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**MECHANIZATION, EMPLOYMENT, AND OUTPUT PER MAN
IN BITUMINOUS-COAL MINING**

by

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VOLUME II

WORK PROJECTS ADMINISTRATION, NATIONAL RESEARCH PROJECT

In cooperation with

DEPARTMENT OF THE INTERIOR, BUREAU OF MINES

Report No. E-9

Philadelphia, Pennsylvania

August 1939

$$X(0.353) = 92 - 84.73$$

$$G.9.2$$

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APPENDIXES

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APPENDIX A

DETAILED EXPLANATION OF BASIC EMPLOYMENT DATA

AVERAGE NUMBER OF MEN EMPLOYED

Employees Excluded

The following employees are excluded from the Bureau of Mines totals:

- (1) Mine employees not producing coal, such as maintenance men and watchmen. Other occasional groups engaged in development work at certain mines not yet producing or ordinarily not producing are not, in general, included in the Bureau of Mines figures.
- (2) Employees of small irregular mines producing less than 1,000 tons a year. These mines are known as "wagon mines" and "country banks."
- (3) Coke-works employees.
- (4) Office workers.

Absenteeism

In counting names on the pay roll as the average number employed, it is impossible to exclude those men who are absent for a short period between two pay-roll periods. This applies to both voluntary and involuntary absence.

The only large-scale study of absenteeism was one made by the United States Coal Commission for the years 1920 and 1921.¹ The amount of absenteeism was based on the ratio between time worked by the men and time worked by the mine. Daymen, who constituted approximately 40 percent of mine personnel, were found to have worked about 20 percent more days than the mine tippie, whereas tonnage men worked about 10 percent less than the tippie. In other words, for 40 percent of the men absence was not a problem; the remaining 60 percent of the men had an absence rate of about 10 percent. Inferences as to the precise amount of inflation attributable to absentees in the man-day and labor-output figures are unwarranted. However, this is not believed to be a major source of error.

¹See *Report of the United States Coal Commission* (S. Doc. 195, 68th Cong., 2d sess., 1925), pt. III, pp. 1124-33.

An interesting side light on this subject is the considerable reduction in absenteeism that takes place when a mine installs mechanical-loading machinery, especially of the mobile-loading type. Whereas a loading-machine operator whose work is timed to coincide with the operation of an expensive machine is necessary to complete the mining cycle, the absence of a hand loader does not disrupt the mining process.

Monthly Fluctuations in Employment

Unpublished records of the 1929 census of mines and quarries make it evident that there is some variation from month to month in the volume of employment in bituminous mines. The number of men employed on the fifteenth or nearest representative day of each month in 1929 were listed for individual mines in Indiana. Each mine was then classified according to the percentage that the maximum number employed in a single month was of the minimum number. Months in which the only men employed were a small number occupied with maintenance work were excluded in considering minimum monthly employment. The data are summarized in the following tabulation:²

Percent that maximum monthly employment is of minimum	Number of Mines		Tonnage	
	Number	Percent of total	Tons (thousands)	Percent of total
No variation	33	37.9	5,072	28.9
100.1 to 104.9	4	4.6	1,129	6.4
105 to 109.9	3	3.5	1,001	5.7
110 to 114.9	3	3.4	704	4.0
115 to 119.9	7	8.1	1,433	8.1
120 to 129.9	2	2.3	679	3.9
130 to 139.9	4	4.6	1,399	8.0
140 to 149.9	7	8.1	857	4.9
150 to 199.9	7	8.1	2,288	13.0
200 to 249.9	5	5.7	2,041	11.6
250 to 299.9	1	1.1	162	0.9
300 to 349.9	0	0	0	0
350 or over	11	12.6	815	4.6
Total	87	100.0	17,580	100.0

²Based on unpublished data of the U. S. Bureau of the Census.

The tabulation shows that 33 mines in Indiana, which produced nearly 30 percent of the State's tonnage, reported the same number of men at work on the fifteenth day of each month. Seven mines that produced about 12 percent of the tonnage reported a variation of less than 10 percent. These two groups, covering slightly more than 40 percent of the tonnage, showed negligible fluctuation in employment. On the other hand, almost 60 percent of the production came from mines that had a variation of 10 percent or more, and 17 percent of the tonnage was from a group that had more than a 200-percent variation.

Share-the-Work Agreements

Reference has been made to the fact that the wage contracts between the Illinois Coal Operators Association and the United Mine Workers of America, which became effective in August 1932, carried a share-the-work provision, as follows:

In any mechanized mine where men belonging to the local affected have been thrown out of work due to such mechanization, the men so affected shall be entitled to share the work equally up to the point where the further sharing of work would impair the efficiency of operation or the quality of product. . . .

After a mine has been idle, except through strike, for a period of thirty days, the miners employed at mines in the same locality may at their option share work with those thrown idle, either by doubling up in working places or some other manner mutually agreeable; except there will be no change in men in working places oftener than every five days of operation. When a part of the miners at any mine or mines are thrown idle, as above, for a period of five days of operation they shall be entitled to share with the balance in the work in manner provided, unless provided otherwise.

Adoption of this practice raised an obvious possibility of misunderstanding in the reporting of employment. The Department of Mines and Minerals of Illinois recognized the difficulty and, starting in 1932, asked operators to report both the number of men on the pay roll and the number of men working. The following tabulation gives the figures in these two groups for the number of shipping mines indicated for the years 1932-37:³

³Based on *Annual Coal Reports* of the Illinois Department of Mines and Minerals. Numbers of employees include a few men in strip mines.

Year	Number of mines	Number of employees		
		Working	On pay roll	Percent that number on pay roll is of number at work
1932	45	13,835	19,050	137.7
1933	28	8,129	11,287	138.8
1934	35	11,240	14,139	125.8
1935	28	9,880	12,519	126.7
1936	44	12,072	14,955	123.9
1937	53	13,403	16,477	122.9

Obviously it cannot be assumed that all these mines reported incorrectly to the U. S. Bureau of Mines the number of men on the pay roll rather than the number working. In the year 1934, for example, it was found that of a possible overstatement of 2,899 men, 1,600 were in excess of the average number actually working. In 1935 and 1936 the Bureau of Mines corrected the reported number of men to take account of divided working time.

For purposes of this study the authors have also reviewed the reports previously received from mechanized mines in Illinois and have corrected them for divided working time in 1932, 1933, and 1934, using the data in the State reports cited above. Although the Illinois State Department did not report on share-the-work agreements in 1931, the practice may have been followed at least partially in that year.

It has not been feasible to ascertain how far work-sharing was followed at hand-loading mines in the State during this period. It is known, however, that the number of such mines covered by formal agreements was small.

AVERAGE NUMBER OF DAYS WORKED

It has been noted in chapter VII that mine employees do not always put in a full working day; similarly, all employees do not work the same number of days that the tipples operate. In the United States Coal Commission study on absenteeism in 1921⁴ it was found that the daymen worked about 20 percent more days than the number of days on which the tipples were in operation, whereas tonnage men worked about 10 percent less. In this sample study daymen constituted about 40 percent and

⁴Report of the United States Coal Commission (1925), pt. III, pp. 1124-33.

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tonnage men 60 percent of the total number covered. All these employees together, it was found, worked about 3 percent more days than their mines. The National Recovery Administration made a somewhat similar study for the pay-roll period December 1-15, 1933, summarized in the following tabulation:⁵

Division	Number of mines	Weighted average of number of tipple starts	Daymen		Tonnage men	
			Number earning pay	Average days worked	Number earning pay	Average days worked
I ⁶	860	8.3	64,133	8.4	122,989	7.3
II ⁷	164	8.6	15,842	8.8	15,861	7.8

It will be noted that in the sample mines the daymen, in 1933, still worked more time than the mine and the tonnage men worked slightly less.

⁵Based on *Bituminous Coal Code Statistics, Nov. and Dec., 1933* (NRA Division of Research and Planning).

⁶Includes Pennsylvania, Ohio, Michigan, West Virginia, Maryland, Kentucky, and northern Tennessee.

⁷Includes Illinois, Indiana, and Iowa.

APPENDIX B

TABLES

Most of the tables in this appendix refer to mechanical loading. Separate performance statistics are presented for groups of mines according to the degree of mechanical loading they have achieved. Mines falling in Group "A" had successfully mechanized their loading process by 1935. A subgroup, designated as Group "A-1", is comprised of mines in Group "A" which operated each year in the period 1918-35. Mines in Group "B" are those which have installed mechanical loading devices but were still essentially on a hand-loading basis in 1935, or which tried out mechanical loading and then reverted to hand loading. The latter mines, together with mines which never tried mechanical loading, comprise the "all other" group. For a more detailed description of the several groups see chapter VII, section entitled "Classification of Mines", pages 203-7.

Wherever United States production figures are presented, the figures for Alaska have been included. This is the practice which has been followed by the U. S. Bureau of Mines. Alaskan production, however, is negligible, amounting to 119,425 tons in 1935, or about 0.03 percent of the total tonnage.

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Table B-1.- PRODUCTION, EMPLOYMENT, AND LABOR OUTPUT IN THE BITUMINOUS-COAL INDUSTRY, 1880-1936^a

Year	Net tons produced ^b	Average number of men employed	Employment				Labor output	
			Average number of days worked	Total man-days worked ^c	Weighted average length of established work-day	Total man-hours worked ^d	Net tons per man-day	Net tons per man-hour ^d
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1880 ^e	40,501,768	95,418	287	21,205,205	(f)	(f)	1.90	(f)
1890	111,502,322	192,204	226	45,452,104	(f)	(f)	2.56	(f)
1891	119,901,233	205,803	225	45,894,069	(f)	(f)	2.57	(f)
1892	126,856,567	212,895	219	46,823,567	(f)	(f)	2.72	(f)
1893	120,388,231	230,265	204	46,994,460	(f)	(f)	2.73	(f)
1894	112,620,408	244,605	171	41,827,113	(f)	(f)	2.84	(f)
1895	138,112,193	239,928	194	46,532,688	(f)	(f)	2.90	(f)
1896	159,640,276	244,171	192	46,860,872	(f)	(f)	2.94	(f)
1897	147,617,019	247,217	196	46,578,132	(f)	(f)	3.04	(f)
1898	166,523,623	236,717	211	53,956,297	(f)	(f)	3.02	(f)
1899	193,323,187	271,027	254	65,480,318	(f)	(f)	3.05	(f)
1900	212,316,112	304,375	234	71,222,750	(f)	(f)	2.98	(f)
1901	225,622,149	340,252	222	76,522,875	(f)	(f)	2.52	(f)
1902	250,216,344	370,055	250	85,112,890	(f)	(f)	3.05	(f)
1903	222,749,348	415,777	222	93,549,822	8.7	815,982,478	3.02	.347
1904	272,659,689	457,822	202	82,442,064	8.6	760,601,700	3.15	.366
1905	315,068,725	460,622	211	97,192,719	8.6	835,857,323	3.24	.377
1906	342,274,327	472,423	215	101,204,523	8.6	876,375,915	3.36	.391
1907	394,729,112	513,252	234	120,102,372	8.6	1,032,880,399	3.29	.382
1908	332,573,944	516,254	195	99,626,922	8.6	856,994,927	3.34	.398
1909	379,744,237	(f)	209	(f)	(f)	(f)	(f)	(f)
1910	417,111,148	525,232	217	120,250,621	8.6	1,026,725,222	3.46	.402
1911	405,507,022	549,773	211	116,022,222	8.6	997,621,715	3.50	.407
1912	450,104,922	546,632	222	122,344,326	8.6	1,022,162,450	3.52	.422
1913	472,423,227	571,222	222	122,676,222	8.6	1,141,012,922	3.61	.419
1914	428,703,970	523,202	195	112,723,670	8.6	972,522,222	3.71	.432
1915	442,222,422	527,422	203	113,122,222	8.6	972,222,222	3.51	.422
1916	502,219,222	521,102	230	122,022,222	8.6	1,102,022,222	3.69	.422
1917	521,722,222	603,143	243	142,522,222	8.3	1,212,472,117	3.72	.422
1918	572,222,222	612,202	249	152,212,222	8.12	1,242,072,222	3.72	.422
1919	622,222,222	621,222	195	122,222,222	8.02	972,222,222	3.64	.422
1920	562,222,222	622,222	220	142,702,222	8.04	1,122,222,222	4.01	.422
1921	412,222,222	622,222	149	92,222,222	8.04	722,152,222	4.21	.422
1922	422,222,222	622,222	142	92,222,222	8.02	722,222,222	4.22	.422
1923	562,222,222	702,222	179	122,122,222	8.02	1,012,222,222	4.42	.422
1924	422,222,222	612,222	171	102,222,222	8.02	822,022,222	4.27	.422
1925	522,022,222	522,222	195	112,722,222	8.02	922,222,222	4.22	.422
1926	572,222,222	522,222	212	122,222,222	8.07	1,022,022,222	4.20	.422
1927	517,722,222	522,222	191	112,702,222	8.02	912,722,222	4.22	.422
1928	502,742,222	522,222	202	102,222,222	8.02	822,222,222	4.22	.422
1929	522,222,222	522,222	219	110,222,222	8.02	822,222,222	4.22	.422
1930	467,222,222	422,222	222	92,222,222	8.02	742,222,222	4.22	.422
1931	322,022,222	422,222	160	72,022,222	8.02	522,222,222	4.22	.422
1932	322,022,222	422,222	166	72,022,222	8.10	522,222,222	4.22	.422
1933	322,022,222	422,222	177	72,022,222	8.07	522,222,222	4.22	.422
1934	322,022,222	422,222	172	72,022,222	7.27	422,222,222	4.40	.422
1935	372,222,222	422,222	179	82,222,222	7.02	522,222,222	4.20	.422
1936	422,022,222	422,222	199	92,022,222	7.02	622,222,222	4.22	.422
1937	422,022,222	422,022	(f)	(f)	(f)	(f)	(f)	(f)
1938	422,022,222	(f)	(f)	(f)	(f)	(f)	(f)	(f)

a Sources: Mineral Resources of the United States (U. S. Dept. Int., Geological Survey, 1890-1925; U. S. Dept. Com., Bur. Mines, 1924-31); Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1932-33 - 1935); Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937); Bituminous Coal Tables (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37).

b These production data include virtually all coal mined in the United States except Pennsylvania anthracite. In 1921 and for the years 1924-28 no census was made of wagon-mine production. Wagon mines are small workings that produce less than 1,000 tons a year and operate sporadically. The exclusion of their production in these years is not considered serious, probably not more than about a million tons.

c These are calculated figures, men times days, for 1890 through 1925; figures for 1926-34 are from unpublished records; that for 1935 is from Annual Coal Report, U. S. Bur. Mines; and that for 1936 is from Bituminous Coal Tables, Nat. Bit. Coal Com.

d Data on man-hour worked and output per man-hour are based on established length of work-day and therefore subject to error insofar as the established length of work-day varied from the actual hours worked per day by the employees. See text discussion on this point, pp. 129-201.

e Data for 1880 are derived from Tenth Census of the United States (U. S. Dept. Com.), Vol. XV, "Report on the Mining Industries of the United States (Exclusive of the Precious Metals)," pp. 681-684. They relate to the States east of the 100th meridian and are exclusive of "irregular product" from small operations or "farmers' diggings." In estimating the output per man per day, the statisticians of the Census Office considered two boys to be the equivalent in producing capacity of one man. Hence the figure cited for "average number of men employed" represents the 90,354 reported as men plus one-half of the 6,121 reported as boys under 16 years of age. The figures cover the census year ending May 31, 1880.

f Data not available.

g The census figure for average number employed in 1909 is 422,000.

h These figures differ slightly from those shown in table B-2. In table B-2 net tons per man per day have been based on production figures which exclude wagon-mine production.

i 1920 and 1922 were peak years for wagon-mine production, the quantities for these years being, respectively, 4,234,711 and 5,459,322 net tons. For no other year does wagon-mine production rise as high as two million tons. Since there are no output data for wagon mines, the labor output figures for these years have been based only on production by commercial mines.

j Preliminary estimate by Nat. Bit. Coal Com.

APPENDIX B

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Table B-2.- INDEXES OF PRODUCTION, MAN-DAYS, AND NUMBER OF MEN REQUIRED TO MAINTAIN 1,000 TONS OF DAILY CAPACITY IN THE BITUMINOUS-COAL INDUSTRY, 1890-1938^a

(1910=100)

Year	Production	Man-days	Number of men required to maintain 1,000 tons of daily capacity	Year	Production	Man-days	Number of men required to maintain 1,000 tons of daily capacity
	(1)	(2)	(3)		(1)	(2)	(3)
1890	26.7	36.0	135.3	1914	101.3	94.4	93.4
1891	28.3	38.1	134.6	1915	106.1	93.9	88.6
1892	30.4	38.7	127.3	1916	120.5	107.1	88.9
1893	30.8	39.0	126.6	1917	132.3	121.6	92.0
1894	28.5	34.7	121.8	1918	138.9	127.1	91.7
1895	32.4	36.6	119.4	1919	111.7	100.6	90.0
1896	33.0	38.9	117.6	1920	136.3	116.7	86.2
1897	35.4	40.3	113.8	1921	99.7	82.0	82.4
1898	39.9	44.8	112.1	1922	101.2	81.0	80.6
1899	46.3	52.6	113.5	1923	135.4	104.7	77.2
1900	50.9	59.1	116.3	1924	116.0	87.9	75.8
1901	54.1	63.5	117.3	1925	124.7	95.2	76.5
1902	62.4	70.6	113.1	1926	137.5	105.8	76.8
1903	67.8	77.6	114.5	1927	124.1	94.3	76.1
1904	66.8	73.4	109.7	1928	120.1	87.8	73.0
1905	75.5	80.6	106.9	1929	128.3	91.6	71.3
1906	82.2	84.3	103.1	1930	112.1	76.6	68.5
1907	94.6	99.6	105.2	1931	91.6	59.8	65.4
1908	79.7	82.7	103.5	1932	74.3	49.3	66.4
1909	91.0	(b)	(b)	1933	80.0	58.0	72.3
1910	100.0	100.0	100.0	1934	86.2	67.8	78.5
1911	97.3	96.2	99.0	1935	89.3	68.7	76.8
1912	107.9	101.5	94.1	1936	105.3	78.9	74.7
1913	114.7	110.1	95.8	1937	106.1	(b)	(b)
				1938	82.0	(b)	(b)

a Source: Table B-1, cols. 1, 4, and 7 (col. 3 above is the reciprocal of table B-1, col. 7).

b Data not available.

BITUMINOUS COAL

Table B-5.- SALIENT STATISTICS ON MACHINE CUTTING OF BITUMINOUS COAL, 1891 TO 1936^a

Year	Total underground production ^b (1)	Out by Machines ^c		Number of cutting machines (4)	Average number of days worked (5)	Average tons of coal produced:		
		Tons (2)	Percent of underground production (3)			Per year per machine ^d (6)	Per day per machine ^d (7)	Per day per machine operator ^e (8)
1891	117,901,238	6,211,732	5.3	545	223	11,398	51.11	25.56
1892	126,856,567				219			
1893	128,385,231				204			
1894	118,820,405				171			
1895	135,118,193				194			
1896	137,640,276	16,424,932	11.9	1,446	172	11,359	59.16	29.58
1897	147,617,519	22,649,220	15.3	1,956	196	11,379	59.08	29.54
1898	166,393,623	36,113,144	21.5	2,622	211	12,362	58.79	29.29
1899	193,323,187	43,963,933	22.7	3,125	234	14,068	60.12	30.06
1900	212,316,112	52,784,523	24.9	3,907	234	13,510	57.74	28.87
1901	225,828,149	57,843,335	25.6	4,341	225	13,325	59.22	29.41
1902	260,216,844	69,611,582	26.8	5,418	230	12,848	55.86	27.93
1903	282,749,348	77,974,894	27.6	6,658	225	11,711	52.05	26.03
1904	278,659,689	78,606,997	28.2	7,663	202	10,258	50.78	25.39
1905	315,062,785	103,396,452	32.8	9,184	211	11,258	53.36	26.68
1906	342,874,867	118,647,527	34.7	10,212	213	11,638	54.64	27.32
1907	394,759,112	138,547,823	35.1	11,144	234	12,433	53.13	26.57
1908	332,573,944	123,183,334	37.0	11,569	193	10,648	55.17	27.59
1909	379,744,257	142,496,878	37.5	13,049	209	10,920	52.25	26.13
1910	417,111,142	174,012,293	41.7	13,254	217	13,129	60.50	30.25
1911	405,907,059	178,158,236	43.9	13,829	211	12,883	61.06	30.53
1912	450,104,982	210,538,822	46.8	15,298	223	13,763	61.72	30.86
1913	478,435,297	242,421,713	50.7	16,379	232	14,801	63.89	31.90
1914	421,423,024	218,399,287	51.8	16,507	195	15,231	67.85	33.93
1915	439,792,807	243,231,551	55.3	15,692	203	15,501	76.36	38.18
1916	498,587,287	283,991,475	56.9	16,198	230	17,514	76.15	38.06
1917	546,000,586	306,394,127	56.1	17,235	243	17,778	73.16	36.58
1918	571,097,575	323,931,133	56.7	18,463	249	17,545	70.46	35.23
1919	460,225,107	276,019,799	60.0	18,959	195	14,559	74.56	37.33
1920	559,807,130	339,813,476	60.7	19,103	220	17,788	80.85	40.43
1921	410,864,467	272,702,389	66.4	19,618	149	13,901	93.30	46.65
1922	412,059,215	267,032,931	64.8	20,436	142	13,067	92.02	46.01
1923	552,624,528	377,435,543	68.3	21,229	179	17,779	99.32	49.66
1924	470,079,584	336,271,335	71.5	18,660	171	18,021	105.39	52.70
1925	503,181,834	366,725,758	72.9	17,551	195	20,895	107.15	53.58
1926	556,444,290	410,912,640	73.8	17,466	215	23,526	109.42	54.71
1927	499,385,186	374,040,637	74.9	17,388	191	21,511	112.62	56.31
1928	430,956,393	369,687,007	76.9	15,261	203	24,224	119.33	59.67
1929	514,720,494	403,606,717	78.4	14,731	219	27,398	125.11	62.55
1930	447,683,940	362,425,163	81.0	14,237	187	25,457	136.13	68.07
1931	363,157,015	302,262,746	83.2	13,216	160	22,871	142.94	71.47
1932	290,069,744	242,954,770	84.1	12,017	146	20,301	139.05	69.53
1933	315,340,352	264,999,985	84.7	11,845	167	22,541	134.98	67.49
1934	338,578,381	284,076,715	84.1	11,905	178	23,912	134.34	67.17
1935	348,725,830	293,664,208	84.2	11,881	179	24,717	138.98	69.04
1936	410,962,046	348,332,330	84.8	11,974	199	29,091	146.19	73.10

a Source: Mineral Resources of the United States (U. S. Dept. Int., Geological Survey, 1891-1923; U. S. Dept. Com., Bur. Mines, 1924-31); Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1932-33-36); Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937); Bituminous Coal Tables (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37).

b For the years 1891 through 1913 the small amount of strip coal produced has been included. In 1914 and thereafter the strip tonnage excluded has been the "total tons mined at strip pits" and will not agree with other tables which excluded "total at same mines," a figure that included an insignificant production underground in operations which are both strip pits and deep mines.

c Col. (2) divided by col. (4).

d Col. (6) divided by col. (5).

e Col. (7) divided by 2. Two men constitute a cutting-machine crew.

Table B-4.-- PERCENT OF DEEP-MINED BITUMINOUS COAL PRODUCED BY
THE THREE MAJOR METHODS OF HAULAGE EMPLOYED,
1924^a

States	Animals only ^b	Locomotives only ^b	Locomotives and animals ^b
United States	12.0	34.1	53.9
Alabama	30.3	34.3	35.4
Alaska	100.0	-	-
Arkansas	75.0	3.3	21.7
California	100.0	-	-
Colorado	37.1	5.9	57.0
Georgia	100.0	-	-
Illinois	4.8	23.9	71.3
Indiana	14.6	26.9	58.5
Iowa	49.7	1.9	48.4
Kansas	49.2	17.2	33.6
Kentucky	7.2	53.4	39.4
Maryland	28.9	13.9	57.2
Michigan	0.4	32.5	67.1
Missouri	77.1	9.0	13.9
Montana	11.0	24.1	64.9
New Mexico	16.0	-	84.0
North Dakota	62.7	3.1	34.2
Ohio	14.9	19.6	65.5
Oklahoma	77.0	3.0	20.0
Oregon	100.0	-	-
Pennsylvania	10.7	33.9	55.4
Tennessee	14.9	19.6	65.5
Texas	70.8	4.9	24.3
Utah	7.5	11.8	80.7
Virginia	3.3	62.8	33.9
Washington	22.6	32.0	45.4
West Virginia	4.6	47.5	47.9
Wyoming	31.1	2.5	66.4
Other States	100.0	-	-

a Source: H. O. Rogers, "Exit the Mule," Coal Age, Vol. 32,
No. 2 (Aug. 1927), pp. 84-88.

b Includes a few mines also using ropes.

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Table B-5.- NUMBER OF ANIMALS AND LOCOMOTIVES IN SERVICE AT WEST VIRGINIA BITUMINOUS-COAL MINES, 1898-1937^a

Year	Total production	Number of animals	Number of mines using locomotives	Number of locomotives in use				Total
				Electric	Steam ^b	Compressed air	Gasoline ^b	
1898	16,700,999	2,162	(c)	(c)	(c)	(c)	-	(c)
1899	19,252,995	2,333	63	24	64	3	-	91
1900	22,647,207	2,614	72	43	69	4	-	116
1901	24,068,402	3,325	96	78	60	3	-	141
1902	24,970,826	3,132	109	107	64	2	-	173
1903	29,337,241	4,047	145	154	74	3	-	231
1904	32,406,752	4,760	168	206	77	6	-	289
1905	37,791,580	5,272	243	253	90	3	-	346
1906	43,290,350	5,477	281	335	83	3	-	421
1907	48,091,583	5,935	333	439	76	4	-	519
1908	41,897,843	6,073	404	590	81	5	-	676
1909	51,849,220	5,901	402	723	78	10	-	811
1910	61,671,019	6,572	483	888	72	7	-	967
1911	59,831,580	6,551	447	921	54	33	-	1,008
1912	66,786,687	6,486	480	1,194	62	38	17	1,311
1913	71,254,136	6,473	502	1,365	46	40	28	1,479
1914	71,707,626	6,350	662	1,571	59	43	29	1,702
1915	77,184,069	6,208	658	1,693	40	43	32	1,808
1916	86,460,127	6,406	774	1,957	37	41	29	2,064
1917	86,441,667	7,080	924	2,438	34	12	47	2,531
1918	89,935,839	7,418	946	2,687	36	24	49	2,796
1919	79,036,553	6,958	1,008	3,032	31	26	39	3,128
1920	89,970,707	7,341	1,036	3,361	38	32	43	3,474
1921	72,786,996	7,902	1,142	3,921	37	31	44	4,033
1922	80,488,192	6,886	991	3,918	27	48	37	4,022
1923	107,899,941	7,954	1,178	4,470	25	28	43	4,566
1924	101,662,897	6,668	1,074	4,427	18	37	35	4,517
1925	122,380,999	5,579	952	4,421	20	29	35	4,505
1926	143,509,340	5,976	1,027	4,713	23	17	44	4,797
1927	145,122,447	5,602	933	4,743	20	17	24	4,804
1928	132,952,159	4,769	803	4,478	25	17	12	4,532
1929	138,518,855	3,901	748	4,245	21	17	8	4,291
1930	121,472,638	3,373	729	4,253	27	17	4	4,301
1931	101,473,172	2,772	658	4,113	36	17	2	4,168
1932	85,608,735	2,015	566	3,479	15	7	3	3,504
1933	94,343,535	2,319	578	3,720	12	17	5	3,754
1934	98,134,393	2,103	515	3,863	32 ^d	(d)	4	3,899
1935	99,179,061	2,167	520	3,958	33 ^d	(a)	1	3,992
1936	117,825,706	1,871	493	3,964	34 ^d	(a)	5	3,993
1937	116,050,000 ^e	1,985	475	4,041	13 ^d	(a)	3	4,057

^a Sources: Production from *Mineral Resources of the United States* (U. S. Dept. Int., Geological Survey 1898-1923; U. S. Dept. Com., Bur. Mines, 1924-31); *Statistical Appendix to Minerals Yearbook* (U. S. Dept. Int., Bur. Mines, 1932-35-36); *Minerals Yearbook* (U. S. Dept. Int., Bur. Mines, 1937); *Bituminous Coal Tables* (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37). Haulage data from *Annual Reports* (Dept. of Mines, West Virginia); data from 1898 to 1925 are on a fiscal year, 1925 to date on calendar year.

^b Includes a large number used exclusively on the surface.

^c Data not available.

^d Compressed-air locomotives included with steam.

^e Preliminary figure.

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Table B-6.- NUMBER OF ANIMALS AND LOCOMOTIVES IN SERVICE AT PENNSYLVANIA BITUMINOUS-COAL MINES, 1897-1937^a

Year	Total production	Number of animals	Number of locomotives in use				Total	
			Electric	Steam ^b	Compressed air	Gasoline ^b		
1897	54,417,974	6,769	(e)	(e)	(e)	-	(e)	
1898	65,165,133	6,310	(e)	(e)	(e)	-	131	
1899	74,150,175	8,013	122	110	13	-	245	
1900	79,842,326	9,633	174	119	17	-	310	
1901	82,305,946	10,108	231	134	23	-	388	
1902	98,574,367	11,833	323	130	16	-	469	
1903	103,117,178	12,899	435	162	23	-	620	
1904	97,938,287	12,849	560	169	27	-	756	
1905	118,413,637	13,710	660	161	31	-	852	
1906	129,293,206	14,707	833	162	43	-	1,038	
1907	150,143,177	15,323	1,014	174	50	-	1,238	
1908	117,179,527	14,486	966	170	67	-	1,203	
1909	137,966,791	14,722	1,169	163	109	-	1,441	
1910	150,521,526	13,741	1,358	166	149	-	1,673	
1911	144,561,257	13,774	1,438	145	165	-	1,748	
1912	161,865,488	13,908	1,617	168	164	-	1,949	
1913	173,781,217	13,868	1,933	148	168	-	2,249	
1914	147,983,294	12,693	2,152	154	162	40	2,508	
1915	157,955,137	12,135	2,308	154	156	46	2,664	
1916	170,295,424	12,381	2,603	142	137	50	2,932	
1917	172,448,142	13,730	2,965	135	125	64	3,289	
1918	178,550,741	14,173	3,261	175	106	70	3,612	
1919	150,758,154	13,670	3,567	181	103	79	3,930	
1920	170,607,847	14,334	3,832	190	91	85	4,198	
1921	116,013,942	12,939	4,036	146	76	83	4,341	
1922	113,148,308	13,347	4,105	178	61	115	4,459	
1923	171,879,913	13,244	4,461	151	48	100	4,760	
1924	130,633,773	10,648	4,179	153	45	70	4,447	
1925	136,928,019	9,856	4,038	139	17	80	4,274	
1926	153,041,638	9,637	4,142	132	16	98	4,388	
			Battery	Trolley				
1927	132,964,639	8,607	342	3,826	105	14	85	4,372
1928	131,202,163	7,260	299	3,535	66	11	67	3,978
1929	143,516,241	6,714	286	3,576	58	11	61	3,992
1930	124,462,787	5,826	272	3,577	39	4	53	3,945
1931	97,658,698	4,699	239	3,405	37	2	55	3,738
1932	74,775,862	3,994	229	3,252	32	5	42	3,560
1933	79,295,944	4,192	235	3,228	31	(e)	49	3,543
1934	89,825,875	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1935	91,404,670	4,411	210	3,116	31	(e)	54	3,411
1936	109,887,470	4,505	205	3,307	25	(e)	45	3,582
1937	110,160,000 ^d	4,320	197	3,367	22	(e)	31	3,617

^a Sources: Production from Mineral Resources of the United States (U. S. Dept. Int., Geological Survey, 1897-1923; U. S. Dept. Com., Bur. Mines, 1924-31); Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1932-35-36); Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937); Bituminous Coal Tables (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37). Haulage data from Annual Reports (Dept. of Mines, Pennsylvania).

