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MINERALS YEARBOOK

1958

Volume II of Three Volumes

FUELS

Prepared by the staff of the

BUREAU OF MINES

DIVISION OF PETROLEUM

DIVISION OF BITUMINOUS COAL

DIVISION OF ANTHRACITE

UNITED STATES DEPARTMENT OF THE INTERIOR

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FOREWORD

Minerals Yearbook, 1958, published in three volumes, provides a record of performance of the Nation's mineral industries during the year, with enough background information to interpret the year's developments.

Volume I includes chapters on metal and nonmetal mineral commodities, with the exception of the mineral fuels. Included also are a chapter reviewing these mineral industries, a statistical summary, and chapters on mining technology, metallurgical technology, and employment and injuries. When the results of the 1958 Census of Mineral Industries (or Manufactures in some cases such as cement and coke) conducted by the Bureau of the Census become available, comparisons will be shown between Mines and Census data in order to indicate relationships in definitions and coverage.

Volume II includes chapters on each mineral fuel, an employment and injuries presentation, and a mineral-fuels review chapter that summarizes developments in the fuel industries and incorporates all data previously published in the Statistical Summary chapter. Also now included in this review chapter are data on energy production and uses that have previously been included in the Bituminous Coal chapter.

Volume III is comprised of chapters covering each of the 50 States, plus chapters on the island possessions in the Pacific Ocean, and the Commonwealth of Puerto Rico and island possessions in the Caribbean Sea, including the Canal Zone. Volume III also has a Statistical Summary chapter, identical with that in volume I, and another presenting employment and injury data.

The data in the Minerals Yearbook are based largely upon information supplied by mineral producers, processors, and users, and acknowledgment is made of this indispensable cooperation given by industry. Information obtained from individuals by means of confidential surveys has been grouped to provide statistical aggregates. Data on individual producers are presented only if available from published or other nonconfidential sources, or when permission of the individuals concerned has been granted.

Marling J. Ankeny, *Director*.

ACKNOWLEDGMENTS

The chapters in this volume of the Minerals Yearbook were prepared by the staffs of the Division of Anthracite, the Division of Bituminous Coal, and the Division of Petroleum of the Bureau of Mines, and the final printed volume was prepared under editorial supervision by Virgil L. Barr, assistant to the chief, Division of Petroleum, and Thelma Stewart, editorial assistant.

Those chapters dealing with bituminous coal and its products were prepared under the general supervision of T. Reed Scollon, chief, Division of Bituminous Coal, and T. W. Hunter, chief, Branch of Bituminous-Coal Economics and Statistics; the chapters on petroleum and related commodities were prepared under the general supervision of R. A. Cattell, chief, Division of Petroleum, and D. S. Colby, chief, Branch of Petroleum Economics; the anthracite chapter was prepared under the general direction of Joseph A. Corgan, chief, Division of Anthracite; the helium chapter was prepared under the direction of C. W. Seibel, Assistant Director—Helium Activities, and Henry P. Wheeler, Jr., chief, Helium Liaison Office, and data for the Pacific coast were compiled under the direction of J. B. Mull, Region II.

Because of the many sources of data presented, it is impossible to give credit to each source individually, but acknowledgment is here made of the ready and willing cooperation of producers and users of fuels who supplied data and of the business press, trade associations, scientific journals, international organizations, and State and Federal agencies. The U.S. Department of Commerce, Bureau of the Census, furnished data on foreign trade, and the Department of State, U.S. Foreign Service, provided information on foreign production and developments.

The mining and geology and related departments of the respective States have been most cooperative and have made available supplementary and verifying information with respect to production and plant operations. For their assistance the Bureau is deeply grateful, and acknowledgment is made to the following State organizations that assisted with the canvasses of bituminous coal and lignite:

Alabama: Division of Safety and Inspection, Birmingham.
Alaska: Division of Mines and Minerals, Department of Natural Resources, Juneau.
Arizona: State mine inspector, Phoenix.
Arkansas: State mine inspector, Fort Smith.
Colorado: Colorado Coal Mine Inspection Department, Denver.
Georgia: Department of Mines, Mining, and Geology, State Division of Conservation, Atlanta.
Illinois: State Department of Mines and Minerals, Springfield.
Indiana: Bureau of Mines, Terre Haute.
Iowa: State mine inspectors, Des Moines.
Kansas: State Mine Inspection Division, Pittsburg.

Kentucky: Kentucky Department of Mines and Minerals, Lexington.
Maryland: Maryland Bureau of Mines, Westernport.
Missouri: Division of Mine Inspection, Jefferson City.
New Mexico: State inspector of mines, Albuquerque.
North Dakota: State coal-mine inspector, Bismarck.
Ohio: Division of Mines and Mining, Ohio Department of Industrial Relations, Columbus.
Oklahoma: Chief mine inspector, Oklahoma City.
Pennsylvania: Pennsylvania Department of Mines and Mineral Industries, Harrisburg.
Tennessee: Tennessee Division of Mines, Knoxville.
Utah: Safety Division, Industrial Commission of Utah, Salt Lake City.
Virginia: Division of Mines, Virginia Department of Labor and Industry, Big Stone Gap.
Washington: Chief coal-mine inspector, Department of Labor and Industries, Seattle.
West Virginia: West Virginia Department of Mines, Charleston.
Wyoming: State coal-mine inspector, Rock Springs.

Appreciation is also expressed to the Commonwealth of Pennsylvania Department of Mines and Mineral Industries, Harrisburg, and Commonwealth of Massachusetts, Division on Necessaries of Life, Boston, for assistance in acquiring data on anthracite and to the following for their assistance with the peat canvass:

Michigan: Department of Conservation, Lansing.
New Jersey: Department of Conservation and Economic Development, Bureau of Geology and Topography, Trenton.
Washington: Department of Conservation and Development, Olympia.

Credit is also due the following State organizations that assisted with the petroleum and natural-gas canvasses:

Arkansas: Arkansas Oil and Gas Commission, El Dorado.
California: California Department of Natural Resources, San Francisco. Public Utilities Commission, State of California, San Francisco.
Illinois: Oil and Gas Division, and State Geological Survey Division, Urbana.
Kansas: State Geological Survey, Lawrence.
Maryland: Department of Geology, Mines and Water Resources, Baltimore.
Michigan: Geological Survey Division, Department of Conservation, Lansing.
Missouri: Division of Geological Survey and Water Resources, Department of Business and Administration, Rolla.
New York: New York State Science Service, Albany.
North Dakota: North Dakota, Geological Survey, Grand Forks.
Ohio: Oil and Gas Section, Department of Natural Resources, Columbus.
Tennessee: Division of Geology, Department of Conservation, Nashville.
Virginia: Geological Survey Division, Department of Conservation and Development, Charlottesville.
West Virginia: Geological and Economic Survey, Morgantown.

Grateful acknowledgment is made to the American Iron and Steel Institute, New York City; the Anthracite Institute, Wilkes-Barre, Pa.; the Association of American Railroads, Washington, D.C.; the Maher Coal Bureau, St. Paul, Minn.; the Ore and Coal Exchange, Cleveland, Ohio; the National Association of Packaged Fuel Manufacturers, Topeka, Kans.; and the many other trade and industry associations that have provided data.

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PART I. GENERAL REVIEWS

Review of the Mineral-Fuel Industries in 1958

By William A. Vogley and T. W. Hunter

Contents

GENERAL SUMMARY

RECESSION in the domestic economy and a severe decline in demand for coal exports were the major factors that acted upon the mineral-fuels industry in 1958. Although the economy was rising out of the lows of the second quarter by yearend, production and consumption of the mineral fuels were well below 1957 levels for the year as a whole. The total production of energy decreased almost 6.5 percent, although the total consumption of energy fell only 1 percent.

Contributing to the relatively large drop in energy production was the 35-percent decline in coal exports, the substantial decreases in yearend stocks of the major mineral fuels, and the increase in imports of petroleum products. Mineral-fuel prices declined generally during 1958, so the value of mineral-fuel production declined even further than physical production—8.8 percent as compared with 8.4 percent.

Employment in all fuel mining averaged 11 percent below 1957 but had begun to increase during the last quarter of the year. Average hourly earnings were up slightly, but declines in weekly hours reduced weekly earnings by 2 percent. Internal freight rates fell slightly, and ocean freight rates continued to decline from the Suez crisis highs. The index of major input expenses decreased for anthracite and bituminous coal but rose slightly for petroleum. The relative labor cost per dollar of product declined to 10-year lows in the anthracite and bitumious-coal mining industries.

Export markets for coal fell drastically during the year as a result of heavy overstocking abroad in 1956–57, inroads from competitive fuels in European markets, and import restrictions applied by West Germany. Petroleum imports were under voluntary import control but increased substantially. The United States, in value terms, became a net importer of mineral fuels in 1958.

Seven projects had been completed by the end of 1958 under the anthracite mine-water-control program. One was a pump installation, the other six surface drainage improvements estimated to prevent more than 1 billion gallons of water from entering mines each year.

DOMESTIC PRODUCTION

Changes in the domestic production of fuels and energy may be measured in several ways. Table 1 summarizes the total energy production from mineral fuels and waterpower in the United States in terms of British-thermal-unit (B.t.u.) content of the various sources (see also figs. 1 and 2). The values of mineral-fuel production are summarized in table 2; and the actual physical volume of production, in the usual physical units used for each commodity, with value, are given in table 3. Finally, indexes of physical volume of production, weighted by values, are listed in tables 4 and 5. Since these measures are directed to different aspects of the fuels industries, it is not surprising that these measures sometimes move disparately. Such was the case in 1958. Total energy production, measured in British thermal units, was 6.5 percent lower than in 1957. The decline, excluding waterpower, was 7.1 percent. The actual physical quantities of production showed six increases and five decreases. The value of mineral-fuel production declined by $1.1 billion, an 8.8-percent fall. The Bureau of Mines index of physical voume of mineral-fuel

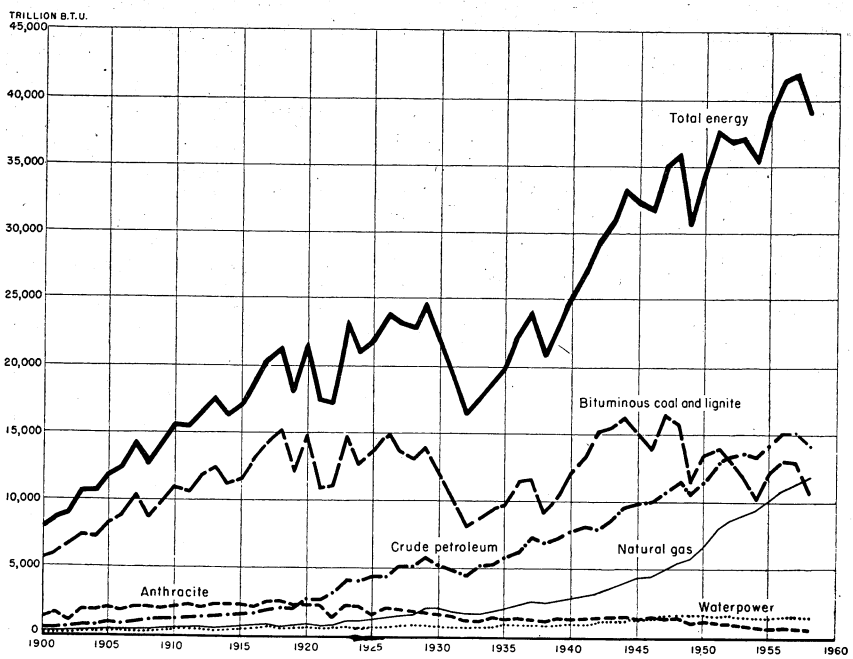

FIGURE 1.—Production of mineral-energy fuels and energy from waterpower in continental United States, 1900–58.

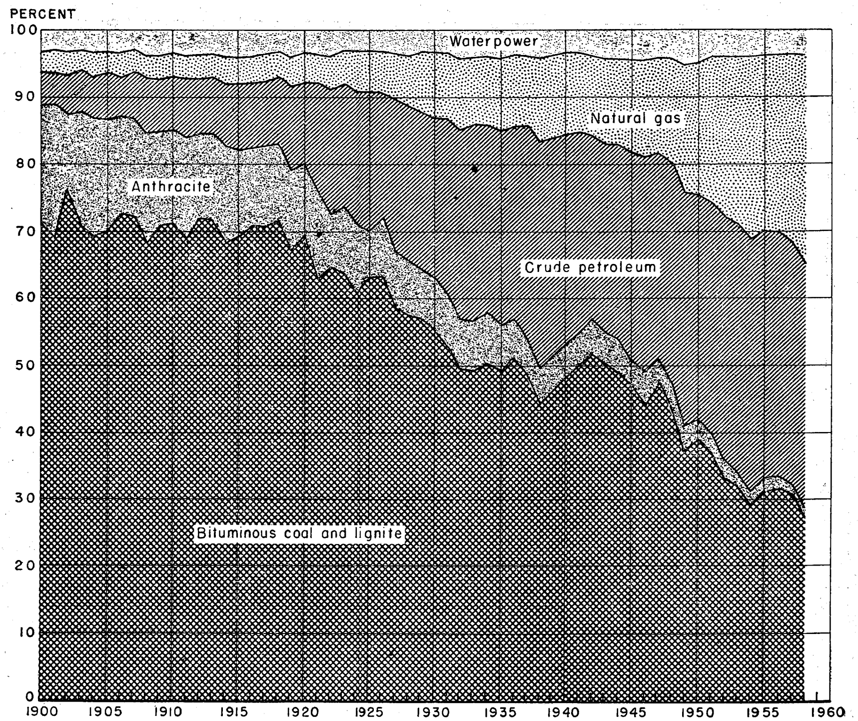

FIGURE 2.—Percentage of total production of British thermal units equivalent of mineral-energy fuels and energy from waterpower in continental United States, 1900–58.

production dropped by 10.1 points, an 8.4-percent decline, very similar to the 8.6-percent fall in the Federal Reserve Board index.

The major difference between the Bureau of Mines index of physical volume of production and the series of production in British thermal units is in the weighting system employed. The index uses shifting value weights, while the B.t.u. series uses fixed energy-conversion factors. There is a difference in coverage in that the index excludes liquefied petroleum gases and waterpower. The movements of the two series since 1900 are compared in figure 3. The B.t.u. series was adjusted to exclude waterpower and converted to index form, 1947–49 as 100. Although the series agree quite closely with respect to year-by-year changes, the magnitude of change over the 58-year period is markedly different when measured by each series. As would be expected, these differences are greatest in the total fuels index, for it is this index that is most affected by differences in weighting.

Total Energy.—Total production of mineral-energy fuels and energy from waterpower in the United States in 1958—39,131 trillion B.t.u.—declined for the first time since 1954. As indicated in table 2 and figure 1, all fuels declined except natural gas; energy from waterpower also increased. Bituminous coal and lignite declined by 16.7 percent, anthracite by 16.4 percent, and crude petroleum by 6.4 percent.

