer in the Pioneer district. The dredge is the largest in the State, and its erection and operation constituted one of the outstanding features of the revival of placer mining in Montana during 1933. Other lessees on the Pioneer ground and the Ballard, Yam Hill, and Findaster placers also contributed to the district output.

Washington Gulch district.—Several hundred tons of gold ore from the Shamrock (Mascotte) mine of the Shamrock Mines, Ltd., were treated in 1933 in a flotation mill, and gold ore from the North American mine was smelted at East Helena. The placer output (299.20 ounces of gold and 37 ounces of silver) came chiefly from the Fontana property of the El Dorado Gold Placer Mining Co.; among the other placer producers were the Old Shoe, Katy, and Cornucopia.

Zozell district.—The Blue Eyed Maggie mine 9 miles east of Deer Lodge was the largest producer in the Zozell district in 1933; lessees shipped 340 tons of gold and silver ore to Anaconda for smelting.

The Emery Consolidated Mining Co. shipped 108 tons of gold ore from its property 10 miles east of Deer Lodge to smelters. Test lots of gold ore from the Climax mine and gold and silver ore from the Galena property were shipped to Anaconda. A little placer gold (2.08 ounces) was marketed from a prospect.

RAVALLI COUNTY

Overwich district.—A little gold ore from the Washington mine was treated in 1933 by amalgamation. The placer output was 81.51 ounces of gold and 3 ounces of silver, chiefly from the Camas (Hogue), Homestake, Lucerne, and Discovery placers.

SANDERS COUNTY

Eagle district.—The Jack Waite Mining Co. continued operations in 1933 at the Silver King property (which extends from Sanders County, Mont., into Shoshone County, Idaho) and produced nearly 12,700 tons of lead-zinc ore of milling grade and about 1,000 tons of lead ore of smelting grade from the Sanders County section of the mine. The mill ore was treated in the 500-ton flotation plant near Duthie, Idaho; lead concentrates, together with the first-class lead ore, were shipped to the Bunker Hill smelter near Kellogg, Idaho, and zinc concentrates went to the electrolytic zinc plant of the Sullivan Mining Co. at Silver King, Idaho.

Revais Creek district.—A lessee shipped 50 tons of copper ore in 1933 from the Dixon (Lucky Strike) mine 7 miles southwest of Dixonto the smelter at Anaconda.

Vermillion district.—Most of the output of the Vermillion district in 1933 came from the Mammy Lou & Driftwood and Maple (Russell) placers on Trout Creek.

SILVER BOW COUNTY

The following table gives the output of mines in Silver Bow County in 1932 and 1933. There was a sharp decrease in copper production, but there were marked increases in lead and zinc and small increases in gold and silver output.

Production of gold, silver, copper, lead, and zinc in Silver Bow County, Mont., 1932-33, in terms of recovered metals

Year	Mines producing	Ore, old tailings, etc.	Gold (lode and placer)	Silver (lode and placer)	Copper ¹	Lead	Zinc	Total value
1932.....	33	<i>Short tons</i> 652,967	<i>Fine ounces</i> 4,182.84	<i>Fine ounces</i> 1,563,752	<i>Pounds</i> 84,607,794	<i>Pounds</i> 2,600	<i>Pounds</i> 30,962,929	\$5,857,814
1933.....	43	613,752	4,464.72	2,361,320	65,239,000	8,370,243		6,704,194

¹ Includes copper saved from precipitates, as follows: 1932, 9,474,300 pounds; 1933, 9,167,018 pounds.

From 1882 (the first year for which detailed records are available) to the end of 1933 the mines in Silver Bow County, which includes the Butte or Summit Valley district, produced the five metals as follows: Gold, 1,812,431.14 ounces; silver, 464,448,810 ounces; copper, 10,436,818,053 pounds; lead, 322,662,066 pounds; and zinc, 2,598,358,854 pounds. The total value of this production is \$2,179,328,840.

Butte or Summit Valley district.—The Anaconda Copper Mining Co. operated its copper properties at Butte in 1933 at only about 25 percent of capacity, with the result that there was a decrease from 1932 of nearly 20,000,000 pounds in copper and 1,200 ounces in gold from copper ore; however, silver from copper ore produced by the company increased about 46,000 ounces. The company produced 463,808 tons of copper ore of milling grade, shipped to the concentrator at Anaconda, and 12,374 tons of copper ore of smelting grade and 6,013 tons of mine-water precipitates, shipped to the smelter at Anaconda. As a result of improvement in the sales price of silver, lead, and zinc the company resumed production of lead-zinc ore during 1933 and shipped more than 79,000 tons of such ore from the Orphan Girl mine at Butte to the lead-zinc flotation plant at Anaconda. In consequence of these operations the Anaconda Copper Mining Co. was by far the largest producer of silver, copper, and zinc in Montana in 1933 and ranked second in lead and sixth in gold. The company also resumed production of lead-zinc ore at the Emma mine, held under lease from the Butte Copper & Zinc Co., and shipped 55,573 tons of lead-zinc ore to Anaconda for milling. The Emma mine ranked first in output of lead and second in silver and zinc.

The copper smelter of the Anaconda Copper Mining Co. at Anaconda was operated regularly at reduced capacity on ore, concentrates, precipitates, etc., from company properties, with an increased quantity of ore and concentrates from custom shippers. The smelter output of gold and silver was greater than in 1932, but the copper output was less. The copper refinery and wire and rod mill of the company at Great Falls were operated at reduced rates on blister copper from Anaconda. The production of lead-zinc ore from mines at Butte during the latter half of the year resulted in the reopening of the 1,750-ton lead-zinc flotation mill at Anaconda, and the resulting zinc concentrates materially increased the receipts at the electrolytic zinc plants of the company. The Great Falls zinc plant was reopened in January 1933 and operated the entire year on company concentrates and custom concentrates, the latter largely from Idaho and Utah plants. The zinc plant at Anaconda was operated a short time in the fall owing largely to a sharp increase in receipts of custom concentrates from a plant in Utah. A detailed profit-and-loss statement and other information on the year's operations are given in the company's annual report.

A lessee working at the Butte & Superior property (closed in 1930 due to exhaustion of commercial ore reserves) cleaned up 779 tons of zinc ore shipped to the mill at Anaconda and 17 tons of mine-water precipitates sent to the smelter. Lessees reopened the Agnes-Highland group of the Ardsley Butte Mines Corporation and shipped 397 tons of silver ore to the smelter at Anaconda.

The remainder of the output from lode mines in the Butte district consisted of silver ore from the Lavena, Magna Charta, and St. Patrick mines and gold ore from the Addition and Shorty properties, all shipped to Anaconda for smelting.

Placer bullion (128.87 ounces of gold and 40 ounces of silver) was marketed from the Yankee Doodle, Sparrow, Vesuvius, and Monitor placers and from various small operations in the district.

Divide Creek district.—Test lots of gold ore from the Gold King and Combination & Alice properties were treated in 1933 by amalgamation.

Flint Creek district.—Lessees shipped 455 tons of gold and silver ore from the dump of the Flint Creek mine near Butte to the smelter at Anaconda in 1933.

German Gulch district.—Most of the output from the German Gulch district in 1933 came from the German Gulch and Beal placers.

Highland district.—The output from lode mines in the Highland district in 1933 consisted of 805 tons of gold ore from the Highlands (Tilton) group and the Bonanza property, 14 tons of gold and silver ore from the Agnes mine, and a test lot of silver ore from the Rabbit Foot prospect. The placer output (64.24 ounces of gold and 17 ounces of silver) came chiefly from the Gold Chief, Bill, Black Bear, Little Bill, and Sudden Storm placers.

Independence district.—The Jewel Leasing Co. shipped 120 tons of gold ore in 1933 from the Jewel mine near Rocker to Anaconda for smelting. The placer output (10.21 ounces of gold and 3 ounces of silver) came from the Metz (Virgo) placer and a prospect.

Silverbow Creek district.—Placer bullion was recovered in 1933 from various small operations on Silverbow Creek west of Butte.

STILLWATER COUNTY

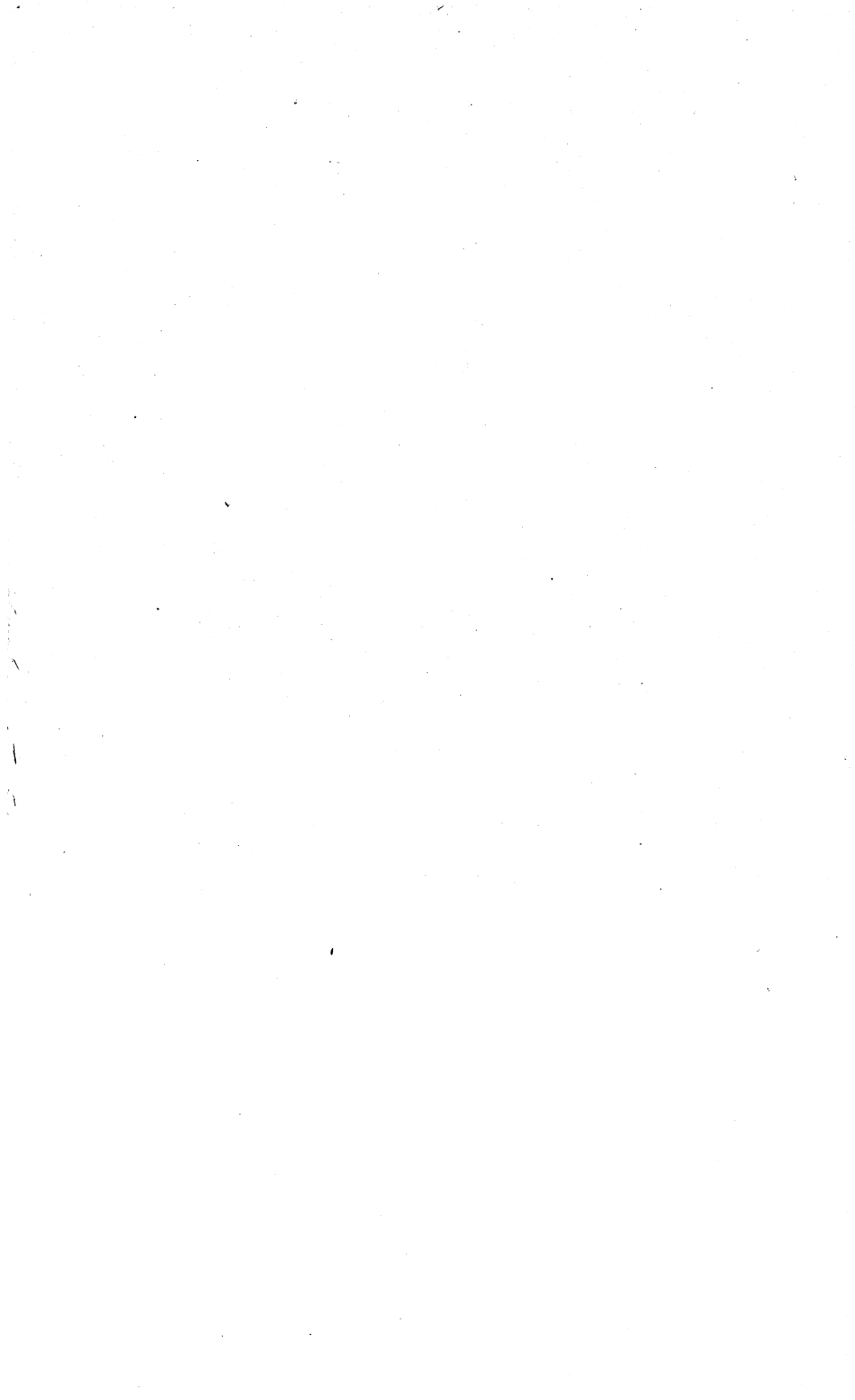
A little placer gold was recovered in 1933 from a property on the Yellowstone River 4 miles west of Columbus.

SWEET GRASS COUNTY

One car of old tailings from the Independence property 40 miles south of Big Timber was shipped in 1933 to Anaconda for smelting.

TOOLE COUNTY

A little placer gold was marketed in 1933 from the Cummings property near Goldbutte.