^b Includes a large number used exclusively on the surface.

^c Data not available.

^d Preliminary figure.

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Table B-7.- GROWTH OF TOTAL TONNAGE OF BITUMINOUS COAL MECHANICALLY CLEANED, 1906-36^a

(Figures represent net tons of clean coal. Data for central washeries operated by consumers are not available before 1927. No canvass was made in 1922, 1924, 1925, or 1926.)

Year	Bituminous coal cleaned by wet and pneumatic methods at mines			Percent of national production	Washed at central plants operated by consumers	Grand total mechanically cleaned
	Wet methods	Pneumatic methods	Total			
1906	9,251,946	-	9,251,946	2.7	(b)	(b)
1907	11,269,518	-	11,269,518	2.9	(b)	(b)
1908	11,870,438	-	11,870,438	3.6	(b)	(b)
1909	14,443,147	-	14,443,147	3.8	(b)	(b)
1910	16,035,387	-	16,035,387	3.8	(b)	(b)
1911	(c)	-	(c)	(c)	(b)	(b)
1912	17,538,572	-	17,538,572	3.9	(b)	(b)
1913	22,069,691	-	22,069,691	4.6	(b)	(b)
1914	20,264,141	-	20,264,141	4.8	(b)	(b)
1915	20,873,727	-	20,873,727	4.7	(b)	(b)
1916	22,922,218	-	22,922,218	4.6	(b)	(b)
1917	25,483,696	-	25,483,696	4.6	(b)	(b)
1918	22,017,293	-	22,017,293	3.8	(b)	(b)
1919	16,884,062	(d)	(d)	3.6 ^d	(b)	(b)
1920	17,984,289	(d)	(d)	3.3 ^d	(b)	(b)
1921	13,628,724	(d)	(d)	3.4 ^d	(b)	(b)
1922	20,140,385	(d)	(d)	3.8 ^d	(b)	(b)
1927	21,119,441	3,650,584	24,770,025	4.8	2,922,022	27,692,047
1928	21,188,911	3,786,185	24,975,096	5.0	3,807,943	28,783,039
1929	26,427,971	5,843,979	32,271,950	6.1	4,527,170	36,799,120
1930	27,794,648	7,895,109	35,689,757	7.6	3,109,862	38,799,619
1931	25,063,165	8,514,638	33,577,803	8.8	2,594,570	36,172,373
1932	20,818,509	6,539,090	27,357,599	8.8	2,920,770	30,278,369
1933	22,992,590	7,573,839	30,566,429	9.2	3,991,782	34,558,211
1934	27,555,730	8,297,984	35,853,714	10.0	3,972,845	39,826,559
1935	31,006,643	8,504,533	39,511,176	10.6	5,849,845	45,361,021
1936	42,795,529	10,590,948	53,386,477	12.2	7,708,499	61,094,976

^a Sources: For 1906-34, L. W. Flein, "Statistical Analysis of the Progress in Mechanical Cleaning of Bituminous Coal From 1927-34," Economic Paper No. 18 (U. S. Dept. Int., Bur. Mines, 1936); for 1935, Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937); for 1936, Bituminous Coal Tables (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37).

^b Data not available.

^c The returns for 1911 apparently were incomplete, but the error cannot now be corrected. As published, they showed 10,850,823 tons of clean coal, equivalent to 2.7 percent of the total output.

^d Pneumatic cleaning began in 1919, but no statistics are available for 1919 to 1923. The tonnages in those years, however, were small, but estimates are included in the percentages of national production.

Table B-8.- MECHANICALLY CLEANED BITUMINOUS COAL, BY STATE, AND PERCENTAGE OF TOTAL STATE OUTPUT MECHANICALLY CLEANED, 1927-36^a

State	(Net tons of clean coal)										
	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1936
	Mechanically cleaned tonnage										
United States	87,692,047	88,785,039	86,799,120	86,799,619	84,178,373	80,879,349	74,229,811	69,882,809	60,261,081	51,029,778	
Alabama	13,108,643	13,084,099	13,869,652	11,960,080	9,303,388	8,848,039	6,789,813	7,180,608	6,841,809	9,922,816	
Arkansas	9,800	9,899	9,839	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
Colorado	1,369,908	1,376,954	1,370,903	808,005	842,863	804,749	521,970	417,399	482,974	719,479	
Illinois	560,648	448,054	626,051	1,192,817 ^b	1,546,659 ^b	1,840,321 ^b	1,796,812 ^b	2,326,848 ^b	2,126,128	2,819,323	
Indiana	800,888	849,322	498,410	(c)	(c)	(c)	(c)	(c)	(c)	1,289,037	
Kansas	-	-	-	-	-	(b)	(d)	(d)	(d)	(d)	
Kentucky	909,882	841,979	497,658	290,780	341,954	531,616	835,238	808,759	821,968	814,447	
Maryland	-	-	-	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
Michigan	169,190	111,469	187,369	(e)	(e)	(e)	(e)	(e)	(e)	(e)	
Missouri	-	-	-	(b)	(b)	(b)	484,911 ^d	619,480 ^d	1,169,881 ^d	1,771,870 ^d	
Montana	148,908	101,966	78,393	(b)	-	-	(b)	(b)	(b)	(b)	
New Mexico	-	-	-	-	-	(b)	(b)	(b)	(b)	(b)	
Ohio	7,278	-	204,845	719,846 ^e	816,908 ^e	804,128 ^e	1,123,113 ^e	1,860,884 ^e	1,121,846 ^e	1,921,848 ^e	
Oklahoma	5,644	-	-	(b)	(b)	(b)	(b)	(b)	(b)	(b)	
Pennsylvania	9,485,092	6,909,848	11,100,193	13,498,934	12,697,808	10,759,082	12,722,812	13,658,248	17,844,648	21,964,408	
Tennessee	244,562	226,903	208,449	297,768	249,488	247,450	208,778	241,580	241,117	217,997	
Virginia	1,289,496	869,271	-	(f)	(f)	(f)	(f)	(f)	309,548	479,798	
Washington	820,481	999,499	967,099	819,482	603,497	468,610	319,617	600,286	614,771	1,308,798	
West Virginia	2,686,482	4,096,483	7,439,098 ^f	9,287,958 ^f	9,710,635 ^f	9,383,094 ^f	10,247,800 ^f	11,008,789 ^f	11,613,819	12,940,471	
Other States	-	-	-	145,019	309,062	470,328	78,660	169,397	118,829	148,397	
	Percent of State output mechanically cleaned										
United States	8.3	8.7	8.9	8.3	8.8	8.6	10.4	11.1	12.2	12.2	
Alabama	66.9	74.1	78.7	78.0	77.5	74.4	76.2	78.2	80.4	81.1	
Arkansas	0.6	0.6	0.6	0	0	0	0	0	0	0	
Colorado	14.0	13.0	12.8	10.8	8.2	8.1	8.9	8.0	8.8	10.8	
Illinois	1.2	0.6	0.9	1.6 ^g	2.6 ^g	3.3 ^g	3.4 ^g	4.1 ^g	7.1	11.0	
Indiana	1.4	1.0	2.7	(c)	(c)	(c)	(c)	(c)	8.2	12.8	
Kansas	-	-	-	-	-	-	(d)	(d)	(d)	(d)	
Kentucky	0.4	0.9	0.8	0.6	0.9	0.9	0.6	0.8	0.9	1.1	
Maryland	-	-	-	-	-	-	-	-	-	-	
Michigan	20.8	10.1	19.6	(e)	(e)	(e)	(e)	(e)	(e)	(e)	
Missouri	-	-	-	-	-	-	8.1 ^d	12.9 ^d	12.8 ^d	20.5 ^d	
Montana	4.8	3.1	2.2	-	-	-	-	-	-	-	
New Mexico	-	-	-	-	-	-	-	-	-	-	
Ohio	-	-	0.9	3.1 ^e	3.9 ^e	3.9 ^e	3.6 ^e	3.9 ^e	3.9 ^e	3.6 ^e	
Oklahoma	-	-	-	-	-	-	-	-	-	-	
Pennsylvania	4.2	5.8	7.7	10.2	13.0	14.4	16.0	17.4	19.9	19.6	
Tennessee	6.0	5.8	5.7	6.8	5.5	7.0	8.2	8.5	8.5	8.1	
Virginia	10.0	2.3	(f)	(f)	(f)	(f)	(f)	(f)	4.0	4.1	
Washington	31.1	30.4	30.4	35.6	32.7	30.6	27.3	26.9	26.4	26.4	
West Virginia	2.8	5.8	5.5 ^f	7.0 ^f	8.7 ^f	10.0 ^f	10.0 ^f	10.2 ^f	11.7	12.0	
Other States	-	-	-	-	-	-	-	-	-	-	

a. Sources: L. H. Flett, "Statistical Analysis of the Progress in Mechanical Cleaning of Bituminous Coal From 1927-34," Economic Paper 19 (U. S. Dept. Int., Bur. Mines, 1935); 1936, *Bituminous Coal Tables* (U. S. Dept. Int., Bur. Mines, 1937); 1938, *Bituminous Coal Tables* (U. S. Dept. Int., Bur. Mines, 1938-37). Central washeries operated by consumers in Colorado and Pennsylvania are included.

b. Included with "Other States."

c. Data for Indiana included with those for Illinois.

d. Data for Kansas included with those for Missouri.

e. Data for Michigan included with those for Ohio.

f. Data for Virginia included with those for West Virginia.

g. Less than 0.05 percent.

Table B-9.- NET TONS PRODUCED PER MAN PER DAY AT ALL BITUMINOUS-COAL MINES, UNDERGROUND MINES, AND STRIP MINES
IN SELECTED STATES, 1910-36

Year	United States			Alabama			Arkansas			Illinois			Indiana		
	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c
1910	3.46	-	3.46	2.91	-	2.91	2.67	-	2.67	3.95	-	3.95	3.67	-	3.67
1911	3.50	-	3.50	2.91	-	2.91	2.80	-	2.80	3.73	-	3.73	3.68	-	3.68
1912	3.68	-	3.68	2.91	-	2.91	2.95	-	2.95	3.95	-	3.95	3.88	-	3.88
1913	3.51	-	3.61	2.82	-	2.82	2.76	-	2.76	4.10	-	4.10	4.06	-	4.06
1914	3.71	5.06	3.71	2.87	-	2.87	2.96	-	2.96	4.19	8.46	4.18	4.27	5.38 ^d	4.27
1915	3.91	5.93	3.90	2.96	-	2.96	2.96	-	2.96	4.35	7.77	4.33	4.17	8.34	4.09
1916	3.89	6.21	3.88	2.73	2.35	2.73	2.87	-	2.87	4.43	7.59	4.41	4.48	7.70	4.40
1917	3.76	5.49	3.75	2.59	5.14	2.57	2.87	-	2.87	4.22	7.42	4.21	4.53	8.85	4.42
1918	3.77	5.46	3.75	2.53	2.32	2.64	2.74	2.52	2.74	4.36	9.33	4.35	4.45	6.72	4.38
1919	3.83	5.53	3.82	2.42	3.72	2.39	2.74	2.09	2.74	4.47	7.74	4.46	4.71	7.36	4.64
1920	4.01	6.02	3.98	2.58	3.52	2.57	2.94	-	2.94	4.78	9.98	4.77	4.91	8.58	4.81
1921	4.21	7.31	4.18	2.93	5.81	2.86	3.03	2.69	3.03	4.80	9.21	4.78	4.86	7.92	4.78
1922	4.29	6.83	4.23	3.03	4.93	3.00	3.32	2.97	3.34	5.06	9.84	5.03	5.24	7.35	5.12
1923	4.47	7.50	4.42	2.94	3.90	2.91	3.39	5.16	3.23	5.03	10.00	4.99	5.45	9.94	5.22
1924	4.57	8.79	4.50	3.11	3.55	3.10	3.23	4.55	3.07	5.17	12.97	5.06	5.73	10.30	5.41
1925	4.53	10.64	4.44	3.00	4.07	2.97	2.99	5.41	2.75	5.34	15.10	5.16	5.87	11.73	5.38
1926	4.50	9.45	4.42	2.89	4.06	2.86	3.00	6.40	2.77	5.31	14.22	5.14	5.72	11.66	5.23
1927	4.55	9.97	4.46	3.10	3.87	3.07	3.05	6.70	2.88	5.36	16.52	5.14	6.13	11.71	5.30
1928	4.73	11.27	4.61	3.09	4.55	3.05	2.79	5.40	2.69	5.57	15.16	5.29	6.51	14.17	5.31
1929	4.85	13.01	4.72	3.08	4.78	3.05	2.70	4.44	2.65	6.06	18.91	5.68	7.00	14.88	5.68
1930	5.06	13.92	4.92	3.38	5.55	3.36	2.87	6.57	2.81	6.42	19.45	5.91	7.56	16.17	5.93
1931	5.30	15.78	5.12	3.84	4.38	3.84	2.58	11.93	2.53	6.54	20.19	5.88	7.95	17.42	6.02
1932	5.22	15.57	4.99	3.60	5.28	3.59	2.61	9.42	2.54	6.30	18.12	5.44	8.65	16.86	6.29
1933	4.78	12.77	4.61	3.26	4.17	3.25	2.57	6.37	2.51	6.00	15.14	5.42	7.52	14.62	5.87
1934	4.40	12.11	4.23	2.62	3.70	2.61	2.46	6.33	2.42	5.62	14.08	5.08	7.75	13.69	5.87
1935	4.50	11.21	4.32	2.79	2.75	2.79	2.47	5.95	2.42	5.97	12.65	5.40	7.91	12.74	6.24
1936	4.62	12.60	4.42	2.90	3.75	2.90	2.58	8.43	2.52	6.55	15.63	5.81	8.48	13.51	6.61

See footnotes at end of table.

Table B-9.- NET TONS PRODUCED PER MAN PER DAY AT ALL BITUMINOUS-COAL MINES, UNDERGROUND MINES, AND STRIP MINES
IN SELECTED STATES, 1910-36 - Continued

Year	Kansas			Kentucky			Missouri			Montana			No. Dakota (Lignite)		
	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c
1910	2.58	-	2.58	3.26	-	3.26	2.00	-	2.00	3.19	-	3.19	3.61	-	3.61
1911	2.86	-	2.86	3.19	-	3.19	2.05	-	2.05	3.50	-	3.50	3.43	-	3.43
1912	2.97	-	2.97	3.38	-	3.38	2.17	-	2.17	4.03	-	4.03	3.46	-	3.46
1913	2.93	-	2.93	3.51	-	3.51	2.22	-	2.22	3.92	-	3.92	3.50	-	3.50
1914	2.87	3.77	2.83	3.79	-	3.79	2.30	4.51	2.23	4.01	-	4.01	4.20	-	4.20
1915	2.80	5.34	2.63	4.11	-	4.11	2.23	4.35	2.02	4.40	-	4.40	4.09	-	4.09
1916	2.78	5.84	2.59	3.91	-	3.91	2.37	5.31	2.06	3.94	-	3.94	3.64	-	3.64
1917	3.11	5.46	2.95	3.72	1.34	3.73	2.44	5.01	2.16	3.80	-	3.80	3.78	3.83	3.78
1918	3.02	6.93	2.80	3.48	1.57	3.49	2.48	5.99	2.14	3.75	-	3.75	3.58	2.77	3.59
1919	2.89	5.40	2.74	3.47	1.95	3.47	2.40	5.40	2.03	4.02	-	4.02	3.45	5.45	3.43
1920	3.19	7.10	2.96	3.95	1.56	3.95	2.56	6.66	2.19	4.19	-	4.19	3.75	8.73	3.55
1921	3.08	7.73	2.87	4.11	5.89	4.11	2.50	7.89	2.10	4.58	-	4.58	4.19	10.48	3.93
1922	3.02	7.95	2.73	4.89	9.49	4.86	2.88	8.77	2.26	5.03	-	5.03	4.40	6.34	4.05
1923	3.19	10.85	2.83	4.83	12.09	4.78	3.08	9.15	2.51	5.00	-	5.00	4.60	6.72	4.07
1924	3.29	11.11	2.83	4.65	10.32	4.58	3.07	9.09	2.15	5.25	19.96	4.99	5.61	10.34	4.41
1925	3.43	11.15	2.79	4.69	9.33	4.63	3.17	9.15	2.08	6.64	36.76	5.45	6.62	12.53	5.12
1926	3.43	11.60	2.66	4.52	8.37	4.48	3.27	9.08	2.26	7.14	47.64	5.49	6.56	12.18	5.16
1927	3.57	11.63	2.56	4.50	10.64	4.45	3.26	8.57	2.06	6.99	58.31	5.33	6.78	14.08	4.86
1928	3.68	12.84	2.39	4.69	8.59	4.66	3.47	10.21	2.17	7.93	48.45	5.43	7.00	13.42	4.93
1929	3.63	11.64	2.67	4.64	14.41	4.61	3.87	12.92	2.30	7.90	25.86	5.69	6.84	15.15	4.65
1930	3.96	11.54	2.64	4.83	12.17	4.81	4.07	16.32	2.18	8.45	28.50	6.11	7.50	13.13	4.60
1931	4.24	15.83	2.11	5.26	12.40	5.25	4.75	13.90	2.20	9.27	40.85	6.59	7.04	16.05	3.86
1932	4.19	14.89	1.99	5.41	18.89	5.41	4.45	15.12	2.01	9.64	70.57	6.56	7.12	15.98	3.99
1933	4.15	13.15	1.83	4.87	-	4.87	4.02	11.10	1.95	9.80	75.47	6.53	7.93	13.06	4.90
1934	4.45	12.44	1.80	4.33	-	4.33	4.29	13.84	1.87	9.73	62.24	5.91	6.65	10.31	4.25
1935	4.00	8.85	1.99	4.28	1.23	4.28	4.02	11.05	1.87	9.30	58.05	5.81	7.61	11.29	5.24
1936	4.80	11.75	2.08	4.34	5.06	4.34	4.13	13.63	1.94	10.53	65.63 ^e	6.35	8.20	12.25	5.34

See footnotes at end of table.

Table B-9.- NET TONS PRODUCED PER MAN PER DAY AT ALL BITUMINOUS-COAL MINES, UNDERGROUND MINES, AND STRIP MINES
IN SELECTED STATES, 1910-36 - Continued

Year	Ohio			Oklahoma			Pennsylvania			Texas (Lignite)			Wyoming		
	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c	All Mines ^a	Strip Mines ^b	Deep Mines ^c
1910	3.61	-	3.61	2.12	-	2.12	3.61	-	3.61	3.71	-	3.71	3.91	-	3.91
1911	3.73	-	3.73	2.24	-	2.24	3.69	-	3.69	3.19	-	3.19	3.70	-	3.70
1912	3.77	-	3.77	2.40	-	2.40	3.89	-	3.89	3.22	-	3.22	3.85	-	3.85
1913	3.84	-	3.84	2.34	-	2.34	3.78	-	3.78	3.22	-	3.22	3.83	-	3.83
1914	3.84	-	3.84	2.41	(d)	2.41	3.75	-	3.75	3.13	-	3.13	4.15	-	4.15
1915	3.94	6.91	3.92	2.62	4.28	2.61	4.00	-	4.00	3.02	-	3.02	4.50	-	4.50
1916	4.26	8.58	4.22	2.60	6.14	2.56	3.91	-	3.90	2.81	-	2.81	4.40	-	4.40
1917	4.26	7.25	4.21	2.45	6.73	2.39	3.80	3.39	3.80	2.84	-	2.84	4.74	5.56	4.74
1918	4.22	7.61	4.10	2.49	4.42	2.46	3.80	4.64	3.79	3.07	-	3.07	4.66	-	4.66
1919	4.39	7.39	4.29	2.44	2.81	2.42	3.96	4.99	3.94	2.94	-	2.94	4.48	-	4.48
1920	4.74	6.17	4.60	2.70	4.83	2.65	3.96	5.16	3.94	3.48	-	3.48	4.69	-	4.69
1921	4.60	9.77	4.50	2.69	5.69	2.58	4.03	6.69	4.01	3.65	-	3.65	5.08	-	5.08
1922	4.92	9.07	4.62	3.12	4.41	3.00	3.84	5.82	3.78	3.29	-	3.29	5.16	-	5.16
1923	4.94	10.72	4.73	3.00	4.15	2.88	4.13	5.71	4.11	3.20	-	3.20	5.24	-	5.24
1924	4.82	10.62	4.55	3.06	4.28	2.92	4.29	6.12	4.27	3.86	48.23	3.46	5.40	-	5.40
1925	4.68	11.89	4.35	2.70	3.98	2.51	4.37	6.81	4.35	3.97	25.94	3.43	5.90	7.20	5.90
1926	4.56	10.27	4.31	2.88	3.87	2.75	4.37	6.56	4.35	4.22	13.04	3.06	6.15	33.04	6.11
1927	4.52	10.09	4.06	3.35	5.44	3.08	4.26	6.36	4.24	6.03	28.37	4.29	6.18	18.79	6.14
1928	4.28	11.99	3.84	3.34	5.51	3.12	4.52	7.18	4.49	5.96	29.61	4.39	6.34	10.76	6.31
1929	4.64	12.58	4.41	3.36	6.46	3.12	4.73	6.89	4.71	6.19	23.44	4.63	6.02	20.35	5.98
1930	4.67	11.48	4.53	3.49	6.98	3.25	4.82	6.10	4.81	5.03	26.92	4.33	6.20	26.41	6.14
1931	4.69	14.08	4.54	3.59	6.87	3.24	4.96	5.87	4.96	6.70	33.20	5.78	6.81	24.93	6.72
1932	4.71	11.83	4.54	3.40	7.40	2.93	4.66	5.48	4.65	7.25	34.40	6.53	6.65	12.09	6.58
1933	4.55	10.16	4.42	3.26	8.52	2.81	4.24	5.15	4.24	7.55	41.75	6.89	6.29	18.45	6.20
1934	4.23	8.12	4.11	3.02	6.57	2.56	3.98	5.06	3.97	7.26	33.18	6.48	6.17	12.88	6.08
1935	4.44	9.70	4.19	3.19	7.73	2.68	4.10	4.95	4.09	7.22	20.51	6.60	6.00	11.89	5.93
1936	4.42	10.21	4.15	3.15	11.88	2.61	4.22	5.89	4.21	7.57	(e)	-	6.00	9.68	5.94

- a Source: Man-day data computed (number of men employed multiplied by average days worked) for 1910-23 from Mineral Resources of the United States (U. S. Dept. Int., Geological Survey, 1910-23); for 1924-36, net tons per man-day published in Mineral Resources of the United States (U. S. Dept. Com., Bur. Mines, 1924-31); Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1932-33-35); Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937); Bituminous Coal Tables (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37).

Net tons per man-day calculated on basis of production figures exclusive of wagon-mine production (mines producing less than 1,000 tons annually) in the years 1918, 1919, 1920, 1922, and 1923 for the U. S. and following States: Ark., Kans., Ky., Mo., Mont., N. Dak., Ohio, Okla., and Pa. In this period wagon-mine production assumed larger proportions than in any other years and since there are no employment data for wagon mines, labor output was based only on production from commercial mines. Between 1910 and 1917 wagon-mine production was small and has been included. In 1921 and from 1924 to 1936 no canvass was made of wagon-mine production.

Due to revisions made during the present study, figures may not in all cases agree with those shown in publications of the Bur. Mines.

- b Source: Man-day data taken from unpublished records of Bur. Mines, 1914-25; for 1926-36, net tons per man-day published in Mineral Resources of the United States (U. S. Dept. Com., Bur. Mines, 1926-31); Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1932-33-35); Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937); Bituminous Coal Tables (U. S. Dept. Int., Nat. Bit. Coal Com., 1936-37).

Net tons per man-day for strip mines based on returns which included data for underground mines in operations which were both strip pits and deep mines. This was necessary because of the impossibility of separating men engaged in stripping from those engaged in other work. Horse-stripping operations were excluded from 1914 to 1921 and included thereafter.

Due to revisions made during the present study, figures may not in all cases agree with those shown in publications of the Bur. Mines.

- c Computed. Data for strip mines were subtracted from those for all mines.
- d Data for Oklahoma included with those for Indiana.
- e Data for Texas lignite included with those for Montana.

BITUMINOUS COAL

Table B-10.- PERCENT OF BITUMINOUS-COAL PRODUCTION MINED BY STRIPPING IN SELECTED STATES, 1914-38^a

Year	Tonnage stripped in United States ^b	Percent of total State production mined by stripping										
		United States	Alabama	Illinois	Indiana	Kansas	Missouri	Montana	North Dakota	Oklahoma	Ohio	Pennsylvania
1914	1,280,946	0.3	-	0.6	1.7 ^c	5.3	6.4	-	-	(d)	-	-
1915	2,831,619	0.6	-	0.8	3.8	11.4	17.2	-	-	0.8	1.2	-
1916	3,935,395	0.8	0.4	0.7	4.2	12.5	21.6	-	-	2.9	1.6	-
1917	5,789,977	1.0	1.2	0.6	4.8	11.2	20.1	-	0.9	3.6	3.1	0.2
1918	8,288,245	1.4	1.2	0.6	4.5	12.1	21.2	-	0.5	5.3	5.9	0.6
1919	5,634,931	1.2	1.8	0.7	4.0	10.3	24.1	-	1.3	4.2	4.9	0.4
1920	8,859,563	1.6	1.2	0.7	4.6	11.9	21.0	-	8.5	3.7	7.2	0.7
1921	5,037,463	1.2	2.7	0.8	3.9	10.5	22.0	-	10.0	6.8	2.6	0.4
1922	10,206,894	2.4	2.0	1.2	7.1	13.2	23.5	-	15.0	11.4	11.3	1.7
1923	11,940,134	2.1	2.6	1.6	8.7	14.6	24.8	-	25.3	10.9	7.5	0.8
1924	13,606,954	2.8	1.9	5.4	11.7	18.7	39.5	6.7	36.2	13.4	9.4	0.7
1925	16,870,907	3.2	2.0	5.1	15.4	24.8	44.6	21.1	38.2	17.0	10.9	0.6
1926	16,928,695	3.0	1.6	5.0	15.6	29.0	41.3	26.1	37.2	16.0	9.1	0.7
1927	18,378,166	3.5	1.9	6.0	24.8	36.3	48.5	26.2	41.9	16.8	17.1	0.9
1928	19,758,577	4.0	1.9	7.8	29.4	42.9	47.7	35.5	45.8	14.8	15.2	0.8
1929	20,268,099	3.8	1.8	8.9	30.6	34.3	49.3	35.8	46.2	13.1	7.5	0.5
1930	19,645,359	4.2	1.1	11.4	34.2	43.1	53.7	35.3	34.2	13.0	5.0	0.6
1931	18,938,321	5.0	0.6	14.3	37.1	50.0	63.8	34.5	59.4	16.6	4.6	0.5
1932	19,641,120	6.3	0.9	19.6	43.5	60.6	63.5	35.2	59.6	21.6	5.8	0.3
1933	18,270,181	5.5	0.6	15.0	36.8	64.9	62.6	36.5	61.2	20.8	5.1	0.3
1934	20,789,641	5.8	0.6	14.9	40.6	69.7	65.3	43.4	61.4	25.2	5.8	0.4
1935	23,647,292	6.4	0.4	16.6	41.4	64.8	64.5	41.6	58.1	24.4	9.7	0.5
1936	28,125,857	6.4	0.4	17.9	43.1	68.8	61.8	43.9	61.7	22.3	10.2	0.7
1937	31,750,853	7.1	*	21.8	46.6	73.4	67.8	41.2	64.2	29.1	10.2	0.7
1938	(c)	(d)	(d)	26.0	52.0	(d)	(d)	(d)	(d)	29.1	(d)	(d)

^a Source: For 1914-18, O. E. Kieseling, F. G. Tryon, and L. Mann, The Economics of Strip Coal Mining (U. S. Dept. Com., Bur. Mines, Econ. Paper 11, 1931); for 1919-31, Mineral Resources of the United States (U. S. Dept. Int., Geological Survey, 1919-23; U. S. Dept. Com., Bur. Mines, 1924-31); for 1932-34, Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines); for 1935, Minerals Yearbook (U. S. Dept. Int., Bur. Mines); for 1936, Bituminous Coal Tables, 1936-37 (U. S. Dept. Int., Nat. Bit. Coal Com.); for 1937-38 the strip production figures have been estimated on basis of data published in State reports and other information available to the Nat. Bit. Coal Com.

Production figures for strip mines exclude all coal mined in operations which are both strip pits and deep mines. They exclude tonnage in horse stripping mines from 1914-21 and include it thereafter.

^b Source: For 1914-31, Mineral Resources of the United States (U. S. Dept. Com., Bur. Mines, 1930-31); for 1932-34, Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1932-1933 - 1935); for 1935-36, Minerals Yearbook (U. S. Dept. Int., Bur. Mines, 1937-38); for 1937 estimated on basis of data published in State reports and other information available to the Nat. Bit. Coal Com.

^c Data for Oklahoma included with those for Indiana.

^d Data not available.

* Less than 0.05 percent.