TABLE 1.—Production of mineral energy fuels and energy from waterpower in trillion British thermal units and percentage contributed by each in continental United States [1]

Year	Bituminous coal and lignite			Anthracite	Crude petroleum	Natural gas wet	Waterpower	Grand total	Percentage					
	Continental United States	Alaska	Total United States						Bituminous coal and lignite	Anthracite	Crude petroleum	Natural gas wet	Waterpower	Total
1900	5,563		5,563	1,457	369	254	250	7,893	70.5	18.4	4.7	3.2	3.2	100.0
1901	5,917		5,917	1,714	402	283	264	8,580	68.9	20.0	4.7	3.3	3.1	100.0
1902	6,818		6,818	1,051	515	301	289	8,974	76.0	11.7	5.7	3.4	3.2	100.0
1903	7,408		7,408	1,895	583	319	321	10,526	70.4	18.0	5.5	3.0	3.1	100.0
1904	7,301		7,301	1,858	679	333	354	10,525	69.4	17.6	6.4	3.2	3.4	100.0
1905	8,255		8,255	1,973	781	377	386	11,772	70.1	16.8	6.6	3.2	3.3	100.0
1906	8,983		8,983	1,811	734	418	414	12,360	72.7	14.7	5.9	3.4	3.3	100.0
1907	10,343		10,343	2,174	963	437	441	14,358	72.0	15.1	6.7	3.1	3.1	100.0
1908	8,713		8,713	2,115	1,035	432	476	12,771	68.2	16.6	8.1	3.4	3.7	100.0
1909	9,949		9,949	2,059	1,062	517	513	14,100	70.6	14.6	7.5	3.7	3.6	100.0
1910	10,928		10,928	2,146	1,215	547	539	15,375	71.1	14.0	7.9	3.5	3.5	100.0
1911	10,635		10,635	2,298	1,279	551	565	15,328	69.4	15.0	8.3	3.6	3.7	100.0
1912	11,793		11,793	2,143	1,293	604	585	16,418	71.8	13.0	7.9	3.7	3.6	100.0
1913	12,535		12,535	2,325	1,441	626	609	17,536	71.5	13.2	8.2	3.6	3.5	100.0
1914	11,075		11,075	2,307	1,541	636	636	16,195	68.4	14.3	9.5	3.9	3.9	100.0
1915	11,597		11,597	2,260	1,630	676	659	16,822	69.0	13.4	9.7	4.0	3.9	100.0
1916	13,166		13,166	2,224	1,744	810	681	18,625	70.7	11.9	9.4	4.3	3.7	100.0
1917	14,456	1	14,457	2,530	1,945	855	700	20,487	70.6	12.3	9.5	4.2	3.4	100.0
1918	15,178	2	15,180	2,510	2,064	775	701	21,230	71.5	11.8	9.7	3.7	3.3	100.0
1919	12,204	2	12,206	2,238	2,195	802	718	18,159	67.2	12.3	12.1	4.4	4.0	100.0
1920	14,897	2	14,899	2,276	2,569	883	738	21,365	69.7	10.7	12.0	4.1	3.5	100.0
1921	10,895	2	10,897	2,298	2,739	732	620	17,286	63.0	13.3	15.9	4.2	3.6	100.0
1922	11,061	2	11,063	1,389	3,234	843	643	17,172	64.5	8.1	18.8	4.9	3.7	100.0
1923	14,788	4	14,792	2,371	4,248	1,113	685	23,209	63.7	10.2	18.3	4.8	3.0	100.0
1924	12,670	2	12,672	2,233	4,141	1,263	648	20,957	60.5	10.6	19.8	6.0	3.1	100.0
1925	13,623	2	13,625	1,570	4,430	1,314	668	21,607	63.1	7.2	20.5	6.1	3.1	100.0
1926	15,019	1	15,020	2,145	4,471	1,452	728	23,816	63.1	9.0	18.8	6.1	3.0	100.0
1927	13,563	2	13,565	2,034	5,227	1,598	776	23,200	58.5	8.8	22.5	6.9	3.3	100.0
1928	13,116	4	13,120	1,914	5,229	1,734	854	22,851	57.4	8.4	22.9	7.6	3.7	100.0
1929	14,014	3	14,017	1,875	5,842	2,118	816	24,668	56.8	7.6	23.7	8.6	3.3	100.0
1930	12,246	3	12,249	1,762	5,208	2,148	752	22,119	55.4	8.0	23.5	9.7	3.4	100.0
1931	10,008	3	10,011	1,515	4,936	1,869	668	18,999	52.7	8.0	26.0	9.8	3.5	100.0
1932	8,112	2	8,114	1,266	4,554	1,729	713	16,376	49.5	7.7	27.8	10.6	4.4	100.0
1933	8,739	2	8,741	1,258	5,253	1,733	711	17,696	49.4	7.1	29.7	9.8	4.0	100.0
1934	9,413	2	9,415	1,452	5,267	1,970	698	18,802	50.1	7.7	28.0	10.5	3.7	100.0

1935	9,753	3	9,756	1,325	5,780	2,136	806	19,803	49.2	6.7	29.2	10.8	4.1	100.0
1936	11,501	3	11,504	1,386	6,378	2,411	812	22,491	51.2	6.1	28.4	10.7	3.6	100.0
1937	11,669	4	11,673	1,317	7,419	2,684	871	23,964	48.7	5.5	31.0	11.2	3.6	100.0
1938	9,128	4	9,132	1,171	7,043	2,565	866	20,777	44.0	5.6	33.9	12.3	4.2	100.0
1939	10,341	4	10,345	1,308	7,337	2,763	838	22,591	45.8	5.8	32.5	12.2	3.7	100.0
1940	12,068	4	12,072	1,308	7,849	2,979	880	25,088	48.1	5.2	31.3	11.9	3.5	100.0
1941	13,464	7	13,471	1,432	8,133	3,162	934	27,132	49.6	5.3	30.0	11.7	3.4	100.0
1942	15,260	7	15,267	1,532	8,043	3,436	1,136	29,414	51.9	5.2	27.3	11.7	3.9	100.0
1943	15,455	8	15,463	1,540	8,733	3,839	1,304	30,879	50.1	5.0	28.3	12.4	4.2	100.0
1944	16,224	9	16,233	1,618	9,732	4,176	1,344	33,103	49.0	4.9	29.4	12.6	4.1	100.0
1945	15,126	8	15,134	1,395	9,939	4,423	1,442	32,333	46.8	4.3	30.7	13.7	4.5	100.0
1946	13,979	10	13,989	1,537	10,057	4,550	1,406	31,539	44.3	4.9	31.9	14.4	4.5	100.0
1947	16,513	9	16,522	1,453	10,771	5,012	1,426	35,184	47.0	4.1	30.6	14.2	4.1	100.0
1948	15,697	10	15,707	1,451	11,717	5,615	1,481	35,971	43.7	4.0	32.6	15.6	4.1	100.0
1949	11,461	11	11,472	1,085	10,683	5,911	1,539	30,690	37.4	3.5	34.8	19.3	5.0	100.0
1950	13,517	10	13,527	1,120	11,449	6,841	1,573	34,510	39.2	3.2	33.2	19.8	4.6	100.0
1951	13,969	13	13,982	1,084	13,037	8,106	1,559	37,768	37.0	2.9	34.5	21.5	4.1	100.0
1952	12,213	18	12,231	1,031	13,282	8,705	1,581	36,830	33.2	2.8	36.1	23.6	4.3	100.0
1953	11,958	23	11,981	786	13,671	9,116	1,522	37,076	32.3	2.1	36.9	24.6	4.1	100.0
1954	10,245	17	10,262	739	13,427	9,488	1,449	35,365	29.0	2.1	38.0	26.8	4.1	100.0
1955	12,157	17	12,174	665	14,410	10,204	1,447	38,900	31.3	1.7	37.1	26.2	3.7	100.0
1956	13,104	19	13,123	734	15,181	10,930	1,542	41,510	31.6	1.8	36.6	26.3	3.7	100.0
1957	12,887	22	12,909	644	15,178	11,571	1,524	41,826	30.9	1.5	36.3	27.7	3.6	100.0
1958	10,734	20	10,754	538	[2] 14,203	11,943	1,693	[2] 39,131	27.5	1.4	36.3	30.5	4.3	100.0

[1] The unit heat values employed are: Anthracite, 12,700 B.t.u. per pound; bituminous coal and lignite, 13,100 B.t.u. per pound; petroleum, 5,800,000 B.t.u. per barrel; natural gas, total production x 1,075 B.t.u. minus repressuring vent and waste gas x 1,035. Waterpower includes installations owned by manufacturing plants and mines, as well as Government and privately owned public utilities. The fuel equivalent of waterpower is calculated from the kilowatt-hours of power produced wherever available, as it is true of all public-utility plants since 1919. Otherwise, the fuel equivalent is calculated from the reported horsepower of installed water wheels, assuming a capacity factor of 20 percent for factories and mines and 40 percent for public utilities.

[2] Preliminary.

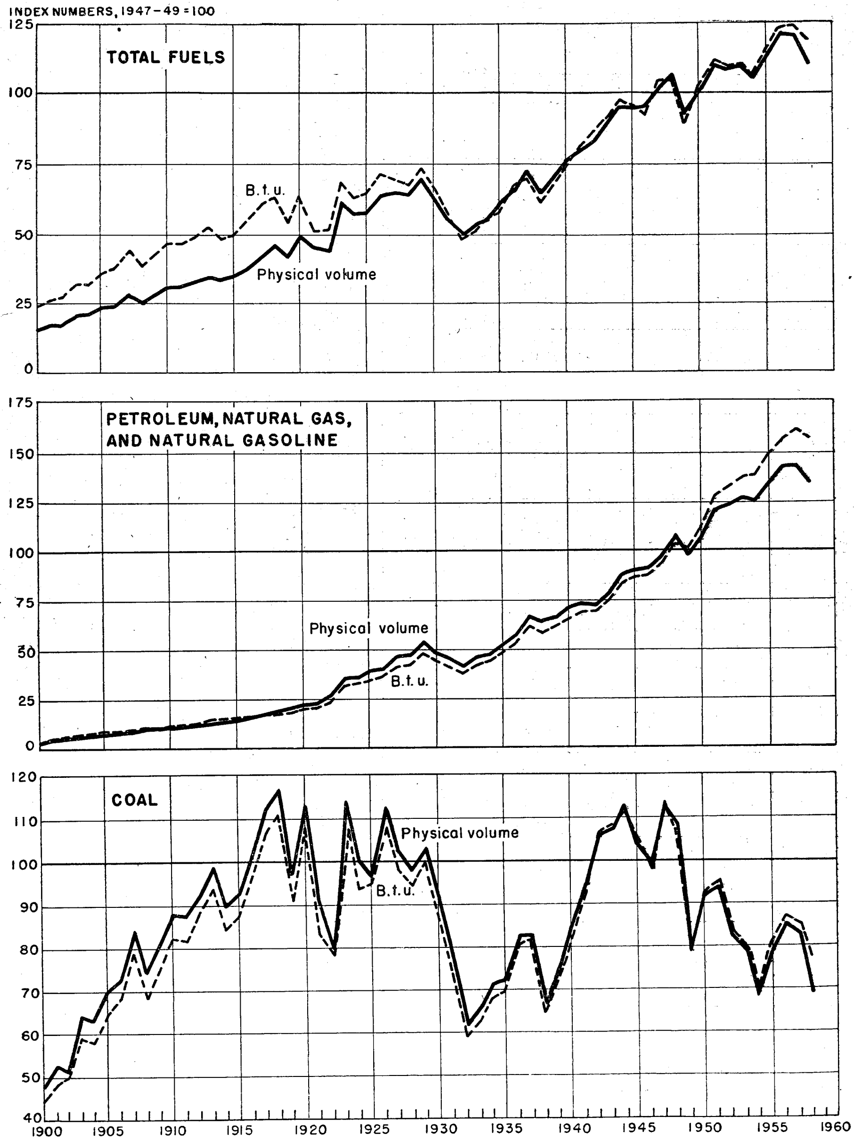

FIGURE 3.—Comparison of indexes of production based upon value weights and British-thermal-unit weights, 1900–58.

Value of Production.—Mineral-fuel production decreased in value in 1958. The value decrease was almost entirely due to production declines, although natural gas, which represents over 10 percent of total value, showed an increase in net value despite a fall in volume.

TABLE 2.—Value of mineral production in continental United States, 1925–58, by mineral groups [1]

(Millions)

Year	Mineral fuels	Nonmetallic minerals (except fuels)	Metals	Total
1925	$2,910	$1,187	$715	$4,812
1926	3,371	1,219	721	5,311
1927	2,875	1,201	622	4,698
1928	2,666	1,163	655	4,484
1929	2,940	1,166	802	4,908
1930	2,500	973	507	3,980
1931	1,620	671	287	2,578
1932	1,460	412	128	2,000
1933	1,413	432	205	2,050
1934	1,947	520	277	2,744
1935	2,013	564	365	2,942
1936	2,405	685	516	3,606
1937	2,798	711	756	4,265
1938	2,436	622	460	3,518
1939	2,423	754	631	3,808
1940	2,662	784	752	4,198
1941	3,228	989	890	5,107
1942	3,568	1,056	999	5,623
1943	4,028	916	987	5,931
1944	4,574	836	900	6,310
1945	4,569	888	774	6,231
1946	5,090	1,243	729	7,062
1947	7,188	1,338	1,084	9,610
1948	9,502	1,552	1,219	12,273
1949	7,920	1,559	1,101	10,580
1950	8,689	1,822	1,351	11,862
1951	9,779	2,079	1,671	13,529
1952	9,616	2,163	1,617	13,396
1953 [2]	10,257	2,350	1,811	14,418
1954 [2]	9,919	2,630	1,518	14,067
1955 [2 3]	10,780	2,957	2,055	15,792
1956 [2 3]	11,741	3,266	2,358	17,365
1957 [2 3]	12,709	3,267	2,137	18,113
1958 [2 3]	11,588	3,341	1,597	16,526

[1] Data for 1925–46 are not strictly comparable with those for subsequent years, since for the earlier years the value of heavy clay products has not been replaced by the value of raw clays used for such products.
[2] Includes Alaska and Hawaii.
[3] Revised.

Domestic Production.—Production of the import mineral fuels declined in 1958. Production increases occurred in bituminous limestone and sandstone, gilsonite, carbon dioxide, helium, LP-gases, and peat. The decrease in coal—16.7 percent—was greater than the decline in consumption because of decreased overseas exports, occasioned to a considerable extent by the recession in Europe and increased barriers to U.S. coal.

Indexes of Physical Production.—The Bureau of Mines index of the physical volume of mineral production in the United States is a comprehensive one that uses shifting weights to reflect the changing patterns of production and consumption as the economy grows and changes. The components of the fuels group are published here for the first time back to 1880. All other groups for 1880–1956 were published in the Minerals Yearbook 1956, volume I, pages 2–5. This index reflects the recession of the economy in 1958. Within the fuels group, coal fell by 13.9 points; petroleum, natural gas, and natural gasoline fell by 7.8 points.

The Federal Reserve Board indexes of production exhibit behavior parallel with the Bureau of Mines index but are available monthly. These indexes, seasonally adjusted, indicate that the slump in production, which began in mid-1957 for coal and in October for crude oil and natural gas, was reversed in May and April 1958, respectively. At yearend the indexes were still below the 1957 average.