GOLD AND SILVER

(DETAILED STATISTICS—GENERAL REPORT)

By J. P. DUNLOP

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DOMESTIC PRODUCTION

Approximate distribution of the production of gold and silver in the United States in 1933, by producing States and Territories

[Figures supplied by U.S. Bureau of the Mint]

State or Territory	Gold		Silver		Increase or decrease from 1932 (fine ounces)	
	Fine ounces	Value ¹	Fine ounces	Value ²	Gold	Silver
Alabama.....	5	\$100	-----	-----	-29	-8
Alaska.....	457, 274	9, 452, 700	155, 334	\$54, 367	+24, 081	-101, 339
Arizona.....	71, 755	1, 483, 300	2, 144, 974	750, 741	+5, 089	+7, 715
California.....	594, 867	12, 297, 000	354, 271	123, 995	+24, 463	-154, 421
Colorado.....	265, 216	5, 482, 500	2, 163, 277	757, 147	-4, 915	+510, 193
Georgia.....	435	9, 000	51	18	+179	+21
Idaho.....	56, 410	1, 166, 100	6, 626, 743	2, 319, 360	+15, 451	+35, 792
Maryland.....	15	300	-----	-----	+15	-----
Michigan.....	8	200	125, 926	44, 074	+8	+54, 518
Montana.....	61, 243	1, 266, 000	3, 563, 820	1, 247, 337	+22, 838	+1, 227, 720
Nevada.....	101, 200	2, 092, 000	1, 031, 283	360, 949	-26, 330	-273, 779
New Mexico.....	27, 095	560, 100	1, 162, 783	406, 974	+7, 087	+54, 619
North Carolina.....	648	13, 400	180	63	+455	-9, 914
Oregon.....	19, 785	409, 000	17, 535	6, 137	-136	+8, 508
Pennsylvania.....	247	5, 100	2, 197	769	+165	+1, 414
Philippine Islands.....	279, 535	5, 778, 500	181, 372	63, 480	+49, 807	+32, 241
Puerto Rico.....	29	600	-----	-----	-77	-12
South Carolina.....	160	3, 300	32	11	+92	+27
South Dakota.....	519, 548	10, 740, 000	130, 317	45, 611	+40, 394	+4, 929
Tennessee.....	223	4, 600	28, 083	9, 829	+63	+8, 783
Texas.....	15	300	240	84	+5	-1, 174
Utah.....	93, 252	1, 927, 700	5, 297, 720	1, 854, 202	-52, 700	-2, 382, 658
Virginia.....	19	400	-----	-----	+4	-----
Washington.....	5, 041	104, 200	16, 114	5, 640	+634	-1, 398
Wyoming.....	2, 221	45, 900	377	132	+571	+79
	2, 556, 246	52, 842, 300	23, 002, 629	8, 050, 920	+107, 214	-978, 144

¹ Gold valued at \$20.67+ per fine ounce.

² Silver valued at 35 cents per fine ounce. Average New York price of bar silver.

The figures in the preceding table were obtained through cooperation between the United States Bureau of the Mint and the Bureau of Mines and were agreed upon after conference and adjustment between the two Bureaus. They are therefore final for both.

The totals are based on bullion deposits in the United States mints and assay offices and on returns to the Bureau of the Mint from the smelting and refining companies. The distribution is adjusted by means of information collected by the Bureau of Mines directly from the producing mines and tabulated for the mine reports discussed later. The data for the total production and in part for the distribution are obtained from records of (1) the unrefined domestic gold and silver deposited in the United States mints and assay offices, (2) the domestic gold and silver in fine bars reported by private refineries, and (3) the unrefined domestic gold and silver contained in ore and matte exported for reduction. The last item is very small.

Domestic smelters recovered 564,978 ounces of gold and 96,354,640 ounces of silver from foreign ores and bullion in 1933, a decrease of 105,857 ounces in gold but an increase of 48,493,987 ounces in silver compared with 1932. As usual in recent years the foreign ores and bullion came mainly from Mexico, Canada, and Peru.

More old gold was returned from industrial to monetary use in 1932 and 1933 than was issued to the arts and industries, a distinct reversal of the normal trend; returns for 1933 totaled 1,103,238 ounces and issues 829,016 ounces, a net return of 280,222 ounces in old gold. The quantity of new silver used for industrial and artistic purposes was 10,810,571 ounces (47 percent of the domestic output) in 1933 compared with 14,461,011 ounces in 1932. The total quantity of silver (new and old) used in the arts and industries was 29,343,451 ounces (5,085,484 ounces more than in 1932). In addition to the gold and silver derived from foreign and domestic ore and bullion 1,103,238 ounces of gold and 18,532,880 ounces of silver were recovered from old or obsolete jewelry, silverware, dental waste, old film, and other material.

Gold and silver produced in the United States, 1792-1933

[The estimate for 1792-1872 is by R. W. Raymond, commissioner, and for the period since 1872 by the Director of the Mint]

Period	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value
1792-1847.....	1, 186, 977	\$24, 537, 000	309, 500	\$404, 500
1848-72.....	58, 279, 781	1, 204, 750, 000	118, 568, 200	157, 749, 900
1873-1933 ¹	169, 415, 228	3, 502, 123, 600	3, 126, 321, 306	2, 370, 455, 009
	228, 881, 986	4, 731, 410, 600	3, 245, 199, 006	2, 528, 609, 409

¹ Gold in 1933 valued at \$20.67+ per fine ounce as heretofore.

The average commercial value per fine ounce of silver for the total recorded domestic production is \$0.779.

REGULATIONS AND EXECUTIVE ORDERS RELATING TO GOLD AND SILVER OF DOMESTIC ORIGIN

A complete account of the regulations pertaining to gold and silver is given in the chapter of Minerals Yearbook, 1934, on Gold and Silver, issued by the United States Bureau of Mines. The Yearbook also contains detailed statistics of production, by States, and may be

purchased for \$1.75 from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Following is a brief résumé of orders and regulations in 1933 and in early 1934.

Gold.—On April 20, 1933, an Executive order, relating to foreign exchange and earmarking and exporting of gold coin, bullion, or currency, forbade the export of gold bullion. On July 27 the newspapers announced a decision of the Attorney General, effective August 9, that permitted export to 75 percent of the United States gold-mine production but made it impracticable for the remaining 25 percent, a situation which would have soon resulted in the closing of many smelters.

The President on August 29 issued an Executive order, coupled with an antihoarding clause, under which the United States Government acted as agent for producers of newly mined gold to obtain the world price through the United States Mint and Federal Reserve banks.

On October 25 the Reconstruction Finance Corporation began buying newly mined gold at arbitrarily fixed and periodically rising prices, the day-by-day price generally being above the world price. On October 27 the Reconstruction Finance Corporation was authorized by Presidential order to extend Government purchase of gold by entering foreign markets and began to bid for gold in Paris and London markets, offering \$32.36 per ounce. On January 16, 1934, the Federal Reserve Bank of New York began paying depositors by check the United States price of \$34.45 per ounce, less a small commission, coincident with the President's message of January 15 to Congress recommending that the upper limit of permissible revaluation of the dollar be 60 percent. Payment for deposits was resumed on February 1 by the Bureau of the Mint, following passage of the Gold Reserve Act of 1934 on January 30, 1934, and the President's proclamation of January 31 fixed the weight of the gold dollar at $15\frac{1}{21}$ grains, nine tenths fine. The value of gold per fine ounce immediately became \$35, at which price it still remains.

Silver.—In December 1933 the price of silver derived from domestic mines and produced after the date of the order was fixed at 64.5 cents per fine ounce. This price had virtually no effect on the 1933 production or value of silver, as only a few ounces of silver from domestic mines and refineries reached the mint between the date of the order and the end of 1933.

PRICES OF SILVER

The average monthly prices of fine bar silver in New York in 1933 follow:

Price of silver per fine ounce in 1933, by months

January.....	\$0. 25712	August.....	\$0. 36386
February.....	. 26386	September.....	. 38752
March.....	. 27737	October.....	. 38502
April.....	. 31042	November.....	. 43286
May.....	. 34384	December.....	. 43362
June.....	. 35975		
July.....	. 37942	Average.....	. 34997

Price of silver per fine ounce, 1929-33¹

1929.....	\$0. 533	1932.....	\$0. 282
1930.....	. 385	1933.....	. 350
1931.....	. 290		

¹ Average New York price for all silver.

The yearly price of silver showed a fairly regular downward trend—from \$1.337 and \$1.339 in 1865 and 1866 to \$0.507 in 1915. The World War caused the price to advance; the downward trend was steady from 1923 to 1927. There was an increase of about 2 cents an ounce in 1928, followed by a decrease of about 5 cents an ounce in 1929. The average yearly price decreased to \$0.385 for 1930, \$0.290 for 1931, and \$0.282 for 1932, but it increased to \$0.350 for 1933.

More than half the world output of silver is derived from ores valued chiefly for metals other than silver, so that the price of silver has less weight in encouraging the bulk of silver production than that of other metals associated with it. Only about one third of the world silver output is derived from ores having silver as a highly predominant factor.²

Other information relating to the production and consumption of silver has been published by the Bureau of Mines.³

IMPORTS AND EXPORTS ⁴

Value of gold and silver imported into and exported from the United States, 1932-33, by classes

	Imports	Exports	Excess of—	
			Imports	Exports
Gold: 1932				
Contained in domestic ore and base bullion.....		\$55,752		\$55,752
Contained in foreign ore and base bullion.....	\$15,244,602		\$15,244,602	
Domestic bullion refined.....	1,033,229	710,196,647		709,163,418
Foreign bullion refined.....	254,799,204	4,491,629	250,307,575	
United States coin.....	38,658,595	85,790,248		47,131,653
Foreign coin.....	53,579,497	8,993,248	44,586,249	
	363,315,127	809,527,524	310,138,426	756,350,823
Excess exports over imports.....				446,212,397
Silver:				
Contained in domestic ore and base bullion.....		6,940		6,940
Contained in foreign ore and base bullion.....	6,775,674		6,775,674	
Domestic bullion refined.....	373	10,160,831		10,160,458
Foreign bullion refined.....	9,982,644	1,582,101	8,400,543	
United States coin.....	1,771,807	36,701	1,735,106	
Foreign coin.....	1,119,445	2,063,321		943,876
	19,649,943	13,849,894	16,911,323	11,111,274
Excess imports over exports.....			5,800,049	
Gold: 1933				
Contained in domestic ore and base bullion.....		2,606,607		2,606,607
Contained in foreign ore and base bullion.....	16,178,252	2,164	16,176,088	
Domestic bullion refined.....	44	267,007,686		267,007,642
Foreign bullion refined.....	169,203,250	78,020,502	91,182,748	
United States coin.....	4,873,001	16,399,795		11,521,794
Foreign coin.....	2,937,139	2,615,439	321,700	
	193,196,686	366,652,193	107,680,536	281,136,043
Excess exports over imports.....				173,455,507
Silver:				
Contained in domestic ore and base bullion.....		189,150		189,150
Contained in foreign ore and base bullion.....	6,508,385		6,508,385	
Domestic bullion refined.....	150	13,940,234		13,940,084
Foreign bullion refined.....	50,133,645	1,331,883	48,801,762	
United States coin.....	1,008,056	48,380	959,676	
Foreign coin.....	2,574,510	3,531,326		956,816
	60,224,746	19,040,973	56,269,823	15,086,050
Excess imports over exports.....			41,183,773	

² Merrill, Charles White, *Economic Relations of Silver to Other Metals in Argentiferous Ores*: Econ. Paper 10, Bureau of Mines, 1930, 29 pp.

³ Merrill, Charles White, *Summarized Data of Silver Production*: Econ. Paper 8, Bureau of Mines, 1930, 58 pp.; *Consumption of Silver in the Arts and Industries of the United States*: Econ. Paper 14, Bureau of Mines, 1932, 18 pp.