Table B-11.- DISTRIBUTION OF BITUMINOUS COAL MINED BY STRIPPING, BY STATE, AND PERCENTAGE OF TOTAL STATE OUTPUT MINED BY STRIPPING, 1936^a

State	Stripped tonnage		Percent stripped tonnage is of total State tonnage
	Tons	Percent of U. S. total	
United States	28,125,857	100.0	6.4
Illinois	9,112,669	32.4	17.9
Indiana	7,699,801	27.3	43.1
Missouri	2,460,749	8.7	61.8
Ohio	2,456,116	8.7	10.2
Kansas	2,025,714	7.2	63.8
North Dakota (lignite)	1,366,921	4.9	61.7
Montana and Texas	1,312,695	4.7	34.3
Pennsylvania	753,784	2.7	0.7
Oklahoma	343,598	1.2	22.3
Iowa	272,534	1.0	6.9
Wyoming	142,694	0.5	2.5
Arkansas	55,115	0.2	3.4
Alabama	32,134	0.2	0.4
South Dakota (lignite)	33,517	0.1	81.1
Kentucky	31,897	0.1	0.1
Colorado	22,376	0.1	0.3
West Virginia	1,523	*	*

^a Source: Bituminous Coal Tables, 1936-1937 (U. S. Dept. Int., Nat. Bit. Coal Com.), p. 16.

* Less than 0.05 percent.

Table B-12.- BITUMINOUS-COAL PRODUCTION IN ILLINOIS, BY COUNTY AND SEAM FOR STRIPPING MINES AND BY COUNTY FOR LOCAL MINES, 1957^a

County	Seam (shipping mines)							Total production		
	1	2	3	4	5	6	7	Shipping mines	Local mines	Total
Adams						51,797		-	909	909
Bond								51,797	-	51,797
Brown								-	20,231	20,231
Bureau		97,207 ^b						97,207	13,380	70,527
Cass								-	915	915
Christian						4,743,998		4,743,998	15,700	4,799,898
Clinton						284,433		-	-	284,433
Crawford								-	1,436	1,436
DeKalb								27,087	36,488	63,575
Franklin								10,108,267	-	10,108,267
Fulton					2,206,218 ^d	769,950 ^b		2,976,168	356,152	3,332,320
Callahan								-	16,063	16,063
Crawson								-	6,912	6,912
Crundy		9,770 ^e						9,770	159,758	169,528
Hancock								-	2,516	2,516
Henry	85,691	536,564 ^c						622,255	106,683	728,938
Jackson						1,509,078 ^f		1,599,078	121,016	1,720,094
Jasper								-	555	555
Jefferson								-	380	380
Jersey								-	1,001	1,001
Johnson								-	139	139
Knox	234,732					487,529 ^c		722,261	140,914	863,175
Ladelle		399,532 ^e						399,532	77,797	477,329
Livingston								-	16,153	16,153
Logan								-	2,969	2,969
McDonough								-	6,482	6,482
Macon					145,289 ^b			145,289	-	145,289
Macoupin						3,515,265		3,515,265	5,621	3,520,886
Madison						1,295,992		1,295,992	363,240	1,659,232
Marion						317,542		317,542	-	317,542
Marshall								-	11,200	11,200
Menard								-	143,649	143,649
Mercer								-	27,925	27,925
Monroe								-	300	300
Montgomery							926,598	926,598	-	926,598
Morgan								-	1,092	1,092
Peoria					1,112,036			1,112,036	273,681	1,485,717
Perry					21,013	3,626,450 ^e		3,847,463	25,892	3,873,355
Pope								-	47	47
Putnam			45,879 ^b					45,879	-	45,879
Randolph								-	-	-
Rock Island						1,337,086 ^h		1,337,086	53,027	1,390,113
R. Clark								-	45,261	45,261
Saline					2,808,224 ^j	651,906 ^c		3,460,130	37,427	3,497,557
Sangamon					1,922,882	415,814		2,338,696	255,408	2,594,104
Shugler								-	73,673	73,673
Scott								-	2,119	2,119
Shelby								-	12,205	12,205
Stark								-	20,783	20,783
Tazewell				126,007				126,007	156,614	282,621
Vermillion						1,661,771 ^k	201,702 ^l	1,863,472	390,931	2,254,403
Wabash								-	9,419	9,419
Warren								-	10,418	10,418
Washington						311,004		311,004	24,713	335,717
White						33,897		33,897	-	33,897
Will		3,318,000 ^c						1,316,001	75,076	1,391,077
Williamson					398,351 ^c	1,983,869 ^g		2,382,214	436,775	2,818,989
Woodford		72,984 ^b						72,984	-	72,984
Total	320,423	2,394,058	45,879	-	6,740,020	36,399,995	201,701	48,062,076	4,370,179	52,432,255
Stripped	-	2,058,378	-	-	2,435,034	6,541,984	140,678	11,276,074	549,796	11,825,870
Deep mined	320,423	335,680	45,879	-	6,304,986	87,015,011	61,023	36,086,002	3,820,383	40,706,385
Local mines ⁿ	340,514	265,377	21,434	7,370	1,024,627	1,337,492	444,345	-	4,370,179	-
GRAND TOTAL	660,937	2,679,435	67,313	7,370	10,664,647	37,697,487	646,046	-	-	52,432,255

a Source: Computed from Coal Report of Illinois, 1957 (Dept. of Mines and Minerals.) Unless otherwise noted, all coal is deep mined by room-and-pillar method.

b All by longwall.

c All mined by stripping.

d 1,801,869 tons by stripping.

e 568,828 tons by stripping.

f 194,048 tons by stripping, balance of 206,489 tons by longwall.

g 2,856,722 tons by stripping.

h 788,284 tons by stripping.

i 236,715 tons by stripping.

j 136,298 tons by stripping.

k 13,942 tons by stripping.

l 140,678 tons by stripping.

m 194,677 tons by striping.

n Method of mining by seam, not known for local mines.

Table B-18.- BITUMINOUS COAL MECHANICALLY LOADED IN SHIPPING MINES IN ILLINOIS, BY SEAM, TYPE OF EQUIPMENT, AND COUNTY, 1937^a

County	Seam No. 5				Seam No. 6					Total					
	Mobile loaders		Pit-car loaders		Total tons	Mobile loaders		Pit-car loaders		Total tons	Mobile loaders		Pit-car loaders		Total tons
	No.	Tons	No.	Tons		No.	Tons	No.	Tons		No.	Tons	No.	Tons	
Bond					1	5,113				5,113	1	5,113			5,113
Christian					57	4,545,320	6	40,363		4,585,683	57	4,545,320	6	40,363	4,585,683
Franklin					170	8,704,107	176	1,250,896		9,955,003	170	8,704,107	176	1,250,896	9,955,003
Jackson					20	1,033,856				1,033,856	20	1,033,856			1,033,856
Macon			3	71,075 ^b									3	71,075 ^b	71,075 ^b
Macoupin					41	1,674,287	342	1,606,440		3,280,727	41	1,674,287	342	1,606,440	3,280,727
Madison					16	687,058	57	348,365		1,035,423	16	687,058	57	348,365	1,035,423
Marion					7	252,950				252,950	7	252,950			252,950
Montgomery					15	781,494	54	147,104		928,598	15	781,494	54	147,104	928,598
Peoria	3	126,811									3	126,811			126,811
Ferry					12	434,691	4	16,641		451,332	12	434,691	4	16,641	451,332
Randolph					11	405,763	9	44,747		450,510	11	405,763	9	44,747	450,510
St. Clair					37	1,154,344	14	37,006		1,191,350	37	1,154,344	14	37,006	1,191,350
Saline	51	1,231,852	8	93,193							51	1,231,852	8	93,193	1,325,045
Sangamon	5	41,978	127	744,834							5	41,254	198	744,834	1,202,626
Vermilion					18	619,140	38	173,485		792,625	18	619,140	38	173,485	792,625
Washington					7	219,670	2	13,491		233,161	7	219,670	2	13,491	233,161
Williamson					23	1,169,154	49	283,320		1,452,474	23	1,169,154	49	283,320	1,452,474
Total	59	1,400,641	138	909,102							496	23,106,864	960	5,267,498	28,374,362

^a Source: Computed from Coal Report of Illinois, 1937 (Dept. of Mines and Minerals).

^b Tonnage loaded by hand-loaded face conveyors.

Table B-14.- GROWTH OF MECHANICAL LOADING IN WESTERN KENTUCKY, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Dokhills and self-loading conveyors			Fit-over loaders			Hand-loaded face conveyors		
		Underground mines b	Total tons	Per cent of underground production	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded
1923	10,064,276	29,515	0.3	27,015	91.5	5	2,500	8.5	1	--	--	--	--	--	--	--	--	--
1924	7,700,095	54,852	0.7	54,852	100.0	8	--	--	--	--	--	--	--	--	--	--	--	--
1925	10,791,813	62,687	0.6	62,690	68.4	3	19,937	31.6	2	--	--	--	--	--	--	--	--	--
1926	14,358,535	30,746	0.2	33,446	43.7	3	17,300	56.3	2	--	--	--	--	--	--	--	--	--
1927 ^c	19,957,582	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1928	15,342,595	81,158	0.5	67,305	82.9	7	5,750	7.1	2	8,105	10.0	2	--	--	--	--	--	--
1929	14,044,179	249,529	1.8	21,912	8.8	1	21,000	8.4	1	--	--	--	206,617	82.8	34	--	--	--
1930	10,622,807	571,525	5.4	139,272	24.4	9	--	--	--	--	--	--	432,253	75.6	76	--	--	--
1931	8,501,229	820,506	9.7	132,135	16.1	7	--	--	--	--	--	--	688,371	83.9	115	--	--	--
1932	9,537,721	1,011,403	10.6	78,647	7.8	7	--	--	--	--	--	--	932,556	92.2	113	--	--	--
1933	7,854,397	762,304	9.5	54,567	7.4	7	--	--	--	--	--	--	687,737	92.6	90	--	--	--
1934	8,214,779	704,466	8.6	--	--	--	--	--	--	--	--	--	704,466	100.0	90	--	--	--
1935	8,132,613	430,930	5.3	--	--	--	--	--	--	--	--	--	430,930	100.0	91	--	--	--
1936	7,974,444	340,583	4.3	230	0.1	1	--	--	--	5,200	1.5	4	335,153	98.4	72	--	--	--

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. The counties included in western Kentucky are Butler, Caldwell, Christian, Crittenden, Daviess, Hancock, Henderson, Hopkins, MeLean, Muhlenberg, Ohio, Union, Warren, and Webster.

b The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

c Data on mechanical loading not available.

Table B-15.- GROWTH OF MECHANICAL LOADING IN ARKANSAS, BY TYPES OF EQUIPMENT, 1923-1936^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Duckbills and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors		
				Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^d
1923	1,078,511	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
1924	1,228,196	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
1925	1,020,947	10,000	1.0	--	--	--	--	--	--	--	--	--	--	10,000 ^e	100.0	(1)		
1926	1,260,922	71,527	5.7	--	--	--	--	--	--	--	--	--	--	71,527 ^f	100.0	(3)		
1927 ^f	1,398,515	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
1928	1,542,832	108,513	7.0	--	--	--	40,000	36.9	2	--	--	--	--	68,513	65.1	(10)		
1929	1,615,405	187,377	11.6	--	--	--	44,986	24.0	6	--	--	--	--	142,391	76.0	(10)		
1930	1,474,294	244,816	16.6	--	--	--	48,600	19.9	10	--	--	--	--	196,216	80.1	(10)		
1931	1,124,240	207,520	18.5	--	--	--	42,140	20.5	5	--	--	--	--	155,360	79.7	(11)		
1932	998,145	153,255	15.4	--	--	--	20,812	13.6	5	--	--	--	--	132,453	85.4	(10)		
1933	852,365	144,736	17.0	--	--	--	34,150	23.6	6	--	--	--	--	110,586	76.4	(5)		
1934	831,106	208,826	25.1	--	--	--	67,800	32.5	9	--	--	--	--	141,026	67.5	(5)		
1935	1,098,805	292,064	26.6	--	--	--	65,824	22.6	8	--	--	--	--	226,140	77.4	(10)		
1936	1,567,672	522,411	33.3	--	--	--	120,840	23.1	9	--	--	--	--	401,571	76.9	(15)		

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^c Excludes tonnage of wagon mines and country banks.

^d Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

^e The figures for hand-loaded face conveyors for the years 1923 to 1926 are incomplete as no specific inquiry regarding this type of equipment was made prior to 1928. However, when a mine reported conveyors without being asked, the incomplete replies are shown here to prove the fact that this equipment was early used.

^f Data on mechanical loading not available.

Table B-16.- BITUMINOUS-COAL PRODUCTION AND TONNAGE MECHANICALLY LOADED
IN PENNSYLVANIA, BY COUNTY, 1937^a

County	Part of State	Total production ^b	Tons mechanically loaded	Percent mechanically loaded
Total	-	110,417,947	11,492,971	10.4
Allegheny	Western	15,213,350	2,382,920	15.7
Armstrong	Central	2,945,132	71,824	2.4
Beaver	Western	89,777	3,000	3.3
Bedford	Central	471,506	2,800	0.6
Blair	Central	227,667	-	-
Bradford	Central	8,092	-	-
Butler	Western	700,448	-	-
Cambria	Central	14,807,485	1,593,784	10.8
Centre	Central	473,490	111,001	23.4
Clarion	Central	1,254,862	187,459	14.9
Clearfield	Central	3,168,807	84,551	2.7
Clinton	Central	40,912	-	-
Elk	Central	606,955	16,271	2.7
Fayette	Western	20,715,179	1,222,768	5.9
Fulton	Central	139,525	-	-
Greene	Western	4,157,344	106,110	2.6
Huntingdon	Central	482,907	-	-
Indiana	Central	6,710,349	1,017,297	15.2
Jefferson	Central	2,131,721	84,631	4.0
Lawrence	Western	264,255	-	-
Lycoming	Central	60,009	-	-
McKean	Central	7,277	-	-
Mercer	Western	314,812	-	-
Somerset	Central	5,218,592	1,060,237	20.3
Tioga	Central	162,059	45,615	28.1
Venango	Western	17,116	-	-
Washington	Western	19,399,990	2,949,632	15.2
Westmoreland	Western	10,628,329	553,071	5.2

a Source: Computed from Annual Bituminous Report (Dept. of Mines, Pa.), mimeographed release.

b Includes a small proportion of strip-mined coal.

BITUMINOUS COAL

Table B-17.- BITUMINOUS-COAL PRODUCTION AND TONNAGE MECHANICALLY LOADED IN WEST VIRGINIA, BY TYPES OF LOADING EQUIPMENT AND COUNTY, 1937^a

County	Total production	Mechanical loading					
		Net tons			Percent of total production		
		Mechanically loaded ^b	Hand-loaded into Conveyors	Total	Mechanically loaded ^b	Hand-loaded into Conveyors	Total
Total *	118,965,066	11,497,410	3,993,453	15,490,863	9.6	3.4	13.0
Barbour	1,624,794	190,887	-	190,887	11.7	-	11.7
Berkeley	266	-	-	-	-	-	-
Boone	3,745,147	400,307	449,196	849,503	10.7	12.0	22.7
Burton	37,425	-	-	-	-	-	-
Brooke	1,390,743	87,073	4,956	92,029	6.2	0.4	6.6
Clay	954,489	-	-	-	-	-	-
Doddridge	400	-	-	-	-	-	-
Fayette	12,851,148	46,247	391,595	437,842	0.4	3.0	3.4
Gilmer	21,239	-	-	-	-	-	-
Grant	18,297	-	-	-	-	-	-
Greenbrier	1,792,487	53,067	41,760	94,847	3.0	2.3	5.3
Hancock	54,375	-	-	-	-	-	-
Harrison	4,011,618	493,787	-	493,787	12.3	-	12.3
Kanawha	7,057,445	471,834	668,814	1,140,648	6.7	9.5	16.2
Lewis	16,565	-	-	-	-	-	-
Lincoln	3,205	-	-	-	-	-	-
Logan	15,432,927	4,067,169	910,581	4,977,750	26.4	5.9	32.3
McDowell	22,852,772	41,958	154,749	196,707	0.2	0.7	0.9
Marion	8,719,856	388,655	-	388,655	4.5	-	4.5
Marshall	617,287	-	-	-	-	-	-
Mason	85,762	-	-	-	-	-	-
Mercer	3,536,419	-	-	-	-	-	-
Mineral	261,255	-	-	-	-	-	-
Mingo	4,004,060	487,427	-	487,427	12.2	-	12.2
Monongalia	6,321,230	4,126,192	-	4,126,192	65.3	-	65.3
Nicholas	34,087	-	9,659	9,659	-	28.3	28.3
Ohio	2,038,252	49,898	251,200	301,098	2.4	12.2	14.6
Preston	396,005	-	-	-	-	-	-
Putnam	507,954	3,252	2,735	5,987	0.6	0.6	1.2
Raleigh	14,567,337	380,770	826,737	1,207,507	2.6	5.7	8.3
Randolph	948,375	196,388	7,806	204,194	20.7	0.8	21.5
Summers	755	-	-	-	-	-	-
Taylor	634,787	-	-	-	-	-	-
Tucker	512,494	-	29,806	29,806	-	5.8	5.8
Upshur	183,785	-	-	-	-	-	-
Wayne	28,130	-	-	-	-	-	-
Webster	842,502	-	70,127	70,127	-	8.3	8.3
Wyoming	2,639,418	12,479	173,752	186,231	0.5	6.6	7.1

^a Source: Computed from Annual Report of the Department of Mines, West Virginia.

^b Almost entirely by mobile loaders.

Table B-18.- NUMBER OF COMMERCIAL BITUMINOUS-COAL MINES AND PERCENTAGE OF TOTAL PRODUCTION, BY SIZE OF MINE, 1905-36^a

Year	Number of commercial bituminous coal mines						Percent of total production					
	Class 1 (more than 200,000 tons)	Class 2 (100,000 to 200,000 tons)	Class 3 (50,000 to 100,000 tons)	Class 4 (10,000 to 50,000 tons)	Class 5 (less than 10,000 tons)	Total	Class 1 (more than 200,000 tons)	Class 2 (100,000 to 200,000 tons)	Class 3 (50,000 to 100,000 tons)	Class 4 (10,000 to 50,000 tons)	Class 5 (less than 10,000 tons)	Total
1905	411	612	808	1,514	1,715	5,060	40.2	27.3	18.2	12.4	1.9	100.0
1910	618	763	960	1,568	1,909	5,818	46.0	25.7	16.5	10.2	1.6	100.0
1913	694	837	959	1,558	1,728	5,776	50.6	24.8	14.4	8.9	1.3	100.0
1917	792	914	1,044	1,996	2,193	6,939	51.9	23.5	13.6	9.4	1.6	100.0
1918	821	929	1,198	2,636	2,735	8,319	48.6	22.7	15.1	11.6	2.0	100.0
1919	550	854	1,181	2,784	3,625	8,994	37.6	26.0	18.2	15.4	2.8	100.0
1920	701	1,031	1,279	3,160	2,750	8,921	42.1	25.3	16.1	14.6	1.9	100.0
1921	482	807	1,003	2,346	3,400	8,038	39.1	27.8	17.1	13.5	2.5	100.0
1922	416	848	1,084	3,139	3,812	9,299	31.5	28.0	18.5	18.4	3.6	100.0
1923	748	935	1,176	2,742	3,730	9,331	47.2	23.2	15.0	12.2	2.4	100.0
1924	646	819	943	2,047	3,131	7,586	49.0	23.8	14.1	10.9	2.2	100.0
1925	714	833	891	1,969	2,737	7,144	53.7	22.7	12.4	9.4	1.8	100.0
1926	823	845	867	1,912	2,730	7,177	58.1	21.0	10.9	8.3	1.7	100.0
1927	779	818	879	1,831	2,704	7,011	54.8	22.3	12.3	8.9	1.7	100.0
1928	773	687	725	1,513	2,752	6,450	60.7	19.4	10.4	7.7	1.8	100.0
1929	827	660	668	1,361	2,541	6,057	65.2	17.9	9.1	6.3	1.5	100.0
1930	716	608	644	1,239	2,684	5,891	63.1	18.6	9.9	6.7	1.7	100.0
1931	578	536	551	1,144	2,833	5,642	59.9	20.0	10.3	7.7	2.1	100.0
1932	465	477	469	1,111	2,905	5,427	55.7	21.8	11.0	8.8	2.7	100.0
1933	498	455	502	1,075	3,025	5,555	58.9	19.5	11.0	8.0	2.6	100.0
1934	551	485	479	1,072	3,671 ^b	6,258 ^b	61.3	19.2	9.6	7.2	2.7	100.0
1935	561	479	503	1,056	3,716 ^b	6,315 ^b	62.2	18.5	9.7	6.8	2.8	100.0
1936	660	452	460	1,085	4,218 ^b	6,875 ^b	69.0	14.8	7.6	5.9	2.7	100.0

^a Source: Mineral Resources of the United States - Part II (U. S. Dept. Com., Bur. Mines) 1929, p. 712; 1930, p. 640; 1931, p. 437; Statistical Appendix to Minerals Yearbook (U. S. Dept. Int., Bur. Mines) 1932-33, p. 368; 1934, p. 294; 1935, p. 256; 1936, p. 819; Bituminous Coal Tables (Nat. Bit. Coal Com.) 1936-37, p. 15. The term commercial mines as used here refers to all bituminous coal mines with the exception of wagon mines producing less than 1,000 tons annually.

^b Not strictly comparable with figures for 1933 and prior years because of more complete coverage by several States in 1934-36 of small trucking mines (producing more than 1,000 tons per year).

BITUMINOUS COAL

Table B-19.- INDEXES OF OUTPUT PER MAN-DAY AND PER MAN-HOUR
IN THE BITUMINOUS-COAL INDUSTRY,
1903-36^a

(1920=100)

Year	Output per man per day	Output per man per hour	Year	Output per man per day	Output per man per hour
	(1)	(2)		(1)	(2)
1903	75.3	69.5	1920	100.0	100.0
1904	78.6	73.3	1921	105.0	104.8
1905	80.8	75.6	1922	107.0	106.6
1906	83.8	78.4	1923	111.7	111.2
1907	82.0	76.6	1924	114.0	113.2
1908	83.3	77.8	1925	113.0	112.4
1909	(b)	(b)	1926	112.2	111.6
1910	86.3	80.6	1927	113.5	113.0
1911	87.3	81.6	1928	118.0	117.4
1912	91.8	85.8	1929	120.9	120.2
1913	90.0	84.0	1930	126.2	125.5
1914	92.5	86.6	1931	132.2	131.5
1915	97.5	91.2	1932	130.2	129.1
1916	97.0	90.8	1933	119.2	118.6
1917	93.8	91.0	1934	109.7	121.2
1918	94.3	93.4	1935	112.2	128.5
1919	95.8	95.6	1936	115.2	131.9

a Source: Table B-1, cols. 7 and 8.

b Data not available.

Table B-80.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN ILLINOIS, 1918-35^a

Year	Production underground mines ^b	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons cut by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B - "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^c	Group A-1	Group A	All other mines
1918	88,735,172				76.1	72.6	51.2	32	52	406	16,724,879	24,113,924	64,621,248
1919	60,461,968				79.2	73.4	53.9	32	53	416	12,265,201	17,093,456	43,368,512
1920	88,135,353				81.9	77.6	56.4	32	52	413	17,185,825	24,464,099	63,671,294
1921	69,036,719				84.5	81.2	59.4	32	53	434	14,434,006	21,135,304	47,901,415
1922	57,686,375				82.9	80.0	62.0	32	54	399	12,221,897	17,714,456	39,971,919
1923	77,941,966	-	136,997	8,304	78.8	77.8	65.5	32	55	390	17,492,663	25,216,568	52,725,398
1924	65,946,957	-	250,028	9,556	83.0	82.3	68.7	32	54	322	19,002,026	26,549,933	39,397,024
1925	63,440,092	378,897	818,282	475,647	80.5	83.3	71.0	32	50	271	18,558,227	28,602,983	34,837,109
1926	65,842,531	978,216	1,933,181	572,117	80.8	85.1	72.4	32	53	267	20,683,005	31,952,475	33,890,056
1927	44,018,154	(e)	(e)	(e)	84.2	86.4	70.1	32	55	272	13,894,397	20,445,449	23,572,705
1928	51,608,797	2,912,155	4,445,887	2,524,846	85.1	88.6	74.9	32	53	235	17,740,617	26,117,444	25,491,313
1929	55,270,828	7,868,791	15,101,514	2,650,519	88.0	91.7	73.5	32	55	235	19,276,075	30,280,805	24,990,023
1930	47,580,700	10,563,836	20,748,185	2,098,970	96.5	97.9	74.8	32	56	216	16,610,283	27,414,798	20,165,902
1931	37,977,698	11,832,697	21,123,541	1,453,353	93.9	96.3	71.0	32	54	196	14,384,982	23,772,184	14,205,514
1932	26,923,252	8,892,317	14,434,892	924,625	96.6	97.8	67.7	32	53	214	9,945,803	15,488,225	11,435,027
1933	31,788,513	11,926,519	16,837,836	283,790	97.7	98.3	71.6	32	47	297	13,048,524	18,199,929	13,628,584
1934	35,112,301	13,252,294	18,382,025	100,322	98.0	98.5	69.3	32	45	294	14,586,400	19,770,200	15,342,101
1935	37,115,382	14,694,428	20,164,010	349,072	98.2	98.6	70.6	32	44	295	15,835,950	21,329,203	15,766,179

See footnotes at end of table.

Table B-20.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN ILLINOIS, 1918-35^a - Continued

Year	Production underground mines ^b	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^c			Number of men required to maintain 1,000 tons of hourly capacity ^e		
		Group A-1 ^d	Group A ^d	All other mines	Group A-1 ^d	Group A ^d	All other mines	Group A-1 ^d	Group A ^d	All other mines	Group A-1 ^d	Group A ^d	All other mines	Group A-1 ^d	Group A ^d	All other mines
1918	88,735,172	8,603	12,665	33,940	13,566	20,265	65,361	243	238	238	.634	.626	.518	1,577	1,597	1,931
1919	60,461,968	9,181	13,109	34,095	13,949	20,338	64,377	167	163	159	.670	.650	.539	1,493	1,538	1,855
1920	88,135,353	10,039	14,397	37,366	13,960	21,103	65,646	214	213	213	.694	.667	.555	1,441	1,499	1,802
1921	69,036,719	10,676	15,633	41,012	15,131	23,062	71,914	169	169	146	.722	.691	.577	1,385	1,447	1,733
1922	57,686,375	11,752	17,436	42,705	15,810	24,293	71,435	130	127	117	.719	.693	.587	1,391	1,443	1,704
1923	77,941,966	12,014	18,012	43,360	16,928	26,236	72,667	182	175	152	.727	.704	.594	1,376	1,420	1,684
1924	65,946,957	13,196	19,638	35,686	18,098	27,682	60,678	180	169	138	.718	.704	.594	1,393	1,420	1,684
1925	63,440,092	13,033	19,974	29,226	18,270	27,888	48,825	178	179	149	.731	.719	.587	1,368	1,391	1,704
1926	65,842,531	13,826	21,359	25,989	18,494	29,164	45,110	187	187	163	.737	.728	.584	1,357	1,374	1,712
1927	44,018,154	14,120	22,617	26,076	18,918	30,689	45,199	123	113	113	.760	.742	.580	1,316	1,348	1,724
1928	51,608,797	13,522	20,533	20,963	17,274	27,210	35,719	164	159	152	.797	.776	.588	1,271	1,289	1,701
1929	55,270,828	12,550	19,612	18,932	15,093	23,446	31,580	192	193	165	.828	.826	.597	1,208	1,211	1,675
1930	47,580,700	12,359	19,607	18,005	14,212	22,202	29,801	168	175	140	.857	.870	.595	1,167	1,149	1,661
1931	37,977,698	12,066	19,470	15,177	13,884	21,817	26,097	149	153	117	.891	.909	.564	1,122	1,100	1,773
1932	26,923,252	11,954	18,981	12,538	12,796	19,893	24,618	104	102	114	.913	.930	.539	1,095	1,075	1,855
1933	31,788,513	10,258	15,548	12,809	10,921	16,384	24,248	159	146	133	.943	.960	.527	1,060	1,042	1,898
1934	35,112,301	10,759	15,741	14,416	11,220	16,098	26,412	187	173	147	.962	.976	.554	1,040	1,025	1,805
1935	37,115,382	11,484	16,122	14,644	11,670	16,118	24,975	197	189	154	.986	1.002	.588	1,014	998	1,701

a Source: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

c Excludes wagon mines, country banks, and local commercial mines.

d Corrected for divided working time (share-the-work) 1932 to 1935.

e Data not available.

* Three-year moving average except for terminal years.