TABLE 3.—Mineral-fuels production in the United States [1]

Mineral	1955		1956	
	Short tons (unless otherwise stated)	Value (thousands)	Short tons (unless otherwise stated)	Value (thousands)
Asphalt and related bitumens (native):				
Bituminous limestone and sandstone	1,427,207	$4,111	1,458,533	$4,114
Gilsonite	82,822	3,117	89,003	3,822
Carbon dioxide, natural (estimated) thousand cubic feet	702,417	234	713,030	235
Coal:				
Bituminous and lignite [2] thousand short tons	464,633	2,092,383	500,874	2,412,004
Pennsylvania anthracite do	26,205	206,097	28,900	236,785
Helium thousand cubic feet	235,868	3,881	266,937	4,413
Natural gas million cubic feet	9,405,351	978,357	10,081,923	1,083,812
Natural-gas liquids:				
Natural gasoline and cycle products thousand gallons	5,844,904	423,775	5,807,100	431,958
LP-gases do	5,972,698	195,231	6,487,413	265,185
Peat	273,669	2,283	272,972	2,320
Petroleum (crude) thousand 42-gallon barrels	2,484,428	6,870,380	2,617,283	7,296,760
Total mineral fuels		10,780,000		11,741,000
Total all other minerals		[4] 5,012,000		[4] 5,624,000
Grand total, mineral production		[4] 15,792,000		[4] 17,365,000

Mineral	1957		1958	
	Short tons (unless otherwise stated)	Value (thousands)	Short tons (unless otherwise stated)	Value (thousands)
Asphalt and related bitumens (native):				
Bituminous limestone and sandstone	1,168,507	$3,221	1,326,493	$3,343
Gilsonite	207,704	4,259	317,280	4,864
Carbon dioxide, natural (estimated) thousand cubic feet	704,276	139	722,615	102
Coal:				
Bituminous and lignite [2] thousand short tons	492,704	2,504,406	410,446	1,996,281
Pennsylvania anthracite do	25,338	227,754	21,171	187,898
Helium thousand cubic feet	310,365	5,112	352,134	5,741
Natural gas milion cubic feet	10,680,258	1,201,759	[3] 11,030,298	[3] 1,317,492
Natural-gas liquids:				
Natural gasoline and cycle products thousand gallons	5,734,307	415,791	5,596,458	393,139
LP-gases do	6,655,282	263,665	6,783,000	296,571
Peat	316,217	3,458	327,813	3,446
Petroleum (crude) thousand 42-gallon barrels	2,616,901	8,079,259	[3] 2,448,866	[3] 7,379,071
Total mineral fuels		12,709,000		11,588,000
Total all other minerals		[4] 5,404,000		4,938,000
Grand total, mineral production		[4] 18,113,000		16,526,000

[1] Includes Alaska and Hawaii.
[2] Includes small quantity of anthracite mined in States other than Pennsylvania.
[3] Preliminary figure.
[4] Revised figure.

TABLE 4.—Indexes of the physical volume of mineral production in the United States, 1880–1958, by groups and subgroups [1]

(1947–49=100)

Year	All minerals	Fuels: Total	Fuels: Coal	Fuels: Petroleum, natural gas and natural gasoline [2]	Metals	Nonmetals
1880	6.9	4.5	13.4	1.1	16.4	8.1
1881	7.7	5.2	16.0	1.2	17.2	9.1
1882	8.7	6.2	19.0	1.3	18.4	9.4
1883	8.9	6.6	21.2	1.0	18.6	9.5
1884	9.3	6.8	21.8	1.2	18.9	10.1
1885	9.4	6.7	20.8	1.3	19.3	10.8
1886	10.5	7.9	23.1	2.1	21.1	11.2
1887	11.7	9.1	26.0	2.5	22.5	12.2
1888	12.3	9.5	26.1	3.1	24.4	12.4
1889	13.3	9.9	28.2	2.9	26.1	14.8
1890	14.2	10.5	29.5	3.3	27.9	16.0
1891	14.5	10.9	30.5	3.3	29.0	15.9
1892	15.3	11.1	32.3	3.0	31.7	16.7
1893	14.5	11.2	32.9	2.9	29.1	14.4
1894	14.0	10.7	31.0	2.9	28.8	13.8
1895	15.5	11.9	35.0	3.0	33.5	13.8
1896	16.0	12.0	34.5	3.3	36.8	14.0
1897	16.7	12.3	35.7	3.3	38.7	15.2
1898	17.6	13.1	38.9	3.3	41.7	15.2
1899	19.6	14.8	45.2	3.5	45.7	18.5
1900	20.6	15.4	47.7	3.8	49.8	18.7
1901	21.9	16.9	52.6	4.1	49.9	23.0
1902	22.5	16.7	51.4	4.7	54.1	25.5
1903	25.7	20.3	63.8	5.2	53.8	26.1
1904	25.8	20.5	62.8	5.8	55.1	28.5
1905	29.0	22.8	69.6	6.6	64.9	30.1
1906	30.3	23.4	72.2	6.6	69.8	31.3
1907	33.2	27.5	84.1	8.0	68.3	32.1
1908	30.8	25.2	73.9	8.4	63.6	30.3
1909	34.8	27.5	80.5	9.0	77.5	35.2
1910	36.9	30.0	87.2	10.1	78.7	36.2
1911	36.5	30.3	87.2	10.4	74.7	35.8
1912	39.2	31.9	92.3	10.9	83.1	38.7
1913	41.5	34.3	98.6	11.9	86.5	39.3
1914	38.7	32.6	89.8	12.6	76.1	37.3
1915	41.8	33.9	92.4	13.4	93.9	36.5
1916	47.4	37.4	101.2	15.0	116.0	38.3
1917	49.8	41.6	112.1	16.9	112.2	36.7
1918	50.2	45.0	116.7	17.5	104.7	30.6
1919	43.9	41.2	96.7	18.7	78.7	31.2
1920	50.8	48.7	112.8	21.6	82.7	36.2
1921	42.9	44.6	91.2	22.8	43.3	31.1
1922	45.5	43.8	80.0	26.8	65.5	38.4
1923	62.1	60.7	113.7	35.7	89.7	48.4
1924	58.4	56.4	100.2	35.6	85.3	48.5
1925	60.5	57.2	96.6	38.4	93.1	53.4
1926	65.7	63.0	112.0	39.7	96.7	56.6
1927	66.8	64.6	102.5	46.3	91.2	59.6
1928	66.6	63.9	98.4	47.1	93.5	60.0
1929	72.5	69.9	102.9	53.7	103.0	62.9
1930	64.4	63.2	91.4	48.8	80.3	56.7
1931	54.3	55.7	75.7	45.1	54.6	44.2
1932	43.8	48.5	61.8	41.3	31.0	30.3
1933	48.2	53.1	65.1	46.4	35.4	32.0
1934	52.0	55.8	71.4	47.1	44.9	36.8
1935	55.9	58.9	71.7	51.6	57.3	38.5
1936	66.2	66.1	82.4	57.0	78.7	54.5
1937	73.8	72.2	82.5	66.0	102.8	58.0
1938	63.8	64.6	66.2	63.0	70.2	52.5
1939	70.8	69.3	74.8	65.7	90.2	61.1

See footnotes at end of table.

TABLE 4.—Indexes of the physical volume of mineral production in the United States, 1880–1958, by groups and subgroups—Continued

(1947–49=100)

Year	All minerals	Fuels			Metals	Nonmetals
		Total	Coal	Petroleum, natural gas and natural gasoline [2]		
1940	78.4	75.6	84.6	70.1	110.0	66.2
1941	86.1	80.5	94.1	72.6	124.8	81.3
1942	90.8	84.2	105.5	72.3	135.3	86.2
1943	92.5	88.9	106.9	78.3	136.4	75.9
1944	95.4	96.3	112.5	86.8	117.7	69.9
1945	92.0	94.8	103.7	89.3	95.2	70.2
1946	91.0	93.5	98.7	90.4	78.9	83.6
1947	101.9	102.8	112.8	96.8	101.6	95.6
1948	105.9	106.5	108.0	105.5	104.4	103.4
1949	92.1	90.7	79.2	97.6	94.1	101.0
1950	102.6	100.1	91.7	105.1	108.8	116.1
1951	112.6	110.1	93.6	119.9	117.2	127.3
1952	110.9	107.8	82.7	122.8	112.7	132.1
1953	112.6	108.8	78.8	126.6	119.1	135.2
1954	107.9	104.0	68.1	125.4	97.6	146.4
1955	119.0	113.8	78.7	134.6	115.0	161.0
1956	125.8	120.5	85.0	141.7	[3] 117.1	[3] 172.5
1957	126.1	120.3	82.9	142.5	118.8	175.7
1958 [4]	115.5	110.2	69.0	134.7	91.1	176.0

[1] For general description of index, see Minerals Yearbook 1956, vol. I, Review of the Mineral Industries chapter, pp. 2–5. In that and subsequent nonfuels review chapters separate indexes are shown for various components of the metals and nonmetals indexes. Indexes for components of the fuels index were published for the first time in the 1957 Review of the Mineral-Fuel Industries chapter, carried back to 1925. Such components are here extended back to 1880, the initial year covered in the overall index. Each fuels component series was constructed by linking 5 overlapping segments of indexes computed with 5 different sets of weights: 1889–91, 1909–13, 1923–25, 1935–39, and 1947–49. The splicing periods for the successive supplements were 1899–1901, 1918–20, 1930–32, and 1943–45. Changes in the relative importance of the various fuels are indicated by the following tabulation, which shows, for each of the weight periods, the ratio of the average value aggregate of each fuel to the total for all minerals included in the index:

	Percent of total				
	1889–91	1909–13	1923–25	1935–39 [1]	1947–49
Fuels:					
Coal:					
Pennsylvania anthracite	14.55	11.71	11.01	6.19	4.09
Bituminous and lignite	24.33	32.82	30.50	22.89	25.66
Total, coal	38.88	44.53	41.51	29.08	29.75
Petroleum, etc.:					
Natural gas	4.66	5.05	2.80	3.72	3.15
Natural gasoline	---------	.06	2.41	2.70	2.12
Petroleum (crude)	6.61	10.78	27.61	38.98	44.63
Total, other	11.27	15.89	32.82	45.40	49.90
Total, fuels	50.15	60.42	74.33	74.48	79.65
Metals	29.78	26.87	13.87	13.26	9.57
Nonmetals	20.07	12.71	11.80	12.26	10.78
Total, all minerals	100.00	100.00	100.00	100.00	100.00

[1] Reflects revision of Fuels and All Minerals indexes to allow for a new natural-gas production series.

[2] Does not cover isopentane, LP-gases, and other natural-gas liquids.
[3] Revised.
[4] Preliminary figures.

TABLE 5.—Indexes of industrial production, mineral fuels, seasonally adjusted [1]

(1947–49=100)

Year and month	Total mineral fuels	Coal	Crude oil and natural gas	Total industrial production
1954	113	67	134	125
1955	123	80	143	139
1956	129	85	150	143
1957	128	83	150	143
1958	117	68	141	134
January	120	69	144	133
February	118	70	141	130
March	111	70	130	128
April	108	63	129	126
May	108	62	130	128
June	112	66	134	132
July	116	65	141	134
August	121	68	146	136
September	123	70	149	137
October	123	69	148	138
November	123	72	147	141
December	124	73	148	142

[1] Federal Reserve Bulletin, monthly issues.

CONSUMPTION

Consumption of mineral fuels is measured in both B.t.u. content and in the physical units usual for the commodity concerned. Both measures indicate declines for all mineral fuels except natural gas in 1958.

Calculated Energy Consumption.—Total energy consumption expressed in British thermal units dropped by 1 percent in 1958. Increases in natural gas and waterpower offset somewhat declines in other mineral fuels, the largest decline being in bituminous coal and lignite. Consumption of energy is historically closely correlated with changes in gross national product, and the decline in 1958 reflects the decrease in gross national product during the year. The share of total energy consumption furnished by coal decreased, reflecting continued losses to competing fuels, while the share contributed by natural gas and natural gas liquids reached an alltime high.

Consumption Patterns.—All mineral fuels except natural gas showed declines in apparent consumption in 1958. Anthracite consumption was down 8.7 percent and bituminous coal somewhat more—11.4 percent. Crude oil runs to stills were 4 percent lower than in 1957, but natural gas consumption increased by almost 5 percent. Coke consumption decreased sharply in line with the recession in the economy, but domestic demand for all oils increased slightly.

All groups (except steel and rolling mills) showed decreased consumption of bituminous coal and lignite. The very low figure for Class I railroads, down 56 percent from 1957 and only 4 percent of the total of 10 years ago, indicates virtual dieselization.

TABLE 6.—Calculated consumption of energy fuels and energy from waterpower in trillion British thermal units and percentage contributed by each in continental United States [1]

Year	Bituminous coal and lignite	Anthracite	Crude oil	Petroleum products net: E, exported; I, imported	Natural gas dry	Natural gas liquids	Waterpower	Grand total	Percentage: Bituminous coal and lignite	Percentage: Anthracite	Percentage: Crude oil	Percentage: Petroleum products net: E, exported; I, imported	Percentage: Natural gas dry	Percentage: Natural gas liquids	Percentage: Waterpower	Percentage: Total
1920	13,325	2,179	3,027	E 393	827	42	775	19,782	67.4	11.0	15.3	E 2.0	4.2	0.2	3.9	100.0
1921	10,266	2,082	3,016	E 342	682	50	656	16,410	62.6	12.7	18.4	E 2.1	4.1	.3	4.0	100.0
1922	11,185	1,443	3,390	E 319	785	56	675	17,215	65.0	8.4	19.7	E 1.9	4.6	.3	3.9	100.0
1923	13,598	2,208	4,419	E 389	1,032	90	727	21,685	62.7	10.2	20.4	E 1.8	4.8	.4	3.3	100.0
1924	12,681	2,050	4,228	E 464	1,170	103	685	20,453	62.0	10.0	20.7	E 2.3	5.7	.5	3.4	100.0
1925	13,079	1,627	4,641	E 485	1,212	124	701	20,899	62.6	7.8	22.2	E 2.3	5.8	.6	3.3	100.0
1926	13,954	1,961	4,876	E 545	1,335	149	765	22,495	62.0	8.7	21.7	E 2.4	5.9	.7	3.4	100.0
1927	13,095	1,897	5,027	E 650	1,465	179	815	21,828	60.0	8.7	23.0	E 3.0	6.7	.8	3.8	100.0
1928	13,069	1,871	5,474	E 711	1,588	200	890	22,381	58.4	8.4	24.4	E 3.2	7.1	.9	4.0	100.0
1929	13,612	1,815	5,894	E 600	1,942	246	847	23,756	57.3	7.6	24.8	E 2.5	8.2	1.0	3.6	100.0
1930	11,921	1,718	6,148	E 496	1,969	243	785	22,288	53.5	7.7	27.6	E 2.2	8.8	1.1	3.5	100.0
1931	9,743	1,484	5,304	E 339	1,715	200	692	18,799	51.8	7.9	28.2	E 1.8	9.1	1.1	3.7	100.0
1932	8,041	1,283	4,830	E 240	1,594	158	726	16,392	49.1	7.8	29.5	E 1.5	9.7	1.0	4.4	100.0
1933	8,323	1,260	5,143	E 299	1,600	144	729	16,900	49.2	7.5	30.4	E 1.8	9.5	.9	4.3	100.0
1934	9,008	1,410	5,136	E 318	1,819	161	721	17,937	50.2	7.9	28.6	E 1.8	10.2	.9	4.0	100.0
1935	9,336	1,298	5,799	E 300	1,974	169	831	19,107	48.9	6.8	30.4	E 1.6	10.3	.9	4.3	100.0
1936	10,697	1,351	6,426	E 302	2,221	184	841	21,418	49.9	6.3	30.0	E 1.4	10.4	.9	3.9	100.0
1937	11,286	1,280	7,004	E 400	2,468	208	905	22,751	49.6	5.6	30.8	E 1.7	10.8	.9	4.0	100.0
1938	8,811	1,148	6,921	E 456	2,348	209	899	19,880	44.3	5.8	34.8	E 2.3	11.8	1.1	4.5	100.0
1939	9,854	1,262	7,327	E 486	2,539	221	872	21,589	45.6	5.9	33.9	E 2.2	11.8	1.0	4.0	100.0
1940	11,290	1,245	7,662	E 175	2,726	243	917	23,908	47.2	5.2	32.1	E .7	11.4	1.0	3.8	100.0
1941	12,893	1,338	8,343	E 139	2,851	364	975	26,625	48.4	5.0	31.3	E .5	10.7	1.4	3.7	100.0
1942	14,149	1,435	7,987	E 320	3,102	367	1,177	27,897	50.7	5.2	28.6	E 1.1	11.1	1.3	4.2	100.0
1943	15,557	1,450	8,538	E 310	3,481	379	1,347	30,442	51.1	4.8	28.1	E 1.0	11.4	1.2	4.4	100.0
1944	15,447	1,509	9,923	E 662	3,775	442	1,387	31,821	48.5	4.7	31.2	E 2.1	11.9	1.4	4.4	100.0
1945	14,661	1,311	10,199	E 580	3,973	491	1,486	31,541	46.5	4.2	32.3	E 1.8	12.6	1.5	4.7	100.0
1946	13,110	1,369	10,270	E 283	4,089	493	1,446	30,494	43.0	4.5	33.7	E .9	13.4	1.6	4.7	100.0
1947	14,302	1,224	11,065	E 262	4,518	564	1,459	32,870	43.5	3.7	33.7	E .8	13.8	1.7	4.4	100.0
1948	13,622	1,275	12,085	E 147	5,033	619	1,507	33,994	40.1	3.8	35.5	E .4	14.8	1.8	4.4	100.0
1949	11,673	958	11,402	I 57	5,289	660	1,565	31,604	36.9	3.0	36.1	I .2	16.7	2.1	5.0	100.0