⁴ Figures on imports and exports compiled by Claude Galihier, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

DOMESTIC SUPPLY

The total excess of imports of gold over exports from 1916 to 1933, inclusive, was \$1,551,319,966. The only years since 1916 in which exports of gold exceeded imports were: 1919, when the excess was \$292,000,000; 1925, when it was \$134,000,000; 1928, when it was \$391,862,000; 1932, when it was \$446,212,000; and 1933, when it was \$173,456,000. The large gain in the domestic supply of gold is illustrated best by the following figures, which show the excess of imports over exports: 1916, \$530,000,000; 1917, \$180,000,000; 1918, \$21,000,000; 1920, \$95,000,000; 1921, \$667,000,000; 1922, \$238,000,000; 1923, \$294,000,000; 1924, \$258,000,000; 1926, \$98,000,000; 1927, \$6,000,000; 1929, \$175,000,000; 1930, \$280,000,000; and 1931, \$145,325,000.

The domestic supply of new gold comes chiefly from dry and siliceous ore and from placer gravel worked largely by dredges. These two sources yielded 90.2 percent of the domestic gold in 1915, 79.86 percent in 1930, 86.5 percent in 1931, 92.9 percent in 1932, and 92.94 percent in 1933. The proportionate output of gold from copper ore was 7.2 percent in 1915, 16.4 percent in 1926, 22.2 percent in 1929, 9.65 percent in 1931, and only 4.59 percent in 1933.

In 1915 dry and siliceous ore yielded 36 percent of the total silver, copper ore 26 percent, lead ore 27 percent, and lead-zinc ore only 9 percent. In 1933 dry and siliceous ore yielded 15.6 percent, copper ore 25.2 percent, lead ore 17.0 percent, and lead-zinc ore 26.6 percent. Thus, the largest gain in the output of silver has been from lead-zinc ore and the greatest loss from dry and siliceous ore. The recovery of silver from copper-lead ores has increased considerably in the last 2 years, owing to the rich silver content of some copper-lead ore from mines in Idaho and Colorado. Copper-lead ores yielded 14.8 percent of the total silver in 1932 and 15 percent in 1933.

WORLD PRODUCTION

GOLD

According to the Bureau of the Mint, the estimated quantity of gold produced in the world from 1860 to 1933, inclusive, is 920,312,353 fine ounces. For 1933 alone it is estimated as 24,962,408 ounces, an increase of 811,647 ounces over 1932.

In a Bureau of Mines publication ⁵ the world output of gold from 1493 to 1927, inclusive, is estimated as approximately 1,003,560,000 ounces, of which 51.5 percent was produced from 1901 to 1927.

In 1933 production of gold in the United States (Philippine Islands excluded) increased 57,407 ounces over 1932. Other large increases were recorded as follows: Russia, 499,290 ounces; Australia, 111,982 ounces; Chile, 107,413 ounces; Southern Rhodesia, 68,364 ounces; China, 53,249 ounces; Mexico, 53,240 ounces; Colombia, 50,016 ounces; Philippine Islands, 49,807 ounces; Sweden, 45,930 ounces; British West Africa, 45,600 ounces; New Guinea, 45,173 ounces; French West Africa, 43,388 ounces; Belgian Congo, 39,453 ounces; Peru, 28,517 ounces; French Equatorial Africa, 23,148 ounces; Yugoslavia, 22,762 ounces; and Venezuela, 18,623 ounces. The

⁵ Ridgway, Robert H., Summarized Data of Gold Production: Econ. Paper 6, Bureau of Mines, 1929, 63 pp.

combined production of gold from Transvaal, Cape Colony, and Natal decreased 544,819 ounces in 1933 and that from Canada decreased 101,272 ounces.

The following table shows the output of gold by countries, 1928 to 1933, as given by the Bureau of the Mint:

World production of gold, 1928-33¹

Country	1928	1929	1930	1931	1932	1933
North America:						
Canada.....	\$39,082,000	\$39,861,700	\$43,557,100	\$55,715,100	\$63,061,106	\$60,967,614
Central America.....	1,250,000	1,100,000	1,200,000	1,400,000	1,700,000	1,800,000
Mexico.....	14,451,700	13,535,900	13,860,200	12,878,600	12,082,419	13,182,984
United States ²	44,335,300	42,514,300	43,419,000	45,762,100	45,877,085	47,063,800
South America:						
Argentina.....	20,000	20,700	20,700	-----	19,928	19,928
Bolivia.....	10,500	31,000	340,700	358,200	253,871	253,871
Brazil.....	2,069,600	2,219,800	2,000,000	2,387,000	2,386,584	2,604,650
Chile.....	595,500	221,900	344,900	442,000	787,555	3,007,979
Colombia.....	833,600	1,000,000	3,281,200	4,015,900	5,131,368	6,165,208
Ecuador.....	1,541,500	1,391,800	1,447,000	1,232,400	1,356,671	1,254,098
Guiana:						
British.....	110,100	132,000	143,300	143,500	386,853	641,986
French.....	939,700	850,300	900,000	899,900	930,439	877,649
Netherland.....	113,700	61,500	81,600	95,000	185,426	255,876
Peru.....	1,833,000	2,524,800	1,861,500	1,523,300	1,148,424	1,737,922
Uruguay.....	-----	-----	-----	-----	-----	383
Venezuela.....	997,600	893,100	1,156,500	874,600	1,593,529	1,978,501
Europe:						
Austria.....	6,600	-----	-----	-----	5,313	-----
Czechoslovakia.....	143,500	103,700	49,900	22,600	47,194	47,194
France.....	1,116,500	1,116,500	881,900	881,900	897,199	1,196,279
Germany.....	112,300	120,300	125,600	85,100	45,189	45,189
Great Britain.....	2,700	200	-----	-----	124	1,323
Greece.....	10,000	10,000	10,000	10,000	9,964	9,964
Hungary.....	-----	-----	-----	-----	-----	59,142
Italy.....	38,600	31,900	35,600	44,700	37,871	53,021
Rumania.....	1,294,600	1,470,800	1,775,800	1,994,400	2,266,273	2,480,620
Russia.....	13,584,100	22,436,800	29,636,500	35,162,000	41,138,708	51,460,000
Spain.....	15,000	10,000	10,000	10,000	10,000	234,543
Sweden.....	289,400	206,700	1,240,300	1,860,500	1,860,465	2,809,922
Yugoslavia.....	299,100	381,500	478,500	451,900	983,607	1,454,139
Asia:						
China.....	2,067,200	1,033,600	2,000,000	2,000,000	2,000,000	3,100,774
Chosen.....	3,440,000	2,843,200	3,299,400	4,312,700	4,312,683	4,312,683
East Indies: Netherland.....	2,278,900	2,230,500	2,282,900	2,068,900	1,611,659	1,629,602
Federated Malay States.....	386,400	505,000	611,800	558,600	561,426	600,227
India, British.....	7,773,800	7,521,800	6,805,800	6,831,700	6,814,098	6,947,926
Indo-China.....	5,300	10,600	10,600	6,000	5,974	3,328
Japan.....	6,905,700	7,360,200	8,036,000	8,972,300	8,972,347	8,967,440
Philippine Islands.....	2,204,500	3,320,400	3,704,500	3,761,900	4,748,899	5,778,500
Sarawak.....	4,100	29,000	35,700	122,000	169,054	386,811
Taiwan.....	186,300	311,800	322,000	1,910,700	1,910,694	1,910,694
Turkey.....	18,600	18,600	18,600	18,600	18,605	-----
Africa.....	233,033,400	235,346,900	242,884,900	246,572,800	263,276,049	256,893,221
Australasia.....	13,063,700	12,090,100	12,854,900	16,205,400	20,636,010	23,823,684
Total: Value.....	400,995,500	404,969,000	430,724,900	461,592,300	499,240,663	516,018,675
 Fine ounces.....	19,399,124	19,585,536	20,836,318	22,329,525	24,150,761	24,962,408

¹ Valued at \$20.67+ per fine ounce.

² Philippine Islands excluded.

SILVER

The Bureau of the Mint estimates the world production of silver from 1860 to 1933, inclusive, as 10,341,430,906 fine ounces. The output was 3,906,000 ounces less in 1933 than in 1932. The largest decreases were: Canada, 3,169,300 ounces; Mexico, 1,202,000 ounces; United States (Philippine Islands excluded), 1,010,400 ounces; Spain, 444,800 ounces; Italy, 423,900 ounces; and Japan, 401,800 ounces. The only large increase was made by Australia, chiefly from New South Wales.

World production of silver, 1928-33, in fine ounces

Country	1928	1929	1930	1931	1932	1933
North America:						
Canada.....	21,936,400	23,143,300	26,435,900	20,558,200	18,356,393	15,187,063
Central America.....	2,558,500	3,000,000	3,900,000	4,000,000	4,300,000	4,800,000
Mexico.....	108,537,300	108,871,400	105,410,900	86,064,500	69,303,054	68,101,062
United States.....	58,426,000	61,233,300	50,627,200	30,822,000	23,831,642	22,821,257
South America:						
Argentina.....	15,000	15,000	15,000	-----	50,154	50,154
Bolivia.....	5,638,800	4,816,200	7,091,100	5,772,300	4,115,200	4,115,200
Brazil.....	25,600	21,000	20,000	10,000	10,000	10,000
Chile.....	1,436,700	328,500	732,400	320,200	103,780	103,780
Colombia.....	68,200	60,000	60,000	40,000	50,000	107,992
Ecuador.....	79,800	96,500	106,100	104,800	114,167	113,200
Guiana.....	7,500	7,500	7,500	6,000	6,000	6,000
Peru.....	21,607,700	21,495,200	15,500,400	10,942,500	6,735,360	6,760,534
Venezuela.....	4,000	4,000	4,200	4,200	6,000	6,000
Europe:						
Austria.....	18,900	10,600	10,200	10,200	27,938	-----
Czechoslovakia.....	767,700	723,000	890,600	899,300	947,139	947,139
France.....	360,100	360,100	652,000	652,000	643,000	643,000
Germany.....	5,220,800	5,512,800	5,485,400	5,784,600	5,993,499	5,993,499
Great Britain.....	32,800	36,000	41,000	34,000	16,043	37,551
Greece.....	241,100	241,100	241,100	192,900	192,900	192,900
Hungary.....	-----	-----	-----	-----	-----	15,593
Italy.....	514,400	518,700	571,700	719,300	801,499	377,592
Norway.....	398,700	282,900	337,800	297,400	292,565	241,125
Poland.....	235,100	360,600	558,700	558,700	69,283	41,377
Rumania.....	100,000	90,700	142,000	155,800	173,031	173,031
Russia.....	380,000	300,000	300,000	350,000	400,000	400,000
Spain.....	2,526,500	2,659,200	2,659,200	3,098,700	3,374,335	2,929,508
Sweden.....	75,000	75,000	75,000	80,000	80,000	244,822
Yugoslavia.....	62,700	80,000	100,300	94,700	133,230	196,758
Asia:						
Burma.....	7,400,000	7,273,300	7,047,000	5,898,000	6,001,000	6,050,000
China.....	100,000	50,000	50,000	60,000	60,000	60,000
Chosen.....	56,100	60,100	68,800	203,500	209,332	209,332
East Indies, Netherland.....	2,032,000	1,967,900	2,094,200	1,473,100	842,362	860,463
India, British.....	25,800	25,000	25,000	25,000	25,737	30,241
Indo-China.....	53,200	3,200	3,200	1,600	2,724	2,724
Japan.....	5,144,900	5,674,700	5,628,600	6,183,300	6,360,643	5,958,842
Philippine Islands.....	36,400	101,500	110,300	97,100	149,131	181,372
Taiwan.....	11,700	13,000	15,200	17,200	17,713	17,713
Turkey.....	220,000	220,000	220,000	200,000	200,000	-----
Africa:						
Algeria.....	117,400	166,900	167,000	150,000	58,899	128,139
Bechuanaland.....	100	100	400	700	1,672	622
Belgian Congo.....	10,600	12,000	13,000	15,000	18,000	18,000
British West Africa (Gold Coast, Ashanti, Nigeria, Sierra Leone).....	-----	-----	200	252,900	86,402	117,480
East Africa, Portuguese.....	300	100	40	100	257	224
Eritrea.....	-----	-----	-----	-----	-----	96
Rhodesia.....	103,900	100,500	73,360	76,500	114,893	112,459
Tanganyika and Kenya Colony.....	1,700	1,200	1,400	1,900	4,431	5,505
Transvaal, Cape Colony, Natal.....	1,031,400	1,031,800	1,050,000	1,063,000	1,120,668	1,065,011
Australasia.....	10,304,400	9,928,100	10,165,000	8,628,800	9,492,726	11,552,438
	257,925,200	260,970,000	248,708,400	195,920,000	164,892,802	160,986,798

¹ Philippine Islands excluded.