Table B-21.- MEMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN ILLINOIS, 1918-80^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("TYPICAL MECHANIZED") (Includes only such Group A as operated each year of period)						
	Number ^b	Production ^c (net tons)	Total tons mechanically loaded ^d	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
				Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5) % (2)	(7)	(8)	(9) (8) % (5)	(10) (8) % (5)	(11)	(12)	(13) (12) % (2)	(14)	(15)	(16) (15) % (12)	(17) (15) % (5)
1918	158	88,735,172		52	86,115,926	87.2				32	16,724,879	18.8				
1919	169	60,461,960		53	17,093,456	28.3				32	12,265,201	20.3				
1920	165	88,135,353		52	24,164,059	27.8				32	17,109,825	19.5				
1921	167	69,056,719		53	21,137,724	30.6				32	14,434,006	20.9				
1922	153	57,646,373		54	17,718,456	30.7				32	12,221,977	21.2				
1923	155	77,944,966	145,903	55	25,216,568	32.4	196,997	0.5	94.3	32	17,492,663	22.4				
1924	176	65,946,977	259,534	54	26,540,933	40.3	250,026	0.9	96.3	32	19,022,226	26.8				
1925	181	63,446,052	1,293,929	50	22,602,903	35.1	818,242	2.9	63.2	32	12,558,227	29.3	3	378,977	2.0	29.3
1926	180	65,042,531	2,505,298	53	31,992,175	49.5	1,933,161	6.1	77.2	32	20,669,005	31.4	4	978,216	4.7	39.0
1927	187	44,010,154	(e)	55	20,445,449	46.4	(e)			32	13,694,997	31.6	(e)	(e)		
1928	228	51,608,757	6,970,733	53	26,117,444	50.6	4,445,887	17.0	65.8	32	17,740,617	34.4	17	2,912,155	16.4	43.6
1929	290	75,270,828	17,722,033	55	30,220,205	41.8	15,101,514	49.9	95.1	32	19,276,075	34.9	24	7,068,791	40.8	44.3
1930	272	47,936,700	22,246,955	56	27,444,798	57.6	20,748,189	75.7	90.8	32	12,610,295	34.9	26	10,569,836	65.6	46.2
1931	250	37,377,608	22,276,924	54	23,772,124	63.6	21,123,341	88.9	93.6	32	14,354,922	37.9	22	11,032,577	32.1	32.4
1932	267	26,983,252	15,359,517	53	15,468,225	57.5	14,434,932	93.2	94.0	32	9,245,803	36.9	22	8,022,317	89.4	57.9
1933	304	31,788,513	17,121,666	47	12,159,929	57.1	12,837,036	92.7	98.3	32	13,428,524	43.0	29	11,925,519	91.4	69.7
1934	330	25,112,301	12,422,347	45	19,770,200	56.3	12,322,025	93.0	99.5	32	14,526,400	43.5	31	13,252,234	90.9	71.7
1935	339	27,115,322	20,513,022	44	21,329,203	57.5	20,164,010	94.5	98.3	32	15,035,950	42.7	32	14,624,422	92.8	71.6

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines, country banks, and local commercial mines.

c The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

APPENDIX B

Table B-22.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN ILLINOIS, 1923-35^a

Year	ALL UNDERGROUND MINES				GROUP A MINES - ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")				
	Number ^b	Production ^c (net tons)	Mines with mechanical loading		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		
			Number	Production			Total tons mechanically loaded ^d	Net tons			Per cent of total tonnage mechanically loaded by all mines	Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	445	77,941,966	2	281,369	145,301	1	203,537	136,997	94.3	1	77,832	8,304	5.7
1924	376	65,946,957	4	1,159,878	259,584	1	506,470	250,028	96.3	3	653,408	9,556	3.7
1925	321	63,440,092	16	4,912,083	1,293,929	5	3,384,774	818,282	63.2	11	1,527,309	475,647	36.8
1926	320	65,842,531	21	8,445,308	2,505,258	7	5,790,539	1,937,181	77.2	14	2,654,769	572,117	22.8
1927	327	44,018,154	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	288	51,608,757	61	20,233,581	6,970,733	29	14,318,633	4,445,887	63.8	32	5,914,948	2,524,846	36.2
1929	290	55,270,828	73	28,910,320	17,752,033	43	23,951,039	15,101,514	85.1	30	4,959,281	2,650,519	44.9
1930	272	47,580,700	69	28,052,576	22,846,555	49	24,395,958	20,748,185	90.8	20	3,656,616	2,098,370	9.2
1931	250	37,977,698	76	25,498,432	22,576,894	49	21,848,530	21,123,541	93.6	27	3,649,902	1,453,353	6.4
1932	267	26,923,252	71	16,917,409	15,359,517	48	14,540,164	14,434,892	94.0	23	2,377,245	924,625	6.0
1933	304	31,788,513	52	18,971,319	17,121,626	44	17,512,026	16,837,836	98.3	8	1,459,233	283,790	1.7
1934	339	35,112,301	48	21,635,890	16,482,347	43	19,559,570	18,382,025	93.5	5	2,076,320	100,322	0.5
1935	339	37,115,382	55	24,858,462	20,513,082	44	21,329,203	20,164,010	98.3	11	3,529,259	349,072	1.7

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b Excludes wagon mines, country banks, and local commercial mines.

^c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^e Data not available.

Table B-22.- GROWTH OF MECHANICAL LOADING IN ILLINOIS, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)	Mechanical Loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Doorbills and self-loading scrapers			Pit-car loaders			Hand-loaded face conveyors		
				Tons	Per cent of total tons loaded	Number of Machines	Tons	Per cent of total tons loaded	Number of Machines	Tons	Per cent of total tons loaded	Number of Machines	Tons	Per cent of total tons loaded	Number of Machines	Tons	Per cent of total tons loaded	Number of installations ^b
1923	77,941,966	145,301	0.2	145,301	100.0	19	--	--	--	--	--	--	--	--	--	--	--	--
1924	65,244,357	259,584	0.4	251,884	97.0	27	--	--	--	--	--	--	--	--	7,700	3.0	(1)	
1925	63,440,092	1,293,929	2.0	675,359	52.2	49	230,114	17.8	17	--	--	--	388,156	30.0	36	--	--	
1926	65,842,531	2,505,258	3.8	1,446,309	73.8	89	187,212	7.5	17	--	--	--	469,777	18.7	38	--	--	
1927	44,012,154																	
1928	51,608,787	6,970,733	13.5	3,207,917	46.0	128	--	--	--	1,719	0	2	3,761,097	54.0	964	--	--	
1929	55,270,828	17,752,035	32.1	6,325,149	35.6	215	19,320	0.1	2	--	--	--	11,407,564	64.5	1,685	--	--	
1930	47,580,700	22,242,555	47.0	9,565,814	43.0	257	38,610	0.2	1	650	0	1	12,841,473	56.2	1,971	--	--	
1931	37,577,668	22,576,254	59.4	10,055,746	44.5	234	38,448	0.1	2	--	--	--	12,325,149	54.6	2,162	127,551	0.8	
1932	26,923,252	15,359,517	57.0	7,744,254	50.4	289	2,292	0	2	--	--	--	7,528,871	49.0	2,042	83,464	0.6	
1933	31,728,533	17,121,626	53.9	10,351,222	60.5	281	--	--	--	--	--	--	6,755,929	39.4	1,444	14,415	0.1	
1934	35,112,301	18,162,317	52.0	11,643,841	64.0	281	--	--	--	--	--	--	6,816,116	36.9	1,336	22,050	0.1	
1935	37,115,322	20,513,022	55.3	12,809,739	62.4	319	--	--	--	--	--	--	7,664,306	37.4	1,319	39,037	0.2	
1936	41,813,930	26,110,068	62.4	12,607,302	71.3	431	--	--	--	--	--	--	7,665,608	28.6	1,151	37,158	0.1	

a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

c Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

d Data on mechanical loading not available.

e Less than 0.05 percent.

Table B-24.- TONS MECHANICALLY LOADED AND NUMBER OF MEN REQUIRED TO MAINTAIN 1,000 TONS OF HOURLY CAPACITY AT GROUP A MINES IN ILLINOIS, BY TYPES OF LOADING EQUIPMENT, 1918-35^a

Year	Tons mechanically loaded				Number of men required to maintain 1,000 tons of hourly capacity			
	All Group A mines	Mines in which the following equipment was the predominant type used: ^b			All Group A mines	Mines in which the following equipment was the predominant type used: ^b		
		Mobile loaders	Pit-car loaders	Mines shifting from pit-car to mobile loaders		Mobile loaders	Pit-car loaders	Mines shifting from pit-car to mobile loaders
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1918					1,597	1,590	1,631	1,541
1919					1,538	1,538	1,600	1,414
1920					1,499	1,495	1,567	1,387
1921					1,447	1,410	1,513	1,395
1922					1,443	1,441	1,443	1,445
1923	136,997	136,997			1,420	1,433	1,393	1,433
1924	250,028	250,028			1,420	1,414	1,401	1,439
1925	818,282	737,584	80,698		1,391	1,351	1,408	1,408
1926	1,933,181	1,660,825	238,023		1,374	1,314	1,414	1,391
1927	(c)	(c)	(c)	(c)	1,348	1,302	1,376	1,353
1928	4,445,887	2,279,602	1,308,899	633,960	1,289	1,232	1,305	1,333
1929	15,101,514	5,354,931	6,205,361	2,723,597	1,211	1,111	1,267	1,271
1930	20,748,185	8,567,315	8,015,653	2,908,560	1,149	1,000	1,250	1,256
1931	21,123,541	8,978,876	8,006,818	2,813,594	1,100	935	1,253	1,182
1932	14,434,892	6,884,490	4,637,307	1,856,126	1,075	919	1,238	1,167
1933	16,837,836	8,956,660	5,148,876	1,907,209	1,042	893	1,203	1,130
1934	18,382,025	9,673,868	5,606,953	2,334,298	1,025	881	1,188	1,114
1935	20,164,010	9,789,830	6,668,438	3,053,032	998	836	1,182	1,050

a Source: Computed from U. S. Bureau of Mines data.

b The division of Group A mines fell logically into three groups: (1) mines which used only mobile loaders or in which they were used for at least two-thirds of the mechanically loaded tonnage for at least 3 years, (2) mines which used only pit-car loaders or in which they were used for at least two-thirds of the mechanically loaded tonnage for at least 3 years, and (3) mines which started their mechanical-loading program with pit-car loaders and changed to mobile loaders at the end of the period.

It will be noted that the tonnages in columns (2), (3), and (4) above do not equal the total tonnage in column (1). A few mines using both pit-car loaders and mobile loaders on about an equal basis had to be omitted. Man-hour requirements for these mines were also omitted.

c Data not available.

Table B-25.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN INDIANA, 1918-35^a

Year	Production underground mines ^b	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons out by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B - "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^c	Group A-1	Group A	All other mines
1918	29,247,196				81.6	71.4	48.2	10	19	255	2,765,509	5,925,122	25,594,074
1919	20,078,373				85.9	75.5	49.6	10	21	291	2,188,298	3,517,787	16,760,616
1920	27,985,162				81.1	69.7	47.4	10	21	274	2,375,572	4,625,057	23,560,095
1921	19,498,666				92.6	82.0	47.3	10	23	237	2,700,409	4,383,191	15,135,475
1922	17,758,174				81.9	72.4	48.5	10	24	247	2,242,682	3,984,288	13,773,866
1923	23,923,212	-	7,694	69,856	82.1	74.1	54.1	10	25	245	3,346,076	6,460,787	17,462,425
1924	16,969,024	26,978	282,186	62,931	83.4	76.4	64.8	10	27	194	2,828,528	4,616,590	14,152,644
1925	17,955,580	497,145	1,054,993	376,449	92.8	85.2	66.6	10	26	156	3,097,845	5,170,429	12,786,151
1926	19,569,770	591,242	1,393,357	610,502	91.2	86.7	69.1	10	28	152	3,255,594	6,181,894	15,896,886
1927	13,476,614	(d)	(d)	(d)	90.5	78.1	61.8	10	29	149	1,617,699	3,786,629	9,692,085
1928	11,564,468	606,879	1,772,517	655,661	87.8	80.2	70.1	10	26	117	1,467,225	3,895,079	7,669,389
1929	12,729,560	1,112,146	2,353,716	920,279	90.6	93.4	70.1	10	24	118	3,021,139	4,765,862	7,963,698
1930	10,680,760	1,242,572	2,616,728	937,465	90.1	94.5	77.6	10	23	125	2,324,890	5,999,268	6,861,462
1931	8,990,371	1,392,558	3,234,965	276,301	81.8	94.0	78.6	10	26	121	2,178,412	4,542,652	4,447,719
1932	7,532,716	1,286,688	2,988,080	237,268	85.6	94.6	75.8	10	26	110	1,585,099	3,564,248	5,988,468
1933	6,695,976	1,709,695	4,065,498	156,857	92.1	92.8	78.0	10	29	108	1,995,298	4,706,813	5,989,168
1934	6,518,231	1,685,369	5,386,761	16,925	93.8	95.9	86.1	10	29	100	1,927,626	5,562,098	2,966,138
1935	9,232,600	1,852,777	5,747,553	20,143	94.6	98.1	78.0	10	28	105	2,065,675	6,080,460	5,202,540

See footnotes at end of table.

Table B-25.-- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN INDIANA, 1918-35^a - Continued

Year	Production underground mines ^b	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^c			Number of men required to maintain 1,000 tons of hourly capacity ^d		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines
1918	29,247,198	1,563	2,189	15,785	2,177	5,555	25,756	221	224	250	.718	.653	.634	1,395	1,531	1,875
1919	20,078,378	1,844	2,678	14,252	2,849	5,898	25,511	147	155	147	.780	.699	.658	1,316	1,421	1,792
1920	27,985,152	1,768	3,177	14,974	2,281	4,177	25,940	168	182	195	.746	.692	.676	1,340	1,445	1,758
1921	19,498,686	2,034	3,488	15,382	3,005	5,545	28,218	168	156	125	.735	.703	.695	1,361	1,422	1,681
1922	17,759,174	2,245	4,186	15,091	2,997	5,887	28,041	125	119	107	.719	.686	.614	1,391	1,458	1,629
1923	23,925,212	2,590	4,836	17,055	3,285	6,861	26,919	175	167	128	.721	.709	.641	1,387	1,410	1,560
1924	16,969,024	2,286	4,427	15,202	3,302	6,295	19,728	156	156	154	.709	.719	.650	1,410	1,391	1,538
1925	17,955,580	2,082	4,039	10,245	2,904	5,378	15,816	188	160	156	.877	.705	.655	1,477	1,418	1,627
1926	19,566,770	1,965	4,223	10,020	3,119	6,376	15,455	207	183	167	.704	.731	.640	1,420	1,368	1,563
1927	15,478,614	2,174	4,978	9,850	2,825	6,402	15,781	95	95	125	.720	.738	.651	1,389	1,355	1,595
1928	11,554,468	1,879	5,246	8,558	2,064	4,193	10,569	132	150	146	.777	.765	.637	1,287	1,277	1,570
1929	12,729,550	1,988	5,328	6,070	2,487	4,162	9,141	190	179	154	.805	.819	.654	1,245	1,221	1,529
1930	10,950,750	2,076	5,416	5,606	2,459	3,849	8,510	140	146	155	.845	.877	.654	1,185	1,140	1,529
1931	9,990,271	1,861	5,540	4,180	2,090	3,845	6,751	146	158	155	.974	1.001	.635	1,027	899	1,575
1932	7,532,716	1,694	3,538	3,543	1,428	3,008	5,641	117	126	140	1.038	1.024	.601	953	977	1,564
1933	8,695,978	1,409	3,461	3,259	1,358	3,820	5,641	177	170	153	1.072	1.050	.588	955	952	1,701
1934	8,619,551	1,494	3,986	2,565	1,503	3,891	4,598	178	192	153	1.027	1.030	.602	974	971	1,661
1935	9,282,800	1,611	4,582	3,010	1,539	4,115	4,652	183	188	152	1.049	1.112	.646	953	899	1,543

a Sources: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b The strip production used in subtraction is the "total at same mines" and includes an insignificant production underground in operations which are both strip pits and deep mines.

c Excludes wagon mines and country banks.

d Data not available.

e Three-year moving average except for terminal years.

Table B-26.- MEMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN INDIANA, 1918-28^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "mechanized group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period)							
	Number ^b	Production ^c (net tons)	Total tons mechanically loaded ^c	Number of mines in Group A	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5)÷(2)	(7)	(8)	(9) (8)÷(5)	(10) (8)÷(5)	(11)	(12)	(13) (12)÷(2)	(14)	(15)	(16) (15)÷(12)	(17) (15)÷(3)	
1918	278	29,247,196		19	3,923,122	13.4				10	2,763,309	9.4					
1919	312	20,078,373		21	3,317,757	16.5				10	2,168,298	10.8					
1920	295	27,982,128		21	4,625,057	16.5				10	2,375,572	8.5					
1921	260	19,492,666		23	4,363,191	22.4				10	2,700,499	13.8					
1922	271	17,739,174		24	3,924,228	22.4				10	2,242,622	12.6					
1923	270	23,923,212	77,522	25	6,160,707	27.0	1	7,624	0.1	9.9	3,326,076	14.0					
1924	221	16,969,024	325,117	27	4,916,360	29.4	6	222,125	5.4	20.4	2,322,325	11.9	3	25,978	1.0	0.3	
1925	181	17,955,590	1,431,242	26	5,170,429	28.8	7	1,054,993	20.4	73.7	3,097,245	17.3	3	497,113	16.0	31.7	
1926	180	19,562,770	2,203,999	28	6,121,204	31.6	4	1,393,357	22.5	65.2	3,253,324	16.6	3	591,222	18.2	26.8	
1927	178	13,472,614	(e)	29	3,726,549	28.1	(e)	(e)	(e)	10	1,617,699	12.0	(e)	(e)	(e)	(e)	
1928	113	11,551,168	2,425,178	26	3,895,079	33.7	11	1,772,517	45.9	73.1	1,667,225	14.4	4	606,879	36.4	29.0	
1929	122	12,729,550	3,273,999	24	4,765,952	37.4	12	2,353,716	49.4	71.9	3,021,139	23.7	5	1,112,126	36.8	34.0	
1930	126	10,050,730	3,509,129	23	3,939,222	36.8	17	2,319,728	63.1	71.8	2,324,990	21.4	6	1,222,373	59.4	35.5	
1931	127	8,990,271	3,311,224	25	4,522,552	50.9	19	3,234,923	71.2	92.1	2,173,112	21.2	7	1,293,353	64.1	39.7	
1932	136	7,532,716	3,225,345	26	3,524,222	47.3	22	2,939,000	83.8	92.6	1,585,099	21.0	8	1,236,526	78.0	32.3	
1933	137	8,695,276	4,222,375	29	4,725,212	54.1	23	4,065,128	86.4	96.3	1,993,228	22.9	8	1,709,298	85.8	40.5	
1934	128	8,512,231	5,122,622	28	3,522,023	65.3	27	3,126,761	92.8	99.7	1,927,222	22.6	9	1,625,329	87.4	31.2	
1935	133	9,222,200	5,727,696	29	6,030,160	65.3	28	5,747,553	95.3	99.7	2,063,275	22.4	10	1,822,777	89.8	32.1	

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

^b Includes wagon mines and country banks.

^c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^e Data not available.

Table B-27.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN INDIANA, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production ^c (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d			Net tons	Per cent of total tonnage mechanically loaded by all mines			Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	270	23,923,212	4	369,555	77,542	1	145,588	7,684	9.9	3	223,967	69,858	90.1
1924	221	18,969,024	8	803,917	325,117	6	740,986	262,186	80.6	2	62,931	62,931	19.4
1925	181	17,955,530	14	1,659,223	1,431,442	7	1,087,955	1,054,993	73.7	7	571,268	376,449	26.3
1926	180	19,568,770	16	2,887,774	2,203,859	8	1,400,070	1,393,357	63.2	8	1,487,704	810,502	36.8
1927	178	13,478,614	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	143	11,554,468	17	3,069,030	2,426,178	11	1,937,813	1,772,517	73.1	6	1,131,187	653,661	26.9
1929	142	12,789,550	26	4,015,527	3,273,995	14	2,801,099	2,353,716	71.9	12	1,214,428	920,279	28.1
1930	146	10,850,750	27	4,266,901	3,503,183	17	2,833,643	2,515,728	71.8	10	1,433,250	987,455	28.2
1931	147	8,990,271	25	4,537,700	3,511,264	19	3,568,121	3,234,963	92.1	6	969,579	276,301	7.9
1932	136	7,532,716	25	4,007,083	3,225,345	22	3,316,296	2,988,080	92.6	3	690,787	237,265	7.4
1933	137	8,695,976	25	4,889,242	4,222,355	23	4,231,822	4,065,498	96.3	2	657,420	156,857	3.7
1934	128	8,518,231	28	5,880,998	5,402,686	27	5,441,932	5,346,761	99.7	1	439,066	15,925	0.3
1935	133	9,232,800	30	6,325,544	5,767,696	28	6,050,460	5,747,553	99.7	2	295,084	20,443	0.3

a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines and country banks.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-22.- GROWTH OF MECHANICAL LOADING IN INDIANA, BY TYPES OF EQUIPMENT, 1923-56^a

Year	Production (net tons)	MECHANICAL LOADING BY TYPES OF EQUIPMENT ^b																	
		Mechanical loading			Mobile loaders			Scrapers			Dredgills and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors		
		Underground mines ^c	Total tons	Per cent of under ground Production	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^c
1923	23,923,212	77,512	0.3	70,476	90.9	15	--	--	--	--	--	--	7,056	9.1	3	--	--	--	
1924	18,969,024	925,117	1.7	325,117	100.0	37	--	--	--	--	--	--	--	--	--	--	--	--	
1925	17,955,520	1,431,112	8.0	1,379,469	96.4	73	51,973	3.6	8	--	--	--	--	--	--	--	--	--	
1926	19,568,770	2,203,899	11.3	1,822,754	82.7	76	343,963	15.6	11	--	--	--	37,122	1.7	7	--	--	--	
1927 ^d	15,470,614																		
1928	11,954,166	2,125,178	21.0	2,122,193	90.4	72	--	--	--	--	--	233,985	9.6	14	--	--	--	--	
1929	12,729,550	3,273,995	25.7	1,999,626	61.1	64	--	--	--	--	--	1,267,012	38.7	163	7,267	0.2	--	(1)	
1930	10,850,750	3,503,189	32.3	1,713,390	48.9	65	--	--	--	--	--	1,709,793	51.1	233	--	--	--	--	
1931	8,990,271	3,511,264	39.1	2,026,568	57.7	67	--	--	--	--	--	1,475,096	42.0	155	9,623	0.5	--	(1)	
1932	7,532,716	3,225,315	42.8	2,364,354	73.3	84	--	--	--	--	--	818,514	28.4	168	12,477	1.5	--	(2)	
1933	8,695,976	4,222,335	48.6	3,116,318	74.5	91	--	--	--	--	--	1,011,116	24.7	167	31,991	0.8	--	(1)	
1934	8,518,231	5,422,626	63.6	4,199,727	77.7	95	--	--	--	--	--	1,037,434	24.2	165	125,525	3.1	--	(2)	
1935	9,232,300	5,767,626	62.5	4,086,428	70.8	123	--	--	--	--	--	705,697	12.8	99	77,591	1.5	--	(2)	
1936	10,142,735	7,142,090	70.5	6,422,937	89.6	146	--	--	--	--	--	627,637	9.3	74	75,496	1.1	--	(2)	

a Sources: U. S. Bureau of Mines. Certain of these figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

c Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

d Data on mechanical loading not available.

Table B-29.- TONS MECHANICALLY LOADED AND NUMBER OF MEN REQUIRED TO MAINTAIN 1,000 TONS OF HOURLY CAPACITY AT GROUP A MINES IN INDIANA, BY TYPES OF LOADING EQUIPMENT, 1918-35^a

Year	Tons mechanically loaded				Number of men required to maintain 1,000 tons of hourly capacity			
	All Group A mines	Mines in which the following equipment was the predominant type used: ^b			All Group A mines	Mines in which the following equipment was the predominant type used: ^b		
		Mobile loaders	Pit-car loaders	Mines shifting from pit-car to mobile loaders		Mobile loaders	Pit-car loaders	Mines shifting from pit-car to mobile loaders
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1918					1,531	1,370	1,745	1,976
1919					1,431	1,314	1,664	1,597
1920					1,445	1,364	1,618	1,558
1921					1,422	1,361	1,524	1,575
1922					1,458	1,408	1,563	1,560
1923	7,684	7,684			1,410	1,377	1,497	1,443
1924	262,186	262,186			1,391	1,353	1,486	1,403
1925	1,054,993	1,054,993			1,418	1,389	1,488	1,445
1926	1,393,357	1,385,507	7,850		1,368	1,318	1,477	1,406
1927	(c)	(c)	(c)	(c)	1,355	1,261	1,508	1,410
1928	1,772,517	1,621,186	8,000	143,331	1,277	1,096	1,513	1,416
1929	2,353,715	1,609,871	202,899	540,945	1,221	1,018	1,570	1,387
1930	2,515,728	1,350,725	280,194	884,809	1,140	961	1,545	1,248
1931	3,234,963	1,992,911	446,210	795,842	999	872	1,429	1,056
1932	2,988,080	1,897,811	288,997	801,272	977	878	1,391	989
1933	4,065,498	2,199,855	542,563	1,323,080	952	853	1,404	969
1934	5,386,761	3,193,986	601,796	1,590,979	971	883	1,374	977
1935	5,747,553	3,380,852	718,825	1,647,876	899	807	1,244	934

a Source: Computed from U. S. Bureau of Mines data.

b The division of Group A mines fell logically into three groups: (1) mines which used only mobile loaders or in which they were used for at least two-thirds of the mechanically loaded tonnage for at least 3 years, (2) mines which used only pit-car loaders or in which they were used for at least two-thirds of the mechanically loaded tonnage for at least 3 years, and (3) mines which started their mechanical-loading program with pit-car loaders and changed to mobile loaders at the end of the period.

Only one mine in the total for Group A was using face conveyors and could not be classified as falling under one of the three headings. To prevent disclosure of data for individual operations, the tonnage was included under pit-car loaders; the man-hour requirements of this mine, however, were omitted.

c Data not available.

APPENDIX B

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Table B-30.- INDEXES OF PRODUCTION, MAN-HOURS, AND UNIT LABOR REQUIREMENTS
AT GROUP A AND ALL OTHER MINES IN THE ILLINOIS-
INDIANA AREA, 1918-56^a

(1923=100)

Year	Group "A" mines			"All other" mines		
	Production	Man-hours	Number of men required to maintain 1,000 tons of hourly capacity ^b	Production	Man-hours	Number of men required to maintain 1,000 tons of hourly capacity ^b
1918	88.5	97.5	112.1	128.1	148.6	115.7
1919	84.4	68.6	107.3	85.7	96.3	111.2
1920	91.8	91.7	105.3	124.0	131.7	107.9
1921	80.5	83.4	101.9	89.8	95.0	103.9
1922	68.9	66.2	101.9	76.6	77.1	101.9
1923	100.0	100.0	100.0	100.0	100.0	100.0
1924	99.0	96.9	99.9	76.3	76.0	99.5
1925	106.6	102.5	98.5	67.8	67.5	100.2
1926	120.4	115.7	97.0	67.4	68.6	101.1
1927	76.5	71.3	95.3	47.4	48.6	102.0
1928	94.7	86.4	90.8	47.2	48.2	100.8
1929	110.6	92.2	85.5	47.0	46.2	99.3
1930	99.1	77.5	81.0	38.5	37.6	99.3
1931	89.4	68.8	76.3	26.6	27.3	104.3
1932	60.1	42.2	74.6	21.9	25.1	109.4
1933	72.2	52.7	72.4	25.1	28.3	112.0
1934	80.0	56.0	71.4	26.1	28.6	107.4
1935	86.4	58.3	68.8	27.1	27.4	101.1

a Source: Computed from U. S. Bureau of Mines data.

b Three-year moving average except for terminal years.

Table B-31.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN WYOMING, 1918-55^a

Year	Production underground mines ^b	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons cut by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B - "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^c	Group A-1	Group A	All other mines
1918	9,458,698				64.4	66.8	35.7	15	15	45	3,467,684	3,875,545	5,565,143
1919	7,219,788				66.0	70.1	42.2	13	18	53	2,788,868	3,340,972	3,878,766
1920	9,630,271				60.8	65.8	44.8	13	19	50	3,298,340	4,455,320	5,174,951
1921	7,200,666				62.2	67.9	35.7	13	23	40	2,559,764	3,605,044	3,594,622
1922	5,971,724				74.6	79.7	34.2	13	23	39	2,134,561	3,168,355	2,903,369
1923	7,575,031	107,698	107,698	105	55.5	67.9	30.5	13	22	40	2,718,645	3,965,808	3,608,223
1924	6,757,468	161,523	161,523	-	65.3	74.6	29.2	13	23	59	2,679,463	3,847,418	3,910,050
1925	6,519,653	444,189	579,272	-	62.8	68.7	24.5	13	22	38	2,705,684	3,934,590	2,585,083
1926	6,459,429	1,076,901	1,278,460	-	76.9	79.4	20.2	13	22	38	2,940,890	4,213,844	2,245,685
1927	6,687,428	(c)	(c)	(c)	77.6	75.2	22.4	13	24	36	3,395,837	5,055,316	1,832,112
1928	6,499,914	2,029,086	2,530,351	102,097	81.4	78.6	25.4	13	24	33	3,404,485	5,091,762	1,408,152
1929	6,632,041	2,195,999	2,889,376	112,668	80.7	79.7	35.5	13	24	29	3,563,841	5,347,486	1,284,655
1930	6,006,522	2,153,415	2,781,585	83,163	81.8	81.6	38.2	13	26	33	3,404,755	4,965,389	1,040,133
1931	4,901,429	2,063,917	2,733,861	42,137	85.5	81.5	32.7	13	26	39	2,884,667	4,171,671	729,366
1932	4,072,912	1,887,774	2,691,082	6,761	90.4	87.9	35.1	13	24	40	2,378,634	3,555,789	517,123
1933	3,918,865	2,068,976	2,969,920	-	92.8	91.0	35.5	13	25	38	2,392,371	3,828,852	390,313
1934	4,248,647	2,498,866	3,560,180	11,424	93.5	94.2	43.3	13	24	38	2,699,003	3,951,780	268,867
1935	5,042,637	3,120,285	4,530,032	-	97.9	98.2	33.0	13	23	41	3,262,136	4,714,955	327,882

See footnotes at end of table.

Table B-31.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN WYOMING, 1918-36* - Continued

Year	Production underground mines ^b	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^c			Number of men required to maintain 1,000 tons of hourly capacity ^d		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1 ^d	Group A ^d	All other mines	Group A-1 ^d	Group A ^d	All other mines
1918	9,438,688	1,605	1,788	2,614	2,516	2,666	4,668	270	271	266	-	.574	.593	-	1,742	1,686
1919	7,219,788	1,636	1,800	2,278	2,495	3,162	4,124	227	232	215	-	.568	.587	-	1,761	1,704
1920	9,650,271	1,649	2,070	2,488	2,354	3,415	4,354	266	269	260	-	.584	.608	-	1,712	1,645
1921	7,200,666	1,788	2,606	2,791	2,688	4,019	4,466	179	173	161	-	.624	.619	-	1,603	1,616
1922	5,971,724	1,962	2,891	2,896	2,839	4,044	5,001	136	137	121	-	.669	.608	-	1,495	1,645
1923	7,575,051	1,808	2,837	2,314	2,279	3,488	4,043	188	188	195	-	.715	.568	-	1,399	1,761
1924	6,757,468	1,905	2,702	2,091	2,311	3,540	3,573	178	178	174	-	.764	.561	-	1,309	1,783
1925	6,519,665	1,869	2,717	1,857	2,231	3,295	2,928	181	181	174	-	.787	.537	-	1,271	1,862
1926	6,469,429	1,802	2,874	1,744	2,037	3,237	2,609	204	197	161	-	.808	.545	-	1,247	1,835
1927	6,687,428	1,956	3,009	1,533	2,241	3,685	2,077	216	210	165	-	.804	.555	-	1,244	1,802
1928	6,499,914	1,826	2,906	880	2,028	3,510	1,310	233	219	200	-	.812	.593	-	1,232	1,686
1929	6,532,041	1,789	2,809	780	2,179	3,643	1,171	249	238	206	-	.806	.611	-	1,241	1,637
1930	6,005,522	2,027	3,199	774	2,278	4,065	1,123	210	194	188	-	.816	.588	-	1,225	1,701
1931	4,801,429	2,094	3,388	596	2,154	3,791	943	171	164	153	-	.843	.538	-	1,186	1,859
1932	4,072,912	1,870	2,906	479	2,047	3,308	839	159	163	136	-	.870	.473	-	1,149	2,114
1933	3,918,965	1,759	2,626	267	2,023	3,221	495	172	168	163	-	.893	.453	-	1,120	2,208
1934	4,248,847	1,884	2,850	253	2,023	3,251	475	200	192	155	-	.898	.479	-	1,114	2,088
1935	5,042,637	2,109	3,048	231	2,216	3,481	434	221	221	190	-	.902	.532	-	1,109	1,880

a Source: U. S. Bureau of Mines. Certain of the figures in this table (under column "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

c Excludes wagon mines and country banks.

d Figures for Group "A" mines are not strictly comparable with those shown in other panels. Due to the impossibility of separating accurately the productivity data of the Union Pacific Coal Company by mines it was necessary to include in the "A" series the hand-loading mines of this company. Specifically, Group "A" includes the hand-loading operations of the Union Pacific Coal Company at Hanna, Reliance, Rock Springs, Superior, and Winton. Group "A-1" mines could not be shown.

e Data not available.