1950	11,900	1,013	12,304	I 402	6,150	783	1,601	34,153	34.8	3.0	36.0	I 1.2	18.0	2.3	4.7	100.0
1951	12,285	940	13,867	I 107	7,248	874	1,592	36,913	33.3	2.5	37.6	I .3	19.6	2.4	4.3	100.0
1952	10,971	897	14,248	I 132	7,760	954	1,614	36,576	30.0	2.4	39.0	I .4	21.2	2.6	4.4	100.0
1953	11,182	711	14,912	I 180	8,156	1,006	1,550	37,697	29.7	1.9	39.5	I .5	21.6	2.7	4.1	100.0
1954	9,512	683	14,830	I 260	8,554	1,042	1,479	36,360	26.2	1.9	40.8	I .7	23.5	2.8	4.1	100.0
1955	11,104	599	15,956	I 372	9,232	1,196	1,497	39,956	27.8	1.5	39.9	I .9	23.1	3.0	3.8	100.0
1956	11,338	610	16,994	I 424	9,834	1,209	1,598	42,007	27.0	1.4	40.5	I 1.0	23.4	2.9	3.8	100.0
1957	10,838	528	16,960	I 368	10,416	1,242	1,538	41,920	25.8	1.3	40.5	I .9	24.8	3.0	3.7	100.0
1958	9,607	483	[2] 16,307	I 1,111	10,995	1,240	1,740	[2] 41,483	23.1	1.2	39.3	I 2.7	26.5	3.0	4.2	100.0

[1] The heat values employed are: Anthracite, 12,700 B.t.u. per pound; bituminous coal and lignite, 13,100 B.t.u. per pound; crude oil, 5,800,000 B.t.u. per barrel; weighted average British thermal units on petroleum products by using 5,248,000 gasoline, 5,670,000 kerosene, 5,825,000 distillate, 6,287,000 residual, 6,064,800 lubricants, 5,537,280 wax, 6,636,000 asphalt, and 5,796,000 miscellaneous; natural gas dry, 1,035 B.t.u. per cubic foot; natural gas liquid weighted average British thermal units based on production; natural gasoline 110,000 B.t.u. per gallon, and LP-gas 95,500 B.t.u. per gallon. Waterpower converted to coal equivalent at the prevailing rate of pounds of coal per kilowatt-hour each year at central electric stations.

[2] Preliminary.

TABLE 7.—Apparent consumption of mineral fuels and related products

Commodity	1957	1958	Change from 1957 (percent)
Fuels:			
Bituminous coal ... million net tons	413.7	366.7	−11.4
Crude petroleum, runs to stills ... million barrels	2,890.4	[1] 2,776.1	−4.0
Natural gas ... billion cubic feet	10,279.8	10,760.7	+4.7
Anthracite ... million net tons	20.8	19.0	−8.7
Products:			
All oils, domestic demand [2] ... million barrels	3,218.6	[1] 3,308.6	+2.8
Coke ... million net tons	74.4	52.6	−29.3
Petroleum asphalt ... do	16.2	17.5	+8.0

[1] Preliminary.
[2] Domestic demand will vary from consumption because of substantial secondary and consumers stocks not reported to the Bureau of Mines.

TABLE 8.—Consumption of bituminous coal and lignite in the United States, 1957–58, by major consumer groups

(Thousand net tons)

Year	Electric power utilities [1]	Class 1 railroads [2]	Coke plants	Steel and rolling mills	Cement mills	Other mining and manufacturing industries	Retail deliveries to other consumers	Bunker foreign and lake vessel [3]	Total
1957	157,398	8,401	108,020	6,938	8,633	87,202	35,712	1,364	413,668
1958	152,928	3,725	76,580	7,268	8,256	81,372	35,619	955	366,703

[1] Federal Power Commission.
[2] Association of American Railroads.
[3] U.S. Department of Commerce, Bureau of Census.

TABLE 9.—Sales of fuel oil and natural gas in the United States 1957–58, by major consumer groups

(Fuel oils—thousand barrels; natural gas—million cubic feet)

Year	Railroads	Vessels	Gas and electric power plants	Smelters, mines, and manufactures	Space heating and cooking	Military	Oil-company fuel	Miscellaneous	Total
Distillate fuel oil:									
1957	88,315	20,420	5,296	43,532	377,044	12,737	10,419	59,512	617,275
1958	83,719	18,768	5,382	[1] 470,610	(1)	13,412	7,815	53,853	653,559
Residual fuel oil:									
1957	6,953	123,651	[2] 76,577	166,885	81,412	28,962	50,153	9,984	[2] 544,577
1958	5,772	106,269	76,424	[1] 249,352	(1)	37,428	46,463	9,659	531,367
Natural gas:									
1957			[3] 1,338,079	4,611,272	3,276,185		2,158,530		10,045,987
1958			[3] 1,372,853	4,677,559	3,586,025		2,286,016		10,549,600

[1] Smelters, mines, and manufactures includes space heating and cooking in 1958.
[2] Revised.
[3] Memorandum entry, not additive; includes gas other than natural. Natural-gas component included under Smelters, mines, and manufactures.

Sales of fuel oil and natural gas by consumer groups showed changes in 1958, as compared with 1957, which reflected the changed business conditions. Declines occurred in groups related to transportation. Most significant is the continued increase of natural gas consumption for space heating and cooking.

The space-heating and household market furnishes the greater part of anthracite consumption in the United States. Use of anthracite for these purposes continued to decline in 1958, but colder weather slowed the rate of decline. Consumption for electric-power production, the largest industrial use of anthracite, decreased 17 percent in 1958 and represented 15 percent of total consumption in this country.

STOCKS

Physical Stocks.—The physical stocks of most major mineral fuels were lower at the end of 1958 than at the end of 1957. These decreases in stocks reflect drawing down of the inventory accumulation that occurred in 1957 and were an encouraging sign at yearend. The stocks, however, were still higher than those during the recession of 1953–54. When related to yearly consumption, stocks at the end of 1958 were for bituminous and lignite, 22 percent; anthracite, 2 percent; and crude petroleum, 9 percent.

TABLE 10.—Physical stocks of crude mineral fuels and products at end of year, 1954–58

(Producers stocks, unless otherwise indicated)

	1958	1957	1956	1955	1954
Coal and related products:					
Coal-bituminous and lignite [1] net tons	80,263,680	85,503,119	82,888,617	72,561,387	73,533,436
Coal-Pennsylvania anthracite [2] do	406,375	499,620	341,505	719,569	1,292,922
Coke do	3,823,364	3,148,776	2,334,441	1,700,771	2,948,840
Petroleum and related products:					
Carbon black thousand pounds	300,923	349,399	347,574	236,924	321,385
Crude petroleum and petroleum products thousand barrels	788,796	839,906	780,391	714,859	714,933
Crude petroleum do	262,730	281,813	266,014	265,610	258,385
Natural-gas liquids do	22,752	20,756	20,559	13,564	14,038
Gasoline do	186,790	196,776	187,271	165,433	155,400
Distillate fuel oil do	125,101	149,449	133,981	11,333	108,144
Residual fuel oil do	59,508	59,959	44,491	39,174	52,105
Petroleum asphalt do	9,757	10,463	9,150	7,768	7,175
Other refined products do	122,158	121,290	118,925	111,977	119,686
Natural gas [3] million cubic feet	83,081	191,396	136,470	67,934	102,106

[1] Stocks at industrial consumers and retail yards and on upper Lake docks.
[2] Producers stocks in ground storage.
[3] Net stores at end of year.

LABOR AND PRODUCTIVITY

Employment.—The Bureau of Mines publishes two sets of employment figures for bituminous-coal mines. One set (presented in the next chapter of this volume) is unadjusted, for lack of coverage, but is directly comparable to the reported injuries and is used for calculating injury rates. These data are adjusted for coverage, and the resulting adjusted data are published in the Bituminous Coal chapter and used for the productivity analyses therein. Employment figures for the anthracite industry represent full coverage for both productivity and injury analyses and are virtually identical. The U.S. Department of Labor, Bureau of Labor Statistics, publishes a third set of employment data, based upon payroll information. Bureau of Labor Statistics data are presented in table 11 to facilitate comparison with Bureau of Mines figures. The following indicates the order of difference between the Bureau of Labor Statistics data on total employment and the Bureau of Mines fully adjusted data:

(In thousands)

	Anthracite			Bituminous coal		
	BLS data [1]	Mines data [2]	Difference	BLS data [1]	Mines data [2]	Difference
1954	40.1	44.0	3.9	228.5	227.4	−1.1
1955	31.3	33.5	2.2	218.7	225.1	6.4
1956	29.3	31.5	2.2	228.6	228.2	−.4
1957	28.4	30.8	2.4	230.0	228.6	−1.4
1958	20.3	26.5	6.2	195.2	197.4	2.2

[1] All employees, average for year.
[2] Average men working daily.

In no instance during the last 5 years have Bureau of Labor Statistics data and Bureau of Mines data moved in opposite directions, but the indicated size of change has differed markedly in the two sources.

The data presented in table 11 does permit comparison with other industries. Such analysis substantiates the conclusion that the recession was relatively severe in coal as compared with petroleum and products of petroleum and coal.

The decrease in bituminous employment (average men working daily) occurred in spite of the drop in the number of days worked to 184 as compared with 203 in 1957. Anthracite also showed a drop in days worked to 183 as compared with 196 in 1957.

Productivity.—The productivity of labor continued to increase in bituminous-coal mining, and also rose in anthracite mining. The net tons per man per day reached 11.33 in bituminous-coal mining (an alltime high) and was 4.36 in anthracite mining (also an alltime record) as compared with 10.59 and 4.18, respectively, in 1957, and 6.26 and 2.81 in 1948, 10 years ago.

Hours and Earnings.—Average weekly earnings and average weekly hours decreased in coal mining, but average hourly earnings remained the same. The drop in weekly hours was reversed towards the end of the year as recovery from the general business recession occurred. Petroleum and natural gas production and the manufacturing industries shown in table 12 generally fared better than coal.

TABLE 11.—Total employment in the mineral-fuel industries in the continental United States by industries [1]

(Thousands)

Year and month	Mining				
	Total	Anthracite	Bituminous coal	Crude-petroleum and natural-gas production	Petroleum and natural-gas production, except contract services [2]
1949–53 (average)	691.3	67.8	350.0	273.5	(3)
1954	572.4	40.1	228.5	303.8	(3)
1955	567.1	31.3	218.7	317.1	189.0
1956	582.7	29.3	228.6	324.8	192.3
1957	584.6	28.4	230.0	326.2	193.8
1958:					
January	558.9	23.3	219.8	315.8	191.1
February	546.0	24.1	212.4	309.5	190.2
March	531.7	22.8	206.3	302.6	189.3
April	517.4	19.6	199.0	298.8	188.7
May	510.0	20.0	192.2	297.8	187.8
June	512.5	19.2	190.1	303.2	190.4
July	501.9	19.4	179.6	302.9	190.8
August	507.3	18.1	184.5	304.7	190.4
September	507.2	18.5	187.2	301.5	187.8
October	505.0	19.3	189.1	296.6	184.0
November	506.7	19.5	190.5	296.7	182.9
December	512.5	19.6	192.2	300.7	182.7
Year (average)	518.1	20.3	195.2	302.6	188.0

Year and month	Manufacturing		
	Total products of petroleum and coal	Petroleum refining	Coke, other petroleum and coal products
1949–53 (average)	249.0	196.7	53.5
1954	253.4	203.6	49.8
1955	252.8	201.3	51.5
1956	252.1	200.8	51.3
1957	249.5	199.1	50.4
1958:			
January	243.8	196.7	47.1
February	241.4	195.2	46.2
March	238.4	194.2	44.2
April	237.9	193.3	44.6
May	238.3	192.9	45.4
June	239.1	192.6	46.5
July	239.7	193.5	46.2
August	239.2	192.9	46.3
September	238.7	191.5	47.2
October	233.1	186.0	47.1
November	235.1	188.5	46.6
December	233.6	187.5	46.1
Year (average)	238.2	192.1	46.1

[1] U.S. Dept. of Labor, Bureau of Labor Statistics, latest revisions available August 1, 1959. Published currently in the Monthly Labor Review, table A-2. Data are for all employees; those for production and nonsupervisory workers also are available in this publication.
[2] Not included in total because data are also included with crude petroleum and natural gas production.
[3] Data not available.

TABLE 12.—Average hours and gross earnings of production and nonsupervisory workers in the mineral fuels and related industries in the United States [1]

Year and month	Mining											
	Total fuels [2]			Anthracite			Bituminous coal			Petroleum and natural gas production except contract services		
	Weekly earnings	Weekly hours	Hourly earnings	Weekly earnings	Weekly hours	Hourly earnings	Weekly earnings	Weekly hours	Hourly earnings	Weekly earnings	Weekly hours	Hourly earnings
1949-53 (average)	$75.25	35.4	$2.12	$65.44	30.5	$2.15	$74.96	34.3	$2.19	$80.24	40.7	$1.97
1954	84.04	35.2	2.40	73.68	30.7	2.40	80.85	32.6	2.48	91.94	40.5	2.27
1955	94.13	38.4	2.46	78.73	33.5	2.35	96.26	37.6	2.56	94.19	40.6	2.32
1956	102.51	38.8	2.65	78.96	32.9	2.40	106.22	37.8	2.81	101.68	41.0	2.48
1957	107.11	38.1	2.83	81.79	31.1	2.63	110.53	36.6	3.02	106.75	40.9	2.61
1958:												
January	105.37	36.9	2.86	81.74	30.5	2.68	103.36	34.0	3.04	110.56	41.1	2.69
February	103.65	36.4	2.86	73.70	27.5	2.68	100.62	33.1	3.04	110.83	41.2	2.69
March	101.33	35.6	2.86	66.25	25.0	2.65	96.37	31.7	3.04	110.97	41.1	2.70
April	97.50	34.5	2.85	58.65	22.3	2.63	90.60	30.0	3.02	108.81	40.6	2.68
May	98.47	35.2	2.81	67.60	25.8	2.62	93.30	31.1	3.00	107.06	40.4	2.65
June	107.13	37.7	2.86	80.96	30.9	2.62	106.30	35.2	3.02	110.57	40.8	2.71
July	103.30	36.6	2.84	79.77	30.8	2.59	97.85	32.4	3.02	110.83	41.2	2.69
August	104.84	37.3	2.82	74.59	28.8	2.59	105.90	35.3	3.00	106.67	40.1	2.66
September	106.96	37.8	2.83	80.08	30.8	2.60	106.55	35.4	3.01	110.02	40.9	2.69
October	106.19	37.7	2.83	77.52	29.7	2.61	107.76	35.8	3.01	107.60	40.3	2.67
November	108.06	37.8	2.87	78.04	29.9	2.61	107.31	35.3	3.04	112.06	41.2	2.72
December	111.32	39.1	2.85	93.19	35.3	2.64	115.82	38.1	3.04	108.54	40.5	2.68
Total 1958	104.51	36.9	2.85	76.01	28.9	2.63	102.65	34.0	3.02	109.54	40.8	2.69

	Manufacturing								
	Total: Products of petroleum and coal			Petroleum refining			Coke, other petroleum, and coal products		
	Weekly earnings	Weekly hours	Hourly earnings	Weekly earnings	Weekly hours	Hourly earnings	Weekly earnings	Weekly hours	Hourly earnings
1949–53 (average)	$81.02	40.7	$1.98	$84.11	40.4	$2.08	$73.98	41.8	$1.77
1954	92.62	40.8	2.27	96.22	40.6	2.37	80.93	41.5	1.95
1955	97.00	41.1	2.36	100.37	40.8	2.46	86.31	41.9	2.06
1956	104.39	41.1	2.54	108.39	40.9	2.65	91.32	41.7	2.19
1957	108.39	40.9	2.65	112.88	40.9	2.76	96.00	41.2	2.33
1958:									
January	109.89	40.4	2.72	115.06	40.8	2.82	93.06	39.1	2.38
February	108.53	39.9	2.72	113.24	40.3	2.81	92.02	38.5	2.39
March	109.07	40.1	2.72	114.09	40.6	2.81	91.25	38.5	2.37
April	110.97	40.5	2.74	115.59	40.7	2.84	94.96	39.9	2.38
May	110.16	40.5	2.72	113.65	40.3	2.82	98.23	41.1	2.39
June	111.93	41.0	2.73	115.75	40.9	2.83	98.71	41.3	2.39
July	113.16	41.0	2.76	117.26	41.0	2.86	99.46	41.1	2.42
August	110.29	40.4	2.73	113.08	40.1	2.82	100.85	41.5	2.43
September	112.33	40.7	2.76	116.00	40.7	2.85	101.02	40.9	2.47
October	110.15	40.2	2.74	113.48	40.1	2.83	98.98	40.4	2.45
November	112.46	40.6	2.77	116.28	40.8	2.85	99.60	40.0	2.49
December	111.35	40.2	2.77	114.86	40.3	2.85	99.60	40.0	2.49
Total 1958	110.85	40.5	2.74	114.86	40.6	2.83	97.31	40.2	2.42

[1] U.S. Dept. of Labor, Bureau of Labor Statistics, latest revisions available June 1959. Published currently in the Monthly Labor Review, tables A-3 and C-1.
[2] Weighted average computed by authors using employment as weights.