MINE REPORT**METHOD OF COLLECTING STATISTICS**

The first table in this report presents the final official figures of the production of gold and silver in the United States in 1933, as agreed upon by the Bureau of the Mint and the Bureau of Mines. With the comparatively unimportant exceptions of domestic gold and silver contained in ore and matte exported for reduction during the year, these figures record the production of gold and silver bullion from domestic ore in marketable form as metals, either refined or unrefined.

To trace this total gold and silver produced back to its source by States, counties, and mining districts, the Bureau of Mines systematically investigates the "mine production" of ores containing gold and silver and the output of the placer mines, the output being classified

by methods of production and by kinds of ore, as well as by mining districts. The resulting figures form the basis of the mine reports.

Of the two plans for ascertaining the production of gold and silver, one is a measure of the metallurgic industry and the other of the mining industry; one reports the metal actually recovered in marketable form and the other the mine output and its recoverable content. The two methods will not produce exactly corresponding results, but the figures for a period of years sufficiently long to compensate for overlap or lag should agree within allowable limits of error.

Gold and silver produced in the United States, 1905-33, according to mint and mine returns

Year	Mint		Mine	
	Gold	Silver	Gold	Silver
1905-29.....	\$1,833,086,700	<i>Fine ounces</i> 1,554,961,427	\$1,820,146,691	<i>Fine ounces</i> 1,548,291,786
1930.....	47,247,600	50,748,127	47,916,142	47,835,181
1931.....	49,527,200	30,932,050	49,751,668	29,953,728
1932.....	50,626,000	23,980,773	53,218,073	22,899,865
1933.....	152,842,300	23,002,629	154,341,610	23,317,159
Total, 1905-33.....	2,033,329,800	1,683,625,006	2,025,374,184	1,672,297,719
Fine ounces of gold.....	98,362,334	.....	97,977,476	.....

¹ Gold valued at \$20.67 + per fine ounce as heretofore.

According to mint reports, these figures show a total excess of gold for the 29 years of 384,858 ounces (a difference of 0.39 percent) and a total excess of silver of about 11,327,300 ounces (a difference of 0.67 percent).

UNITS OF MEASUREMENT

In the measurement of ores and concentrates the short ton of 2,000 pounds is used.

Throughout 1932 and earlier years the price of gold was fixed by law at \$20.67+ per fine ounce, and in 1933 the legal coinage value was continued at \$20.67+. The average weighted price for the year 1933, as computed by the Bureau of Mines, was \$25.56 per fine ounce. For a discussion of prices of newly mined gold in 1933, see page 410.

The annual average prices for silver from 1929 to 1933 are given on page 411.

MINES PRODUCING

LEADING GOLD PRODUCERS

About 1,615,400 fine ounces of gold (70 percent of the mine output of the United States—Philippine Islands and Puerto Rico excluded) in 1933 represented the yield of 25 companies, none of which produced less than 12,200 ounces. The Homestake mine of South Dakota was the largest producer; the Alaska Juneau ranked second; and the Fairbanks Exploration Co. of Alaska, which made the largest output from gold dredging, ranked third. The Benguet Consolidated Mining Co. (including the Balatoc mine, controlled by Benguet stockholders) in the Philippine Islands ranked second only to the Home-

stake mine as a gold producer, having an output considerably larger than that of the Alaska Juneau property.

Of the largest producers 10 were in California, 4 in Alaska, 3 each in Colorado and Utah, 2 in Arizona, and 1 each in Idaho, New Mexico, and South Dakota. Of these companies 15 produced gold from dry and siliceous ores, 5 from gravel by dredging, and the other 5 mainly from copper, lead, and lead-zinc ores.

Larger producers of gold in the United States in 1933, in order of output

Rank	Operator	State	Mining district	Source of gold
1	Homestake Mining Co.....	South Dakota.	Whitewood.....	Dry and siliceous ore.
2	Alaska Juneau Gold Mining Co.	Alaska.....	Juneau.....	Do.
3	Fairbanks Exploration Co.....	do.....	Fairbanks.....	Dredging gravel.
4	Empire Star Mines Co., Ltd.....	California.....	Grass Valley.....	Dry and siliceous ore.
5	Golden Cycle Mining & Reduction Co. ¹	Colorado.....	Cripple Creek.....	Do.
6	Natomas Co.....	California.....	Folsom.....	Dredging gravel.
7	Yuba Consolidated Gold Fields.....	do.....	Yuba River and Snelling.....	Do.
8	London Gold Mines Co.....	Colorado.....	Mosquito Creek.....	Dry and siliceous ore.
9	Willow Creek Mines, Inc.....	Alaska.....	Willow Creek.....	Do.
10	Idaho-Maryland Mines Co.....	California.....	Grass Valley.....	Do.
11	Hammon Consolidated Gold Fields.....	Alaska.....	Nome.....	Dredging gravel.
12	Capital Dredging Co.....	California.....	Folsom.....	Do.
13	Utah Copper Co.....	Utah.....	West Mountain.....	Copper ore and siliceous ore.
14	Phelps Dodge Corporation (Copper Queen).	Arizona.....	Warren.....	Copper ore.
15	The Argonaut Mining Co., Ltd.....	California.....	Jackson.....	Dry and siliceous ore.
16	Eureka Standard Mining Co.....	Utah.....	Tintic.....	Do.
17	Shenandoah Dives Mining Co.....	Colorado.....	San Juan.....	Do.
18	The Mountain Copper Co., Ltd.....	California.....	Iron Mountain.....	Do.
19	American Metal Co.....	New Mexico.....	Willow Creek.....	Lead-zinc ore.
20	United States Smelting, Refining & Mining Co.....	Utah.....	West Mountain.....	Copper ore, lead ore and lead-zinc ore.
21	St. Joseph Lead Co.....	Idaho.....	Middle Boise.....	Dry and siliceous ore.
22	Kennedy Mining & Milling Co.....	California.....	Jackson.....	Do.
23	Central Eureka Mining Co.....	do.....	Sutter Creek.....	Do.
24	Original Sixteen to One Mines, Inc.....	do.....	Alleghany.....	Do.
25	United Verde Extension Mining Co.....	Arizona.....	Verde.....	Copper ore.

¹ Custom mill. Includes ore from Cresson, Portland, United Gold, and other mines.

Besides the output of these 25 large operators, a total of about 688,300 fine ounces of gold came from about 6,900 placer and lode⁶ mines of which the majority produced only small quantities; some, however, had an output of more than 10,000 ounces. Only two companies in the United States exceeded the output of the Benguet mine in the Philippine Islands, and only the Homestake property in South Dakota exceeded the combined output of the Benguet mine and the Balatoc mine (controlled by Benguet stockholders).

LEADING SILVER PRODUCERS

The output of silver from the 25 leading producing companies in 1933 was about 19,783,000 ounces—86 percent of the total (excluding the Philippine Islands and Puerto Rico). Eight of these properties—3 in Utah, 2 in Idaho, and 1 each in Arizona, Colorado, and Montana—each produced more than 1,000,000 ounces; none yielded less than

⁶ Gardner, E. D., and Johnson, O. H., *Mining and Milling Practices at Small Gold Mines: Inf. Circ. 6800, Bureau of Mines, 1934, 31 pp.*

100,000 ounces. Of the 25 large producers 6 were in Utah, 5 in Idaho, 3 each in Arizona and Montana, 2 each in Colorado, Nevada, and New Mexico, and 1 each in Alaska and South Dakota; most of the silver was derived from base ores.

Larger producers of silver in the United States in 1933, in order of output

Rank	Operator	State	Mining district	Source of silver
1	Sunshine Mining Co.	Idaho	Evolution	Copper-lead ore.
2	Silver King Coalition Mines Co.	Utah	Uintah	Lead-zinc ore.
3	Anaconda Copper Mining Co.	Montana	Summit Valley (Butte).	Copper ore.
4	United States Smelting, Refining & Mining Co.	Utah	West Mountain	Lead ore, lead-zinc ore, and copper ore.
5	Empire Zinc Co.	Colorado	Battle Mountain	Copper ore.
6	Bunker Hill & Sullivan Mining & Concentrating Co. (Sullivan- Last Chance).	Idaho	Yreka	Lead ore.
7	Phelps Dodge Corporation (Cop- per Queen).	Arizona	Warren	Copper ore.
8	Tintic Standard Mining Co.	Utah	Tintic	Lead ore and siliceous ore.
9	Hecla Mining Co.	Idaho	Lelande	Lead ore.
10	Federal Mining & Smelting Co. (Morning mine).	do.	Hunter	Lead-zinc ore.
11	American Metal Co.	New Mexico	Willow Creek	Do.
12	Magma Copper Co.	Arizona	Pioneer	Copper ore and sili- ceous ore.
13	Anaconda Copper Mining Co. (Orphan Girl lease).	Montana	Summit Valley	Lead-zinc ore.
14	Asarco Mining Co.	New Mexico	Central	Do.
15	Shenandoah-Dives Mining Co.	Colorado	San Juan	Dry and siliceous ore.
16	Tonopah Mining Co.	Nevada	Tonopah	Do.
17	United Verde Extension Mining Co.	Arizona	Verde	Copper ore.
18	Eureka Standard Mining Co.	Utah	Tintic	Dry and siliceous ore.
19	Utah Copper Co.	do.	West Mountain	Copper ore and sili- ceous ore.
20	Crescent Mining Co.	Idaho	Yreka	Copper-lead ore.
21	Butte Copper & Zinc Co.	Montana	Summit Valley	Lead-zinc ore.
22	Bluestone Lime & Quartzite Min- ing Co.	Utah	Rush Valley	Lead ore.
23	Combined Metals Reduction Co.	Nevada	Pioche	Lead-zinc ore.
24	Homestake Mining Co.	South Dakota	Whitewood	Dry and siliceous ore.
25	Alaska Juneau Gold Mining Co.	Alaska	Juneau	Do.

NUMBER OF MINES

The following table indicates the number of mines that produced gold and silver in 1933. The placers are those in which the gold and the silver in natural alloy with the gold and, in a few placers, with platinum are recovered from gravel and sand, whether by hand washing, sluicing, hydraulicking, drifting (in frozen ground or ancient buried river channels), or dredging. The lode mines are those producing gold and silver (from ore as distinguished from gravel) mainly from underground workings, including those which yield ore valuable chiefly for copper, lead, or zinc but which contribute precious metals as byproducts. In addition to producing mines enumerated here, many properties were being prospected and developed, and many other mining claims were being held by assessment work only.

The enumeration of placer mines is less satisfactory than that of lode mines, because some are operated only temporarily and are individually small and because much of the production is made by transitory miners not regularly working placer ground. So far as possible

the unit is, as for lode mines, not the operator but the mining claim or group of claims.

The total number of placer mines active in the States in which gold is obtained by placer mining increased 7 percent in 1933; the greatest increases were in California, Idaho, Montana, and Oregon. Many of the operations were on a very small scale. Gold dredges accounted for 54 percent of the total increase in placer gold.

The number of lode mines operated increased noticeably in 1933 in all the large gold-producing States but South Dakota and in 1932 in all but Utah. The increased activity was mainly in mines yielding siliceous ore, as the number of those producing base ores containing gold or silver in 1933 was much smaller than in 1931 or 1930 and very little larger than in 1932.