* Three-year moving average except for terminal years.

Table B-32.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN WYOMING, 1918-35^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period)						
	Number ^b	Production ^c (net tons)	Total tons mechanically loaded ^d	Production of these mines		Number of mines in Group A	Mechanical loading of these mines			Production of these mines		Number of mines in Sub- Group A-1	Mechanical loading of these mines			
				Net tons	Per cent of total under- ground		Number of these mines loading me- chanically during the year	Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines	Net tons		Per cent of total under- ground	Number of these mines loading me- chanically during the year	Net tons	Per cent of total Sub-Group A-1 output
(1)	(2)	(3)	(4)	(5)	(6) (5)÷(2)	(7)	(8)	(9) (8)÷(5)	(10) (8)÷(3)	(11)	(12)	(13) (12)÷(2)	(14)	(15)	(16) (15)÷(12)	(17) (15)÷(3)
1918	60	9,138,688		3,875,545	42.1					13	3,467,664	36.7				
1919	71	7,219,738		3,340,972	46.3					15	2,788,866	38.6				
1920	69	9,630,271		4,455,350	46.3					15	3,286,340	34.2				
1921	65	7,200,666		3,626,044	50.1					13	2,559,764	35.5				
1922	62	5,971,784		3,168,355	53.1					13	2,134,561	35.7				
1925	62	7,575,051	107,609	3,969,808	52.4	1	107,698	2.7	99.9	13	2,718,643	35.9	1	107,698	4.0	99.9
1924	62	6,757,468	161,525	3,847,418	56.9	2	161,525	4.2	100.0	13	2,679,465	39.7	2	161,525	6.0	100.0
1925	60	6,519,653	579,272	3,934,590	60.3	5	579,272	14.7	100.0	13	2,705,664	41.5	5	579,272	16.4	75.7
1926	60	6,199,429	1,276,460	4,213,644	68.2	8	1,276,460	30.3	100.0	13	2,940,890	46.5	6	1,076,901	36.6	81.2
1927	60	6,687,428	(e)	3,055,316	75.6	(e)	(e)	(e)	(e)	13	3,395,897	50.8	(e)	(e)	(e)	(e)
1928	57	6,199,914	2,632,448	5,091,762	78.5	19	2,530,351	49.7	96.1	13	3,104,485	52.4	10	2,089,086	59.6	77.1
1929	55	6,632,041	3,001,969	5,347,486	80.6	20	2,899,376	54.0	96.2	13	3,563,841	53.7	12	2,195,999	61.6	73.2
1930	59	6,005,922	2,864,698	4,965,399	82.7	21	2,781,535	56.0	97.1	13	3,104,755	56.7	12	2,153,415	63.2	79.2
1931	69	4,901,429	2,775,998	4,171,571	85.1	23	2,731,861	65.5	96.5	13	2,864,667	58.4	12	2,065,917	72.0	74.3
1932	64	4,072,912	2,697,863	3,552,789	87.3	21	2,691,082	75.7	99.7	13	2,378,634	58.4	12	1,887,774	79.4	70.0
1933	65	3,918,965	2,969,920	3,288,692	90.0	23	2,969,920	81.2	100.0	13	2,392,371	61.0	12	2,068,976	86.5	69.7
1934	62	4,248,647	3,571,604	3,961,780	93.2	23	3,560,180	89.9	99.7	13	2,699,005	69.5	13	2,498,866	92.6	70.0
1935	64	5,042,897	4,530,092	4,744,955	95.5	23	4,530,092	96.1	100.0	13	3,262,136	64.7	13	3,120,205	95.7	60.9

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines and country banks.

c The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-33.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN WYOMING, 1923-33^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production ^c (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d			Net tons	Per cent of total tonnage mechanically loaded by all mines			Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	62	7,575,091	2	444,175	107,803	1	324,280	107,698	99.9	1	121,893	105	0.1
1924	62	6,757,468	2	487,883	161,523	2	487,883	161,523	100.0	-	-	-	-
1925	60	6,519,653	5	1,186,682	579,272	5	1,186,682	579,272	100.0	-	-	-	-
1926	60	6,459,429	8	1,987,780	1,278,460	8	1,987,780	1,278,460	100.0	-	-	-	-
1927	60	6,687,428	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	57	6,499,914	22	4,589,723	2,632,448	19	4,241,495	2,530,351	96.1	3	348,228	102,097	3.9
1929	55	6,652,041	24	5,195,692	3,001,969	20	4,784,674	2,889,376	96.2	4	431,018	112,595	3.8
1930	59	6,005,522	24	4,908,799	2,844,698	21	4,559,650	2,781,535	97.1	3	307,169	85,165	2.9
1931	65	4,901,429	27	4,136,736	2,775,998	23	3,955,666	2,733,821	98.5	4	183,070	42,137	1.5
1932	64	4,072,912	23	3,391,783	2,697,863	21	3,348,219	2,691,082	99.7	2	43,564	6,781	0.3
1933	63	3,918,965	23	3,390,212	2,969,920	23	3,390,212	2,969,920	100.0	-	-	-	-
1934	62	4,248,647	24	3,997,022	3,571,604	23	3,952,114	3,560,180	99.7	1	44,908	11,424	0.3
1935	64	5,042,837	23	4,714,955	4,530,032	23	4,714,955	4,530,032	100.0	-	-	-	-

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines and country banks.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized")

e Data not available.

Table B-54.- GROWTH OF MECHANICAL LOADING IN WYOMING, BY TYPES OF EQUIPMENT, 1923-35^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT															
				Mobile loaders			Scrapers			Dredges and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors			
				Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^c	
1923	7,575,091	107,805	1.4	107,698	99.9	6	--	--	--	105	0.1	1	--	--	--	--	--	--	
1924	6,757,468	161,523	2.4	161,523	100.0	6	--	--	--	--	--	--	--	--	--	--	--	--	
1925	6,519,655	379,272	5.8	449,914	77.7	26	20,758	3.6	1	--	--	--	--	--	--	108,600 ^d	18.7	(1)	
1926	6,459,429	1,270,460	19.8	955,815	66.9	30	183,268	14.3	7	109,221	8.1	7	--	--	--	136,156 ^d	10.7	(1)	
1927 ^e	6,667,428																		
1928	6,489,914	2,652,448	40.5	1,051,784	40.0	34	259,957	9.9	6	995,958	37.8	56	36,944	1.4	10	287,825	10.9	(6)	
1929	6,652,411	3,001,969	45.3	1,119,525	37.3	32	349,690	13.0	10	1,137,974	37.9	74	221,191	7.4	60	131,369	4.4	(5)	
1930	6,005,522	2,864,698	47.7	999,775	34.9	33	340,513	11.9	10	1,107,784	36.7	77	302,877	10.6	65	113,809	3.9	(3)	
1931	4,901,429	2,775,998	56.6	855,622	30.8	32	358,279	12.9	11	1,169,306	42.1	95	235,764	6.5	99	157,027	5.7	(5)	
1932	4,072,912	2,697,865	66.2	714,325	26.5	29	290,282	10.7	10	1,122,079	43.6	104	242,268	9.0	87	328,809	12.8	(5)	
1933	3,918,965	2,969,920	75.8	625,226	21.0	22	358,689	12.1	10	1,380,293	46.5	104	315,315	10.6	88	290,117	9.8	(6)	
1934	4,248,647	3,371,604	81.1	724,397	20.3	21	401,683	11.2	10	1,630,624	51.5	128	328,408	9.2	76	286,492	8.0	(4)	
1935	5,042,937	4,530,032	89.8	899,477	19.8	22	444,514	9.8	9	2,430,969	53.7	150	254,313	5.6	70	500,759	11.1	(6)	
1936	5,627,652	5,189,263	92.2	1,103,545	21.3	24	316,507	6.1	10	2,893,833	55.7	175	243,627	4.7	66	631,751	12.2	(6)	

^a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^c Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

^d The figures for hand-loaded face conveyors for the years 1923 to 1926 are incomplete as no specific inquiry regarding this type of equipment was made prior to 1926. However, where a mine reported conveyors without being asked, the incomplete replies are shown here to prove the fact that this equipment was early used.

^e Data on mechanical loading not available.

Table B-35.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN MONTANA, 1918-35^a

Year	Production underground mines ^b	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons cut by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B "Experimentally mechanized" ^c)	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^c	Group A-1	Group A	All other mines
1918	4,532,505				69.7	69.3	40.9	4	5	47	1,428,216	1,456,992	3,075,513
1919	3,236,369				57.7	57.2	37.5	4	5	53	1,071,061	1,097,108	2,139,261
1920	4,413,866				55.2	54.8	44.2	4	5	52	1,326,786	1,356,954	3,056,912
1921	2,733,958				72.6	72.4	26.8	4	5	37	815,969	821,859	1,912,099
1922	2,572,221				81.0	81.0	42.3	4	4	30	894,244	894,244	1,677,977
1923	3,147,678				83.6	83.4	27.1	4	6	27	1,131,432	1,141,133	2,006,545
1924	2,711,993				82.7	81.4	34.7	4	6	45	1,172,733	1,195,640	1,516,353
1925	2,401,956				83.1	83.1	46.9	4	4	35	1,183,720	1,183,720	1,218,236
1926	2,067,083				82.7	82.7	49.1	4	4	30	1,005,670	1,005,670	1,061,413
1927	2,321,524	(d)	(d)	(d)	82.5	82.9	42.6	4	5	29	1,230,784	1,256,252	1,065,272
1928	2,143,191	362,963	362,963	3,632	92.7	92.9	54.6	4	5	30	1,216,307	1,251,007	892,184
1929	2,188,699	659,155	677,591	30,047	93.1	93.4	54.4	4	6	29	1,243,738	1,304,475	884,224
1930	1,956,638	1,025,495	1,073,384	41,321	99.9	99.9	61.9	4	7	22	1,064,738	1,151,775	804,863
1931	1,557,341	812,247	992,176	34,407	100.0	100.0	64.7	4	8	13	812,247	1,122,024	435,317
1932	1,376,938	776,444	1,065,192	9,019	100.0	100.0	57.4	4	8	14	774,850	1,159,976	216,962
1933	1,367,414	813,432	1,087,328	—	100.0	100.0	49.4	4	8	14	813,432	1,205,194	162,220
1934	1,451,611	755,208	1,148,428	—	100.0	100.0	36.4	4	8	14	757,198	1,270,360	181,251
1935	1,607,553	865,185	1,291,373	—	100.0	100.0	35.4	4	8	19	865,810	1,428,552	179,001

See footnotes at end of table.

Table B-35.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN MONTANA, 1918-35^a - Continued

Year	Production underground mines ^b	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^c			Number of men required to maintain 1,000 tons of hourly capacity ^d		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines
1918	4,532,505	669	687	1,462	1,360	1,416	3,143	267	265	263	.491	.485	.464	2,037	2,062	2,155
1919	3,236,369	708	733	1,351	1,415	1,457	2,666	189	187	198	.527	.524	.491	1,898	1,908	2,037
1920	4,413,866	691	710	1,499	1,175	1,215	2,989	240	239	255	.586	.583	.516	1,706	1,715	1,938
1921	2,733,958	761	790	1,615	1,143	1,189	2,989	134	130	148	.659	.656	.545	1,517	1,524	1,835
1922	2,572,221	822	822	1,477	1,141	1,141	2,494	136	136	142	.716	.713	.568	1,397	1,403	1,761
1923	3,147,678	847	892	1,334	1,117	1,179	2,332	167	160	188	.750	.749	.568	1,333	1,335	1,761
1924	2,711,993	843	874	1,092	1,098	1,136	2,022	174	171	173	.776	.776	.567	1,289	1,289	1,764
1925	2,401,956	886	886	881	1,108	1,108	1,503	167	167	171	.793	.793	.574	1,261	1,261	1,742
1926	2,067,083	822	822	789	1,016	1,016	1,332	153	153	166	.791	.790	.584	1,264	1,266	1,712
1927	2,321,524	729	762	699	956	999	1,222	211	206	188	.792	.792	.573	1,263	1,263	1,745
1928	2,143,191	749	794	630	929	981	1,135	203	197	177	.811	.808	.559	1,233	1,238	1,789
1929	2,188,699	691	773	685	799	903	1,244	225	211	156	.899	.882	.555	1,112	1,134	1,802
1930	1,956,638	712	800	641	695	815	1,142	187	180	152	1.062	.985	.532	942	1,015	1,880
1931	1,557,341	736	941	364	569	843	752	138	149	147	1.106	1.041	.478	904	961	2,092
1932	1,376,938	570	868	242	570	846	619	170	167	110	1.089	1.046	.407	918	956	2,457
1933	1,367,414	588	880	135	604	883	389	173	171	150	.993	1.015	.358	1,007	985	2,793
1934	1,451,611	607	1,028	176	601	1,004	521	171	170	143	.994	1.002	.351	1,006	998	2,849
1935	1,607,553	628	1,044	157	625	1,061	426	197	195	164	1.002	.984	.369	998	1,016	2,710

^a Source: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^c Excludes wagon mines, country banks, and local commercial mines.

^d Data not available.

* Three-year moving average except for terminal years.

Table B-36.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN MONTANA, 1918-55^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only sub-Group A as operated each year of period)							
	Number ^b	Production ^c (net tons)	Total tons mechanically loaded ^d	Number of mines in Group A	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub-Group A-1	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
	(1)	(2)	(3)	(4)	(5)	(6) (5) ÷ (4)	(7)	(8)	(9) (8) ÷ (7)	(10) (9) ÷ (7)	(11)	(12)	(13) (12) ÷ (11)	(14)	(15)	(16) (15) ÷ (14)	(17) (16) ÷ (14)
1918	52	4,532,905		5	1,468,992	32.1					4	1,482,218	31.8				
1919	53	5,226,589		5	1,097,108	20.9					4	1,071,081	20.1				
1920	57	4,413,055		5	1,356,954	30.7					4	1,330,198	30.1				
1921	42	2,733,439		5	821,559	30.1					4	815,869	29.5				
1922	34	2,572,221		4	894,244	34.8					4	894,244	34.8				
1923	33	2,147,678	--	6	1,141,128	53.2	--	--	--		4	1,151,432	53.9	--	--	--	--
1924	51	2,711,998	--	6	1,165,640	43.1	--	--	--		4	1,172,733	43.2	--	--	--	--
1925	39	2,401,956	--	4	1,163,720	48.5	--	--	--		4	1,158,750	48.5	--	--	--	--
1926	34	2,067,958	--	4	1,005,870	48.7	--	--	--		4	1,005,870	48.7	--	--	--	--
1927	34	2,321,684	(e)	6	1,256,222	54.1	(e)	(e)	(e)		4	1,230,764	52.0	(e)	(e)	(e)	(e)
1928	35	2,145,191	566,958	5	1,251,037	58.4	4	822,953	39.0	39.0	4	1,218,307	56.8	4	565,958	29.5	99.0
1929	35	2,155,899	707,838	6	1,304,475	60.5	5	877,021	31.9	31.8	4	1,245,738	58.0	4	585,156	31.0	99.1
1930	29	1,956,856	1,114,705	7	1,151,775	59.9	7	1,075,294	32.2	32.5	4	1,064,733	54.4	4	1,025,495	96.8	99.0
1931	21	1,557,341	1,025,838	8	1,123,024	72.0	7	992,178	33.4	33.4	4	912,247	32.2	4	812,247	100.0	79.1
1932	22	1,978,938	1,074,211	8	1,159,978	58.7	7	1,065,192	31.5	32.2	4	774,650	33.2	4	775,444	100.0	72.3
1933	22	1,357,414	1,037,928	8	1,205,194	88.1	7	1,007,928	30.2	100.0	4	815,422	39.5	4	815,422	100.0	74.3
1934	22	1,461,611	1,148,426	8	1,270,280	87.0	8	1,145,422	30.4	100.0	4	787,193	32.2	4	755,208	99.7	65.8
1935	27	1,607,938	1,251,378	8	1,422,938	88.5	8	1,251,378	30.4	100.0	4	855,810	33.8	4	855,155	99.8	67.0

a Sources: U.S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines, country banks, and local commercial mines.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

f One company reported slightly more tons loaded than total production.

Table B-37.-- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN MONTANA, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production ^c (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Mechanical loading of these mines			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d		Net tons	Per cent of total tonnage mechanically loaded by all mines	Net tons			Per cent of total tonnage mechanically loaded by all mines	
1923	33	3,147,678	--	--	--	--	--	--	--	--	--	--	--
1924	51	2,711,993	--	--	--	--	--	--	--	--	--	--	--
1925	39	2,401,956	--	--	--	--	--	--	--	--	--	--	--
1926	34	2,057,083	--	--	--	--	--	--	--	--	--	--	--
1927	34	2,321,524	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	35	2,143,191	6	1,631,696	366,595	4	1,216,307	362,965	99.0	2	415,389	3,632	1.0
1929	35	2,188,699	8	1,605,896	707,658	5	1,281,086	677,591	95.8	3	324,810	30,047	4.2
1930	29	1,956,658	10	1,453,876	1,114,705	7	1,151,775	1,073,384	96.3	3	302,101	41,321	3.7
1931	21	1,557,341	11	1,254,487	1,026,585	7	1,056,517	992,176	96.6	4	157,970	34,407	3.4
1932	22	1,376,938	9	1,183,787	1,074,211	7	1,127,345	1,065,192	99.2	2	56,442	9,019	0.8
1933	22	1,367,414	7	1,190,194	1,087,328	7	1,190,194	1,087,328	100.0	--	--	--	--
1934	22	1,451,611	8	1,270,360	1,148,428	8	1,270,360	1,148,428	100.0	--	--	--	--
1935	27	1,607,553	8	1,428,552	1,291,373	8	1,428,552	1,291,373	100.0	--	--	--	--

a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines, country banks, and local commercial mines.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-26.- GROWTH OF MECHANICAL LOADING IN MONTANA, BY TYPES OF EQUIPMENT, 1923-56^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Dumbbells and self-loading conveyors			Pit-car loaders			Hand-loaded feed conveyors		
				Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^d
1923	3,117,678	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1924	2,711,993	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1925	2,101,956	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1926	2,057,003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1927	2,321,564	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1928	2,313,191	366,999	17.1	300,802	82.1	13	--	--	--	15,084	4.3	8	169,989	13.6	11	--	--	
1929	2,180,699	707,638	32.3	517,350	77.4	17	--	--	--	7,932	1.1	1	150,046	21.2	23	8,300	0.3	(1)
1930	1,956,638	1,114,705	57.0	901,908	80.9	27	--	--	--	23,861	2.1	3	72,930	6.6	21	116,006	10.4	(3)
1931	1,597,341	1,026,583	65.9	806,962	78.6	27	--	--	--	155,627	15.2	9	38,869	3.8	16	24,908	2.4	(5)
1932	1,376,938	1,074,411	78.0	770,064	71.7	25	--	--	--	162,566	15.1	12	129,371	12.1	39	12,190	1.1	(2)
1933	1,367,144	1,027,128	79.5	799,169	73.5	26	--	--	--	114,366	10.9	5	170,521	15.7	35	2,912	0.3	(1)
1934	1,451,611	1,118,128	79.1	766,534	66.8	29	--	--	--	110,303	9.6	4	269,570	23.5	44	2,021	0.1	(1)
1935	1,607,553	1,291,373	80.3	805,935	68.6	28	--	--	--	73,661	5.7	4	331,777	25.7	38	--	--	
1936	1,799,456	1,664,121	83.8	1,140,892	77.7	31	--	--	--	92,177	6.7	3	227,052	15.6	32	--	--	

^a Sources: U. S. Bureau of Mines. Certain of these figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^c Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

^d Data on mechanical loading not available.

Table B-39.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A AND ALL OTHER BITUMINOUS-COAL MINES IN WASHINGTON, 1918-35^a

Year	Production underground mines	Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6		Panel 7		Panel 8 ^b		Panel 9 ^b	
		Tons mechanically loaded		Tons cut by machine - Per cent of total production		Number of mines		Production (net tons)		Hourly capacity		Men employed		Days operated per year		Tons per man-hour ^c		Number of men required to maintain 1,000 tons of hourly capacity ^d	
		Group A	All other mines (Group B - "Experimentally mechanized")	Group A	All other mines	Group A	All other mines	Group A	All other mines	Group A	All other mines	Group A	All other mines	Group A	All other mines	Group A	All other mines	Group A	All other mines
1918	4,082,212			0.0	8.1	5	50	996,888	3,085,324	437	1,418	1,012	4,097	285	272	.432	.945	2,515	2,899
1919	2,990,447			0.0	12.2	5	42	757,589	2,232,858	434	1,286	1,072	3,954	218	217	.447	.836	2,287	2,988
1920	3,757,985			0.0	13.5	4	43	781,078	2,976,907	358	1,448	695	4,299	277	257	.455	.855	2,502	2,909
1921	2,429,722			0.0	7.7	5	48	720,358	1,709,364	419	1,453	793	3,565	215	147	.543	.861	1,942	2,770
1922	2,551,155			0.0	15.5	7	40	557,180	2,023,975	487	1,228	845	5,855	143	206	.554	.871	1,805	2,695
1923	2,925,392	--	--	0.0	11.6	7	49	759,594	2,165,798	451	1,272	854	3,472	205	215	.576	.865	1,784	2,740
1924	2,655,667	--	--	3.5	12.4	6	52	590,213	2,065,454	478	1,205	775	3,085	166	214	.603	.890	1,658	2,654
1925	2,537,890	--	--	10.5	4.4	5	51	450,878	2,077,014	300	1,345	456	3,270	192	193	.621	.410	1,510	2,439
1926	2,556,558	--	--	10.9	7.9	5	46	529,315	2,027,243	298	1,325	500	3,109	222	194	.602	.425	1,561	2,353
1927	2,635,062	(d)	(d)	11.8	7.0	5	48	595,409	1,979,653	400	1,167	727	2,680	205	212	.577	.428	1,735	2,336
1928	2,519,901	85,225	3,980	26.4	5.6	6	48	808,355	1,711,546	498	951	845	2,255	205	225	.577	.425	1,733	2,347
1929	2,521,327	255,775	4,250	44.5	15.4	6	42	903,395	1,617,931	511	879	855	2,093	221	250	.614	.431	1,629	2,320
1930	2,801,928	425,505	700	59.8	0.2	6	40	745,747	1,555,181	507	913	770	2,031	164	215	.631	.446	1,585	2,242
1931	1,845,451	459,445	--	75.2	0.9	6	44	604,181	1,241,269	444	914	703	1,959	170	170	.604	.442	1,555	2,182
1932	1,590,455	362,950	--	78.5	0.2	5	33	521,559	1,068,896	438	805	844	1,955	149	165	.549	.420	1,521	2,381
1933	1,394,088	270,858	--	75.6	0.0	5	55	333,054	1,061,034	315	737	655	1,920	132	180	.510	.410	1,561	2,459
1934	1,332,991	340,585	--	87.8	0.0	5	51	380,795	952,195	245	738	474	1,697	218	165	.528	.435	1,594	2,255
1935	1,559,205	429,517	--	95.4	0.3	5	51	471,755	1,087,450	234	659	497	1,751	235	175	.572	.493	1,748	2,025

a Source: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Because of statistical deficiencies, the figures shown in panels 8 and 9 are not comparable from year to year. See pp. 274-5.

c Excludes wagon mines and country banks.

d Data not available.

e Three-year moving average except in terminal years.

Table B-40.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN WASHINGTON, 1918-35^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						
	Number ^b	Production (net tons)	Total tons mechanically loaded ^c	Number of mines in Group A	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5)÷(2)	(7)	(8)	(9) (8)÷(5)	(10) (8)÷(3)	
1918	55	1,082,212		5	996,888	24.4				
1919	47	2,990,447		5	757,589	25.3				
1920	47	3,757,093		4	781,073	20.8				
1921	51	2,428,722		5	720,338	29.7				
1922	47	2,581,165		7	557,180	21.6				
1923	56	2,926,392	--	7	739,394	25.3	--	--	--	--
1924	58	2,653,667	--	6	590,213	22.2	--	--	--	--
1925	56	2,537,890	--	5	460,876	18.2	--	--	--	--
1926	51	2,586,568	--	5	529,315	20.5	--	--	--	--
1927	54	2,635,062	(d)	6	656,409	24.9	(d)	(d)		
1928	52	2,519,901	90,085	6	808,365	32.1	2	86,225	10.7	95.7
1929	48	2,521,327	273,026	6	903,396	35.8	4	268,776	29.8	98.4
1930	46	2,301,928	424,206	6	746,747	32.4	5	423,506	56.7	99.8
1931	50	1,846,461	459,446	6	604,181	32.7	5	459,446	76.0	100.0
1932	61	1,590,465	362,950	8	521,559	32.8	5	362,950	69.6	100.0
1933	62	1,394,068	270,858	6	333,054	23.9	5	270,858	81.3	100.0
1934	56	1,382,991	340,685	5	390,796	28.3	5	340,685	87.2	100.0
1935	56	1,559,206	429,617	5	471,738	30.3	5	429,617	91.1	100.0

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines and country banks.

c Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

d Data not available.

Table B-41.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN WASHINGTON, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^c			Net tons	Per cent of total tonnage mechanically loaded by all mines			Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	56	2,926,392	--	--	--	--	--	--	--	--	--	--	--
1924	58	2,653,667	--	--	--	--	--	--	--	--	--	--	--
1925	56	2,577,890	--	--	--	--	--	--	--	--	--	--	--
1926	51	2,586,568	--	--	--	--	--	--	--	--	--	--	--
1927	54	2,635,062	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
1928	52	2,519,901	3	361,029	90,095	2	241,937	86,225	95.7	1	119,092	3,860	4.3
1929	48	2,521,327	5	813,492	273,026	4	774,838	268,776	98.4	1	43,654	4,250	1.6
1930	46	2,501,928	6	967,973	424,206	5	647,611	423,506	99.8	1	320,332	700	0.2
1931	50	1,846,461	5	505,710	459,446	5	505,710	459,446	100.0	--	--	--	--
1932	61	1,590,465	5	421,738	362,950	5	421,738	362,950	100.0	--	--	--	--
1933	62	1,394,068	5	321,946	270,858	5	321,946	270,858	100.0	--	--	--	--
1934	56	1,382,991	5	390,796	340,685	5	390,796	340,685	100.0	--	--	--	--
1935	56	1,559,206	5	471,738	429,617	5	471,738	429,617	100.0	--	--	--	--

^a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b Excludes wagon mines and country banks.

^c Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^d Data not available.

Table B-46.- GROWTH OF MECHANICAL LOADING IN WASHINGTON, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Dredges and self-loading conveyors			Pit-car loaders			Hand loaded face conveyors		
				Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^b
1923	2,926,392	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1924	2,653,687	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1925	2,537,890	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1926	2,536,568	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1927 ^c	2,659,062	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1928	2,519,901	90,085	3.6	--	--	--	--	--	--	--	--	--	--	--	90,085	100.0	(3)	
1929	2,521,327	275,026	10.9	--	--	--	--	--	2,923	1.1	2	--	--	--	270,105	98.9	(4)	
1930	2,301,928	424,206	18.4	--	--	--	--	--	45,523	11.4	2	1,760	0.4	2	373,923	86.2	(4)	
1931	1,846,461	459,446	24.9	--	--	--	--	--	45,943	10.0	2	14,044	3.1	1	399,499	86.9	(4)	
1932	1,590,465	362,950	22.8	--	--	--	--	--	37,968	10.5	2	8,000	2.2	1	316,902	87.3	(4)	
1933	1,394,068	270,958	19.4	--	--	--	--	--	21,799	8.1	2	--	--	--	249,059	91.9	(4)	
1934	1,382,991	340,683	24.6	--	--	--	--	--	27,700	8.1	2	--	--	--	312,985	91.9	(4)	
1935	1,559,206	429,617	27.6	--	--	--	--	--	25,000	5.8	2	--	--	--	404,617	94.8	(4)	
1936	1,812,104	608,488	33.6	--	--	--	--	--	1,000	0.2	1	--	--	--	607,488	99.8	(4)	

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

^c Data on mechanical loading not available.