Labor-Turnover Rates.—The data presented in table 13 are sensitive indicators of the state of business. The upturn in activity during 1958 is clearly reflected in both the accession and separation rates.

TABLE 13.—Labor turnover, mineral fuels and related industries [1]

(Per thousand employees)

Year and month	All manufacturing	Products of petroleum and coal	Petroleum refining	Anthracite mining	Bituminous coal mining
Total accession rate:					
1957 average	29	11	8	13	9
1958:					
January	25	4	2	13	6
February	22	4	3	10	5
March	24	9	3	8	10
April	25	9	4	4	11
May	30	7	3	7	5
June	38	17	13	13	12
July	33	7	4	7	11
August	39	7	3	8	12
September	40	6	2	36	23
October	34	7	3	49	18
November	28	4	2	15	18
December	23	5	2	18	11
Average	30	7	4	16	12
Total separation rate:					
1957 average	36	14	11	24	16
1958:					
January	50	20	18	16	46
February	39	14	8	76	39
March	42	15	10	13	56
April	41	9	7	189	25
May	36	8	6	104	31
June	29	11	8	36	27
July	32	11	9	30	4
August	35	15	11	7	20
September	35	16	13	6	13
October	32	14	10	17	9
November	28	13	9	14	9
December	27	10	7	8	8
Average	36	13	10	43	24
Layoff rate:					
1957 average	17	5	4	14	10
1958:					
January	38	13	11	10	42
February	29	8	2	70	35
March	32	8	4	8	51
April	30	4	1	184	21
May	24	2	1	92	25
June	18	6	3	33	22
July	20	4	2	25	13
August	19	6	3	2	14
September	16	4	2	4	7
October	17	4	2	5	4
November	16	8	4	12	5
December	17	6	3	5	4
Average	23	6	3	38	20

[1] U.S. Dept. of Labor, Bureau of Labor Statistics, Monthly Labor Review, 1958 and 1959, monthly issues.

PRICES AND COSTS

Prices.—The average wholesale prices of fuels decreased during 1958 to 112.7 as compared with 117.2 in 1957, as contrasted with the increase that occurred for all commodities. The decline was especially marked in coal and petroleum and products. Table 14 summarizes the actual price changes in representative mineral fuels.

Costs.—An index of major input expenses in anthracite, bituminous-coal, and crude-petroleum mining has been constructed by the Office of Chief Economist, Bureau of Mines. This index does not compare the actual costs of producing these fuels but only indicates the changes in operating costs for each since 1947. The labor input has been adjusted for productivity changes for bituminous coal and anthracite (using the data in table 17) but has not been so adjusted for crude petroleum. The weights are based upon the 1954 Census of Mineral Industries. The categories of expense considered are labor, supplies, fuels, and purchased electric energy. These indexes do not include capital costs. A comparable index for metal mining is presented in the Review of the Mineral Industries chapter, volume 1, Minerals Yearbook.

These figures (except petroleum) seem to be more directly related to the business cycle than to any long trend. The indexes were relatively high (for anthracite and bituminous) during the postwar slumps in business activity—1949, 1953, and 1957–58.

Relative Labor Costs.—The most important element in operating costs is, of course, wages and salaries. The index of relative labor costs

TABLE 14.—Average monthly wholesale price indexes for selected fuels, 1949–53 average and 1954–58 [1]

(1947–49=100)

(Unless otherwise specified)

Year and month	Fuels total	Coal	Coke	Gas [2]	Electricity [2]	Petroleum and Products
1949–53 (average)	105.5	108.4	121.7	102.4	99.8	107.3
1954	108.1	106.3	132.5	108.8	101.8	110.8
1955	107.9	104.8	135.2	111.6	97.4	112.7
1956	111.2	114.5	149.7	115.1	94.2	118.2
1957	117.2	124.4	161.7	116.1	95.5	127.0
1958 (average)	112.7	122.9	161.9	101.7	100.4	117.7
January	116.1	126.1	161.9	100.0	100.0	123.0
February	113.6	126.2	161.9	101.5	100.1	118.9
March	112.4	126.2	161.9	101.1	100.1	117.0
April	111.0	119.8	161.9	98.1	100.0	115.8
May	110.3	119.7	161.9	98.3	100.0	114.7
June	110.7	120.3	161.9	97.4	100.1	115.3
July	111.9	121.1	161.9	97.9	100.1	117.1
August	113.7	121.9	161.9	102.0	100.8	119.2
September	114.1	122.7	161.9	104.1	100.8	119.7
October	113.0	123.8	161.9	106.3	100.9	117.5
November	112.6	123.8	161.9	106.0	100.8	116.9
December	112.9	123.7	161.9	107.8	100.7	117.2

[1] U.S. Dept. of Labor, Bureau of Labor Statistics, Monthly Labor Review, table D-8.
[2] Gas and electricity beginning January 1958, January 1958=100.

adjusts average earnings by changes in productivity to indicate the direction of movement in real labor costs per ton of coal. When the changes in value of a ton of coal are considered, an index of labor costs per dollar of product is obtained. The changes in labor costs per ton and per dollar have been remarkably slight in the coal industries since 1949 and reached a low point in 1958.

TABLE 15.—Comparative fuel prices, 1957–58

Fuel	1957	1958
Bituminous coal:		
Average prices, dollars per net ton:		
Railroad fuel, f.o.b. mine [1]	5.53	5.67
Average retail price [2]	16.28	16.53
Cost of coal at merchant coke ovens	10.76	10.74
Anthracite, average sales realization per net ton on shipments to points outside regions, excluding dredge coal, dollars:		
Chestnut	13.06	12.28
Pea	10.39	9.87
Buckwheat No. 1	9.21	9.05
Petroleum and petroleum products:		
Crude petroleum, average price per barrel at well — dollars	3.09	3.01
Gasoline, average dealers net price (excluding taxes) of gasoline in 50 U.S. cities — cents per gallon [3]	16.69	16.22
Residual fuel oil:		
No. 6 fuel oil, average of high and low prices in Philadelphia — dollars per barrel (refinery) [3]	3.31	2.69
Bunker C, average price for all Gulf ports — do [3]	2.85	2.25
Distillate, fuel oil:		
No. 2 distillate, average of high and low prices at Philadelphia — cents per gallon (refinery) [3]	11.06	9.59
No. 2 distillate, average for all Gulf ports — do [3]	9.99	9.12
Natural gas:		
Average U.S. value, at well — cents per thousand cubic feet	11.3	11.9
Average U.S. value, at points of consumption — do	43.1	46.2
Average wholesale-price index for all commodities [1]	117.6	119.2

[1] Interstate Commerce Commission.
[2] U.S. Dept. of Labor, Bureau of Labor Statistics, published and unpublished Wholesale Prices and Price Indexes.
[3] Platt's Oil Price Handbook.

TABLE 16.—Indexes of major input expenses, mineral-fuel mining

(1949=100)

Year	Anthracite	Bituminous coal	Crude petroleum and natural gas	Year	Anthracite	Bituminous coal	Crude petroleum and natural gas
1947	92	88	87	1953	113	104	118
1948	99	101	99	1954	95	94	120
1949	100	100	100	1955	95	93	122
1950	105	99	103	1956	92	98	129
1951	112	106	112	1957	101	102	134
1952	112	104	115	1958	98	97	137

TABLE 17.—Indexes of relative labor cost, anthracite and bituminous coal mining, 1949–1958

(1949=100)

Year	Index of labor costs per ton of product [1]		Index of value of product per man-day [2]		Index of labor cost per dollar of product [3]	
	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous
1949	100	100	100	100	100	100
1950	106	98	104	105	101	99
1951	113	104	116	111	101	103
1952	113	102	115	117	105	101
1953	114	101	127	128	103	100
1954	91	87	138	137	93	94
1955	91	86	124	141	100	94
1956	86	91	139	158	92	92
1957	96	95	149	172	94	91
1958	92	88	159	175	88	89

[1] Index based upon net tons per man per day (from coal chapters, this volume) and index of average earnings derived from Bureau of Labor Statistics data on hourly earnings.
[2] Index based upon net tons per man per day and mine values of production.
[3] Index based on index of value per man-day and index of average earnings.

INCOME AND INVESTMENT

National Income Originated.—The fuels industries fared relatively poorly during 1958 as compared with all industries in national income originated. The decreases in anthracite mining, bituminous, and other soft coal mining and crude petroleum and natural gas were not

TABLE 18.—National income by industrial origin, selected industries [1]

(Million dollars)

Industry	1957	Change from 1956 (percent)	1958	Change from 1957 (percent)
All industries	366, 503	+4	366, 183	
Mining	6, 206	−1	5, 302	−15
Metal mining	911	−17	699	−23
Anthracite mining	166	−2	130	−22
Bituminous and other soft-coal mining	1, 578	+2	1, 234	−22
Crude petroleum and natural gas	2, 757	+6	2, 479	−10
Nonmetallic mining and quarrying	794	−5	760	−4
Manufacturing	112, 581	+3	103, 715	−8
Products of petroleum and coal	4, 118	−5	3, 828	−7

[1] U.S. Dept. of Commerce, Survey of Current Business, July 1959, table I-10.

as great as that in metal mining but exceeded that in nonmetal mining and quarrying. The manufacturing category of products of petroleum and coal was down 7 percent as compared with the slight decline for all manufacturing.

Investment.—Data on the total investment in fuels are not available. Table 19 presents data on direct private investments abroad in the petroleum industry. The only information available on book values of domestic investments is that contained in the statistical summary of balance-sheet data from corporate income-tax returns. These reports are issued after almost a 2-year delay—data for fiscal year ending July 1957 being the latest available. As compared with a total book value of foreign investments at the end of 1957 for petroleum

TABLE 19.—Direct private investment of U.S. companies in foreign petroleum industries, 1958 [1]

(Million dollars; net inflows to the United States (—))

Country	Petroleum				All industries			
	Book value beginning of year	Net capital movements	Undistributed earnings of subsidiaries	Book value end of year	Book value beginning of year	Net capital movements	Undistributed earnings of subsidiaries	Book value end of year
Canada	2,154	230	27	2,410	8,332	398	200	8,929
Latin American Republics:								
Brazil	227	—13	1	215	1,301	26	18	1,345
Central America	96	17	2	110	674	46	27	737
Colombia	106	—4	—11	91	297	—2	—7	289
Mexico	18	(2)	(2)	19	765	—12	27	781
Venezuela	2,179	113	9	2,302	2,683	132	49	2,863
Total [3]	2,870	142	3	3,005	8,325	288	135	8,730
Dependencies in Western Hemisphere	190	11	4	206	339	24	31	395
Western European countries	1,184	67	6	1,256	3,993	173	207	4,382
African countries	254	11	10	276	711	38	40	789
Middle Eastern countries	1,118	109	—8	1,218	1,209	114	—7	1,315
Far Eastern countries	629	—37	54	646	1,553	—9	139	1,681
International [4]	593	66	5	664	776	68	10	854
Total, all areas	8,991	600	102	9,681	25,238	1,094	755	27,075

[1] U.S. Dept. of Commerce, Survey of Current Business, vol. 39, No. 8, August 1959, pp. 30–31. Data are preliminary.
[2] Less than $500,000.
[3] Includes countries not shown above.
[4] Includes shipping enterprises registered in Liberia and Panama but operating worldwide.

TABLE 20.—New plant and equipment expenditures, mineral fuels and related industries [1]

(Million dollars)

Year and quarter	Mining including fuels	Manufacturing petroleum and coal products	Total manufacturing	Year and quarter	Mining including fuels	Manufacturing petroleum and coal products	Total manufacturing
1954	975	2,684	11,038	1958—Continued			
1955	957	2,798	11,439	April–June	239	629	2,939
1956	1,241	3,135	14,954	July–September	223	554	2,664
1957	1,243	3,453	15,959	October–December	254	661	2,932
1958	941	2,431	11,433				
January–March	225	587	2,898				

[1] U.S. Dept. of Commerce, Office of Business Economics, Survey of Current Business, March 1959, p. 17, and July 1959, p. 30.

industries of $9 billion, the total book value of assets in crude petroleum and products (including coal products) was $40.6 billion. As an indication of growth in domestic investment, the figure for fiscal 1952 was $28.9 billion.

Indications of the current rates of investment are given by data on expenditures on new plant and equipment in the manufacturing industries and by data on gross proceeds of new corporate security offerings. The recession is reflected in the new plant and equipment expenditures, which for both mining and manufacturing declined sharply in 1958.

TABLE 21.—Estimated gross proceeds of new corporate securities offered for cash in the United States in 1958 [1]

Type of security	Total corporate		Manufacturing		Mining [2]	
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent
Bonds	9,653	83	3,180	91	134	54
Preferred stock	571	5	40	1	3	1
Common stock	1,334	12	295	8	110	45
Total	11,558	100	3,515	100	247	100

[1] U.S. Securities and Exchange Commission, Statistical Bulletin, vol. 18, No. 6, June 1959, p. 12. Substantially all new issue of securities offered for cash sale in the United States in amounts over $100,000 and with terms to maturity of more than 1 year are covered in these data.
[2] Including fuels.

TRANSPORTATION

As indicated in table 22, within recent years the methods of shipping bituminous coal and lignite from the mines have changed radically; shipments by rail have declined, whereas shipments by water and truck have increased. Generally, the cost by water or truck, particularly for short distances, is less than the rail freight rate. Transportation costs compose a significant portion of the delivered price of coal, thus placing it at a competitive disadvantage with oil and natural gas, which are moved by tankers and pipelines. About 75 percent of all coal moves by rail, and freight adds as much as 70 percent to the mine price of coal. As a consequence, considerable attention is being given to means of substantially reducing transportation costs. Among these is locating large coal-consuming industries at or near coal sources (particularly near water transportation), increased barging and trucking of coal, and transmitting electric energy directly from mine-located generating plants.

The total movement of mineral fuels and related products by rail and water is summarized in table 23.