*Number of mines in the United States producing gold and silver in 1933, by States*¹

State	Placer	Lode	Total	State	Placer	Lode	Total
Alabama.....	1	-----	1	North Carolina.....	9	10	19
Alaska ²	600	35	635	Oregon.....	292	111	403
Arizona.....	179	399	578	Pennsylvania.....	-----	1	1
California.....	993	797	1,790	South Carolina.....	3	5	8
Colorado.....	286	614	900	South Dakota.....	215	4	219
Georgia.....	22	7	29	Tennessee ³	1	2	3
Idaho.....	334	188	522	Texas.....	-----	3	3
Illinois ³	-----	2	2	Utah.....	21	121	142
Maryland.....	1	-----	1	Virginia ³	1	1	2
Michigan ³	-----	2	2	Washington.....	70	37	107
Montana.....	276	426	702	Wyoming.....	20	4	24
Nevada.....	116	422	538				
New Mexico.....	302	92	394		3,742	3,283	7,025

¹ Philippine Islands and Puerto Rico excluded.

² Estimate.

³ Number of mines contributing to production of gold and silver.

*Number of mines in the United States producing gold and silver, 1929-33*¹

Year	Placer	Lode	Total	Year	Placer	Lode	Total
1929.....	1,219	2,060	3,279	1933.....	3,742	3,283	7,025
1930.....	1,799	1,984	3,783				
1931.....	2,081	1,988	4,069	Average.....	2,468	2,437	4,905
1932.....	3,496	2,371	6,367				

¹ Philippine Islands and Puerto Rico excluded.

MINE PRODUCTION

SUMMARY

The following table gives the quantity and the value (gold at both \$20.67+ and \$25.56 per fine ounce and silver at 35 cents per fine ounce) of the mine production of gold and silver in 1933, by States, as reported to the Bureau of Mines by the producing mines.

Mine production of gold and silver in the United States in 1933, by States

State	Gold			Silver		Increase or decrease from 1932 (fine ounces)	
	Fine ounces	Value at—		Fine ounces	Value at 35 cents per ounce	Gold	Silver
		\$20.67+ per ounce ¹	\$25.56 per ounce ²				
Alabama.....	3.97	\$82	\$101			-65	-10
Alaska.....	469,285.88	9,701,000	11,994,947	157,150	\$55,003	-24,574	-76,900
Arizona.....	79,992.61	1,653,594	2,044,611	2,390,363	836,627	+13,203	+307,540
California.....	613,578.85	12,683,801	15,683,075	402,591	140,907	+44,412	-90,942
Colorado.....	242,827.70	5,019,694	6,206,676	2,186,140	765,149	-75,100	+325,732
Georgia.....	558.40	11,543	14,273	65	23	+280	+35
Idaho.....	64,592.23	1,335,240	1,650,977	6,987,960	2,445,786	+17,707	+270,992
Illinois.....				1,422	498		+1,165
Maryland.....	13.50	279	345			+14	
Michigan.....	9.67	200	247	125,926	44,074	+10	+54,518
Missouri.....							-1,128
Montana.....	57,822.20	1,195,291	1,477,935	2,660,700	931,245	+17,220	+974,487
Nevada.....	98,590.28	2,038,042	2,519,968	1,148,621	402,017	-31,130	-155,744
New Mexico.....	26,474.09	547,268	676,678	1,181,580	413,553	+3,266	+39,229
North Carolina.....	724.64	14,980	18,522	11,492	4,022	+357	+1,447
Oregon.....	20,239.66	418,391	517,326	20,760	7,266	-378	+12,144
Pennsylvania.....	208.98	4,320	5,342	2,300	805	+129	+1,470
Philippine Islands.....	325,039.46	6,719,162	8,308,009	186,563	65,297	+80,742	+26,379
Puerto Rico.....	27.00	558	690			79	-12
South Carolina.....	234.57	4,849	5,996	103	36	+164	+98
South Dakota.....	512,403.77	10,592,326	13,097,040	125,417	43,896	+32,066	-778
Tennessee.....	223.49	4,620	5,712	39,869	13,954	+63	+20,569
Texas.....				160	56	-9	-1,262
Utah.....	109,129.55	2,255,908	2,789,351	5,669,197	1,984,219	-26,127	-1,292,900
Virginia.....	32.22	666	824			+1	-3
Washington.....	4,562.68	94,319	116,622	18,520	6,482	-519	+1,108
Wyoming.....	2,199.95	45,477	56,231	260	91	+1,943	+65
	2,628,775.35	54,341,610	67,191,498	23,317,159	8,161,006	+54,351	+417,294

¹ Legal coinage value.² A average weighted price.

The mine production of gold in the United States amounted to 2,628,775.35 fine ounces in 1933 compared with 2,574,424.28 ounces in 1932, an increase of 54,351 ounces. Based on the legal coinage value of \$20.67+ per fine ounce in both years, the total value was \$54,341,610 in 1933 compared with \$53,218,073 in 1932, an increase of \$1,123,537; based on the average weighted price of \$25.56 per fine ounce in 1933, the output in 1933 was valued at \$67,191,498, or \$13,973,425 more than that in 1932.

The only States showing large decreases in output of gold in 1933 were Alaska, Colorado, Nevada, Utah, and Washington. The decrease in Alaska was due chiefly to shortage of water for placer mining.

The total increase in output of silver was comparatively small, the large increases from mines in Montana, Colorado, Arizona, and Idaho being nearly offset by decreases from mines in Utah, Nevada, California, and Alaska. Most of the States reported increases from base ores.

ORE PRODUCTION, CLASSIFICATION, AND AVERAGE METAL YIELD

The best index of lode mining is the quantity, metallic content, and value of ore mined rather than the number of mines or operators. The next table states the production of ore from mines producing gold and silver and the average extraction of precious metals per ton.

The classification adopted is necessarily arbitrary in part. The complex nature of western ores especially and the gradations from one well-recognized class to another render a fixed terminology essential. The dry and siliceous ores comprise gold and silver ores proper, as well as fluxing ores carrying considerable quantities of iron and manganese oxides and very small quantities of gold and silver, and precious metal-bearing ores carrying copper, lead, or zinc in quantities too low to permit classifying them as copper, lead, zinc, or mixed ores. The distinction between gold and silver ores is not made here. The total number of silver mines and the total production of true silver ore are both comparatively small. The copper ores include those containing 2.5 percent or more of copper, or less than this percentage in the great disseminated copper deposits of the West and in the Lake Superior ores. In general, the lead ores are those containing 5 percent (dry assay) or more of lead, and the zinc ores are those containing 16 percent or more of zinc, both irrespective of their precious-metal content. However, ores of lower grades in lead and especially in zinc are treated profitably in many districts; and, of course, they are then classified as lead or zinc ores, as the case may be. The mixed ores are combinations of those enumerated.

The lead, zinc, and lead-zinc ores in most districts in the Eastern and Central States carry no appreciable quantity of gold or silver, and such ores are excluded from this report.

The total quantity of ore from which gold or silver was produced, sold or treated annually, decreased from 68,000,000 tons in 1918 to 21,500,000 tons in 1921, then increased steadily until 1926 when the total was 65,787,864 tons. In 1927 the total quantity of ore was 64,526,920 tons; in 1928, 69,747,193 tons; in 1929, 75,653,924 tons, much the largest output ever recorded; in 1930, 53,972,449 tons; in 1931, 41,985,920 tons; in 1932, 21,451,974 tons; and in 1933, 19,192,723 tons.

Ore produced in the United States and average recovery in fine ounces of gold and silver per ton, 1929-33¹

State	Dry and siliceous ore			Copper ore			Lead ore			Zinc ore			Copper-lead and copper-lead-zinc ores			Lead-zinc ore			Total ore (short tons)
	Short tons	Average ounces per ton		Short tons	Average ounces per ton		Short tons	Average ounces per ton		Short tons	Average ounces per ton		Short tons	Average ounces per ton		Short tons	Average ounces per ton		
		Gold	Silver		Gold	Silver		Gold	Silver		Gold	Silver		Gold	Silver		Gold	Silver	
Alaska.....	4,171,000	0.053	0.03																4,171,000
Arizona.....	96,090	.257	1.41	888,508	0.053	2.38	11,029	0.251	12.67							101	0.254	4.46	995,728
California.....	1,281,843	.274	.28	38,176	.030	.13	1,257	.177	15.74	816	0.064	0.63	8	1.859	29.13				1,322,100
Colorado.....	741,900	.309	.89	91,133	.042	16.27	2,604	1.770	15.73				66	.017	14.91	9,792	.20		845,495
Idaho.....	131,187	.309	1.15	17	.737	4.71	630,305	.001	3.93				121,769		28.03	307,573	.001	3.05	1,190,851
Michigan.....	200	.048	.07	328,000		.38													328,200
Montana.....	167,237	.250	1.21	491,893	.009	3.28	7,425	.158	5.76	43,289		.22	60	.025	14.45	152,582	.010	5.18	862,486
Nevada.....	448,984	.178	1.74	1,197,498	.010	.06	1,583	.458	21.22	202			2,885	.011	11.21	27,302	.015	6.23	1,678,454
New Mexico.....	38,650	.116	3.63	1,100,707	.001	.02	877	.028	4.34	78,240			1,419	.008	15.76	255,946	.076	3.89	1,475,839
Oregon.....	11,508	.470	1.60				223,900		23.50							47	.015	1.98	11,557
South Dakota.....	1,432,555	.357	.09																1,432,555
Texas.....				45		1.40	18		5.39										63
Utah.....	150,007	.325	6.02	3,524,073	.010	.10	62,319	.056	18.61	47						380,489	.056	8.55	4,116,935
Washington.....	5,275	.676	2.75				230	.030	2.55							48,479		.07	53,984
Wyoming.....	1,071	.342	.06																1,071
Eastern States.....	2,869	.248	.06	4703,536	.001	.08				(⁵)									6706,405
1933: Total.....	8,680,376	.180	.42	8,363,586	.013	.70	717,649	.019	5.47	122,594	.002	.58	126,207	.001	27.49	1,182,311	.036	5.20	19,192,723
Percentage.....	45.23			43.57			3.74		0.64				0.66			6.16			100.00
1932: Total.....	8,226,167	.197	.48	11,504,946	.009	.45	697,168	.023	7.02	41,410	.07		167,106		20.18	815,177	.062	6.49	21,451,974
Percentage.....	38.35			53.63			3.25		0.19				0.78			3.80			100.00
1931: Total.....	8,329,009	.177	.52	30,966,550	.007	.31	894,636	.020	6.84	97,950	.06		213,245	.006	13.09	1,484,530	.045	4.69	41,985,920
1930: Total.....	7,767,289	.163	1.13	41,723,797	.008	.33	1,380,641	.019	6.36	249,366	.001	1.80	246,430	.013	12.38	2,604,926	.026	5.01	53,972,449
1929: Total.....	7,671,150	.140	1.45	62,140,833	.007	.29	1,592,043	.023	7.35	494,372	.003	3.19	259,126	.015	10.95	3,496,400	.022	4.47	75,653,924

¹ Illinois, Missouri, Philippine Islands, and Puerto Rico excluded; quantity of crude ore containing gold and silver unknown.

² Includes only copper ore that yielded silver.

³ Includes 42,510 tons of current slag fumed.

⁴ Includes pyritiferous magnetite ore from Pennsylvania yielding 2,158 tons of copper concentrates.

⁵ Zinc ore and lead-zinc ore yielded no gold or silver.

⁶ Includes low-grade pyritiferous magnetite ore from Pennsylvania; excludes ore containing no gold or silver.

The 8,680,376 tons of dry and siliceous ores treated in 1933 yielded an average of 0.180 ounce of gold and 0.42 ounce of silver per ton, and the 10,512,347 tons of base ores containing gold and silver yielded only 0.015 ounce of gold but 1.85 ounces of silver per ton.

Evidently any large increase in gold must come from placers and from dry and siliceous ores and any large increase in silver from the base ores of which copper ore constituted 79.6 percent in 1933; the quantity of copper ore in 1933, however, was much below normal.