Table B-43.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN UTAH, 1918-35^a

Year	Production underground mines	Panel 1			Panel 2			Panel 3			Panel 4			Panel 5					
		Tons mechanically loaded			Tons cut by machine - per cent of total production			Number of mines			Production (net tons)			Hourly capacity					
		Group A-1	Group A	All other mines (Group B-"Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^b	Group A-1	Group A	All other mines	Group A-1		Group A		All other mines	
														On comparable basis over period	On reported basis 1932-1935	On comparable basis over period	On reported basis 1932-1935	On comparable basis over period	On reported basis 1932-1935
1918	5,137,000				70.0	67.8	45.7	5	7	25	1,009,062	1,891,352	3,245,648	530		973		1,520	
1919	4,631,000				98.6	90.5	53.6	5	7	30	1,143,061	1,908,761	2,722,239	567		928		1,493	
1920	6,005,000				99.6	67.5	52.0	5	8	31	1,609,074	2,591,328	3,413,672	768		1,251		1,721	
1921	4,079,000				99.0	61.5	65.0	5	8	28	877,995	1,586,645	2,492,355	1,007		1,469		1,935	
1922	4,992,000				97.9	92.3	64.4	5	8	32	1,297,137	2,152,425	2,839,575	815		1,263		1,784	
1923	4,720,000	-	-	-	83.2	85.8	57.7	5	9	28	1,041,003	1,772,604	2,847,396	1,017		1,550		2,167	
1924	4,688,000	-	-	-	78.2	85.5	67.2	5	9	30	967,362	1,869,982	2,618,018	828		1,313		1,779	
1925	4,690,000	-	-	-	71.7	80.5	69.7	5	10	31	846,582	1,923,172	2,766,828	751		1,437		1,840	
1926	4,373,793	55,083	103,619	11,000	55.4	73.7	70.5	5	10	28	910,182	2,100,091	2,273,702	796		1,353		1,588	
1927	4,781,480	(c)	(c)	(c)	57.3	62.8	82.4	5	10	26	1,213,117	2,534,645	2,246,835	843		1,467		1,377	
1928	4,842,544	348,794	777,756	100,000	66.1	70.4	83.6	5	10	28	1,186,679	2,757,146	2,085,398	833		1,609		1,448	
1929	5,160,521	430,977	867,273	53,000	75.6	75.0	84.1	5	12	30	1,319,024	3,082,366	2,078,155	878		1,844		1,225	
1930	4,297,541	381,514	860,592	1,100	79.3	86.1	80.6	5	12	27	1,127,663	2,709,630	1,547,911	972		2,104		1,099	
1931	3,350,044	351,182	861,062	-	81.8	86.2	86.6	5	11	30	786,473	1,999,663	1,350,381	983		1,938		1,125	
1932	2,852,127	318,379	754,354	-	80.9	91.4	87.0	5	12	27	649,947	1,652,354	1,199,773	846	484	1,736	1,071	(d)	929
1933	2,674,986	250,077	551,172	-	71.7	83.9	78.3	5	12	36	592,241	1,539,898	1,135,088	692	411	1,523	1,014	(d)	672
1934	2,406,183	247,136	594,804	4,669	80.9	90.3	75.6	5	13	30	453,845	1,373,482	1,026,701	690	439	1,554	1,072	(d)	856
1935	2,946,912	388,817	898,118	-	75.6	89.2	87.1	5	12	28	659,263	1,773,504	1,173,314	650	462	1,712	1,254	(d)	963

See footnotes at end of table.

Table B-45.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN UTAH, 1918-35^a - Continued

Year	Production underground mines	Panel 6			Panel 7						Panel 8						Panel 9					
		Men employed			Days operated per year						Tons per man-hour ^b						Number of men required to maintain 1,000 tons of hourly capacity ^c					
		Group A-1	Group A	All other mines	Group A-1		Group A		All other mines		Group A-1		Group A		All other mines		Group A-1		Group A		All other mines	
					On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period	On comparable basis over period	On reported basis over period		
			1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925	1922-1925		
1918	5,137,000	852	1,596	2,564	238		243		267		.623		.609		.592		1,605		1,642		1,689	
1919	4,631,000	798	1,438	2,419	252		257		228		.713		.665		.607		1,403		1,504		1,647	
1920	6,005,000	956	1,687	2,817	262		259		248		.887		.751		.646		1,127		1,332		1,568	
1921	4,079,000	876	1,692	2,730	109		135		161		.900		.767		.647		1,111		1,304		1,546	
1922	4,992,000	1,085	1,833	2,888	199		213		199		1.030		.829		.709		971		1,206		1,410	
1923	4,720,000	852	1,666	2,715	128		143		170		.986		.809		.691		1,014		1,236		1,447	
1924	4,488,000	814	1,626	2,704	146		178		184		1.034		.855		.713		949		1,170		1,403	
1925	4,690,000	788	1,756	2,685	141		165		188		1.006		.843		.707		994		1,186		1,414	
1926	4,373,793	758	1,515	2,030	143		194		179		1.021		.905		.735		979		1,105		1,361	
1927	4,781,480	793	1,479	1,860	180		216		204		1.066		1.001		.769		938		999		1,300	
1928	4,842,544	764	1,512	1,840	178		204		180		1.075		1.062		.743		930		942		1,346	
1929	5,160,521	812	1,719	1,739	189		209		212		1.113		1.099		.725		898		910		1,379	
1930	4,297,541	830	1,899	1,605	145		161		176		1.195		1.123		.691		837		890		1,427	
1931	3,350,044	734	1,625	1,643	100		129		150		1.310	1.108	1.201	1.034	.602	.661	763	903	833	967	1,661	1,573
1932	2,852,127	596	1,389	1,513	96	168	119	191	(d)	163	1.326	.959	1.296	.907	(d)	.625	754	1,043	836	1,103	(d)	1,600
1933	2,874,986	566	1,306	1,510	107	180	129	194	(d)	159	1.306	.775	1.202	.770	(d)	.596	766	1,290	832	1,299	(d)	1,678
1934	2,406,183	530	1,373	1,434	92	151	115	176	(d)	167	1.262	.809	1.181	.807	(d)	.624	792	1,236	847	1,239	(d)	1,603
1935	2,946,918	507	1,371	1,381	145	204	148	202	(d)	174	1.284	.912	1.245	.916	(d)	.697	779	1,096	803	1,092	(d)	1,435

a Source: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines and country banks.

c Data not available.

d Strictly comparable figures were not available for computation.

e Three-year moving average except in terminal years.

Table B-44.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN YEARS, 1918-56^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period)							
	Number ^b	Production (net tons)	Total tons mechanically loaded ^c	Number of mines in Group A	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5)÷(2)	(7)	(8)	(9) (8)÷(5)	(10) (8)÷(3)	(11)	(12)	(13) (12)÷(2)	(14)	(15)	(16) (15)÷(12)	(17) (15)÷(3)	
1918	32	5,137,000		7	1,091,352	36.8				5	1,009,052	19.6					
1919	37	4,631,000		7	1,908,761	41.2				5	1,143,061	24.7					
1920	39	6,005,000		8	2,591,328	43.2				5	1,609,074	26.8					
1921	36	4,079,000		8	1,546,645	38.9				5	877,995	21.5					
1922	40	4,592,000		8	2,152,425	45.1				5	1,297,137	28.0					
1923	37	4,720,000		9	1,772,604	37.6				5	1,041,003	22.1					
1924	39	4,488,000		9	1,869,932	41.7				5	967,562	21.6					
1925	41	4,690,000		10	1,523,172	44.0				5	846,592	18.1					
1926	38	4,373,793	114,619	10	2,100,091	48.0		103,619	4.9	90.4	5	910,182	20.8	3	55,093	6.1	46.1
1927	36	4,781,460		10	2,534,645	53.0		(4)		5	1,213,117	25.4	(4)				
1928	38	4,412,544	877,756	10	2,757,146	56.9	10	777,756	28.2	88.6	5	1,106,679	24.5	3	348,794	29.4	39.7
1929	42	5,150,521	920,273	12	3,082,366	59.7	10	897,273	28.1	94.2	5	1,319,004	25.6	3	430,977	32.7	46.8
1930	39	4,871,541	861,692	12	2,709,630	63.6	10	860,592	31.8	99.9	5	1,127,663	26.5	5	361,544	31.8	44.3
1931	41	3,350,044	861,062	11	1,999,663	59.7	10	861,062	43.1	100.0	5	786,473	23.5	5	351,182	44.7	40.6
1932	39	2,952,127	754,354	12	1,652,354	57.9	11	754,354	45.7	100.0	5	649,947	22.8	4	318,379	49.0	42.2
1933	48	2,674,966	551,172	12	1,539,896	57.6	9	551,172	35.8	100.0	5	592,241	22.1	4	250,057	42.2	45.4
1934	43	2,406,183	599,463	13	1,379,482	57.3	12	594,804	43.1	99.2	5	453,045	18.9	5	247,138	54.5	41.2
1935	40	2,946,918	898,118	12	1,773,604	60.2	12	898,118	50.6	100.0	5	659,263	22.4	5	388,617	59.0	45.3

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

^b Excludes wagon mines and country banks.

^c Includes tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^d Data not available.

Table B-45.-- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN YEAR, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^c			Net tons	Per cent of total tonnage mechanically loaded by all mines			Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	37	4,720,000	--	--	--	--	--	--	--	--	--	--	--
1924	39	4,488,000	--	--	--	--	--	--	--	--	--	--	--
1925	41	4,690,000	--	--	--	--	--	--	--	--	--	--	--
1926	38	4,373,793	6	1,214,530	114,619	5	1,085,673	103,619	90.4	1	130,857	11,000	9.6
1927	36	4,781,480	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
1928	38	4,842,544	13	3,053,729	877,756	10	2,563,364	777,756	88.6	3	490,365	100,000	11.4
1929	42	5,160,521	11	3,249,226	920,273	10	2,865,646	867,273	94.2	1	383,580	53,000	5.8
1930	39	4,257,544	11	2,911,477	861,692	10	2,641,730	860,592	99.9	1	269,747	1,100	0.1
1931	41	3,350,044	10	1,957,145	861,062	10	1,957,145	861,062	100.0	--	--	--	--
1932	39	2,852,127	11	1,612,779	754,354	11	1,612,779	754,354	100.0	--	--	--	--
1933	48	2,674,986	9	1,369,461	551,172	9	1,369,461	551,172	100.0	--	--	--	--
1934	43	2,406,183	13	1,519,376	599,493	12	1,366,941	594,804	99.8	1	182,835	4,689	0.6
1935	40	2,946,918	12	1,775,604	898,118	12	1,775,604	898,118	100.0	--	--	--	--

a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines and country banks.

c Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

d Data not available.

Table B-46.- GROWTH OF MECHANICAL LOADING IN UPAS, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)	MECHANICAL LOADING BY TYPES OF EQUIPMENT																	
		Mechanical loading			Mobile loaders			Scrapers			Duckbills and self-loading scoopers			Pit-car loaders			Hand loaded face conveyors		
		Underground mines	Total tons	Per cent of under- ground produc- tion	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installa- tions ^b
1923	4,720,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1924	4,498,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1925	4,690,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1926	4,373,793	114,619	2.6	114,619	100.0	8	--	--	--	--	--	--	--	--	--	--	--	--	--
1927 ^c	4,781,480	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1928	4,842,544	877,756	18.1	750,746	85.5	17	57,010	6.5	2	60,000	6.9	4	--	--	--	10,000	1.1	(1)	
1929	5,160,521	920,273	17.8	808,935	87.9	25	111,358	12.1	3	--	--	--	--	--	--	--	--	--	
1930	4,257,544	861,692	20.2	789,376	91.6	31	52,316	6.1	3	--	--	--	--	--	--	20,000	2.3	(2)	
1931	3,350,044	861,062	25.7	744,515	86.5	29	36,094	4.2	2	73,425	8.5	6	3,028	0.3	1	4,000	0.5	(2)	
1932	2,852,127	754,954	26.4	645,165	85.5	29	27,247	3.6	1	76,944	10.5	6	3,000	0.4	1	--	--	--	
1933	2,674,066	551,172	20.6	533,286	96.7	31	2,032	0.4	1	--	--	--	5,319	1.0	2	10,515	1.9	(1)	
1934	2,406,189	599,493	24.9	565,395	94.3	36	--	--	--	--	--	--	6,124	1.0	1	27,984	4.7	(2)	
1935	2,946,518	898,118	30.5	856,574	93.1	37	--	--	--	--	--	--	6,355	0.7	1	55,189	6.2	(2)	
1936	3,246,565	1,358,543	41.8	1,248,683	91.9	43	--	--	--	--	--	--	5,165	0.4	1	104,692	7.7	(4)	

^a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

^c Data on mechanical loading not available.

Table B-47.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN CENTRAL PENNSYLVANIA, 1918-35^a

Year	Production underground mines ^{b, c}	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons out by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^b	Group A-1	Group A	All other mines
1918	72,526,367				65.1	61.5	45.9	12	27	1,395	2,763,424	4,692,107	67,854,260
1919	66,169,921				66.5	66.0	47.0	12	28	1,694	3,031,512	4,845,150	63,524,771
1920	68,786,878				66.1	66.6	51.8	12	29	1,810	2,970,066	4,927,699	65,869,179
1921	47,831,941				60.0	66.5	55.6	12	30	1,444	2,786,275	4,460,249	45,471,692
1922	44,365,355				62.1	67.6	55.1	12	30	1,654	2,046,819	3,407,731	40,957,604
1923	62,148,264	--	--	12,600	57.6	64.0	60.6	12	28	1,663	3,168,702	5,005,899	57,142,385
1924	48,845,478	12,077	23,867	9,614	56.2	62.8	62.4	12	28	1,264	3,149,206	4,928,206	43,917,272
1925	52,059,694	141,400	161,049	69,455	54.4	60.7	62.2	12	28	1,178	3,816,809	5,185,455	46,874,439
1926	57,291,669	338,128	492,215	313,249	57.1	65.5	63.2	12	31	1,154	4,051,496	6,291,670	50,999,999
1927	51,186,129	(d)	(d)	(d)	61.9	70.9	66.2	12	31	1,073	3,406,287	5,241,391	45,946,738
1928	47,712,275	798,489	1,280,728	631,246	64.0	72.5	65.5	12	30	909	4,040,442	6,104,204	41,608,071
1929	50,563,488	974,810	1,522,277	534,498	74.6	79.0	65.9	12	32	834	3,894,173	6,412,732	44,150,756
1930	45,496,710	1,069,200	2,026,137	821,626	78.2	81.7	67.5	12	33	771	3,317,309	6,266,062	39,230,648
1931	39,623,150	1,449,858	2,866,070	1,094,476	84.9	87.1	69.8	12	33	719	3,187,956	6,009,202	35,613,648
1932	31,764,511	1,643,960	3,055,348	862,280	88.5	90.5	69.5	12	32	627	2,778,445	5,079,174	26,685,137
1933	33,635,585	2,010,230	3,402,225	689,030	91.2	90.4	64.2	12	31	684	3,197,695	5,616,213	28,017,372
1934	36,215,240	2,250,692	3,569,650	397,403	81.1	84.5	61.0	12	29	775	3,714,142	6,654,720	29,580,520
1935	34,918,042	2,250,758	3,300,314	324,091	80.4	85.5	60.5	12	27	600	3,461,439	6,264,100	28,655,942

See footnotes at end of table.

Table B-47.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN CENTRAL PENNSYLVANIA, 1918-35^a - Continued

Year	Production underground mines ^{b, c}	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour [*]			Number of men required to maintain 1,000 tons of hourly capacity [*]		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines
1918	72,526,367	1,293	2,164	51,327	2,930	4,884	74,692	269	271	267	.440	.443	.420	2,275	2,257	2,581
1919	58,169,921	1,534	2,510	32,553	3,390	5,427	75,227	247	231	204	.463	.466	.434	2,160	2,146	2,504
1920	68,786,870	1,541	2,521	34,089	3,107	5,126	75,881	241	244	235	.487	.491	.443	2,055	2,037	2,257
1921	47,931,941	1,922	3,164	36,988	3,738	5,135	82,651	178	178	146	.491	.500	.452	2,037	2,000	2,212
1922	44,365,335	1,439	2,679	36,695	3,110	5,450	79,763	178	169	139	.485	.498	.464	2,070	2,008	2,156
1923	62,148,264	1,700	2,819	36,886	3,598	5,821	80,134	238	222	183	.480	.487	.474	2,085	2,055	2,110
1924	48,843,478	1,959	3,019	35,348	3,843	6,210	69,846	203	204	164	.510	.499	.480	1,961	2,004	2,083
1925	52,059,894	2,074	3,162	30,246	3,745	6,015	63,192	218	205	193	.535	.513	.483	1,869	1,949	2,070
1926	57,291,669	2,050	3,171	30,138	3,758	6,038	80,823	247	248	211	.535	.522	.489	1,869	1,916	2,046
1927	51,168,129	1,935	3,047	30,801	3,846	5,929	82,538	220	215	186	.543	.538	.502	1,842	1,859	1,992
1928	47,712,275	2,149	3,289	28,043	3,709	5,705	64,067	235	232	185	.568	.558	.514	1,761	1,792	1,946
1929	50,563,488	2,116	3,440	26,724	3,407	5,869	50,338	230	233	206	.593	.578	.522	1,686	1,730	1,916
1930	45,496,710	2,023	3,593	25,877	3,493	5,277	51,699	205	218	182	.627	.605	.529	1,696	1,653	1,890
1931	39,623,150	2,092	3,808	25,527	3,080	5,806	49,264	190	197	158	.657	.635	.524	1,522	1,572	1,908
1932	31,764,311	2,052	3,769	23,181	2,894	5,544	44,873	175	171	143	.663	.648	.510	1,508	1,543	1,961
1933	33,633,565	1,946	3,519	21,536	3,254	5,795	45,285	208	201	162	.612	.611	.489	1,634	1,637	2,045
1934	36,215,240	2,151	4,122	23,433	4,114	7,561	49,281	237	223	174	.572	.564	.485	1,748	1,712	2,062
1935	34,918,042	2,400	4,586	24,476	4,049	7,582	48,504	206	196	167	.598	.602	.506	1,686	1,661	1,980

a Source: U. S. Bureau of Mines. Certain of the figures in this table (in columns under "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. The counties included in central Pennsylvania are Armstrong, Bedford, Blair, Bradford, Cambria, Cameron, Center, Clarion, Clearfield, Clinton, Elk, Forest, Fulton, Huntingdon, Indiana, Jefferson, Lycoming, McKean, Potter, Somerset, Sullivan, Tioga, and Warren.

b Excludes wagon mines and country banks.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Data not available.

* Three-year moving average except in terminal years.

Table B-68.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN CENTRAL PENNSYLVANIA, 1918-35^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)							SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period)						
	Number ^b	Production ^{b,c} (net tons)	Total tons mechanically loaded ^d	Number of mines in Group A	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5)(2)	(7)	(8)	(9) (8)(9)	(10) (8)(3)	(11)	(12)	(13) (12)(2)	(14)	(15)	(16) (15)(12)	(17) (15)(3)	
1918	1,412	72,526,567		27	4,492,107	6.5				12	2,785,124	3.8					
1919	1,712	58,169,921		28	4,445,150	8.0				12	3,051,512	5.2					
1920	1,659	66,786,678		29	4,927,699	7.2				12	2,970,066	4.5					
1921	1,474	47,931,943		30	4,460,269	9.5				12	2,736,275	5.7					
1922	1,634	44,365,355		30	3,407,731	7.7				12	2,045,019	4.6					
1923	1,691	62,148,264	12,600	28	5,009,099	8.1				12	3,168,702	5.1					
1924	1,282	48,843,478	55,181	28	4,526,206	10.1	3	23,387	0.5	71.5	3,149,206	6.5	1				
1925	1,203	52,059,894	210,512	28	5,105,195	10.0	6	161,049	3.1	69.0	3,616,809	7.0	2	12,077	0.4	36.1	
1926	1,195	57,291,669	805,464	31	6,291,670	11.0	15	462,215	7.8	61.1	4,051,496	7.1	7	338,128	8.5	42.0	
1927	1,104	51,102,129	(a)	31	5,241,391	10.2	(a)	(a)			3,406,287	6.7	(a)	(a)			
1928	959	47,712,275	1,661,924	30	6,101,264	12.8	23	1,230,758	20.2	66.1	4,040,442	8.5	8	798,159	19.6	42.9	
1929	866	50,563,186	2,056,773	32	6,112,732	12.7	26	1,522,277	25.7	74.0	3,894,173	7.7	9	974,810	25.0	47.4	
1930	804	45,495,710	2,847,765	33	6,266,062	13.8	31	2,226,137	35.3	71.1	3,317,309	7.5	11	1,069,200	32.2	37.3	
1931	752	39,625,150	3,960,546	33	6,009,202	15.2	32	2,666,070	47.7	72.4	3,107,996	8.1	12	1,449,893	45.5	36.6	
1932	659	31,704,311	5,917,628	32	5,079,174	16.0	31	3,059,348	60.8	78.0	2,778,445	8.8	12	1,446,950	59.2	42.0	
1933	715	33,653,525	3,991,855	31	5,516,213	16.7	30	3,402,225	60.6	85.2	3,197,695	9.5	12	2,010,230	66.9	30.4	
1934	804	36,215,240	3,967,053	29	6,654,720	18.4	29	3,569,650	53.6	90.0	3,714,142	10.5	12	2,250,892	60.6	26.7	
1935	827	34,918,432	3,624,405	27	6,264,100	17.9	27	3,300,344	52.7	91.1	3,421,459	9.9	12	2,250,758	65.0	22.1	

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. For counties included in central Pennsylvania see table B-47, fig. a.

b Excludes number and tonnage of wagon mines and country banks.

c The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-49.-- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN CENTRAL PENNSYLVANIA, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production ^{b,c} (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d			Net tons	For cent of total tonnage loaded by all mines			Net tons	For cent of total tonnage loaded by all mines
1923	1,691	62,148,284	2	49,332	12,600	--	--	--	--	2	49,332	12,600	100.0
1924	1,282	48,843,478	8	528,260	33,481	3	431,256	23,867	71.3	5	97,004	9,614	28.7
1925	1,206	52,059,894	13	1,684,905	230,512	6	750,377	161,049	69.9	7	934,528	69,463	30.1
1926	1,185	57,291,669	35	8,800,703	805,444	15	3,853,922	1,892,215	61.1	20	4,946,781	313,249	38.9
1927	1,104	51,188,129	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	939	47,712,275	66	9,988,525	1,861,984	23	4,480,457	1,230,738	66.1	43	5,508,068	631,246	33.9
1929	866	50,563,488	78	11,057,795	2,056,773	26	4,818,017	1,522,277	74.0	52	6,279,778	534,496	26.0
1930	804	45,496,710	79	13,922,468	2,847,765	31	5,931,728	2,026,137	71.1	48	7,990,740	821,626	28.9
1931	752	39,623,150	80	13,747,535	3,960,546	32	5,997,929	2,866,070	72.4	48	7,749,606	1,094,476	27.6
1932	659	31,764,311	65	9,761,493	3,917,628	31	5,068,915	3,055,348	78.0	32	4,692,578	862,280	22.0
1933	715	33,633,585	53	10,048,259	3,991,255	30	5,599,168	3,402,225	85.2	25	4,449,091	589,050	14.8
1934	804	36,215,240	47	10,285,229	3,967,053	29	6,654,720	3,569,650	90.0	18	3,630,805	397,403	10.0
1935	827	34,918,042	47	10,129,424	3,684,405	27	6,264,100	3,300,344	91.1	20	3,869,324	324,091	8.9

a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. For counties included in central Pennsylvania see table B-47, ft. a.

b Excludes number and production of wagon mines and country banks.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-20.-- GROWTH OF MECHANICAL LOADING IN CENTRAL PENNSYLVANIA, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)		MECHANICAL LOADING BY TYPES OF EQUIPMENT															
	Underground mines ^{b, c}	Mechanical loading		Mobile loaders			Scrapers			Dumpbills and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors		
		Total tons	Per cent of under-ground production	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^d
1923	62,118,284	12,600	0	12,600	100.0	5	--	--	--	--	--	--	--	--	--	--	--	
1924	48,813,478	31,681	0.1	8,654	25.8	3	21,572	73.4	8	--	--	--	--	--	--	--	--	
1925	52,059,894	230,512	0.4	20,552	8.9	2	180,255	78.2	21	--	--	--	--	--	--	255 ^e	0.8	(1)
1926	57,291,669	805,444	1.4	30,647	3.8	2	399,577	49.6	28	--	--	--	--	--	--	29,702 ^e	12.9	(4)
1927 ^f	51,188,129															375,810 ^e	46.6	(21)
1928	47,712,275	1,861,984	3.9	37,999	2.0	3	733,340	39.4	71	21,381	1.2	3	--	--	1,069,264	57.4	(39)	
1929	50,563,488	2,096,773	4.1	123,335	6.0	11	571,201	27.8	71	20,563	1.0	2	12,294	0.6	2	1,329,380	64.6	(51)
1930	45,466,710	2,847,783	6.3	17,566	0.6	3	626,615	24.1	75	135,475	4.8	18	--	--	2,037,507	70.5	(60)	
1931	39,623,150	3,960,546	10.0	17,322	0.4	3	653,349	16.5	70	174,814	4.4	19	58,230	1.5	1	3,056,811	77.2	(67)
1932	31,764,311	3,917,628	12.3	14,248	0.4	2	492,336	12.5	65	116,540	3.0	16	68,329	1.7	3	3,226,175	82.4	(50)
1933	33,433,585	3,991,855	11.9	8,363	0.2	3	362,312	9.1	22	112,173	2.8	17	--	--	3,508,177	87.9	(44)	
1934	36,215,240	3,967,053	11.0	--	--	--	245,839	6.2	33	84,634	2.1	15	--	--	3,636,580	91.7	(39)	
1935	34,918,022	3,624,405	10.4	--	--	--	115,193	3.2	19	26,486	0.7	17	--	--	3,482,726	96.1	(36)	
1936	38,159,053	3,930,121	10.3	19,222	0.5	2	127,473	4.8	31	33,218	0.8	12	--	--	3,690,268	93.9	(38)	

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. For counties included in central Pennsylvania see table B-47, etc. a.

b Excludes tonnage of wagon mines and country banks.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Number of mines in which hand-loaded conveyors, other than pit-car loaders were used.

e The figures for hand-loaded face conveyors for the years 1923 to 1928 are incomplete as no specific inquiry regarding this type of equipment was made prior to 1928. However, a number of mines reported conveyors without being asked, and the incomplete replies are shown here to prove the fact that this equipment was early used.

f Data on mechanical loading not available.

g Less than 0.05 percent.

Table B-51.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN WESTERN PENNSYLVANIA AND "NUMBER 8" FIELD IN OHIO, 1918-35^a

Year	Production underground mines ^{b,c}	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons cut by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^b	Group A-1	Group A	All other mines
1918	122,298,766				76.5	77.3	67.0	6	7	1,151	1,419,634	1,795,088	120,505,698
1919	106,017,854				60.3	60.4	68.8	6	8	1,234	1,419,488	1,695,967	104,323,687
1920	115,367,054				83.4	82.5	69.9	6	8	1,209	1,505,247	1,775,156	111,613,479
1921	85,549,202				86.6	85.6	75.7	6	8	1,073	1,538,528	1,738,380	81,810,822
1922	73,168,918				86.1	87.0	70.1	6	8	1,269	1,104,112	1,241,645	71,927,273
1923	126,150,724	--	--	39,414	87.1	86.3	75.0	6	8	1,299	2,451,720	2,779,717	123,371,007
1924	95,875,657	500	500	119,806	88.9	88.0	72.1	6	7	961	2,335,482	2,457,850	93,417,827
1925	96,213,412	18,282	18,282	2,517	87.4	87.8	70.2	6	7	878	908,551	950,320	97,263,092
1926	107,763,153	25,639	25,639	506,534	89.0	88.7	69.4	6	8	872	1,800,585	2,382,055	105,356,098
1927	86,238,716	(e)	(e)	(e)	85.6	86.2	68.1	6	9	827	2,508,601	3,344,181	82,894,535
1928	88,128,576	689,564	621,664	616,921	87.7	88.4	71.4	6	9	706	3,451,744	4,323,296	83,805,280
1929	103,365,115	1,249,798	1,740,186	1,496,632	91.0	91.9	74.5	6	10	678	4,678,743	5,358,602	97,426,513
1930	88,992,848	1,673,662	2,794,102	2,729,438	90.6	92.6	79.6	6	10	631	5,117,956	6,741,442	82,261,408
1931	68,497,967	2,120,871	3,626,208	2,349,214	94.1	96.2	84.9	6	10	584	4,255,442	5,975,037	62,524,920
1932	49,875,555	1,788,142	3,148,587	1,181,253	95.5	96.3	86.3	6	11	520	3,698,385	5,150,260	44,726,305
1933	56,029,339	1,899,448	3,047,661	871,171	96.5	97.3	86.7	6	11	516	3,505,625	4,934,463	51,094,386
1934	63,855,150	2,139,268	3,321,444	378,486	94.3	95.3	84.7	6	11	608	4,045,238	5,632,227	58,222,933
1935	66,155,209	2,580,139	3,772,141	550,724	95.0	95.8	84.3	6	11	627	4,363,270	6,042,796	60,112,413

See footnotes at end of table.

Table B-51.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN WESTERN PENNSYLVANIA AND "NUMBER 8" FIELD IN OHIO, 1918-35^a - Continued

Year	Production underground mines ^{b, c}	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^e			Number of men required to maintain 1,000 tons of hourly capacity ^d		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines
1918	122,298,786	724	931	55,928	1,271	1,649	108,900	245	241	266	.570	.565	.514	1,754	1,770	1,846
1919	106,017,364	991	1,203	59,567	2,025	2,429	108,139	179	176	221	.534	.536	.551	1,873	1,866	1,885
1920	115,387,034	885	1,061	57,129	1,624	1,930	106,211	213	209	243	.504	.504	.543	1,984	1,984	1,842
1921	85,649,202	1,299	1,499	64,731	2,706	3,201	118,115	148	146	167	.551	.544	.528	1,815	1,838	1,894
1922	75,168,918	1,360	1,600	57,789	2,198	2,610	116,812	100	97	155	.558	.522	.531	1,859	1,916	1,883
1923	126,150,724	1,266	1,472	67,662	2,477	3,041	128,735	244	236	227	.537	.525	.540	1,862	1,905	1,852
1924	96,975,657	1,303	1,422	61,663	2,733	2,965	107,803	224	216	189	.481 ^d	.471 ^d	.569	2,075 ^d	2,123 ^d	1,757
1925	98,213,412	1,219	1,320	59,667	2,636	2,941	102,147	93	90	203	.436 ^d	.437 ^d	.580	2,283 ^d	2,288 ^d	1,724
1926	107,738,153	859	1,115	59,712	2,274	2,918	102,639	262	267	220	.411 ^d	.412 ^d	.578	2,433 ^d	2,427 ^d	1,736
1927	86,238,716	1,201	1,672	54,400	3,049	3,986	98,728	261	266	190	.416 ^d	.424 ^d	.575	2,392 ^d	2,358 ^d	1,739
1928	88,128,576	1,630	2,009	44,948	3,379	4,135	77,138	287	269	233	.495 ^d	.489 ^d	.588	2,020 ^d	2,045 ^d	1,701
1929	103,365,115	2,109	2,670	50,198	3,495	4,637	81,063	277	278	242	.566 ^d	.567 ^d	.618	1,767 ^d	1,784 ^d	1,618
1930	88,992,948	2,589	3,431	50,521	4,214	5,260	77,578	249	245	203	.657	.664	.642	1,622	1,606	1,568
1931	88,497,957	2,375	3,315	44,861	3,156	4,268	88,609	224	223	174	.684	.716	.638	1,462	1,397	1,567
1932	49,975,555	1,947	2,949	36,689	2,826	4,016	80,305	231	218	162	.707	.738	.607	1,414	1,355	1,647
1933	58,029,339	2,077	3,054	39,769	3,047	4,326	70,913	211	204	160	.692	.716	.588	1,445	1,397	1,701
1934	63,855,180	2,415	3,432	45,629	3,419	4,846	76,652	232	227	178	.719	.727	.594	1,391	1,376	1,684
1935	68,156,209	2,722	3,948	47,117	3,542	5,013	74,973	229	224	182	.768	.768	.628	1,302	1,305	1,692

a Source: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. The counties included in western Pennsylvania are Allegheny, Beaver, Butler, Fayette, Greene, Lawrence, Mercer, Venango, Washington, and Westmoreland; those in the "Number 8" field in Ohio are Belmont, Harrison, and Jefferson.

b Excludes wagon mines and country banks.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d The actual course of the series for Group "A-1" and Group "A" mines in panels 8 and 9 is not known during the period 1924-25 to 1928-29 because the method of computing man-days (and man-hours), by multiplying days operated per year by the reported number of men employed (at best an approximation), is not adapted to measuring performance during an industrial dispute such as occurred at several Group "A" mines during this period. The disturbed labor conditions doubtlessly had some effect on productivity, but the extreme fluctuations are probably more apparent than real. The distorting factors were chiefly operative from 1925 to 1928, but are here carried back into 1924 and forward into 1929 by the operation of the 3-year moving average.

e Data not available.