DISTRIBUTION OF BITUMINOUS COAL AND LIGNITE

Tables 24, 25, and 26 summarize the distribution of bituminous coal and lignite in 1958 from coal-producing districts of origin to States of destination, by methods of transportation and types of consumer use. This information shows the participation of the bituminous-coal and lignite industry in the various energy markets of the Nation, both locally and nationally. They also provide benchmarks for special studies and analyses of the many factors that influence coal production and its utilization in the highly competitive energy market.

TABLE 22.—Method of shipment of bituminous coal and lignite from mines, and used at mines, in the United States, 1954–58

Year	Method of shipment from mines: Shipped by rail and trucked to rail	Method of shipment from mines: Shipped by water and trucked to water	Method of shipment from mines: Trucked to final destination	Used at mines [1]	Total production
	Thousand net tons				
1954	305,918	32,912	44,689	8,187	391,706
1955	355,924	47,476	51,607	9,626	464,633
1956	390,015	50,732	49,768	10,359	500,874
1957	[2] 380,471	[2] 51,171	50,334	10,728	492,704
1958	305,642	43,899	50,605	10,300	410,446
	Percentage of total				
1954	78.1	8.4	11.4	2.1	100.0
1955	76.6	10.2	11.1	2.1	100.0
1956	77.9	10.1	9.9	2.1	100.0
1957	77.2	10.4	10.2	2.2	100.0
1958	74.5	10.7	12.3	2.5	100.0

[1] Includes coal used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, transported from mines to point of use by conveyors or trams, made into beehive coke at mines, and all other uses at mines.

[2] Revised.

TABLE 23.—Rail and water transportation of mineral fuels and related products in the United States, 1957–58, by products

(Thousand short tons)

Product	Rail [1]: 1957	Rail [1]: 1958	Rail [1]: Change from 1957 (percent)	Water [2]: 1957	Water [2]: 1958 [3]	Water [2]: Change from 1957 (percent)
Coal:						
Anthracite [4]	30,285	23,770	−22	1,261	865	−31
Bituminous [4]	372,194	307,492	−17	151,161	126,688	−16
Coke [4]	19,564	12,635	−35	480	279	−42
Crude petroleum	2,046	1,196	−42	74,090	67,965	−8
Gasoline	8,853	8,366	−6	90,640	92,211	+2
Distillate fuel oil	9,553 (Distillate and residual fuel oil)	8,475	−11	69,125	72,530	+5
Residual fuel oil				43,940	42,403	−4
Asphalt	3,495	3,356	−4	3,329	3,611	+8
Kerosine	15,543 (Kerosine and other)	14,777	−5	8,918	9,339	+5
Other				9,776	10,627	+9
Total	461,533	380,067	−18	452,720	426,518	−6

[1] Revenue freight originated, excluding forwarder and less than carlot shipments, for which categories commodity detail is not available. Source: Interstate Commerce Commission, Freight Commodity Statistics, Class I Steam Railways in the United States, for years ended Dec. 31, 1957 and 1958: Statements 58100 and 59100.

[2] Domestic traffic; that is, all commercial movements between any point in continental United States or its territories and possessions and any other such point. Traffic with the Panama Canal Zone, the Virgin Islands, and military cargoes carried in Defense Department vehicles are excluded. Source: Department of the Army, Waterborne Commerce of the United States, Calendar Year 1957, part 5, National Summaries, and preliminary tabulations for the 1958 volume.

[3] Preliminary figures.

[4] Figures for rail shipments include briquets. For water shipment briquets not reported by type of material and included with Other. The rail figure for anthracite is higher than domestic production because it duplicates shipments to washers and breakers and shipments from the same.

The information is based upon reports submitted to the Bureau of Mines voluntarily by producers, sales agents, distributors, and wholesalers who normally produce or sell 100,000 tons or more annually. The unprecedented cooperation of these respondents resulted in their reporting about 94 percent of all coal produced or shipped during the year. To account for total industry shipments, estimates for the remaining shipments are included, based on data from coal trade and other reliable coal statistical reporting agencies.

Details of the distribution survey are shown in Bureau of Mines Mineral Market Report 2879.

TABLE 24.—Distribution of bituminous coal and lignite, 1958, by method of movement and consumer use

(Thousand net tons)

Shipments	Consumer use					
	Electric utilities	Coke and gas plants	Retail dealers	All others	Railroad fuel	Used at mines and sales to employees
I. Total shipments to all destinations in the United States, Alaska, and Canada, by all methods of movement and consumer use, and oversea exports	151, 114	79, 837	36, 888	93, 352	4, 152	2, 294
II. Shipments to all destinations in the United States, Alaska, and Canada, by specific method of movement and consumer use:						
A. Methods of movement:						
All-rail	68, 515	34, 088	27, 410	60, 025	-------	---------
River and ex-river	35, 250	23, 978	1, 112	5, 631	-------	---------
Great Lakes [1]	13, 313	13, 793	1, 774	11, 353	-------	---------
Tidewater [2]	14, 206	6, 491	1, 321	2, 840	-------	---------
Truck	11, 897	840	5, 239	13, 043	-------	---------
Tramway, conveyor, and private railroad	7, 933	647	32	460	-------	---------
B. Methods of movement and/or consumer uses unknown	---------	---------	-------	-------	4, 152	2, 294
C. Total	151, 114	79, 837	36, 888	93, 352	4, 152	2, 294

Shipments	Canadian Great Lakes commercial docks [3]	U.S. Great Lakes dock storage [3]	U.S. Tidewater dock storage [3]	Oversea exports [4]	Net change in mine inventory	Total
I. Total shipments to all destinations in the United States, Alaska, and Canada, by all methods of movement and consumer use, and oversea exports	2, 206	1, 436	10	37, 744	−469	408, 564
II. Shipments to all destinations in the United States, Alaska, and Canada, by specific method of movement and consumer use:						
A. Methods of movement:						
All-rail	---------	---------	---------	-------	-------	190, 038
River and ex-river	---------	---------	---------	-------	-------	65, 971
Great Lakes [1]	---------	---------	---------	-------	-------	40, 233
Tidewater [2]	---------	---------	---------	-------	-------	24, 858
Truck	---------	---------	---------	-------	-------	31, 019
Tramway, conveyor, and private railroad	---------	---------	---------	-------	-------	9, 072
B. Methods of movement and/or consumer uses unknown	2, 206	1, 436	10	37, 744	−469	47, 373
C. Total	2, 206	1, 436	10	37, 744	−469	408, 564

[1] Excludes shipments to Canadian Great Lakes commercial docks and United States dock storage for which consumer uses are not available; however, includes vessel fuel, the destinations of which are not available.

[2] Excludes oversea exports and U.S. tidewater dock storage for which consumer uses are not available; however, includes bunker fuel, the destinations of which are not available.

[3] Consumer use unknown.

[4] Excludes Canada; consumer use unknown.

TABLE 25.—Distribution of bituminous coal and lignite by district of origin and consumer use

(Thousand net tons)

District of origin [1]	Consumer use					
	Electric utilities	Coke and gas plants	Retail dealers	All others	Railroad fuel	Used at mines and sales to employees
1	13,137	3,333	1,881	9,474	384	345
2	8,268	22,007	1,109	6,267	138	679
3 and 6	19,376	6,998	1,333	9,428	270	28
4	17,759	45	1,273	10,120	670	66
7	3,066	13,654	5,463	4,200	91	210
8	27,586	22,340	12,507	22,620	883	640
9	18,922	-----	3,289	5,408	371	1
10	22,868	732	5,527	13,846	766	86
11	8,431	(2)	[2] 1,018	5,551	266	50
12	811	-----	151	366	-----	-----
13	5,326	5,839	490	[3] 1,196	(3)	30
14	8	860	17	283	-----	-----
15 [4]	2,312	(2)	[2] 494	1,124	76	1
16	225	-----	153	293	-----	6
17	379	1,262	325	584	3	10
18	29	-----	7	41	-----	6
19	451	-----	(5)	[5] 1,069	(5)	21
20	499	2,574	1,122	646	11	103
21	1,138	-----	556	719	2	1
22 and 23	523	-----	132	531	41	11
Total	151,114	79,837	36,888	93,352	4,152	2,294

District of origin [1]	Canadian Great Lakes commercial docks [6]	U.S. Great Lakes dock storage [6]	U.S. Tide-water dock storage [6]	Overseas exports [6] [7]	Net change in mine inventory	Total
1	56	1	5	1,732	20	30,368
2	94	9	-----	(8)	[9] 87	38,658
3 and 6	443	108	-----	1,308	107	39,399
4	(10)	[10] 290	-----	(8)	[9] −224	29,999
7	334	108	2	12,773	−128	39,773
8	1,135	1,010	3	21,491	−425	109,790
9	-----	3	-----	3	36	28,033
10	(10)	[10] 51	-----	-----	27	43,903
11	-----	-----	-----	-----	−22	15,294
12	-----	-----	-----	-----	-----	1,328
13	-----	-----	-----	(8)	[9] 167	13,048
14	-----	-----	-----	-----	-----	1,168
15 [3]	-----	-----	-----	-----	8	4,015
16	-----	-----	-----	-----	−3	674
17	-----	-----	-----	-----	1	2,564
18	-----	-----	-----	-----	-----	83
19	-----	-----	-----	-----	3	1,544
20	-----	-----	-----	266	24	5,245
21	-----	-----	-----	-----	3	2,419
22 and 23	-----	-----	-----	14	7	1,259
Total	2,206	1,436	10	37,744	−469	408,564

[1] Producing districts are defined in Mineral Market Report 2879, March 1959.
[2] Shipments to coke and gas plants are included with retail dealers.
[3] Railroad fuel shipments are included with all others.
[4] Excludes Texas.
[5] Shipments to retail dealers and for railroad fuel are included with all others.
[6] Consumer use unknown.
[7] Excludes Canada, consumer use unknown.
[8] Included in net change in inventory.
[9] Includes overseas exports.
[10] Shipments to Canadian Great Lakes commercial docks included with shipments to U.S. Great Lakes dock storage.

TABLE 26.—Distribution of bituminous coal and lignite, 1958, by destination and consumer use

(Thousand net tons)

Destination	Consumer use				
	Total	Electric utilities	Coke and gas plants	Retail dealers	All others
New England:					
Massachusetts	4,728	2,505	531	305	1.387
Connecticut	4,199	2,514	464	210	1,011
Maine, New Hampshire, Vermont, and Rhode Island	1,944	749	------	365	830
Middle Atlantic:					
New York	23,605	11,279	4,364	962	7,000
New Jersey	6,391	3,379	980	170	1,862
Pennsylvania	44,840	13,683	20,680	1,687	8,790
East North Central:					
Ohio	44,390	18,776	9,119	4,395	12,100
Indiana	31,322	12,407	10,800	2,718	5,397
Illinois	38,806	17,244	2,660	7,874	11,028
Michigan	22,398	8,502	3,082	2,858	7,956
Wisconsin	10,322	4,893	350	1,412	3,667
West North Central:					
Minnesota	4,848	2,185	832	368	1,463
Iowa	4,869	1,949	------	1,165	1,755
Missouri	6,462	2,636	209	1,384	2,233
North Dakota and South Dakota	2,363	1,118	------	673	572
Nebraska and Kansas	1,160	476	------	268	416
South Atlantic:					
Delaware and Maryland	8,591	2,774	4,205	608	1,004
District of Columbia	1,060	606	------	196	258
Virginia	11,185	5,236	139	1,697	4,113
West Virginia	14,322	5,549	5,208	349	3,216
North Carolina	8,049	4,874	1	1,153	2,021
South Carolina	3,108	1,117	------	416	1,574
Georgia and Florida	3,474	2,578	(1)	[1] 448	485
East South Central:					
Kentucky	[2] 11,616	[2] 7,185	1,645	[2] 883	1,903
Tennessee	[2] 12,296	[2] 9,042	150	[2] 1,247	1,857
Alabama and Mississippi	12,567	5,462	5,790	366	949
West South Central: Arkansas, Louisiana, Oklahoma, and Texas	1,599	(3)	966	[3] 54	579
Mountain:					
Colorado	2,738	597	955	318	868
Utah	3,003	499	1,875	319	310
Montana and Idaho	881	(4)	------	[4] 881	(4)
Wyoming	510	329	------	58	123
New Mexico	98	37	------	13	48
Arizona and Nevada	132	5	------	16	111
Pacific:					
Washington and Oregon	958	2	------	363	593
California	1,285	------	[5] 1,285	(5)	(5)
Alaska	775	450	------	51	274
Canada	9,003	402	3,572	953	4,076
Destination and/or consumer uses not available:					
Great Lakes movement:					
Canadian commercial docks	2,206	------	------	------	------
Vessel fuel	1,267	------	------	------	------
U.S. dock storage	1,436	------	------	------	------
Tidewater movement:					
Oversea exports (except Canada)	37,744	------	------	------	------
Bunker fuel	27	------	------	------	------
U.S. dock storage	10	------	------	------	------
Railroad fuel:					
United States companies	3,395	------	------	------	------
Canadian companies	757	------	------	------	------
Coal used at mines and sales to employees	2,294	------	------	------	------
Net change in mine inventory	−469	------	------	------	------
Total	408,564	------	------	------	------

[1] Shipments to coke and gas plants are included with retail dealers.
[2] District 10 shipments to Tennessee are included with Kentucky.
[3] Shipments to electric utilities are included with retail dealers.
[4] Shipments to electric utilities and all others are included with retail dealers.
[5] Shipments to retail dealers and all others are included with coke and gas plants.

WORLD REVIEW

In value terms, the United States became a net importer of mineral fuels in 1958. Imports were valued at $1,653 million in 1958 as compared with exports of $1,153 million. The value of imports and exports, grouped by Standard International Trade Classification, are presented in table 27. The change to a net import status resulted from continued increases in petroleum imports and a very sharp decline in coal exports.

U.S. exports of both bituminous coal and anthracite to Canada declined 6.5 million tons, both as a result of the increased indigenous availability of oil and natural gas in Canada and depressed business conditions. Overseas exports dropped almost 22 million tons (36 percent). In addition to declining consumption abroad, some of this decrease resulted from high accumulations of coal stocks in 1957 plus continued high levels of production in Europe during 1958. West Germany adopted a restrictive import policy during 1958, and U.S. exports to Germany declined by 29 percent. At yearend, it was still clear that at least another year would be required before the surplus coal stocks in Europe could be adjusted to more normal levels.

World Production.—The most notable coal production increase in 1958 was made by the U.S.S.R., where total output, including bituminous, anthracite, and lignite, reached 547 million short tons compared to 510 million tons in 1957, an increase of 7 percent. The share of U.S.S.R. coal production in total world output in 1958 was about 20 percent. Of the total 1958 coal production in the U.S.S.R., approximately 29 percent was lignite.

While Soviet coal-production statistics are impressive, their significance is somewhat diminished by the fact that they include large quantities of lower quality coals that average only half the energy value of an equal weight of standard bituminous coal. When the production is adjusted for energy content and compared with U.S. production on the same basis, the standard bituminous equivalent is 430 million tons in Russia and 419 million tons in the United States.

Production in the countries belonging to the Organization for European Economic Cooperation is summarized in table 28. Changes in total production in 1958 were slight as compared with 1957.

World Trade Prices.—Price indexes of fuels in world trade were mixed during 1958. The rises were confined to crude petroleum and coal in Canada and Germany.

GOVERNMENT ACTIVITIES

Oil-Import Program.—As a result of the Voluntary Oil-Import Program, imports of crude oil for 1958 were less than 1957, but imports of products not covered under the program increased sharply. In July the Administrator of the import program requested all importing companies to limit imports of unfinished oils to the May–June 1958 levels. In the last quarter of the year imports began to rise sharply, but the program of import restriction was still voluntary at yearend.