About 22,660 tons more siliceous ore were treated in South Dakota in 1933 than in 1932, and 0.017 ounce more gold was recovered per ton; 303,625 tons more were treated in California, and 0.069 ounce less gold was recovered per ton; 103,000 tons more were treated in Alaska, and 0.003 ounce less gold was recovered per ton; and 143,187 tons less were treated in Colorado, and 0.044 ounce less gold was recovered per ton. These four States yielded 88 percent of the total dry and siliceous ore treated and 84 percent of the total gold from such ores in 1933. About 53,777,200 tons less copper ore containing gold and silver were sold or treated in 1933 than in 1929 and 3,141,360 tons less than in 1932. The quantity of lead ore containing gold and silver was less than half of that in 1929 but 20,481 tons more than that in 1932. The quantity of zinc ore sold or treated increased 81,184 tons and that of lead-zinc ore 367,134 tons, but the average gold and silver recovered per ton in 1933 was much less than in 1932. The quantity of copper-lead and copper-lead-zinc ores sold or treated was the smallest since 1922, but the average silver recovered per ton was more than 7 ounces above that in 1932.

The quantity of gold recovered from the 10,512,347 tons of base ores in 1933 totaled 162,544 ounces and the silver 19,452,659 ounces compared with 165,485 ounces of gold and 18,744,681 ounces of silver from 13,225,807 tons in 1932. In 1929 about 67,983,000 tons of base ores yielded 576,479 ounces of gold and 49,707,013 ounces of silver.

GOLD, BY SOURCES

As the following table indicates, 92.94 percent of the domestic output of gold in 1933 was obtained from dry and siliceous ores—normally gold quartz and gold-silver quartzose ores—and from placers compared with 92.90 percent in 1932. The total contribution of gold from the great copper, lead, and zinc mines of the country was 7.06 percent in 1933 compared with 7.10 percent in 1932.

Mine production of gold in the United States in 1933, by States, in fine ounces ¹

State	Placers	Dry and siliceous ore	Copper ore	Lead ore	Zinc ore	Copper-lead ore	Lead-zinc ore	Total
Alabama	3.97							3.97
Alaska	249,228.00	220,057.88						469,285.88
Arizona	5,130.12	24,657.81	47,410.62	2,768.43			25.63	79,992.61
California	261,378.86	350,756.26	1,153.95	222.41	52.50	14.87		613,578.85
Colorado	5,325.51	229,029.23	3,862.60	4,608.44		1.10	.82	242,827.70
Georgia	393.05	165.35						558.40
Idaho	23,289.90	40,554.12	12.53	428.15		50.02	257.51	64,592.23
Maryland	13.50							13.50
Michigan		9.67						9.67
Montana	8,705.08	41,881.48	4,578.93	1,175.80	3.25	1.50	1,476.16	57,822.20
Nevada	5,769.54	79,909.34	11,545.65	724.99	198.00	32.56	410.20	98,590.28
New Mexico	1,399.15	4,492.76	1,121.71	24.78		11.00	19,424.69	26,474.09
North Carolina	204.14	327.00	193.50					724.64
Oregon	14,782.76	5,408.41		47.80			.69	20,230.66
Pennsylvania ²			208.98					208.98
South Carolina	32.51	202.06						234.57
South Dakota	1,269.75	511,134.02						512,403.77
Tennessee	1.98		221.51					223.49
Utah	142.51	48,721.28	35,527.84	3,500.00			21,237.92	109,129.55
Virginia	14.22	18.00						32.22
Washington	990.96	3,564.79		6.93				4,562.68
Wyoming	1,833.22	366.73						2,199.95
1933:								
Total ounces	579,908.73	1,561,256.19	105,837.82	13,507.73	253.75	111.05	42,833.62	2,303,708.89
Value ⁴	\$11,987,778	\$32,274,030	\$2,187,862	\$279,230	\$5,245	\$2,206	\$885,449	\$47,621,890
Percentage	25.17	67.77	4.59	0.59	0.01	0.01	1.86	100.00
1932:								
Total ounces	544,432.90	1,620,102.19	98,914.10	15,787.43		48.43	50,734.97	2,330,020.02
Value ⁴	\$11,254,427	\$33,490,485	\$2,044,736	\$326,355		\$1,001	\$1,049,785	\$48,165,789
Percentage	23.37	69.53	4.24	0.68			2.18	100.00

¹ Philippine Islands and Puerto Rico excluded. The Bureau of Science, Manila, P. I., reports that bullion from lode mines of the Philippine Islands yielded 323,736.92 ounces of gold and placer mines 1,302.54 ounces.

² Figure represents gold recovered from zinc concentrates produced in 1931 but not marketed until 1933.

³ From pyritiferous magnetite ore.

⁴ At \$20.67+ per ounce.

Examination of the data on domestic mine production of gold from different sources shows that the recovery from placer mines was 27 percent of the total output from 1906 to 1910, inclusive. In recent years placer mines have yielded the following percentages of the total output of gold: 1929, 19.83; 1930, 20.59; 1931, 20.36; 1932, 23.37; and 1933, 25.17 percent. From 1911 to 1915, inclusive, the gold recovered from dry and siliceous ore was 67 percent of the total output; in 1930, 59.27 percent; in 1931, 66.16 percent; in 1932, 69.53 percent; and in 1933, 67.77 percent. The domestic gold recovered from copper ore increased from 5.8 percent of the total from 1906 to 1908, inclusive, to 22.24 percent in 1929, decreased to 4.24 percent in 1932, and increased to 4.59 percent in 1933. The recovery of gold from all other base ores (about 2.3 percent of the total from 1906 to 1910, inclusive, and nearly 6 percent in 1927) decreased to 2.47 percent in 1933.

Gold produced in the United States, by sources, as reported by mines, 1922-33, in fine ounces ¹

Year	Placers	Dry and siliceous ore	Copper ore	Lead ore	Zinc ore	Copper-lead and copper-lead-zinc ores	Lead-zinc ore	Total
1922-29	3,710,834	10,815,834	2,666,542	324,267	10,965	30,657	437,385	17,996,484
1930	440,294	1,267,610	332,999	26,584	350	3,268	67,619	2,138,724
1931	452,862	1,471,738	214,745	17,648		1,175	66,561	2,224,729
1932	544,433	1,620,102	98,914	15,788		48	50,735	2,330,020
1933	579,909	1,561,256	105,838	13,508	254	111	42,833	2,303,709

¹ Philippine Islands and Puerto Rico excluded.

PLACERS

Although the number of placer operations increased about 68 percent in 1932 and 7 percent in 1933, the gold recovered from this source increased only about 20 percent in 1932 and 6.5 percent in 1933; more than half the increase was due to the larger output by dredges. As Alaska, California, Idaho, and Oregon produced 548,680 ounces of gold from placers, the 1,523 placer mines in other States had a combined yield of only 31,229 ounces. The States showing the largest increases in output from placers were: California, 30,849 ounces; Idaho, 10,850 ounces; Montana, 5,168 ounces; Colorado, 2,827 ounces; Wyoming, 1,754 ounces; and Arizona, 1,650 ounces.

Placer gold is derived chiefly from dredging (which yielded 74.6 percent of the total in 1933), from placers operated by hydraulicking, and from those worked by drift mining or by sluicing. The last two methods are relatively unimportant, except in Alaska, California, and Oregon. There is also a small annual output of gold from dry placer mining in Arizona, California, and New Mexico and of gold and platinum from ocean-beach mining in California and Oregon.

Dredging.—The value of gold recovered by dredges in the United States (Philippine Islands excluded) from the inception of the industry as a commercial factor in 1896 to the end of 1932 is recorded as \$256,240,763 (12,395,647 fine ounces), divided as follows: California, 8,442,820 ounces; Alaska, 2,465,290 ounces; Montana, 464,034 ounces; Colorado, 401,510 ounces; Idaho, 309,943 ounces; Oregon, 281,334 ounces; and other States, 30,716 ounces.

The output in 1933 was 432,703 ounces from 64 dredges compared with 413,686 ounces from 57 dredges in 1932. Of the total in 1933, California produced 201,710 ounces from 25 dredges; Alaska, 200,563 ounces from 25 dredges; Idaho, 17,361 ounces from 4 dredges; Oregon, 4,736 ounces from 4 dredges; Montana, 4,318 ounces from 3 dredges; Colorado, 2,814 ounces from 2 dredges; and Arizona, 1,201 ounces from 1 dredge.

Gold produced in the United States by dredges, 1929-33, in fine ounces

Year	Dredges	California	Alaska	Other States ¹	Total
1929.....	63	173,630	141,835	14,998	330,463
1930.....	60	166,981	189,272	18,084	374,337
1931.....	58	175,086	181,358	10,837	367,281
1932.....	57	188,831	207,674	17,181	413,686
1933.....	64	201,710	200,563	30,430	432,703

¹ Arizona, Colorado, Idaho, Montana, Oregon, and Washington.

Gold dredges operated in the United States in 1933

ALASKA

Name	Address	District	Number of dredges
Northern Star Dredging Co.....	Council.....	Council.....	1
Ophir Gold Dredging Co.....	Nome.....	do.....	1
Chatham Gold Dredging Co.....	Fairbanks.....	Fairbanks.....	1
Fairbanks Exploration Co.....	do.....	do.....	5
Fish Creek Mining Co.....	do.....	do.....	1
J. R. Murphy, lessee from Fairbanks Gold Dredging Co., Ltd.	Meehan.....	do.....	

Gold dredges operated in the United States in 1933—Continued

ALASKA—Continued

Name	Address	District	Number of dredges
Forsgren Dredging Co.....	Deering.....	Fairhaven.....	1
Keewalik Mining Co.....	Candle.....	do.....	1
North American Dredging Co.....	Flat.....	Iditarod.....	1
J. E. Riley Investment Co.....	do.....	do.....	1
Higgins et al.....	Takotna.....	Innoko.....	1
Puntilla et al.....	Ophir.....	do.....	2
Dry Creek Dredging Co.....	Nome.....	Nome.....	1
Hammon Consolidated Gold Fields.....	do.....	do.....	3
Spruce Creek Dredging Co.....	Solomon.....	Solomon.....	1
New York-Alaska Gold Dredging Corporation.....	Akiak.....	Tuluksak-Akiak.....	1
Yentna Dredging Co.....	Talkeetna.....	Yentna.....	1

ARIZONA

Calari Dredging Co.....	Prescott.....	Lynx Creek.....	1
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CALIFORNIA

Allen Dredge.....	Burson.....	Camanche.....	1
Crow Creek Dredging Co.....	Cottonwood.....	Cottonwood Creek.....	1
Norman C. Stines.....	San Francisco.....	Dobbins.....	1
Capital Dredging Co.....	do.....	Folsom.....	3
Gold Hill Dredging Co.....	do.....	do.....	1
Natomas Co.....	Sacramento.....	do.....	6
LaGrange Gold Dredging Co.....	San Francisco.....	LaGrange.....	1
Lancha Plana Gold Dredging Co.....	Camanche.....	Lancha Plana.....	1
Trinity Dredging Co.....	Lewiston.....	Lewiston.....	1
Canyon Creek Dredge.....	San Francisco.....	Mother Lode.....	1
Gold Bar Dredging Co.....	Lewiston.....	New River.....	1
Cal Oro Dredging Co.....	San Francisco.....	North Central.....	1
Shasta Butte Gold Dredging Co.....	Oroville.....	Oroville.....	1
Snelling Gold Dredging Co.....	San Francisco.....	Snelling.....	1
Yuba Consolidated Gold Fields.....	do.....	do.....	1
Do.....	do.....	Yuba River.....	3

COLORADO

Continental Dredging Co.....	Breckenridge.....	Breckenridge.....	1
Tiger Placers Co.....	Tiger.....	do.....	1

IDAHO

Gold Dredging, Inc.....	Pierce.....	Pierce.....	1
American Gold Dredging Corporation.....	Boise.....	Steele.....	1
Idaho Gold Dredging Co.....	Warren.....	Warren.....	1
Warren Creek Dredging Co.....	do.....	do.....	1

MONTANA

Story Gold Dredging Co.....	Bozeman.....	Norwegian.....	1
Yuba Associated Engineers, Ltd.....	Goldcreek.....	Pioneer.....	1
Winston Brothers Co.....	Helena.....	Prickly Pear Creek.....	1

OREGON

Empire Gold Dredging & Mining Co.....	Prairie City.....	Canyon.....	1
Rogue River Gold Co.....	Rogue River.....	Foots Creek.....	1
Howard Investment Co.....	Baker.....	Mormon Basin.....	1
Timms Gold Dredging Co.....	Galena.....	Susanville.....	1

Additional information on this subject may be found in issues of Minerals Yearbook and Mineral Resources, in reports of the Director of the Mint, and in reports of geological surveys or mining officials of the various States.