* Three-year moving average except in terminal years.

Table B-52.- MEMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN WESTERN PENNSYLVANIA AND "NUMBER 8" FIELD IN OHIO, 1918-55^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period) ^c							
	Number ^b	Production ^b (net tons)	Total tons mechanically loaded ^d	Number of mines in Group A	Production of these mines		Number of these mines loading mechanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of these mines loading mechanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5) ^{1/2} (2)	(7)	(8)	(9) (8) ^{1/2} (5)	(10) (8) ^{1/2} (5)	(11)	(12)	(13) (12) ^{1/2} (2)	(14)	(15)	(16) (15) ^{1/2} (12)	(17) (15) ^{1/2} (3)	
1918	1,138	122,296,786		7	1,795,088	1.5				6	1,419,634	1.2					
1919	1,242	105,017,354		8	1,693,667	1.6				6	1,419,488	1.3					
1920	1,217	113,587,034		8	1,773,159	1.6				6	1,505,247	1.3					
1921	1,001	89,549,202		8	1,798,380	2.1				6	1,538,928	1.8					
1922	1,277	73,166,918		8	1,241,645	1.7				6	1,124,112	1.5					
1923	1,507	126,150,724	39,444	8	2,779,717	2.2	--	--	--	6	2,451,720	1.9	--	--	--	--	--
1924	908	99,875,697	120,305	7	2,497,810	2.6	1	500	0.1	6	2,335,482	2.4	1	500	0.1	0.1	
1925	895	98,213,442	20,799	7	950,320	1.0	1	18,282	1.9	6	905,651	0.9	1	18,282	2.0	87.9	
1926	880	107,738,153	52,473	8	2,382,055	2.2	1	25,639	1.1	6	1,800,595	1.7	1	25,639	1.4	4.8	
1927	896	86,238,716	(e)	9	3,344,181	3.9	(*)	(*)	(*)	6	2,508,601	2.9	(*)	(*)	(*)	(*)	
1928	715	88,128,576	1,438,485	9	4,323,296	4.9	6	821,564	19.0	6	3,481,744	4.0	5	689,564	19.8	47.9	
1929	688	103,365,115	3,236,818	10	5,938,602	5.7	10	1,740,186	29.3	6	4,678,415	4.5	6	1,249,798	26.7	38.6	
1930	641	88,992,848	5,523,940	10	6,741,442	7.6	10	2,794,102	41.4	6	5,117,995	5.8	6	1,675,662	32.7	30.3	
1931	594	68,497,997	5,975,417	10	5,973,097	8.7	10	3,626,209	60.7	6	4,255,442	6.2	6	2,420,871	49.8	35.5	
1932	531	49,875,555	4,279,820	11	5,150,550	10.3	11	3,148,567	61.1	4	3,598,385	7.2	5	1,783,142	49.6	41.7	
1933	527	56,029,339	3,718,832	11	4,934,453	8.8	11	3,047,661	61.8	6	3,509,665	6.3	6	1,999,448	54.2	51.1	
1934	619	69,895,160	3,699,930	11	5,632,227	8.8	11	3,321,444	59.0	6	4,045,238	6.3	6	2,159,268	52.9	57.8	
1935	638	66,155,209	4,322,865	11	6,046,796	9.1	11	3,772,444	62.4	6	4,369,270	6.6	6	2,586,139	59.1	59.7	

^a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period. For counties included in western Pennsylvania and in "Number 8" field in Ohio see table B-51, fn. a.

^b Excludes number and tonnage of wagon mines and country banks.

^c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^e Data not available.

^{*} Less than 0.05 percent.

Table B-55.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN WESTERN PENNSYLVANIA AND "NUMBER 8" FIELD IN OHIO, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production ^{bc} (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d			Net tons	Per cent of total tonnage mechanically loaded by all mines			Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	1,307	126,150,724	3	1,021,684	39,444	--	--	--	--	3	1,021,684	39,444	100.0
1924	968	95,875,657	4	848,153	120,306	1	285,254	500	0.4	3	562,899	119,806	99.6
1925	885	98,213,412	3	933,105	20,799	1	187,698	18,282	87.9	2	745,807	2,517	12.1
1926	800	107,736,153	6	2,976,616	532,473	1	308,166	23,639	4.8	7	2,668,450	506,534	95.2
1927	836	86,238,716	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	715	88,128,576	28	8,658,844	1,438,485	6	3,113,351	821,564	57.1	22	5,545,493	616,921	42.9
1929	688	103,365,115	46	20,040,550	3,236,818	10	5,930,602	1,740,186	53.8	36	11,101,948	1,496,632	46.2
1930	641	88,992,848	44	20,211,635	5,523,540	10	6,741,442	2,794,102	50.6	34	13,470,193	2,729,438	49.4
1931	524	68,497,927	37	16,696,614	3,975,417	10	5,973,037	3,628,203	60.7	27	10,723,577	2,349,244	39.3
1932	531	49,879,555	28	11,456,928	4,279,820	11	5,445,698	3,448,567	73.6	17	6,311,230	1,131,253	26.4
1933	527	56,029,339	25	10,529,041	3,718,832	11	4,934,453	3,047,661	82.0	14	5,594,588	671,171	18.0
1934	619	63,855,160	21	10,876,527	3,699,930	11	5,632,227	3,321,444	89.8	10	5,244,300	378,486	10.2
1935	638	66,155,209	23	12,250,689	4,322,865	11	6,042,796	3,772,441	87.3	12	6,207,893	550,724	12.8

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. For counties included in western Pennsylvania and in "Number 8" field in Ohio see table B-51, fn. e.

^b Excludes number and tonnage of wagon mines and country banks.

^c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^e Data not available.

Table B-54.- GROWTH OF MECHANICAL LOADING IN WESTERN PENNSYLVANIA AND "NUMBER 6" FIELD IN OHIO, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Dredges and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors		
				Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^d
1923	126,150,724	39,414	•	39,414	100.0	3	--	--	--	--	--	--	--	--	--	--	--	
1924	95,875,657	120,306	0.1	120,306	100.0	7	--	--	--	--	--	--	--	--	--	--	--	
1925	96,213,412	20,799	•	20,799	100.0	3	--	--	--	--	--	--	--	--	--	--	--	
1926	107,758,157	532,173	0.5	146,591	27.5	12	--	--	--	374,037	70.3	12	--	--	11,545 ^e	2.2	(1)	
1927	86,258,716																	
1928	88,128,576	1,438,485	1.6	1,280,573	89.0	50	15,754	1.1	3	31,492	2.2	7	14,442	1.0	5	96,664	6.7	(8)
1929	105,365,115	3,256,618	3.1	2,176,949	67.2	54	15,000	0.5	2	25,654	0.8	8	301,537	30.5	247	30,878	1.2	(4)
1930	86,932,848	5,523,540	6.2	3,239,407	58.6	71	17,287	0.9	4	132,930	2.4	8	2,045,042	37.0	280	60,874	1.1	(3)
1931	68,427,957	5,975,417	8.7	3,050,402	51.7	76	19,805	0.3	2	44,375	0.8	5	2,730,897	45.7	564	89,348	1.5	(5)
1932	49,875,555	4,279,820	8.6	1,948,905	45.5	45	--	--	--	6,178	0.2	1	2,201,539	51.4	457	123,200	2.9	(4)
1933	56,029,339	3,718,832	6.6	1,915,910	51.5	44	--	--	--	--	--	--	1,695,989	45.6	458	106,939	2.9	(4)
1934	63,855,160	3,699,930	5.8	2,174,323	58.8	49	--	--	--	--	--	--	1,335,720	36.1	421	189,887	5.1	(4)
1935	66,155,209	4,322,865	6.5	2,723,347	63.0	65	--	--	--	--	--	--	1,228,290	28.4	385	371,228	6.6	(5)
1936	82,666,999	6,855,247	8.3	4,951,684	72.2	128	--	--	--	--	--	--	1,031,277	15.4	362	852,266	12.4	(7)

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period. For counties included in western Pennsylvania and in "Number 6" field in Ohio see table B-51, fig. 2.

^b Excludes tonnage of wagon mines and country banks.

^c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Number of mines in which hand-loaded conveyors, other than pit-car loaders were used.

^e The figures for hand-loaded face conveyors for the years 1928 to 1934 are incomplete as no specific inquiry regarding this type of equipment was made prior to 1928. However, where a mine reported conveyors without being asked, the incomplete replies are shown here to prove the fact that this equipment was early used.

^f Data on mechanical loading not available.

^g Less than 0.05 percent.

Table B-25.- GROWTH OF MECHANICAL LOADING IN WEST VIRGINIA, BY TYPES OF EQUIPMENT, 1925-36^a

Year	Production (net tons)	Mechanical loading		MECHANICAL LOADING BY TYPES OF EQUIPMENT														
				Mobile loaders			Scrapers			Duckbills and self-loading			Pit-car loaders			Hand-loaded face conveyors		
				Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^b
1925	106,996,284	1,567,698	1.5	1,208,153	88.3	16	88,861	6.5	3	--	--	--	500	0.1	1	70,174	5.1	(1)
1926	101,416,119	2,012,790 ^d	2.0	1,828,995	90.9	54	178,795	8.9	11	--	--	--	5,000	0.2	1	--	--	--
1927	122,107,584	2,180,768 ^d	2.0	2,331,989	94.0	16	148,779	6.0	8	--	--	--	--	--	--	--	--	--
1928	113,353,458	2,000,656	1.4	1,966,467	98.3	47	16,745	0.8	5	17,424	0.9	1	--	--	--	--	--	--
1927 ^e	116,113,202																	
1928	132,905,350	2,190,153	1.6	1,849,572	84.5	14	149,696	6.8	13	7,393	0.3	4	15,000	0.7	4	160,502	7.7	(13)
1929	138,505,793	2,697,615	1.9	1,897,379	68.9	40	130,017	4.8	10	61,972	2.3	2	264,993	13.5	66	283,294	10.5	(15)
1930	121,472,658	2,220,401	1.8	1,447,952	65.4	32	162,156	7.3	15	37,223	1.6	8	447,375	20.1	80	133,695	6.0	(15)
1931	101,471,261	1,656,824	1.7	1,160,334	68.8	28	87,373	5.2	10	70,620	4.2	13	231,656	13.7	48	136,621	8.1	(10)
1932	85,608,735	765,206	0.9	386,167	50.5	20	59,210	7.2	3	67,899	8.9	11	93,631	12.3	21	161,805	21.1	(13)
1933	94,223,315	794,280	0.8	364,602	45.9	8	9,023	1.1	4	27,164	3.4	4	100,168	22.7	16	213,323	26.9	(15)
1934	96,950,128	1,364,936	1.4	640,571	46.9	14	25,600	1.9	3	24,900	1.8	3	154,581	11.3	11	519,284	38.1	(25)
1935	99,178,665	2,059,322	2.1	1,120,025	54.4	38	57,054	2.7	5	20,000	1.0	1	--	--	--	862,203	41.9	(31)
1936	117,924,183	8,712,935	7.4	6,262,177	71.9	126	72,043	0.6	4	--	--	--	--	--	--	2,378,713	27.3	(57)

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

c Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

d Includes the tonnage loaded mechanically in Tazewell County, Virginia.

e Data on mechanical loading not available.

Table B-56.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN ALABAMA, 1918-35^a

Year	Production underground mines ^b	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons out by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B- "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^c	Group A-1	Group A	All other mines
1918	18,662,916				62.6	60.0	29.9	7	11	286	955,523	1,353,792	17,209,124
1919	16,028,928				65.4	63.8	31.7	7	12	270	807,548	1,146,225	13,862,703
1920	15,914,695				72.0	68.9	35.1	7	13	236	886,164	1,496,191	14,418,704
1921	11,921,786				68.0	64.6	39.2	7	13	220	870,868	1,819,369	10,802,417
1922	17,937,986				65.4	66.1	37.2	7	16	248	1,161,414	2,036,218	15,901,788
1923	19,700,597	--	46,200	4,614	64.3	69.8	41.2	7	16	255	1,112,796	2,117,709	17,682,888
1924	16,486,744	128,803	189,177	--	67.1	77.6	49.5	7	16	208	970,818	1,986,264	16,500,480
1925	19,271,713	--	39,879	63,768	65.0	76.5	52.2	7	16	203	1,072,155	2,197,198	17,074,516
1926	20,349,366	--	116,473	124,396	65.4	73.8	56.6	7	17	188	1,179,274	2,254,694	16,094,672
1927	19,070,957	(d)	(d)	(d)	70.7	74.9	61.2	7	18	189	1,154,224	2,264,731	16,806,226
1928	17,057,205	240,920	545,564	70,056	71.7	72.7	64.7	7	17	166	1,226,257	2,519,613	14,537,392
1929	17,507,175	427,610	871,265	62,401	79.6	78.8	65.7	7	18	149	1,499,695	3,090,832	14,416,343
1930	16,380,423	548,707	1,205,953	850,089	86.8	83.4	72.0	7	18	124	1,163,122	2,516,751	12,863,672
1931	11,905,714	781,284	1,546,163	891,741	87.3	82.9	73.5	7	18	116	1,149,303	2,205,584	9,700,130
1932	7,784,201	682,696	946,324	290,217	94.2	90.2	76.6	7	17	120	901,452	1,529,233	6,254,943
1933	8,708,025	672,713	1,144,268	245,042	94.7	88.7	76.5	7	17	106	894,536	1,816,576	6,891,449
1934	9,084,855	605,975	820,217	151,069	90.8	88.4	76.9	7	17	98	926,872	1,784,313	7,300,540
1935	8,467,212	728,188	1,209,646	94,007	89.5	85.9	70.4	7	17	100	1,146,325	2,051,388	6,435,824

See footnotes at end of table.

Table B-56.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN ALABAMA, 1918-35^a - Continued

Year	Production underground mines ^b	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^c			Number of men required to maintain 1,000 tons of hourly capacity ^d		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines
1918	18,662,916	585	568	7,718	1,544	2,229	25,070	295	288	277	.250	.250	.358	4,000	3,922	2,985
1919	15,028,928	547	514	7,264	1,668	2,240	25,874	279	270	236	.208	.226	.324	4,425	4,237	3,086
1920	15,914,895	560	627	7,448	1,630	2,828	22,257	291	288	242	.221	.258	.332	4,202	5,922	3,012
1921	11,921,786	501	682	7,972	1,767	2,803	22,288	203	178	185	.284	.256	.349	5,908	5,597	2,865
1922	17,957,996	531	964	8,752	2,005	3,209	24,526	244	240	212	.264	.276	.353	3,623	3,356	2,833
1923	19,700,597	489	942	8,858	1,748	3,333	25,771	255	256	230	.280	.266	.366	3,769	5,564	2,809
1924	18,486,744	414	906	8,611	1,627	3,505	25,464	243	239	219	.264	.261	.353	3,831	3,704	2,833
1925	19,271,713	422	943	7,896	1,698	3,527	22,732	263	254	246	.249	.254	.350	3,937	5,774	2,857
1926	20,349,366	462	922	7,728	1,742	3,426	25,187	282	272	267	.280	.261	.346	3,631	5,636	2,890
1927	19,070,957	496	1,059	8,258	1,818	3,687	25,107	246	236	231	.273	.272	.349	3,676	5,521	2,866
1928	17,057,205	552	1,184	7,501	1,950	4,034	20,995	240	235	221	.283	.290	.355	3,448	5,322	2,817
1929	17,607,175	554	1,563	7,170	2,084	4,227	20,485	247	249	229	.314	.321	.361	3,115	5,077	2,770
1930	15,380,423	648	1,897	7,611	1,766	3,898	20,220	194	198	186	.366	.368	.386	2,717	2,667	2,697
1931	11,905,714	740	1,656	8,188	1,747	3,743	18,986	171	152	135	.423	.400	.400	2,500	2,467	2,500
1932	7,784,201	687	1,329	6,748	1,605	3,160	17,130	147	127	108	.410	.408	.396	2,461	2,375	2,532
1933	8,708,025	621	1,292	5,340	1,594	3,238	14,850	157	158	145	.390	.402	.368	2,488	2,435	2,717
1934	9,084,853	730	1,442	5,307	1,799	3,489	15,192	175	170	190	.405	.414	.366	2,415	2,404	2,732
1935	8,467,212	879	1,703	5,763	1,962	3,898	14,637	186	169	160	.448	.448	.389	2,232	2,294	2,571

- a Sources: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.
- b The strip production used in subtraction is the "total at same mines" and includes an insignificant production underground in operations which are both strip pits and deep mines.
- c Excludes wagon mines, country banks, and local commercial mines.
- d Data not available.
- * Three-year moving average except in terminal years.

Table B-57.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN ALABAMA, 1918-36^a

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period) -							
	Number ^b	Production ^c (net tons)	Total tons mechanically loaded ^d	Number of mines in Group A	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of these mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage me- chanically loaded by all mines
(1)	(2)	(3)	(4)	(5)	(6) (5)÷(2)	(7)	(8)	(9) (8)÷(5)	(10) (8)÷(2)	(11)	(12)	(13) (12)÷(2)	(14)	(15)	(16) (15)÷(12)	(17) (15)÷(3)	
1918	297	18,568,916		11	1,353,792	7.3				7	953,523	5.1					
1919	262	15,628,938		12	1,146,225	7.4				7	807,340	5.4					
1920	249	15,914,895		13	1,436,191	9.4				7	885,164	5.6					
1921	233	11,921,786		13	1,319,369	11.1				7	870,848	7.3					
1922	264	17,927,986		16	2,036,218	11.4				7	1,181,444	6.6					
1923	269	19,700,577	50,814	16	2,117,709	10.7	5	46,200	2.2	90.9	1,112,796	5.6	--	--	--	--	
1924	224	18,486,744	189,177	16	1,986,264	10.7	4	189,177	9.5	100.0	970,618	5.3	1	128,803	13.3	60.1	
1925	219	19,271,713	109,637	16	2,197,198	11.4	1	39,879	1.8	38.5	1,072,155	5.6	--	--	--	--	
1926	205	20,349,366	240,869	17	2,234,694	11.1	3	116,473	5.2	48.4	1,179,274	5.8	--	--	--	--	
1927	207	19,070,957	(e)	18	2,264,731	11.9	(e)	(e)		7	1,154,224	6.1	(e)	(e)	(e)	(e)	
1928	183	17,057,205	613,600	17	2,519,813	14.8	7	513,564	23.6	88.6	1,226,257	7.2	3	240,920	19.6	39.3	
1929	167	17,507,175	933,664	18	3,090,832	17.7	8	871,263	28.2	93.3	1,499,695	8.6	3	427,610	28.5	45.8	
1930	142	15,580,423	2,056,052	18	2,518,751	16.4	13	1,205,923	47.9	50.7	1,163,122	7.6	4	548,707	47.2	28.7	
1931	134	11,945,714	2,277,994	18	2,205,584	18.5	15	1,346,133	61.0	60.2	1,149,305	9.7	5	781,284	68.0	34.9	
1932	137	7,784,201	1,236,544	17	1,529,253	19.6	15	946,324	61.9	76.5	901,452	11.6	5	682,696	75.7	55.2	
1933	122	8,708,025	1,309,308	17	1,816,576	20.9	15	1,144,266	63.0	82.4	894,536	12.3	5	672,733	75.2	48.4	
1934	113	9,684,853	1,071,286	17	1,784,313	19.6	15	920,217	51.6	85.9	928,872	10.2	5	605,975	65.4	56.6	
1935	117	8,467,212	1,303,653	17	2,031,388	24.0	17	1,209,646	59.5	92.8	1,146,325	13.5	5	728,186	63.5	55.9	

a Sources: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines, country banks, and local commercial mines.

c The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

Table B-56.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN ALABAMA, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally mechanized")			
	Number ^b	Production ^c (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d			Net tons	Per cent of total tonnage mechanically loaded by all mines			Net tons	Per cent of total tonnage mechanically loaded by all mines
1923	269	19,700,597	4	186,944	50,814	3	123,271	46,200	90.9	1	63,673	4,614	9.1
1924	224	18,486,744	4	257,464	189,177	4	257,464	189,177	100.0	--	--	--	--
1925	219	19,271,713	2	471,378	103,637	1	55,342	39,879	38.5	1	416,036	63,758	61.5
1926	205	20,349,366	7	693,169	240,869	3	222,121	116,473	48.4	4	471,048	124,396	51.6
1927	207	19,070,957	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	183	17,057,205	11	1,527,936	613,600	7	1,132,920	543,564	88.6	4	395,016	70,036	11.4
1929	167	17,507,175	12	3,350,240	933,664	8	1,527,942	871,863	93.3	4	1,822,298	62,401	6.7
1930	142	15,380,423	24	5,641,235	2,056,052	13	2,086,996	1,205,953	58.7	11	3,554,239	850,099	41.3
1931	134	11,905,714	28	4,644,276	2,237,894	15	1,976,869	1,346,153	60.2	13	2,657,407	891,741	39.8
1932	137	7,784,201	27	2,977,956	1,236,541	15	1,367,461	946,324	76.5	12	1,610,485	290,217	23.5
1933	122	8,708,025	26	3,411,601	1,389,308	15	1,622,208	1,144,266	82.4	11	1,809,393	245,042	17.6
1934	113	9,084,853	21	3,232,446	1,071,286	15	1,585,623	920,217	85.9	6	1,646,323	151,069	14.1
1935	117	8,467,212	21	3,044,540	1,303,653	17	2,031,388	1,209,646	92.8	4	1,053,152	94,007	7.2

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines, country banks, and local commercial mines.

c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-69.- GROWTH OF MECHANICAL LOADING IN ALABAMA, BY TYPES OF EQUIPMENT, 1923-36^a

Year	Production (net tons)	MECHANICAL LOADING BY TYPES OF EQUIPMENT																	
		Mechanical Loading			Mobile loaders			Scrapers			Duckbills and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors		
		Underground mines ^b	Total tons	Per cent of under- ground production	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installa- tions ^c
1923	19,700,997	50,814	0.3	--	--	--	4,614	9.1	1	--	--	--	--	--	--	146,200 ^d	90.9	(3)	
1924	18,486,744	189,177	1.0	--	--	--	--	--	--	--	--	--	--	--	--	189,177 ^d	100.0	(4)	
1925	19,271,715	105,697	0.5	--	--	--	65,798	61.5	12	--	--	--	--	--	--	39,879 ^d	38.5	(1)	
1926	20,340,344	240,869	1.2	--	--	--	111,803	46.4	30	--	--	--	--	--	--	129,066 ^d	53.6	(4)	
1927 ^e	19,070,997	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1928	17,097,205	613,600	3.6	--	--	--	94,958	15.5	7	--	--	--	--	--	--	518,642	84.5	(8)	
1929	17,507,175	935,644	5.3	9,451	1.0	2	97,200	10.4	4	--	--	--	--	--	--	782,249	83.3	(9)	
1930	15,380,423	2,056,052	13.4	12,266	0.6	2	189,657	8.9	18	75,479	3.7	12	1,060,824	51.6	105	723,826	35.2	(14)	
1931	11,905,714	2,237,894	18.8	24,691	1.1	2	194,296	8.7	34	1,236	0	1	1,226,693	54.8	167	790,978	35.4	(14)	
1932	7,784,201	1,236,541	15.9	20,299	1.7	2	136,416	11.0	31	--	--	--	539,719	43.6	170	540,447	43.7	(15)	
1933	8,708,025	1,389,306	16.0	27,116	2.0	2	149,431	10.7	9	--	--	--	516,778	39.4	144	665,993	47.9	(14)	
1934	9,084,853	1,071,286	11.8	--	--	--	140,760	13.1	23	1,745	0.2	2	426,200	39.8	143	502,581	46.9	(11)	
1935	8,467,212	1,305,653	15.4	17,678	1.4	4	261,957	20.1	20	6,948	0.5	2	478,798	36.7	94	538,372	41.3	(12)	
1936	12,175,186	1,741,452	14.3	155,349	8.9	10	367,083	21.1	27	18,973	1.1	3	344,412	31.3	93	655,635	37.6	(15)	

^a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^c Number of mines in which hand-loaded conveyors, other than pit-car loaders were used.

^d The figures for hand-loaded face conveyors for the years 1923 to 1926 are incomplete as no specific inquiry regarding this type of equipment was made prior to 1928. However, where a mine reported conveyors without being asked, the incomplete replies are shown here to prove the fact that this equipment was early used.

^e Data on mechanical loading not available.

^f Less than 0.05 percent.

Table B-60.-- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN THE UNITED STATES, 1916-35^a

Year	Production underground mines ^{b,c}	Panel 1			Panel 2			Panel 3			Panel 4		
		Tons mechanically loaded			Tons cut by machine - Per cent of total production			Number of mines			Production (net tons)		
		Group A-1	Group A	All other mines (Group B - "Experimentally mechanized")	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines ^d	Group A-1	Group A	All other mines
1916	568,267,198				71.6	68.5	56.0	104	170	7,985	35,067,859	46,478,667	521,768,529
1919	457,960,318				74.0	70.8	59.4	104	183	8,645	26,711,506	37,500,518	420,749,803
1920	561,863,212				74.0	71.1	60.6	104	187	8,561	35,484,002	49,137,957	502,825,556
1921	409,104,819				76.1	76.0	65.6	104	195	7,689	28,241,314	41,751,701	387,352,918
1922	404,911,653				79.4	76.7	64.9	104	204	8,324	24,872,152	37,137,450	367,774,203
1923	548,075,165	125,422	350,698	1,529,050	74.9	74.6	68.5	104	205	8,216	34,421,758	52,001,111	466,074,052
1924	469,592,310	340,370	1,015,449	2,434,788	77.5	75.2	70.9	104	207	8,413	34,757,606	51,069,994	417,922,328
1925	502,259,415	1,572,032	2,970,394	3,679,878	77.5	80.5	72.1	104	198	5,987	34,406,232	53,567,437	448,691,978
1926	554,314,173	3,173,473	5,726,598	6,526,050	77.2	80.9	73.3	104	208	5,938	38,564,793	61,573,628	492,740,645
1927	499,355,554	(e)	(e)	(e)	79.4	79.3	74.5	104	220	5,641	31,808,145	49,810,745	449,544,811
1928	479,225,661	8,227,221	13,041,392	8,386,354	80.8	82.6	76.4	104	218	4,846	36,856,038	57,833,764	421,591,907
1929	513,649,859	15,458,295	27,223,197	10,138,299	85.1	87.1	77.3	104	225	4,560	41,370,915	66,808,486	447,041,378
1930	446,514,080	19,333,480	35,897,590	11,296,258	90.5	91.6	79.5	104	233	4,193	36,335,912	61,565,032	394,949,028
1931	562,778,891	21,838,411	39,223,549	8,338,559	91.0	91.9	81.8	104	236	3,776	31,656,310	55,185,158	307,693,738
1932	289,850,757	18,442,560	31,371,672	4,445,237	94.0	94.2	82.5	104	234	3,544	24,753,984	41,750,239	248,100,516
1933	316,013,552	22,344,119	35,378,824	2,441,637	95.1	94.3	83.1	104	229	3,591	28,410,237	46,042,348	288,971,204
1934	337,947,455	24,537,365	39,655,552	1,779,183	94.2	94.5	82.4	104	223	3,750	31,197,561	51,090,454	288,867,011
1935	346,184,677	27,598,040	44,672,816	2,604,408	94.7	95.0	82.3	104	226	3,698	33,675,990	55,096,468	293,089,209

See footnotes at end of table.

Table B-60.- SALIENT STATISTICS SHOWING PERFORMANCE OF GROUP A-1, GROUP A, AND ALL OTHER BITUMINOUS-COAL MINES IN THE UNITED STATES, 1918-35^a - Continued

Year	Production underground mines ^{b, c}	Panel 5			Panel 6			Panel 7			Panel 8			Panel 9		
		Hourly capacity			Men employed			Days operated per year			Tons per man-hour ^d			Number of men required to maintain 1,000 tons of hourly capacity		
		Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines	Group A-1	Group A	All other mines
1918	568,267,196	16,538	23,463	256,725	28,628	41,678	665,170	249	247	250	.677	.663	.655	1,733	1,776	2,198
1919	457,950,316	17,508	24,673	263,074	30,686	44,666	569,632	190	188	196	.693	.672	.669	1,666	1,746	2,132
1920	551,865,212	18,648	27,318	284,275	29,607	45,414	584,645	223	224	220	.612	.608	.608	1,634	1,701	2,049
1921	409,104,619	21,286	31,704	308,721	33,711	51,886	604,123	165	164	148	.634	.610	.606	1,577	1,639	1,980
1922	406,911,658	21,671	32,986	321,535	33,663	53,126	621,826	142	139	142	.639	.616	.623	1,566	1,623	1,912
1923	549,075,163	22,332	34,851	343,042	34,631	56,490	635,649	191	185	179	.645	.619	.636	1,550	1,616	1,866
1924	469,992,310	23,839	36,028	302,474	36,543	58,077	551,075	180	175	171	.649	.626	.644	1,541	1,597	1,838
1925	502,269,415	23,511	36,292	291,684	36,103	56,863	521,889	180	182	197	.650	.631	.643	1,538	1,585	1,842
1926	554,314,173	23,339	37,309	281,375	36,120	59,109	523,393	204	204	217	.645	.631	.641	1,560	1,585	1,843
1927	499,356,564	23,736	39,420	283,229	37,477	63,044	520,057	164	156	196	.653	.637	.648	1,531	1,570	1,825
1928	479,225,661	23,623	38,182	254,402	35,140	58,019	453,998	191	187	206	.677	.658	.659	1,477	1,520	1,789
1929	513,649,859	23,867	38,201	250,348	33,144	55,213	438,344	214	215	221	.715	.694	.675	1,369	1,441	1,739
1930	446,514,090	24,545	40,479	254,456	32,706	55,131	429,007	183	183	187	.767	.740	.692	1,321	1,351	1,689
1931	362,778,891	24,008	41,444	239,425	29,968	52,060	390,646	163	165	139	.785	.778	.699	1,274	1,289	1,669
1932	389,960,757	21,310	37,763	206,365	27,231	47,268	350,634	140	137	147	.793	.785	.665	1,236	1,274	1,709
1933	315,013,552	20,400	36,291	199,086	25,832	45,090	363,334	173	167	167	.793	.778	.666	1,261	1,285	1,731
1934	337,947,466	21,873	37,069	223,539	27,723	48,017	398,429	197	190	177	.802	.784	.666	1,247	1,276	1,757
1935	349,134,377	22,864	40,723	235,979	28,645	49,681	401,679	201	193	177	.833	.820	.667	1,200	1,220	1,704

^a Source: U. S. Bureau of Mines. Certain of the figures in this table (under columns "Tons mechanically loaded") differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

^b Excludes tonnage of wagon mines and country banks and includes local commercial tonnage.