Mine-Water Control.—A joint $17-million program for mine-water control in the anthracite-producing region of Pennsylvania was estab-

TABLE 27.—Value of imports and exports, mineral fuels and products, 1956–58 [1]

(Thousand dollars)

[U.S. Department of Commerce]

SITC No.	Group and commodity	Imports for consumption [2]			Exports of domestic merchandise		
		1956	1957	1958	1956	1957	1958
311-01	Coal (anthracite, bituminous, subbituminous, lignite)	2,885	3,155	2,581	732,126	828,684	525,643
311-02	Coke of coal and of lignite	1,471	1,544	1,571	11,468	14,356	7,127
311-03	Briquettes of coal, of lignite, of coke, and of peat	4	10	2	1,716	1,383	899
312-01	Petroleum, crude and partly refined for further refining	841,252	986,144	995,990	91,899	175,593	[3] 20,156
313-01	Motor spirit (gasoline and other light fuel oils for similar uses) including gasoline blending agents	34,115	48,353	111,070	190,592	206,014	142,045
313-02	Lamp oil and white spirit (kerosine, illuminating oil)	896	537	148	13,157	22,236	6,063
313-03	Gas oil, diesel oil and other fuel oils	383,638	496,072	498,851	175,301	278,114	117,464
313-04	Lubricating oils and greases, including mixtures with animal and vegetable lubricants	19	15	112	208,179	209,965	193,261
313-05	Mineral jelly and waxes (including petrolatum)	1,178	1,041	1,347	27,186	28,839	[3] 25,945
313-09	Pitch, resin, petroleum asphalt, coke of petroleum and other by-products of coal, lignite, petroleum and oil shale (including mixtures with asphalt), n.e.s., not chemicals	11,501	18,885	19,784	28,939	30,252	31,321
314-01	Gas, natural	1,042	3,317	21,821	4,045	12,356	14,655
314-02	Gas, manufactured				16,214	21,100	8,423
	Total fuels	1,278,001	1,559,073	1,653,277	1,500,822	1,828,892	1,153,002

[1] The grouping of the commodities is based upon Standard International Trade Classification of the United Nations. Basic data were compiled by the Office of the Chief Economist, Bureau of Mines, from a supplement to the Annual Statistical Bulletin Series IV by the Organization for European Economic Cooperation, which represents a conversion of U.S. import and export classification to SITC categories. Actual import and export data is taken from U.S. Dept. of Commerce reports FT 110 and FT 410. Since the SITC may differ from that used by the Bureau of Mines, the values shown may not compare with those shown in the commodity chapters.

[2] Includes items entered for immediate consumption, withdrawn from bonded storage warehouses for consumption, and items withdrawn from bonded smelting and refining warehouses for consumption or export.

[3] Not strictly comparable with earlier years because of changes in classification of export statistics.

lished in 1955 by the Federal Government and the Commonwealth of Pennsylvania. By the close of 1958, 18 projects with an aggregate cost (contracted or estimated) of nearly $6.75 million were active or had been completed. During 1958, five projects totaling nearly $2.5 million were approved for Federal participation. Equipment and installation costs are shared equally by the Federal and State Governments.

Seven projects were completed by the end of 1958. One was a pumping installation of 10,000-g.p.m. capacity and the other six were surface drainage improvements, which, it is estimated, will prevent more than 1 billion gallons of water from entering the mines each year.

TABLE 28.—Monthly average of production of mineral fuels and products in selected OEEC countries, 1951–58 [1]

(Million metric tons)

Product	Member countries combined	Austria	Belgium	France	Saar	West Germany
Black coal:						
1951	38.50	(2)	2.47	4.41	1.36	9.91
1952	39.50	(2)	2.53	4.61	1.35	10.27
1953	39.20	(2)	2.51	4.38	1.37	10.37
1954	39.50	(2)	2.44	4.53	1.40	10.67
1955	39.70	(2)	2.50	4.61	1.44	10.89
1956	40.00	(2)	2.46	4.59	1.42	11.20
1957	40.10	(2)	2.42	4.73	1.37	11.10
1958	39.30	(2)	2.26	4.81	1.37	11.04
Coking coal:						
1951	6.24	0.12	.51	.70	.32	2.80
1952	6.82	.13	.53	.79	.33	3.11
1953	6.77	.13	.50	.74	.31	3.15
1954	6.69	.14	.51	.79	.31	2.92
1955	7.46	.15	.55	.92	.34	3.39
1956	8.12	.17	.61	1.04	.35	3.63
1957	8.39	.18	.60	1.07	.37	3.78
1958	7.97	.16	.58	1.06	.36	3.63
Crude petroleum:						
1951	.40	.19	----------	.03	----------	.11
1952	.48	.23	----------	.03	----------	.15
1953	.54	.25	----------	.03	----------	.18
1954	.62	.28	----------	.04	----------	.22
1955	.76	.31	----------	.07	----------	.26
1956	.85	.29	----------	.11	----------	.29
1957	.97	.27	----------	.12	----------	.33
1958	1.01	.24	----------	.12	----------	.37
Petroleum products:						
1951	53.49	[4] .78	.85	17.25	----------	4.31
1952	67.99	[4] .87	2.45	20.12	----------	4.90
1953	77.04	[4] 1.03	3.01	20.86	----------	5.84
1954	88.55	[4] 1.29	3.53	21.85	----------	7.86
1955	94.90	2.16	4.38	22.95	----------	9.26
1956	102.69	2.07	5.11	24.68	----------	10.31
1957	102.64	2.11	5.07	22.81	----------	10.76
1958	120.08	1.93	6.24	27.37	----------	13.87

See footnotes at end of table.

TABLE 28.—Monthly average of production of mineral fuels and products in selected OEEC countries, 1951–58 [1]—Continued

(Million metric tons)

Product	Italy	Netherlands	Turkey	United Kingdom	Other member countries
Black coal:					
1951	0.10	1.04	0.25	18.87	0.13
1952	.09	1.04	.25	19.17	.13
1953	.09	1.03	.31	18.98	.13
1954	.09	1.01	.30	18.97	.12
1955	.10	.99	.29	18.76	.12
1956	.09	.99	.31	18.80	.12
1957	.09	.95	.33	18.93	.13
1958	.06	.99	.34	18.27	.13
Coking coal:					
1951	.18	.25	n.a.	1.36	----------
1952	.20	.27	n.a.	1.45	----------
1953	.20	.27	n.a.	1.48	----------
1954	.22	.28	n.a.	1.52	----------
1955	.25	.33	n.a.	1.53	----------
1956	.29	.35	n.a.	1.66	----------
1957	.31	.35	n.a.	1.73	----------
1958	.29	.34	n.a.	1.56	----------
Crude petroleum:					
1951	(3)	.06	(3)	----------	----------
1952	.01	.06	(3)	----------	----------
1953	.01	.07	(3)	----------	----------
1954	.01	.08	.01	----------	----------
1955	.02	.09	.02	----------	----------
1956	.05	.09	.03	----------	----------
1957	.11	.13	.03	----------	----------
1958	.13	.14	.03	----------	----------
Petroleum products:					
1951	6.92	6.39	(2)	15.50	1.49
1952	9.17	7.34	(2)	21.25	1.90
1953	11.96	8.65	(2)	23.90	1.80
1954	15.04	10.42	(2)	25.91	2.65
1955	16.07	11.89	(2)	25.24	2.95
1956	17.71	13.43	(2)	26.16	3.22
1957	19.15	13.97	(2)	25.27	3.50
1958	22.51	14.46	(2)	30.00	3.70

[1] General Statistics, Organization for European Economic Cooperation Statistical Bulletins, May 1959, No. 3, p. 24–25 and July 1959, No. 4, p. 19, 22, 23. Production of brown coal not reported.
[2] Included in other countries.
[3] Less than 0.005 million metric tons.
[4] Refined for Austrian account.

TABLE 29.—World-trade price indexes, 1952–58 [1]

(1953=100)

Mineral	1958	1957	1956	1955	1954	1953	1952
Crude petroleum:							
Kuwait	112.8	109.8	104.9	104.9	104.9	100.0	100.6
Saudi Arabia	114.9	113.3	106.6	106.6	106.6	100.0	94.5
United Kingdom	94.2	108.2	104.5	86.9	85.4	100.0	114.9
United States:							
West-Texas Sour	114.2	114.2	104.3	104.3	104.3	100.0	94.5
Refugio-Light	113.2	118.2	104.7	104.7	104.7	100.0	94.6
Saudi Arabian	104.4	115.5	107.3	96.2	94.7	100.0	126.9
Venezuelan	108.2	110.1	101.6	101.3	101.3	100.0	104.7
Venezuela:							
Export price f.o.b. Puerta La Cruz	110.5	110.1	101.4	104.0	104.3	100.0	95.3
Export price f.o.b. Amuay	113.3	112.9	102.2	102.2	102.2	100.0	99.6
Petroleum products							
United Kingdom	114.7	135.0	111.1	101.3	99.5	100.0	110.9
U.S. distillate No. 2	104.9	118.5	109.9	106.2	102.5	100.0	98.9
U.S. gasoline	88.6	95.6	91.2	92.1	90.4	100.0	96.5
Coal:							
Canada	110.7	109.1	104.1	97.5	97.5	100.0	100.0
Germany	117.7	112.1	105.6	99.4	97.9	100.0	84.8
United Kingdom	112.7	140.0	129.1	99.1	96.4	100.0	100.0
United States	112.3	115.6	105.6	94.2	93.8	100.0	98.1

[1] United Nations, Monthly Bulletin of Statistics, March 1959, table 48, pp. 143–144.

TABLE 30.—Comparison of world and U.S.[1] production of mineral fuels, 1957–58

(Compiled under the supervision of Berenice B. Mitchell, Division of Foreign Activities, Bureau of Mines Aug. 14, 1959)

Mineral	1957			1958		
	World	United States		World	United States	
	Thousand short tons		Percent of world	Thousand short tons		Percent of world
Coal:						
Bituminous	1,761,225	490,097	27	1,846,370	408,019	22
Lignite	655,496	2,607	(2)	677,365	2,427	(2)
Pennsylvania anthracite	156,800	25,338	16	161,400	21,171	13
Coke (excluding breeze):						
Gashouse [3]	52,196	(4)	(4)	51,283	(4)	(4)
Oven and beehive	293,848	75,951	26	280,246	53,604	19
Fuel briquets and packaged fuel	120,830	1,152	(2)	116,760	1,072	(2)
Natural gas ... million cubic feet	(5)	10,680,258	(5)	(5)	(5)	(5)
Peat	69,260	316	(2)	65,670	328	(2)
Petroleum (crude) ... thousand barrels	6,450,666	2,616,778	41	6,617,656	2,448,866	37

[1] Including Alaska and noncontiguous territories.
[2] Less than 1 percent.
[3] Includes low- and medium-temperature and gashouse coke.
[4] Bureau of Mines not at liberty to publish U.S. figure separately.
[5] Data not available.

Employment and Injuries in the Fuel Industries

By John C. Machisak

Contents

Introduction

THIS CHAPTER of the Minerals Yearbook contains injury experience and related employment data for the coal-mining, coking, oil and gas, and peat industries of the United States for 1958. Injury experience is measured by the number of injuries per million man-hours of exposure to the hazards of the particular industry.

No attempt has been made to combine these data and present rates, which will reflect the fuel industries group, because the accident hazards inherent in each of the aforementioned industries are not comparable. Discussions and tabulations covering the injury and employment records of the mineral industry as a whole are presented in volume III.

COAL

The 1958 injury-frequency rate for the coal-mining industry of the United States declined slightly from that of the preceding year, according to reports received by the Bureau of Mines, U.S. Department of the Interior. Final data for anthracite and preliminary data for bituminous-coal and lignite mines indicated that the 1958 combined frequency rate (fatal and nonfatal), 46.81, was 1 percent lower than the 47.21 recorded for 1957.

The number of fatal injuries reported by the industry was the lowest ever recorded by the Bureau. A total of 356 fatalities were reported during 1958, reflecting a frequency rate of 1.13 per million man-hours of exposure, decreasing 26 percent in number and 3 percent in frequency of occurrence from that reported in 1957. Three major disasters (a single accident that results in the death of five men or more)—all in the bituminous-coal industry—claimed 42 lives in 1958.

Nonfatal injuries totaled 14,354 and occurred at a rate of 45.68 in 1958 compared with 18,792 injuries and a rate of 46.04 in 1957.

The average working force of the industry declined 16 percent and man-hours dropped 23 percent from the 1957 record. Employees worked an average of 7.84 hours a day for 187 days during the year and accumulated 314.3 million man-hours of worktime.

Bituminous-Coal Mines.—The combined fatal and nonfatal injury rate for the bituminous-coal and lignite industry was slightly higher in 1958 than in 1957. Preliminary data for 1958 indicated that 12,554 fatal and nonfatal injuries occurred during the year at a frequency rate of 45.03 per million man-hours of exposure. Final data for 1957 were 16,342 fatal and nonfatal injuries, resulting in a frequency rate of 44.91.

Of the 324 fatalities recorded for the bituminous-coal and lignite industry, 287 occurred underground, 18 at surface operations, 16 at stripping operations, and 3 at auger mines.

The leading cause of fatalities in the bituminous-coal mining industry—falls of roof, face, and rib—claimed the lives of 157 men in 1958, a decrease of 40 from that recorded for the same cause in 1957. Haulage ranked second as a cause of fatal injuries and caused 43 fatalities underground in 1958; 53 were reported in 1957. Three major disasters (a single accident that results in the death of five men or more) accounted for 42 deaths in 1958. Two disasters, killing 36 men, were caused by gas explosions and 1, killing 6 men, was the result of a roof fall.

The average number of men working daily in the bituminous-coal industry was 188,000 in 1958—a 16-percent decline from the 1957 average employment of 223,900. The average days worked per man decreased from 206 in 1957 to 187 in 1958. Total man-hours worked decreased 23 percent in 1958 from that of the preceding year, resulting in an average work year of 1,483 hours per man.

TABLE 1.—Employment and injury experience at coal mines in the United States, 1954–58

Industry and year	Average men working daily [1]	Average active mine days [2]	Million man-days worked	Million man-hours worked	Number of injuries		Frequency rates per million man-hours	
					Fatal	Nonfatal	Fatal	Nonfatal
Bituminous-coal mines: [3]								
1954	241,919	177	42.8	337.7	334	14,746	0.99	43.66
1955	225,539	210	47.3	373.4	360	15,966	.96	42.76
1956	227,778	212	48.4	383.4	392	16,486	1.02	42.99
1957	223,900	206	46.0	363.9	427	15,915	1.17	43.74
1958 [4]	188,000	187	35.2	278.8	324	12,230	1.16	43.87
Anthracite mines:								
1954	41,786	164	6.8	50.2	62	2,972	1.23	59.18
1955	34,550	182	6.3	46.0	60	2,919	1.30	63.46
1956	32,507	212	6.9	50.2	56	3,330	1.12	66.31
1957	30,825	196	6.1	44.3	51	2,877	1.15	64.93
1958	26,540	183	4.9	35.5	32	2,124	.90	59.88
Total coal mines:								
1954	283,705	175	49.6	388.0	396	17,718	1.02	45.67
1955	260,089	206	53.6	419.4	420	18,885	1.00	45.03
1956	260,285	212	55.3	433.7	448	19,816	1.03	45.69
1957	254,725	204	52.1	408.2	478	18,792	1.17	46.04
1958 [4]	214,540	187	40.1	314.3	356	14,354	1.13	45.68

[1] Average number of men at work each day mine was active. Because absenteeism and labor turnover are taken into consideration, this number is lower than number of men available for work, as measured by a count of names on payroll.
[2] Average in which operating time of each mine is weighted by average number of workers in mines.
[3] Includes lignite.
[4] Bituminous data for 1958 are preliminary.

Anthracite Mines.—A record low number of fatal and nonfatal injuries were recorded by the Bureau of Mines for the Pennsylvania anthracite industry during 1958. The overall injury-frequency rate, 60.78, was 8 percent lower than that of the preceding year and the lowest since 1954.