DRY AND SILICEOUS ORES

The siliceous ore comprises free-milling (amalgamating) ore, as in Alaska, California, and Oregon; both amalgamating and concentrating ore, as in many States; concentrating ore, as in parts of Colorado and Arizona; all-sliming and cyaniding ore, as in Nevada; and smelting ore. Tailings both from old dumps and from current millings are largely reworked by concentration and subsequent cyanidation or smelting. The material smelted consists mainly of concentrates and siliceous and pyritic ores, which are also valuable as fluxes. Figures of relative output by methods and States are given on page 430.

Nearly all the siliceous ore in three of the largest gold-producing States—Alaska, California, and South Dakota—yields only a small quantity of silver and is classed as gold ore. The siliceous ore from Arizona, Colorado, Nevada, New Mexico, and Utah includes some silver and gold-silver ore.

Siliceous ore treated and gold recovered per ton of ore treated, 1929-33

Year	Alaska		California		South Dakota		Colorado	
	Ore treated	Recovery per ton	Ore treated	Recovery per ton	Ore treated	Recovery per ton	Ore treated	Recovery per ton
	<i>Short tons</i>	<i>Ounce</i>	<i>Short tons</i>	<i>Ounce</i>	<i>Short tons</i>	<i>Ounce</i>	<i>Short tons</i>	<i>Ounce</i>
1929.....	3,900,000	0.045	573,724	0.357	1,463,159	0.217	640,442	0.302
1930.....	3,936,000	.045	730,712	.344	1,365,156	.298	710,491	.274
1931.....	4,195,000	.054	1,008,411	.310	1,404,153	.308	811,619	.281
1932.....	4,068,000	.056	978,218	.343	1,409,893	.340	885,087	.353
1933.....	4,171,000	.053	1,281,843	.274	1,432,555	.357	741,900	.309

COPPER ORE

The gold obtained as a byproduct in the treatment of copper ore increased 6,924 ounces in 1933 following large decreases in 1932 and 1931. The States reporting substantial increases in gold from copper ore in 1933 were Arizona, Colorado, and Utah, and the largest decreases were in California, Montana, Nevada, and New Mexico.

LEAD ORE

The production of gold from lead ore decreased 2,280 ounces in 1933, following a decrease of 1,860 ounces in 1932. Mines in Colorado, Idaho, and Montana showed increases, but gold from lead ore mined in Arizona decreased 2,305 ounces, in Utah 1,718 ounces, and in California 1,303 ounces.

ZINC, LEAD-ZINC, AND MIXED ORES

The combined output of gold from lead-zinc and mixed ores was 42,944 ounces in 1933, or 7,839 ounces less than in 1932; mines in Utah and New Mexico yielded 95 percent of the gold from these sources. Only 254 ounces of gold were reported recovered from zinc ores in 1933.

SILVER, BY SOURCES

The combined yield of silver from placers and dry and siliceous ores decreased from 3,994,988 ounces in 1932 to 3,677,937 ounces in 1933. The silver derived from base ores increased from 18,744,681 to 19,452,659 ounces.

Mine production of silver in the United States in 1933, by States, in fine ounces ¹

State	Placers	Dry and siliceous ore	Copper ore	Lead ore	Zinc ore	Copper-lead ore	Lead-zinc ore	Total
Alaska.....	29,000	128,150						157,150
Arizona.....	603	135,883	2,113,721	139,706			450	2,390,363
California.....	20,460	356,586	5,015	19,785	512	233		402,591
Colorado.....	1,260	657,979	1,482,975	40,969		984	1,973	2,186,140
Georgia.....	31	34						65
Idaho.....	7,243	150,743	80	2,479,659		3,413,255	936,980	6,987,960
Illinois ²				1,422				1,422
Michigan.....		14	128,912					128,926
Montana.....	1,223	202,651	1,613,340	42,742	9,376	867	790,501	2,660,700
Nevada.....	1,991	780,148	69,605	33,594	60,835	32,345	170,103	1,148,621
New Mexico.....	160	140,302	18,657	3,809		22,370	996,282	1,181,580
North Carolina.....	43	49	11,400					11,492
Oregon.....	2,166	18,454		47			93	20,760
Pennsylvania ⁴			2,300					2,300
South Carolina.....	3	100						103
South Dakota.....	97	125,320						125,417
Tennessee.....			39,869					39,869
Texas.....			63	97				160
Utah.....	15	902,295	353,154	1,159,767			3,253,966	5,669,197
Washington.....	166	14,508		586			3,260	18,520
Wyoming.....	200	60						260
1933: Total ounces.....	64,661	3,613,276	5,836,091	3,922,183	70,723	3,470,054	6,153,608	23,130,596
Value.....	\$22,631	\$1,264,647	\$2,042,632	\$1,372,764	\$24,753	\$1,214,519	\$2,153,763	\$8,095,709
Percentage.....	0.28	15.62	25.23	16.96	0.31	15.00	26.60	100.00
1932: Total ounces.....	63,844	3,931,144	5,180,776	4,894,938	3,025	3,371,570	5,294,372	22,739,669
Value.....	\$18,004	\$1,108,582	\$1,460,979	\$1,380,372	\$353	\$950,782	\$1,493,013	\$6,412,585
Percentage.....	0.28	17.29	22.78	21.53	0.01	14.83	23.28	100.00

¹ Philippine Islands and Puerto Rico excluded. The Bureau of Science, Manila, P. I., reports that bullion from gold lode and placer mines of the Philippine Islands yielded 186,563 ounces of silver.

² From fluorspar-lead ores.

³ Figure represents silver recovered from zinc concentrates produced in 1931 but not marketed until 1933.

⁴ From pyritiferous magnetite ore.

Silver produced in the United States, by sources, as reported by mines, 1922-33, in fine ounces ¹

Year	Placers	Dry and siliceous ore	Copper ore	Lead ore	Zinc ore	Copper-lead and copper-lead-zinc ores	Lead-zinc ore	Total
1922-29.....	411,195	141,347,315	123,726,641	130,940,197	7,747,600	12,814,130	86,202,764	503,189,842
1930.....	44,811	8,740,561	13,617,566	8,778,685	449,983	3,051,604	13,041,693	47,724,903
1931.....	46,521	4,369,200	9,573,651	6,114,975	6,023	2,791,101	6,955,157	29,856,628
1932.....	63,844	3,931,144	5,180,776	4,894,938	3,025	3,371,570	5,294,372	22,739,669
1933.....	64,661	3,613,276	5,836,091	3,922,183	70,723	3,470,054	6,153,608	23,130,596

¹ Philippine Islands and Puerto Rico excluded.

PLACERS

The increase in 1933 in the quantity of silver recovered from placer bullion was only 817 ounces. Mines in Alaska, California, Idaho, and Oregon yielded 91 percent of the total placer silver compared with 94 percent in 1932.

DRY AND SILICEOUS ORES

The largest decreases in silver from dry and siliceous ores were in Colorado, Nevada, New Mexico, and Utah. States that made good increases in silver from this source were Alaska, Arizona, Idaho, Montana, and Oregon.

COPPER ORE

Nearly all the silver produced from copper ore is obtained in the electrolytic refining of blister copper. The silver tenor of much of the copper ore, especially that of the Santa Rita district, New Mexico of Bingham, Utah, and of Ely, Nev., is notably low. The yield of silver from copper ore in 1933 was about 655,300 ounces more than in 1932 but was 7,781,500 ounces less than in 1930. States with increases were Arizona, Colorado, Michigan, Montana, Nevada, Tennessee, and Utah. Mines in Arizona, Colorado, Montana, and Utah yielded 95 percent of the total silver from copper ore in 1933.

LEAD ORE

Most of the silver from lead ore is obtained from desilverization of lead bullion from the smelting of western concentrates. The mine production of silver from argentiferous lead ore in 1933 was about 972,750 ounces less than in 1932 and 4,856,500 ounces less than in 1930. The largest increases in 1933 were in Arizona, Colorado, and Montana; the notable decreases were in Idaho and Utah.

LEAD-ZINC ORE

The output of silver from lead-zinc ore in 1933 was about 859,200 ounces more than in 1932. There was an unusual increase in Montana and other large increases in Idaho, Nevada, and New Mexico. There was a decrease of about 520,000 ounces in Utah.

ZINC AND MIXED ORES

None of the zinc ore treated in States east of Colorado yielded any gold or silver, and the mine production of silver from zinc material in 1933 was credited entirely to California, Montana, and Nevada, with Nevada yielding 60,835 ounces of the total of 70,723 ounces. Silver from copper-lead ore increased from 3,371,570 ounces in 1932 to 3,470,054 ounces in 1933, of which 3,413,255 ounces came from mines in Idaho where the output increased 74,028 ounces. The recoverable silver in the copper-lead ore treated averaged 27.5 ounces to the ton in 1933 compared with 20.2 ounces in 1932.

GOLD AND SILVER, BY METHODS OF TREATMENT

The following table gives the production of gold and silver from ore, old tailings, etc., treated in 1932 and 1933.

Gold and silver produced in the United States from ore, old tailings, etc., in 1933, by States and by methods of recovery ¹

State	Total quantity of crude ore, old tailings, etc., treated (short tons)	Ore, old tailings, etc., to gold and silver mills				Ore and old tailings to concentrating mills (short tons)	Concentrates from all sources			Crude ore to smelters			Ore leached, old tailings and slag smelted, etc.				
		Ore (short tons)	Old tailings, etc. (short tons)	Gold (fine ounces)	Silver (fine ounces)		Short tons	Gold (fine ounces)	Silver (fine ounces)	Short tons	Gold (fine ounces)	Silver (fine ounces)	Short tons	Gold (fine ounces)	Silver (fine ounces)		
Alaska	4, 171, 000	4, 164, 002	2, 549	187, 972	37, 865	4, 449	2, 844	32, 086	90, 285								
Arizona	995, 728	34, 482	33, 300	10, 108	12, 951	320, 288	80, 398	9, 835	478, 200								
California	1, 322, 100	1, 073, 954	90, 728	285, 471	187, 889	112, 295	11, 307	59, 063	115, 627	7, 436	6, 924	78, 300	37, 687	742	315		
Colorado	845, 495	458, 978	(²)	140, 702	32, 935	273, 878	19, 580	74, 777	586, 042	112, 539	22, 023	1, 565, 903					
Idaho	1, 190, 851	78, 220	1, 385	18, 825	14, 394	1, 097, 413	175, 096	20, 367	6, 660, 685	12, 973	1, 448	299, 319	860	662	6, 319		
Montana	862, 486	64, 855	5, 118	12, 608	19, 364	708, 313	149, 991	15, 592	2, 423, 478	37, 887	19, 436	203, 292	46, 313	1, 481	13, 343		
Nevada	1, 678, 454	101, 675	271, 566	37, 979	82, 009	1, 246, 033	63, 854	16, 515	351, 573	58, 863	37, 535	657, 358	317	792	55, 660		
New Mexico	1, 475, 839	3, 010		665	304	1, 462, 910	130, 016	23, 288	1, 140, 281	9, 919	1, 122	40, 835					
Oregon	11, 557	5, 097		2, 390	525	4, 597	208	1, 101	4, 038	1, 845	1, 951	13, 971	18	15	60		
South Dakota	1, 432, 555	1, 432, 555	(³)	511, 134	125, 320												
Texas	63									63		160					
Utah	4, 116, 935	3, 597	24, 709	1, 913	99	3, 902, 263	294, 543	56, 286	3, 570, 185	179, 595	50, 671	2, 093, 244	6, 771	137	5, 654		
Washington	53, 984	205		301	160	48, 511	7, 172	19	3, 294	5, 264	3, 246	14, 887	4	6	13		
Wyoming	1, 071	1, 071		248	43			39	17								
Eastern States	7 706, 405	2, 619		483	97	5 523, 936	5 11, 606	339	21, 658	179, 850	515	31, 997					
Total, 1932	18, 864, 523	7, 424, 320	429, 355	1, 210, 799	513, 985	9, 704, 986	952, 654	309, 367	15, 445, 371	1, 213, 765	199, 486	6, 897, 012	92, 097	4, 140	82, 219		
	21, 193, 474	7, 340, 114	344, 429	1, 212, 187	891, 945	11, 804, 550	1, 015, 517	307, 475	14, 918, 474	1, 079, 958	262, 077	6, 735, 155	86, 494	3, 848	57, 458		

¹ Illinois, Michigan, Philippine Islands, and Puerto Rico excluded.² Exclusive of bullion from 2,305 tons of concentrates amalgamated, which is included under "Concentrates from all sources."³ Also 2,525 tons of concentrates were cyanided. The figures for these concentrates and for the gold and silver recovered from them are included under "Concentrates from all sources."⁴ Includes 37,413 tons of pyrites (yielding no gold or silver) roasted for the manufacture of sulphuric acid; residue leached amounted to 37,286 tons.⁵ Sands and slimes (298,142 tons) from ore and concentrates known to have been first amalgamated and estimated tailings from ore first floated and other sands and slimes from iron concentrates first amalgamated (62,601 tons) were cyanided.⁶ Sands and slimes (1,430,738 tons) from ore first amalgamated were cyanided.⁷ Includes low-grade pyritiferous magnetite ore from Pennsylvania; excludes ore containing no gold or silver.⁸ Includes only ore or concentrates yielding gold and silver.⁹ Exclusive of ore leached (537,929 tons) containing no gold or silver. No ore leached in 1933.