^c The strip production used in subtraction is the "total at same mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Excludes wagon mines and country banks in every year and local commercial mines starting in 1923.

^e Data not available.

^f Three-year moving average except in terminal years.

Table B-61.- NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A BITUMINOUS-COAL MINES ("MECHANIZED GROUP") IN THE UNITED STATES, 1918-35*

Year	ALL UNDERGROUND MINES			GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)						SUB-GROUP A-1 MINES ("IDENTICAL MECHANIZED") (Includes only such Group A as operated each year of period)							
	Number ^b	Production ^{b,c} (net tons)	Total tons mechanically loaded ^d	Number of mines in Group A	Production of these mines		Number of mines loading me- chanically during the year	Mechanical loading of these mines			Number of mines in Sub- Group A-1	Production of these mines		Number of mines loading me- chanically during the year	Mechanical loading of these mines		
					Net tons	Per cent of total under- ground e		Net tons	Per cent of total Group A output	Per cent of total tonnage me- chanically loaded by all mines all mines (10) (11)(12)		Net tons	Per cent of total under- ground		Net tons	Per cent of total Sub-Group A-1 output	Per cent of total tonnage mechanically loaded by all mines (17) (15)(16)
(1)	(2)	(3)	(4)	(5)	(6) (5)(2)	(7)	(8)	(9) (8)(5)	(10)	(11)	(12)	(13) (12)(2)	(14)	(15)	(16) (15)(12)	(17) (15)(16)	
1918	8,159	868,267,196	-	170	46,478,667	8.2				104	33,067,059	5.8					
1919	8,026	457,950,316	-	135	37,800,513	8.1				104	26,711,306	5.6					
1920	8,784	751,963,212	-	187	49,137,657	8.9				104	33,154,002	6.1					
1921	7,684	409,101,619	-	195	44,751,701	10.2				104	28,241,514	6.9					
1922	9,028	404,911,655	-	204	37,137,450	9.2				104	24,672,158	6.1					
1923	8,421	548,075,169	1,879,786	205	52,001,111	9.5	8	350,696	0.7	18.7	104	34,421,758	6.3	2	125,422	0.4	6.7
1924	6,620	468,992,310	3,450,237	207	51,069,984	10.9	19	1,015,469	2.0	89.4	104	34,757,606	7.4	9	340,370	1.0	9.9
1925	6,489	502,259,443	5,644,062	198	53,597,437	10.7	30	2,970,364	5.5	44.7	104	34,406,252	6.9	14	1,572,052	4.6	23.7
1926	6,416	584,514,175	11,292,628	208	61,373,258	11.1	35	5,768,598	9.3	50.9	104	38,564,795	7.0	27	3,175,473	8.2	28.2
1927	5,861	498,355,554	(e)	220	49,610,743	10.0	(e)	(e)			104	31,600,445	6.3	(e)	(e)		
1928	5,064	479,225,661	21,427,746	218	57,833,754	12.1	129	13,041,392	22.5	60.9	104	36,056,038	7.7	61	8,227,221	22.3	38.4
1929	4,795	513,640,859	37,361,496	225	66,608,486	13.0	164	27,223,197	40.9	72.9	104	41,370,915	8.1	77	15,458,295	37.4	41.4
1930	4,426	446,514,050	46,993,848	233	61,565,032	13.8	193	35,697,590	58.0	76.0	104	36,335,912	8.1	85	19,333,460	53.2	41.1
1931	4,012	362,778,891	47,562,108	236	55,185,158	15.2	203	39,223,549	71.1	82.5	104	31,096,310	8.7	90	21,038,411	69.0	45.9
1932	3,778	289,850,757	35,816,509	234	44,750,239	14.4	204	31,373,672	75.1	87.6	104	24,753,984	8.5	89	18,468,560	74.5	51.5
1933	3,820	315,013,552	37,820,461	229	46,048,348	14.6	199	35,378,824	76.8	93.5	104	28,410,237	9.0	92	22,344,119	78.6	59.1
1934	3,979	371,947,465	44,432,733	223	51,050,454	15.1	206	39,655,552	77.6	95.7	104	31,397,561	9.2	98	24,537,365	78.7	59.2
1935	3,524	348,164,677	47,177,224	222	55,099,468	15.8	222	44,372,016	80.9	96.5	104	33,575,990	9.6	104	27,588,040	82.2	58.5

* Sources: U. S. Bureau of mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates, or in the adoption of uniform classifications over the entire period.

^b Excludes wagon mines and country banks in every year and local commercial mines starting with 1923. The tonnage of local commercial mines is included in production figures.

^c The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

^d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

^e Data not available.

Table B-62.- COMPARISON OF NUMBER, PRODUCTION, AND TONNAGE MECHANICALLY LOADED OF GROUP A AND GROUP B BITUMINOUS-COAL MINES IN THE UNITED STATES, 1923-35^a

Year	ALL UNDERGROUND MINES					GROUP A MINES ("MECHANIZED GROUP") (All mines of "Mechanized Group" including those newly opened or closed during period)				GROUP B MINES ("Experimentally Mechanized")			
	Number ^b	Production ^{b,c} (net tons)	Mines with mechanical loading			Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines		Number of these mines loading mechanically during the year	Production of these mines loading mechanically during the year	Mechanical loading of these mines	
			Number	Production	Total tons mechanically loaded ^d			Net tons	Per cent of total tonnage loaded by all mines			Net tons	Per cent of total tonnage loaded by all mines
1923	8,121	548,075,163	61	13,510,817	1,879,726	8	1,158,115	350,696	18.7	53	12,352,732	1,529,070	81.3
1924	6,620	468,992,310	84	16,721,172	3,450,237	19	3,308,503	1,015,449	29.4	65	17,412,669	2,434,788	70.6
1925	6,185	502,259,415	100	22,532,321	6,644,062	30	7,921,636	2,970,384	44.7	70	14,610,685	3,673,678	55.3
1926	6,146	554,314,173	166	46,687,305	11,252,628	55	16,376,657	5,726,598	50.9	111	30,310,648	5,526,030	49.1
1927	5,861	498,355,554	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
1928	5,064	479,225,661	344	75,575,359	21,427,746	129	35,969,362	13,041,392	60.9	215	39,605,977	8,386,354	39.1
1929	4,705	513,649,859	406	108,814,447	37,361,496	164	53,014,194	27,223,197	72.9	242	55,799,953	10,138,299	27.1
1930	4,426	446,514,060	417	106,530,176	46,993,848	193	54,269,822	35,697,590	76.0	224	52,660,354	11,296,258	21.0
1931	4,012	362,778,891	402	89,733,172	47,562,108	203	50,086,744	39,223,549	82.5	199	39,646,431	8,338,559	17.5
1932	3,778	289,850,757	354	65,490,580	35,816,909	201	38,706,317	31,371,672	87.6	153	26,792,265	4,446,237	12.4
1933	3,820	315,013,552	282	63,774,420	37,820,461	199	43,265,961	35,378,824	93.5	83	20,508,459	2,441,637	6.5
1934	3,973	337,947,465	283	71,317,446	41,432,735	205	49,803,720	39,653,552	95.7	77	21,513,426	1,779,183	4.3
1935	3,924	348,184,677	323	86,667,904	47,177,224	226	55,095,468	44,572,816	94.5	97	31,572,436	2,604,408	5.5

a Source: U. S. Bureau of Mines. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitutions of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes wagon mines, country banks, and local commercial mines. The tonnage of local commercial mines is included in production figures.

c The strip production used in subtraction is the "total at some mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Includes the tonnage mechanically loaded by the Group B mines ("experimentally mechanized").

e Data not available.

Table B-48.- GROWTH OF MECHANICAL LOADING IN THE UNITED STATES, BY TYPES OF EQUIPMENT, 1923-97^a

Year	Production (net tons)	MECHANICAL LOADING BY TYPES OF EQUIPMENT																
		Mechanical loading		Mobile loaders			Scrapers			Duckbills and self-loading conveyors			Pit-car loaders			Hand-loaded face conveyors		
		Total tons	Per cent of underground production	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of machines	Tons	Per cent of total tons loaded	Number of installations ^d
1923	548,075,168	1,880,000	0.5	1,652,000	87.9	105	108,000	5.5	9	-	-	1	8,000	0.4	4	117,000 ^e	6.2	(5)
1924	668,992,310	3,150,000	0.7	2,998,000	86.9	166	247,000	7.2	29	-	-	-	5,000	0.1	1	200,000 ^e	5.8	(7)
1925	508,259,115	5,644,000	1.3	5,239,000	78.8	219	828,000	12.5	86	-	-	-	389,000	5.9	37	188,000 ^e	8.8	(17)
1926	594,314,179	11,253,000	2.0	8,035,000	71.4	295	1,462,000	13.3	133	495,000	4.4	27	507,000	4.5	45	784,000 ^e	6.4	(30)
1927	694,355,354																	
1928	179,225,661	21,428,000	4.5	11,761,000	54.9	397	1,548,000	7.2	130	1,200,000	5.6	82	4,117,000	19.2	1,040	2,802,000	13.1	(119)
1929	213,649,999	27,368,000	7.3	16,232,000	43.5	408	1,550,000	4.1	126	1,309,000	3.5	99	14,679,000	39.3	2,521	3,592,000	9.6	(130)
1930	146,514,060	16,904,000	10.5	20,073,000	42.7	548	1,637,000	3.3	150	1,628,000	3.5	142	19,116,000	40.7	2,876	4,540,000	9.6	(142)
1931	362,778,891	47,562,000	13.1	19,407,000	40.8	583	1,471,000	3.1	146	1,811,000	3.8	165	19,172,000	40.5	3,428	3,701,000	12.0	(152)
1932	289,850,737	35,817,000	12.4	14,825,000	41.4	548	1,132,000	3.2	128	1,630,000	4.5	159	12,590,000	25.2	3,112	5,640,000	15.7	(156)
1933	315,013,522	37,820,000	12.0	17,865,000	47.2	523	990,000	2.6	95	1,656,000	4.4	132	11,433,000	30.2	2,453	5,896,000	15.6	(114)
1934	327,947,465	41,433,000	12.3	20,750,000	50.1	534	1,024,000	2.4	119	2,082,000	5.0	157	11,039,000	26.8	2,288	6,508,000	15.7	(114)
1935	348,184,677	47,177,000	13.5	24,675,000	52.3	657	1,118,000	2.4	78	2,595,000	5.5	180	11,039,000	23.5	2,098	7,691,000	16.3	(135)
1936	209,863,169	66,977,000	16.3	40,970,000	61.2	980	1,273,000	1.9	106	3,260,000	4.8	234	10,538,000	15.7	1,851	10,996,000	16.4	(124)
1937	411,193,382	83,500,000	20.3	56,000,000	67.1	1,272	1,300,000	1.6	115	3,600,000	4.3	250	8,200,000	9.8	1,650	14,400,000	17.3	(233)

a Source: U. S. Bureau of Mines. The data for 1937 represent preliminary estimates of the National Bituminous Coal Commission based on reports of State Department of Mines, operators, and sales of new equipment. Certain of the figures in this table differ slightly from those given in previous publications of the U. S. Bureau of Mines because of revisions made during the present study. These revisions consist in substitution of final returns for preliminary estimates or in the adoption of uniform classifications over the entire period.

b Excludes tonnage of wagon mines and country banks.

c The strip production used in subtraction is the "total at sans mines" which includes an insignificant production underground in operations which are both strip pits and deep mines.

d Number of mines in which hand-loaded conveyors, other than pit-car loaders, were used.

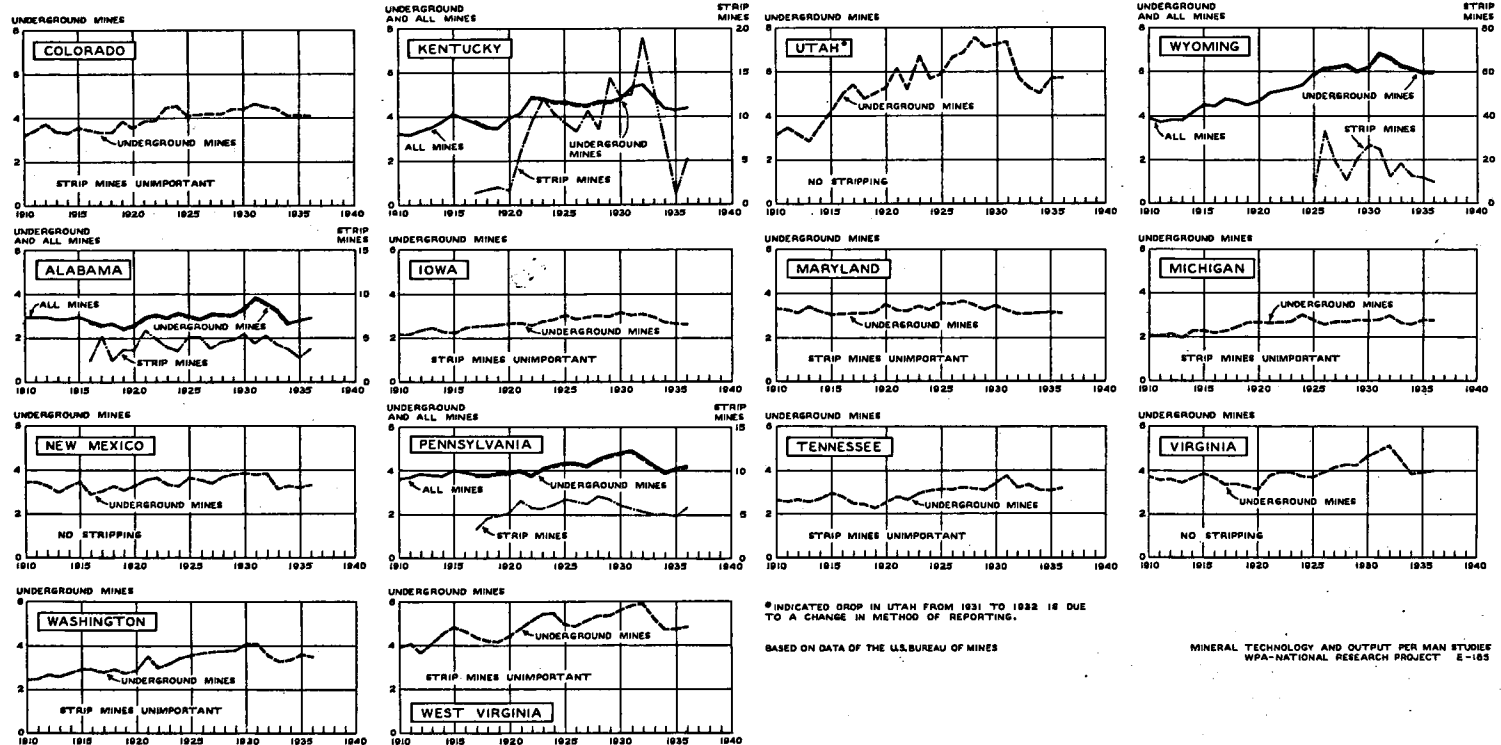
e The figures for hand-loaded face conveyors for the years 1923 to 1928 are incomplete as no specific inquiry regarding this type of equipment was made prior to 1928. However, a number of mines reported conveyors without being asked, and the incomplete replies are shown here to prove the fact that this equipment was early used.

f Data on mechanical loading not available.

g Less than 1,000 tons or 0.05 percent.

Figure B-1.- OUTPUT PER MAN PER DAY IN SELECTED STATES, BY KIND OF MINE, 1910-36

(Net tons; figures for strip mines are shown on a separate scale)



CONFIDENTIAL OFFICE RECORD
TO REMAIN IN CUSTODY OF
U. S. BUREAU OF MINES

WPA NATIONAL RESEARCH PROJECT
BITUMINOUS COAL
TRANSCRIPTION SHEET FOR U. S. BUREAU OF MINES DATA

CODE NO. _____

NRP 501-A
BUREAU OF MINES MINE NO. _____

TRANSCRIBED BY _____
DATE TRANSCRIBED _____

A. DATE	NAMES OF COMPANY (RECORD CHANGES)	B. MINE NAMES	C.
_____	_____	_____	STATE _____ COUNTY _____
_____	_____	_____	FIELD OR TRADE DISTRICT _____
_____	_____	_____	BEAM (1920) _____ (1935)* _____
_____	_____	_____	COMMERCIAL _____ CAPTIVE _____
_____	_____	_____	AGE OF MINE (PRODUCTION RECORD MINE REPORTS (1926) _____

Marked to show sources of data

D. SEAM THICKNESS	J. TYPE OF MINE	P. ROOF
1920 TOTAL THICKNESS _____ INCHES	SHAFT _____ SLOPE _____ DRIFT _____	1931 DOES ROOF IMMEDIATELY OVER COAL CONSIST OF: DRAWSLATE _____ LIMESTONE _____ SHALE OR SLATE _____ BONE OR RASH _____ SANDSTONE _____ OTHER MAT. _____
NET THICKNESS _____ INCHES	1920 _____	IS TOP COAL LEFT IN PLACE TO SUPPORT ROOF? _____
1923 MAXIMUM _____ INCHES	1926 _____	IS DRAWSLATE OR ROOF ROCK TAKEN DOWN? _____
MINIMUM _____ INCHES	1934 _____	HOW MANY INCHES TAKEN DOWN IN ROOMS? _____
AVERAGE _____ INCHES	1926 DEPTH OF SHAFT _____ FT.	_____ IN ENTRIES? _____
1934 ^a AVERAGE _____ INCHES	1926 LENGTH OF DRIFT OR SLOPE _____ FT.	IS WASTE GOBBED UNDERGROUND OR BROUGHT TO SURFACE? _____
E. SYSTEM OF MINING	1926 AVE. DISTANCE OF TRAVEL FROM END OF SLOPE OR BOTTOM OF SHAFT TO FACE _____ FT.	FOR EACH CAR ROCK BROUGHT TO SURFACE, HOW MANY CARS OF COAL? _____
LONGWALL _____	K. LAMPS	HOW MANY PROP'S SET PER 1,000 TONS MINED? _____
ROOM AND PILLAR, ORDINARY METHOD _____	OPEN FLAME _____ 1924 _____ 1934 ^a _____	IS ROOF SERIOUSLY AFFECTED WITH: "KETTLE BOTTOM"? _____ "SLIPS"? _____
ROOM AND PILLAR, WITH PANELS _____	FLAME SAFETY _____	DO YOU CONSIDER ROOF GOOD _____ POOR _____
IF ROOM AND PILLAR IS USED: ARE ROOM PILLARS EXTRACTED? _____	ELECTRIC BATTERY _____	MEDIUM _____ BAD _____
ARE ENTRY PILLARS EXTRACTED? _____	L. IS MINE GASEOUS? (1926 YES _____ NO _____ 1934 ^a YES _____ NO _____)	Q. 1934 WAS MINE ROCK DUSTED? (1930) _____ (1934) _____
F. 1934 ^a % PRODUCTION OBTAINED FROM PILLARS _____ %	M. 1926 THICKNESS OF OVERBURDEN	R. * SCREENING AND PREPARATION
G. 1920 WHAT % OF COAL IN NET THICKNESS MINED: IS EXTRACTED? _____ %	SHALLOWEST PART MINE _____ FT.	TONS
IS LOST? _____ %	DEEPEST PART MINE _____ FT.	1927 _____ 1928 _____
H. 1920 DIP OF COAL BED _____ DEGREES	APPROX. AVE. DEPTH _____ FT.	R.O.M. (INCL. MODIFIED OR SPECIAL R.O.M.) PREPARED SIZES _____ SLACK OR SCREENINGS _____
I. 1924 HAULAGE SYSTEM	N. MINE PUMPS	HAND PICKING (ON PICKING TABLES, LOADING BOOMS, OR IN R.R. CARS) YES OR NO _____
NUMBER UNDERGROUND	1928 ARE UNDERG'D WORKINGS ABOVE DRAINAGE? _____	1928 SCREENING EQUIPMENT: BAR SCREENS _____ GRAVITY _____ SHAKER _____ OTHER SCREENS _____ PICKING TABLES _____ LOADING BOOMS _____
1924 _____ 1935 _____	ARE UNDERG'D WORKINGS WET OR DRY? _____	
HORSES AND MULES _____	NO. PUMPS DEL'Y WATER TO SURFACE _____	
ROPE HAULAGE UNITS _____	GAL. PER MIN. DELIVERED TO SURFACE _____	
STORAGE BATTERY LOCOMOTIVES: WITH TROLLEY _____	O. PARTINGS	
WITHOUT TROLLEY _____	1930 IS FACE BROKEN BY PARTINGS OR BANDS OF IMPURITIES? _____ IF YES, ARE PARTINGS REMOVED UNDERG'D BEFORE LOADING COAL IN MINE CARS? _____	
ELECTRIC TROLLEY LOCOMOTIVES _____	NAME OF PARTING _____ CHARACTER _____ AVE. THICKNESS _____	
COMPRESSED AIR LOCOMOTIVES _____	(ROCK, DIRT, ETC.) IN PRESENT WORKINGS _____	
GASOLINE LOCOMOTIVES _____	NET THICKNESS OF CLEANED COAL AS MINED _____ INCHES	
STEAM LOCOMOTIVES _____		

* DATA REPORTED ON ACCIDENT QUESTIONNAIRE

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TRANSCRIPTION SHEET FOR U. S. BUREAU OF MINES DATA

APPENDIX C

PRODUCTIVITY AND VALUE OF PRODUCT

YEAR	SUR. OF MINES MINE NO.	NO. OF MINES REPORTING	TOTAL PRODUCTION (NET TONS)	AVERAGE NUMBER OF MEN				AVE. DAYS WORKED	TOTAL MAN-DAYS		OUTPUT PER MAN PER DAY		OUTPUT PER MINE PER DAY	HOURS WORKED PER DAY	TOTAL MAN-HOURS		OUTPUT PER MAN PER HOUR		OUTPUT PER MINE PER HOUR	TOTAL VALUE AT MINE OF COAL PRODUCED (DOLLARS)	AVE. VALUE PER TON
				UNDERGROUND			SURFACE		TOTAL	REPORTED	CALCULATED	REPORTED			CALCULATED	REPORTED	CALCULATED				
				TONNAGE	HAULAGE AND TRACK	OTHERS															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1918																					
1919																					
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1935																					
1936																					
1937																					
1938																					
1939																					
1940																					

Code number on Bureau of Mines list

As reported by operator

As reported by operator
Question first asked in 1932

Col. (8) X Col. (9)
Col. (9) + Col. (10)
Col. (9) + Col. (11)
Col. (9) + Col. (12)

As reported by operator (When working base changed during the year, use a weighted average was used)

(by as reported by operator)

(15)
Col. (12) X Col. (13)
Col. (12) + Col. (14)
Col. (12) + Col. (15)
Col. (12) + Col. (16)
Col. (12) + Col. (17)
Col. (12) + Col. (18)
Col. (12) + Col. (19)
Col. (12) + Col. (20)

As reported by operator

(6)
100 + (20)
100

MECHANICAL EQUIPMENT

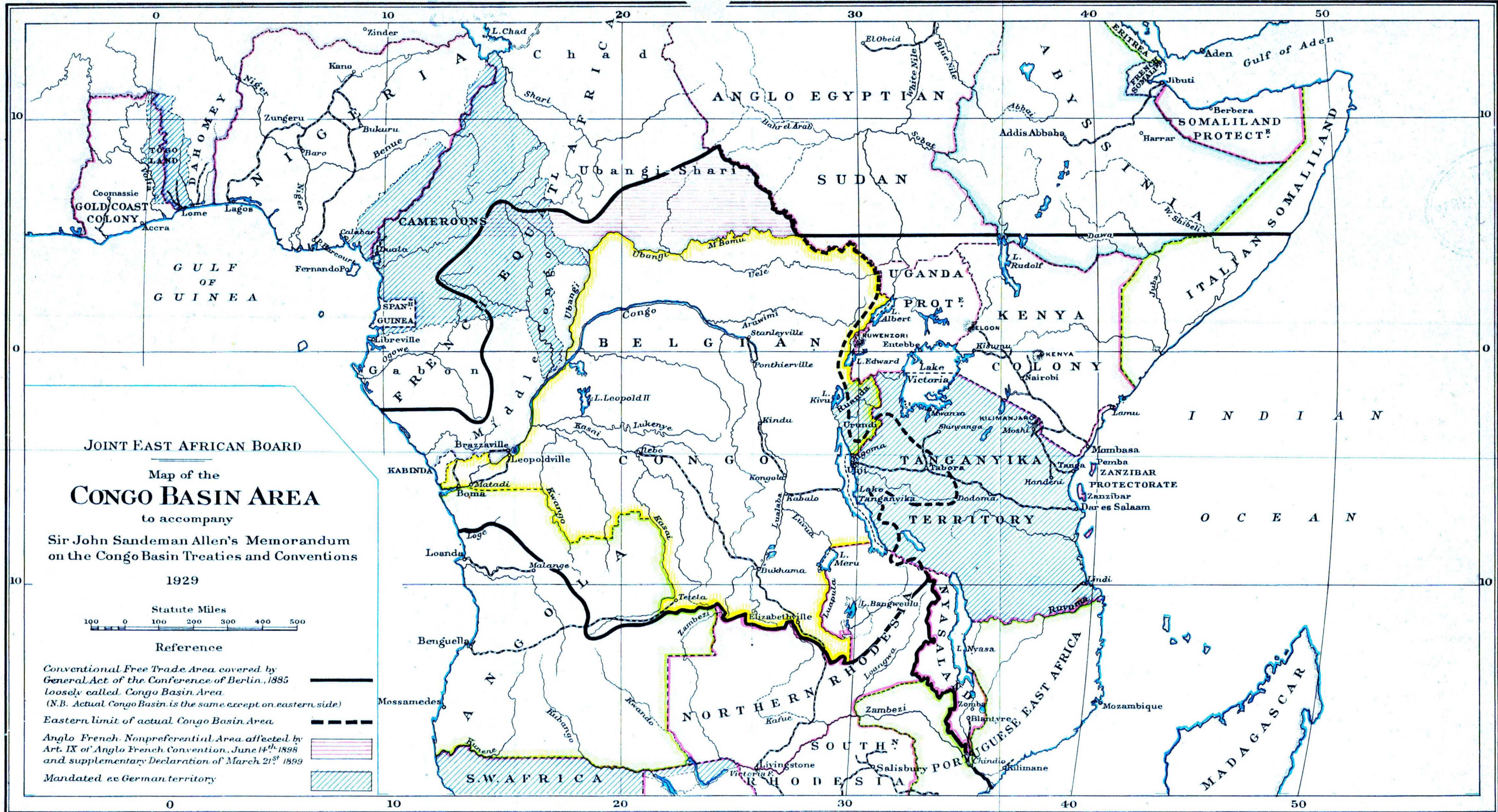
YEAR	TOTAL PRODUCTION (NET TONS)	CUT BY MACHINE		MOBILE LOADING MACHINES			SCRAPER LOADERS			DUCK BILLS AND SELF-LOADING CONVEYORS			PIT CAR LOADERS			HAND LOADED FACE CONVEYORS			TOTAL OF MECHANICAL LOADING		
		TOTAL TONS	PER CENT TOTAL PROD.	MAKE	NO.	TONS	MAKE	NO.	TONS	MAKE	NO.	TONS	MAKE	NO.	TONS	MAKE	NO.	TONS	TOTAL NO.	TOTAL TONS	PER CENT PROD.
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1918																					
1919																					
1920																					
1921																					
1922																					
1923																					
1924																					
1925																					
1926																					
1927																					
1928																					
1929																					
1930																					
1931	is reported by operator	is reported by operator	tot. (24) + col. (25)																		(25)
1932																					(25)
1933	is reported by operator	is reported by operator	tot. (24) + col. (25)																		(25)
1934																					(25)
1935																					(25)
1936	is reported by operator	is reported by operator	tot. (24) + col. (25)																		(25)
1937																					
1938																					
1939																					
1940																					

is reported by operator

YEAR	TOTAL PRODUCTION (NET TONS)	MECHANICAL CLEANING					TOTAL WAGE BILL (DOLLARS)	WAGE COST PER TON	MINED BY HAND		SHOT OFF SOLID		NO. OF CUTTING MACHINES
		KIND OF EQUIPMENT	WET OR PNEU.	TONS CLEANED					TOTAL TONS	PER CENT TOTAL PROD.	TOTAL TONS	PER CENT TOTAL PROD.	
				RAW	CLEANED PRODUCT	REFUSE							
	44	45	46	47	48	49	50	51	52	53	54	55	56
1918													
1919													
1920													
1921													
1922													
1923													
1924													
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1931													
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1934													
1935													
1936													
1937													
1938													
1939													
1940													

As reported by operator

To be obtained by correspondence if operator can conveniently furnish



JOINT EAST AFRICAN BOARD
 Map of the
CONGO BASIN AREA
 to accompany

Sir John Sandeman Allen's Memorandum
 on the Congo Basin Treaties and Conventions

1929



Reference

- Conventional Free Trade Area covered by General Act of the Conference of Berlin, 1885 loosely called Congo Basin Area (N.B. Actual Congo Basin is the same except on eastern side)
- Eastern limit of actual Congo Basin Area
- Anglo French Nonpreferential Area affected by Art. IX of Anglo French Convention, June 14th 1898 and supplementary Declaration of March 21st 1899
- Mandated ex German territory

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