Many gold and silver mills employ concentrating apparatus, and in the preceding table the concentrates obtained from such mills are combined with those from straight concentrating mills under the heading "Concentrates from all sources." The gold and silver included in this item are recovered partly by amalgamation (particularly in Alaska and California) and cyanidation, but most of the concentrates are smelted.

The figures for the quantity of ore treated by concentration include the large quantities of copper, lead, zinc, and mixed ores whose concentrates are smelted primarily for the base metals, the gold and silver being recovered in refining the copper and lead bullion and smelting the zinc residues. The quantity of concentrates produced and the recoverable gold and silver content represent not only the concentrates from straight concentrating mills but also the comparatively small quantity from gold and silver mills.

The States that increased substantially the ore, old tailings, etc., sent direct to gold and silver mills in 1933 were Alaska, Arizona, California, Montana, South Dakota, and Utah; those with notable decreases were Colorado, Idaho, and Nevada.

The quantity of gold recovered at gold and silver mills was 40,446 ounces less in 1933 than in 1932, due to large decreases in Colorado and Nevada. The largest increases were in Alaska, Arizona, and South Dakota.

The quantity of silver recovered in bullion at mills was 408,590 ounces less in 1933 than in 1932. The decrease in Nevada was more than 500,000 ounces, but there were good increases in Arizona, California, Idaho, Montana, and South Dakota.

The quantity of ore and old tailings sent direct to concentrating plants was 2,099,564 tons less in 1933 than in 1932, due to the very large decreases in Alaska, Arizona, and Nevada, where much smaller quantities of copper ore were concentrated. More ore and old tailings were sent to concentrating plants in 1933 than in 1932 from mines in California, Colorado, Idaho, Montana, New Mexico, Utah, and Washington; the gain in Idaho, Montana, and New Mexico was principally in zinc and lead-zinc ores.

In 1933, 8.0 tons of ore, etc., were concentrated for every ton of crude ore shipped direct to smelters compared with 10.9 tons in 1932. In 1919 the ratio was only 5.6 :1.

The figures for the quantity and the recoverable gold and silver content of crude ore shipped from the mines direct to the smelters include, in general, the richer gold, silver, copper, and lead ores from which the gold and silver are eventually recovered by refining the copper or lead bullion that collects the precious metals in the smelting. About 12 percent more crude ore was smelted in 1933 than in 1932. Arizona mines contributed more than half the total in 1933, or 82,352 tons more than they did in 1932. The decrease in total ore, etc., treated in Arizona in 1933 was entirely in ore (largely copper ore) shipped to concentrating plants. States showing large increases in shipments of crude ore to smelters were Arizona, Colorado, Nevada, and Tennessee; there were notable decreases in Alaska, New Mexico, and Utah.

Arizona, with 54,615 ounces, was the largest producer in 1933 of gold from crude ore smelted; and Arizona and Utah combined produced 105,286 ounces of the total 199,486 ounces.

The quantity of silver derived from crude ore smelted increased from 6,735,155 ounces in 1932 to 6,897,012 ounces in 1933. The largest decreases in 1933 were: Utah, 498,023 ounces; California, 60,144 ounces; New Mexico, 48,769 ounces; and Idaho, 21,596 ounces. The largest increases were: Colorado, 380,513 ounces; Arizona, 310,862 ounces; and Montana, 65,858 ounces.

The old materials, mainly tailings and slag, re-treated (with which are included figures for ore and old tailings leached) are partly smelted, often for their fluxing as well as their metal value. Most of the gold and silver derived from old tailings is included under recoveries by amalgamation and cyanidation at gold and silver mills.

*Gold and silver produced at mills in the United States and percentage of gold and silver recovered by smelting and from placers, 1929-33*¹

Year	Ore, old tailings, etc., treated (short tons)	Bullion recovered from all sources (fine ounces)					Percent of gold and silver from all sources							
		Amalgamation		Cyanidation			Amalgamation		Cyanidation		Placers		Smelting ²	
		Gold	Silver	Gold	Silver		Gold	Silver	Gold	Silver	Gold	Silver	Gold	Silver
1929...	6,907,140	619,776	218,642	324,819	3,229,206	30.1	0.4	15.8	5.3	19.8	0.1	34.3	94.2	
1930...	7,079,131	700,318	230,406	380,148	2,728,841	33.2	.5	17.8	5.7	20.6	.1	28.4	93.7	
1931...	7,623,878	806,317	274,850	396,390	1,254,866	36.2	.9	17.8	4.2	20.4	.2	25.6	94.7	
1932...	7,684,543	851,391	260,447	434,869	753,228	36.5	1.1	18.7	3.3	23.4	.3	21.4	95.3	
1933...	7,853,875	893,678	377,823	352,136	227,262	38.8	1.6	15.3	1.0	25.2	.3	20.7	97.1	

¹ Philippine Islands and Puerto Rico excluded.

² Both crude ores and concentrates.

The bulk of the gold continues to come from the gold mills, but the proportion so recovered was only 54.1 percent of the total in 1933 compared with 60 percent in 1919.

The total yield of gold by amalgamation in the United States (Philippine Islands and Puerto Rico excluded) as reported to the Bureau of Mines was 893,678 ounces in 1933 compared with 1,120,344 ounces in 1911, the first year for which figures are available.

The output of gold by cyanidation was 352,136 ounces in 1933 compared with 1,444,077 ounces in 1915, the year of largest recorded output. Thus, the quantity of gold recovered by cyanidation has decreased at a much higher rate than that by amalgamation.

In 1933 gold and silver valued together at \$18,606,202⁷ were produced by amalgamation compared with \$7,358,839⁷ by cyanidation.

⁷ Gold calculated at \$20.67+ per fine ounce.

Gold and silver bullion produced at mills in the United States in 1933, by States ¹

State	Ore, old tailings, etc., treated (short tons)	Bullion recovered from all sources (fine ounces)				Percent of gold and silver from all sources in State			
		Amalgamation		Cyanidation		Amalgamation		Cyanidation	
		Gold	Silver	Gold	Silver	Gold	Silver	Gold	Silver
Alaska.....	4,166,551	209,467	126,230	6,668	250	44.6	80.3	1.4	0.2
Arizona.....	67,782	2,256	918	7,852	12,033	2.8	-----	9.8	.5
California.....	1,164,682	254,755	140,956	37,558	49,404	41.5	35.0	6.1	12.3
Colorado.....	445,978	48,528	7,674	92,174	25,261	20.0	.4	38.0	1.2
Idaho.....	79,605	14,694	12,421	4,131	1,973	22.7	.2	6.4	-----
Michigan.....	200	-----	-----	10	14	-----	-----	100.0	-----
Montana.....	69,973	7,797	1,401	4,811	17,963	13.5	.1	8.3	.7
Nevada.....	373,241	23,570	15,180	14,409	66,859	23.9	1.3	14.6	5.8
New Mexico.....	3,010	597	154	68	150	2.3	-----	.3	-----
Oregon.....	5,097	2,390	525	-----	-----	11.8	2.5	-----	-----
South Dakota.....	1,432,555	328,449	71,985	182,685	53,335	64.1	57.4	35.7	42.5
Utah.....	26,366	143	79	1,770	20	.1	-----	1.6	-----
Washington.....	205	301	160	-----	-----	6.6	.9	-----	-----
Wyoming.....	1,071	248	43	-----	-----	11.3	16.5	-----	-----
Eastern States.....	2,619	483	97	-----	-----	24.2	.2	-----	-----
1933: Total quantity.....	7,853,875	893,678	377,823	352,136	227,262	38.8	1.6	15.3	1.0
Value \$.....	-----	\$18,473,964	\$132,238	\$7,279,297	\$79,542	-----	-----	-----	-----
1932: Total quantity.....	7,684,543	851,391	260,447	434,869	753,228	36.5	1.1	18.7	3.3
Value \$.....	-----	\$17,599,814	\$73,446	\$8,989,540	\$212,410	-----	-----	-----	-----

¹ Michigan included. Philippine Islands and Puerto Rico excluded.

² Includes bullion from 2,305 tons of concentrates amalgamated.

³ Includes bullion from 2,525 tons of concentrates cyanided.

⁴ Also 298,142 tons of sands and slimes from ore and concentrates known to have been first amalgamated and 62,601 tons of estimated tailings from ore first floated and other sands and slimes from iron concentrates first amalgamated were cyanided.

⁵ Also 1,430,738 tons of sands and slimes from ore first amalgamated were cyanided.

⁶ Gold valued at \$20.67+ per ounce.

The largest increases in 1933 in gold recovered by amalgamation were: California, 30,701 ounces; South Dakota, 17,811 ounces; Alaska, 8,658 ounces; Montana, 2,419 ounces; and Nevada, 2,198 ounces; the smaller increases were in Idaho, New Mexico, Oregon, Utah, and Wyoming and in the Eastern States. The decreases were in Colorado, 17,791 ounces; Washington, 1,503 ounces; and Arizona, 934 ounces.

The total decrease of 82,733 ounces in gold recovered by cyanidation in 1933 was due mainly to the following State decreases: California, 38,886 ounces; Nevada, 37,998 ounces; Colorado, 19,349 ounces; Alaska, 4,700 ounces; and Montana, 2,397 ounces. The notable increases were: South Dakota, 14,124 ounces; Idaho, 2,411 ounces; Arizona, 2,352 ounces; and Utah, 1,770 ounces.

The recovery of silver by amalgamation is relatively small, and there was no abnormal change in 1933 except in California where the increase was about 99,200 ounces.

The recovery of silver by cyanidation decreased nearly 526,000 ounces in 1933, following a decrease of about 502,000 ounces in 1932. Most of the decrease in 1933 was at Nevada mines, where the recovery was only 66,859 ounces compared with 569,834 ounces in 1932 and 1,110,948 ounces in 1931.

Some lead concentrates made in Alaska are first amalgamated to save the gold before the concentrates are shipped to a smelter. A small quantity of concentrates from gold and silver mills is cyanided.

REVIEW BY STATES

The usual review by States has been omitted from this report. The chapters relating to mine production of gold, silver, copper, lead, and zinc in the Eastern, Central, and Western States give details of mining, milling, and smelting operations.

PRODUCTION IN PHILIPPINE ISLANDS

The output of gold in the Philippine Islands from 1907 to 1933, inclusive, is recorded as \$47,831,674.³ Production during the last 10 years follows:

1924.....	\$1,651,796	1929.....	\$3,320,300
1925.....	1,945,990	1930.....	3,704,800
1926.....	1,925,188	1931.....	3,762,433
1927.....	1,686,231	1932.....	5,050,084
1928.....	1,904,062	1933.....	6,719,162

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³ At \$20.67+ per fine ounce.

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