The number of fatalities and the corresponding frequency rate decreased 37 and 22 percent, respectively, from that of 1957. A substantial decline was also achieved in both the number and the frequency rate for nonfatal injuries in 1958. A numerical decrease of 753 nonfatal injuries (26 percent) and a frequency rate decline of slightly more than 5 full points (8 percent) were recorded.

Of the 32 deaths reported, 26 occurred underground, 3 at surface operations, and 3 in strip pits. The leading cause of fatalities—falls of roof, face, and rib—accounted for 19 (73 percent) of the underground fatalities in 1958.

An average of 26,540 men, a decrease of 4,285 (14 percent) from that of 1957, worked 7.30 hours each on 183 active mine days and accumulated 35.5 million man-hours during 1958.

COKE

A record low of 5 fatal and 210 nonfatal injuries occurred in the coke industry during 1958, according to reports received by the Bureau of Mines. The corresponding injury-frequency rate, on the other hand, increased slightly—from 4.46 in 1957 to 4.73 in 1958. The counter movement between the number of injuries and the frequency rate was due primarily to a correspondingly greater decrease in man-hours rather than in number of injuries.

The 16,936 ovens operating in 1958 employed an average of 16,186 men—a decrease of 4,000 from that of the preceding year—who accumulated 45.5 million man-hours, while producing 57.3 million net tons of coke and breeze. The annual average hours per employee, 2,810 in 1958, decreased 19 hours from that reported in the preceding year. The average length of shift remained the same, 8 hours, as it was in 1957; each employee, however, worked 4 days less in 1958 than in 1957.

Slot-Type Ovens.—All 5 fatalities and 190 of the 210 nonfatal injuries in the coke industry occurred at slot-type ovens in 1958—a new record low. The combined frequency rate (fatal and nonfatal) increased 16 percent owing mostly to a decrease of 19 percent in man-hours. Production decreased 28 percent, and the average number of men employed, 18 percent. These men averaged 2,873 hours each, working a straight 8-hour shift, at plants that operated 5 days less than in 1957.

Beehive-Coke Ovens.—The beehive-coke industry operated in 1958 for the sixth consecutive year without a fatality; nonfatal injuries decreased from 47 in 1957 to 20. Employment declined 50 percent; man-days and man-hours also decreased 66 and 65 percent, respectively. Days worked averaged 61 less in 1958 and a work force reduced from 1,061 in 1957 to 532 produced 69 percent less coke. In spite of a gratifying decrease in injuries, the nonfatal rate (38.76) exceeded the 1957 rate (31.80) by 22 percent, and fewer ovens reported activity than at any time the Bureau of Mines has collected statistics on beehive-coke ovens.

TABLE 2.—Employment and injury experience at coke ovens in the United States, 1954–58

Industry and year	Average men working daily [1]	Average active plant days [2]	Million man-days worked	Million man-hours worked	Number of injuries		Frequency rates per million man-hours	
					Fatal	Non-fatal	Fatal	Non-fatal
Slot-type coke ovens:								
1954	17,944	359	6.5	51.8	8	245	0.15	4.73
1955	19,597	362	7.1	56.7	9	280	.16	4.94
1956	19,318	355	6.9	54.9	10	268	.18	4.89
1957	19,203	364	7.0	55.9	12	197	.21	3.53
1958	15,654	359	5.6	45.0	5	190	.11	4.23
Beehive-coke ovens:								
1954	1,265	71	.1	.7		9		13.40
1955	1,084	179	.2	1.5		45		30.96
1956	1,155	197	.2	1.7		33		19.41
1957	1,061	186	.2	1.5		47		31.80
1958	532	125	.1	.5		20		38.76
All coke ovens:								
1954	19,209	342	6.6	52.5	8	254	.15	4.84
1955	20,681	352	7.3	58.2	9	325	.15	5.59
1956	20,473	346	7.1	56.6	10	301	.18	5.32
1957	20,264	355	7.2	57.3	12	244	.21	4.26
1958	16,186	351	5.7	45.5	5	210	.11	4.62

[1] Average number of men at work each day oven was active. Because absenteeism and labor turnover are taken into consideration, this number is lower than the number of men available for work, as measured by a count of names on payroll.
[2] Average in which operating time of each plant is weighted by average number of workers in the plant.

NOTE: All data are final.

OIL AND GAS

In the oil and gas industry, combined fatal and nonfatal injuries at the rate of 9.63 per million man-hours of exposure, increased 1 percent in number and 8 percent in frequency in 1958. Severity of all injuries continued a downward trend; the 938 days per million man-hours of exposure lost in 1958 was the lowest rate recorded by the Bureau of Mines in 17 years of reporting.

Of the 11,704 injuries incurred by the industry in 1958, 116 were fatalities and permanent total disabilities, 426 were permanent partial disabilities, and 11,162 were temporary, causing disability for 1 or more days. The average time lost per injury was 97 days; in 1957 the average was 106. These data included fatalities and permanent total disabilities, each with a time-loss charge of 6,000 days.

Frequency of injury occurrence improved over 1957 in natural gasoline and marine transportation (ocean and inland). Severity of injuries was less in the following segments of the industry: Drilling, natural gasoline, pipeline oil, marine transportation (inland), and marketing. The combined frequency rate (fatal and nonfatal) for the industry as a whole as well as the national severity rate in 1958 was exceeded in four departments—drilling, production, and marine transportation, both ocean and inland.

Employment and accumulated man-hours of worktime decreased 5 and 6 percent, respectively, and workers averaged 2,079 hours each—16 hours less than in 1957.

TABLE 3.—Employment and injury experience in the oil and gas industry of the United States, 1954–58

Year	Average men working daily	Million man-hours worked	Number of injuries		Frequency rates per million man-hours	
			Fatal [1]	Nonfatal	Fatal	Nonfatal
1954	580,783	1,229	122	12,796	0.10	10.41
1955	617,274	1,303	135	13,038	.10	10.01
1956	585,486	1,236	147	11,372	.12	9.20
1957	617,596	1,294	121	11,426	.09	8.83
1958	584,708	1,216	116	11,588	.10	9.53

[1] Fatal and permanent total injuries combined.

PEAT

Peat.—The injury-frequency rate for the industrial extracting and processing of peat was 17.04 disabling work injuries per million man-hours of exposure, according to reports received by the Bureau of Mines, U.S. Department of the Interior. Reports were received from 61 active operations in 19 producing States. An average of 464 employees worked 1,517 hours each during the year for a total of .7 million man-hours and sustained 12 nonfatal injuries.

Injury and employment data reported by peat producers and processors canvassed for the first time in 1957 are somewhat sketchy and incomplete. Therefore, no year-to-year comparison of these data was attempted.

TABLE 4.—Employment and injury experience in the peat industry in the United States, 1957–58

Year	Average men working daily	Man-hours worked	Number of injuries		Frequency rates per million man-hours	
			Fatal	Nonfatal	Fatal	Nonfatal
1957 [1]	139	230,633		5		21.68
1958	464	703,992		12		17.04

[1] Incomplete return—first year of canvass.

CONCLUSION

Although records were established in 1958 for the lowest number of injuries sustained for fatal and nonfatal injuries in coal mining and the coking industry, the frequency of occurrence increased in coking and declined only 1 percent in coal. The oil and gas industry, which enjoys one of the best safety records of the fuels industries, showed slightly increased experience over 1957—the best year since the Bureau of Mines began collecting data in 1942.

PART II. COMMODITY REVIEWS

A. Coal and Related Products

Coal—Bituminous and Lignite

By W. H. Young, R. L. Anderson, and E. M. Hall

Contents

GENERAL SUMMARY

THE BITUMINOUS coal and lignite industry declined sharply in 1958 compared with 1957. Production, consumption, average value, exports, employment, and days worked decreased; however, mechanization continued to expand during the year. The percentage of underground production mechanically loaded, the percentage of total production mined by stripping, and tons per man per day rose to new highs.

Production.—The output of bituminous coal and lignite in 1958—410.4 million tons—was 17 percent less than the 492.7 million tons produced in 1957. The lower production in 1958 was due largely to decreased consumption in the United States resulting from a general decrease in business activity and in exports.

Production fluctuated very little during 1958. The only major fluctuation resulted from the miners' vacation period of 12 days in midsummer. According to the Bureau of Labor Statistics, U.S. Department of Labor, time lost because of strikes amounted to 102,000 man-days in 1958, compared with 136,000 in 1957.

Trend of Employment.—Employment decreased 14 percent in 1958 compared with 1957.

Index to Capacity.—As it is impossible for all mines to operate every working day in the year, a conservative figure of 280 days for calculating potential capacity was suggested some years ago by the

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coal committee of the American Institute of Mining, Metallurgical and Petroleum Engineers. The average output per day worked in 1958 was 2.2 million tons, which, if applied to 280 days, gives an annual potential output of 625 million tons, compared with the actual production of 410.4 million tons.

Mechanization.—A slightly larger proportion—85 percent—of coal was loaded mechanically at underground mines in the United States in 1958 than in the preceding year. Auger and strip mines furnished a greater proportion of total production in 1958 than in 1957.

Mechanical Cleaning.—Approximately 63 percent of the bituminous coal and lignite mined in the United States in 1958 was mechanically cleaned. The growth of mechanical cleaning has closely paralleled that of mechanical mining, which requires more mechanical cleaning partly because more refuse is loaded with the coal. Moreover, the bituminous coal and lignite industry has attempted to meet the consumer demand for cleaner coal. A large part of the remaining 37 percent was handpicked and screened into various sizes at tipples with no mechanical cleaning facilities.

Consumption.—Consumption of bituminous coal and lignite in the United States decreased 11 percent in 1958 from the preceding year. All classes of consumers used less coal in 1958 than in 1957. Retail deliveries declined.

Trends of Fuel Efficiency.—As for many years past, public utility electric powerplants scored new records in fuel efficiency.

Competition With Oil and Gas.—Although consumption of energy has increased steadily since 1920, the proportion supplied by bituminous coal and lignite has decreased consistently, indicating serious competition from oil and gas. Of total energy consumed in 1958, bituminous coal and lignite furnished 23 percent; anthracite, 1 percent; oil, 42 percent; gas, 30 percent; and waterpower, 4 percent.

Electric-power utilities consumed 3 percent less bituminous coal, 3 percent more gas, and 3 percent less fuel oil in 1958 than in 1957.

Class I railroads decreased their consumption of coal 56 percent and their purchases of fuel oil and diesel fuel 6 percent.

Stocks.—The reserve supply of bituminous coal and lignite in the hands of industrial consumers and retail coalyards decreased from 81 million tons at the beginning of 1958 to 76 million tons at the end of the year. Stocks decreased from a 71- to a 65-day supply. Stocks on the upper Lake docks decreased 745,439 tons from January 1 to December 31, 1958.

Exports.—In 1958 exports amounted to 50 million tons, decreasing 34 percent from 1957; 38 million tons was shipped overseas and 12 million tons to Canada.

SCOPE OF REPORT

These data include all coal produced in Alaska and the United States except Pennsylvania anthracite and Texas lignite. Alaska production is included in total production of the United States.

Throughout the chapter all tonnage figures show net tons of marketable coal and exclude washery and other refuse. "Tons" refers to net short tons of 2,000 pounds.

TABLE 1.—Salient statistics of the bituminous coal and lignite industry in the United States, 1957–58

	1957	1958	Change from 1957 (percent)
Production net tons	492,703,916	410,445,547	−16.7
Consumption in the United States do	413,668,000	366,703,000	−11.4
Stocks at end of year:			
Industrial consumers and retail yards do	80,779,000	76,285,000	−5.6
Stocks on upper Lake docks do	4,724,119	3,978,680	−15.8
Imports and exports: [1]			
Imports do	366,506	306,940	−16.3
Exports do	[2] 76,445,529	50,279,706	−34.1
Price indicators (average per net ton):			
Average cost of railroad fuel purchased, f.o.b. mines [3]	$5.53	$5.67	+2.5
Average cost of coking coal at merchant coke ovens	$10.76	$10.74	−.2
Average retail price [4]	$16.28	$16.53	+1.5
Average railroad freight charge per net ton [3]	$3.57	$3.58	+.3
Average value f.o.b. mines	$5.08	$4.86	−4.3
Equipment sold:			
Mobile loading machines	209	97	−53.6
Continuous-mining machines	168	107	−36.3
Augers	53	42	−20.8
Shuttle cars	488	181	−62.9
Conveyors:			
Gathering and haulage	172	97	−43.6
Room or transfer	159	92	−42.1
Methods of mining:			
Handloaded underground net tons	54,911,676	43,311,157	−21.1
Mechanically loaded underground do	305,737,465	243,573,087	−20.3
Percentage of total underground production mechanically loaded	84.8	84.9	+.1
Mined by stripping net tons	124,108,538	116,241,787	−6.3
Mined at auger mines do	7,946,237	7,319,516	−7.9
Mechanically cleaned do	304,027,194	259,034,851	−14.8
Number of mines	8,539	8,264	−3.2
Average number of days worked [5]	203	184	−9.4
Average number of men working daily [5]	228,635	197,402	−13.7
Production per man per day [5] net tons	10.59	11.33	+7.0
Fuel efficiency indicator: Pounds of coal per kilowatt hour at electric powerplants [6]	.93	.90	−3.2

[1] Bureau of the Census, U.S. Department of Commerce.
[2] Revised.
[3] Interestate Commerce Commission.
[4] Bureau of Labor Statistics, U.S. Department of Labor.
[5] Accident Analysis Branch, Federal Bureau of Mines.
[6] Federal Power Commission.

Statistics for 1958 are final and are based upon detailed annual reports of production and mine operation furnished by producers. All but a small percentage of the output was covered by the reports submitted. For production not directly reported (chiefly that of small mines) reasonably accurate data were obtained from the records of the various State mine departments (which have statutory authority to require such reports) or, in a few instances, from railroad car-loadings. Thus, complete coverage of all mines producing 1,000 tons a year or more is reported. Inclusion of many small mines that produce less than 1,000 tons a year was not attempted.

From 1955 to 1958, inclusive, the annual production form did not request information on employment. These figures that include men working daily, days worked, man-days worked, and tons per man per day were obtained from the Accident Analysis Branch of the Bureau of Mines.

Statistical procedures are also detailed in the following sections: Production by Months and Weeks, Number and Size of Mines, Mechanical Cleaning, Production by States and Counties, Consumption, Relative Rate of Growth of Mineral Fuels and Waterpower, and Stocks.

RESERVES[1]

TABLE 2.—Coal reserves of the United States, Jan. 1, 1953, by States

(In million short tons)

State	Estimated original reserves					Reserves depleted to Jan. 1, 1953		Remaining reserves Jan. 1, 1953	Recoverable reserves Jan. 1, 1953, assuming 50-percent recovery
	Bituminous coal	Subbituminous coal	Lignite	Anthracite and semianthracite	Total	Production[1]	Production plus loss in mining, assuming past losses equal production		
Alabama[2]	67,570				67,570	861	1,722	65,848	32,924
Arkansas	1,396		90	230	1,716	94	188	1,528	764
COLORADO[3]	90,258	9,437		713	100,408	484	968	99,440	49,719
GEORGIA	100				100	12	24	76	38
ILLINOIS	[4] 137,321				[4] 137,321	[5] 156	[5] 312	137,009	68,504
INDIANA	37,293				37,293	1,039	2,078	35,215	17,607
Iowa	29,160				29,160	348	696	28,464	14,232
KANSAS	[4] 20,774		(6)		20,774	[5] 6	[5] 12	20,762	10,381
Kentucky	123,327				123,327	2,177	4,354	118,973	59,487
MARYLAND	[4] 1,200				[4] 1,200	[5] 2	[5] 4	1,196	598
MICHIGAN	297				297	[7] 46	[8] 77	220	110
Missouri	79,362				79,362	267	534	78,828	39,414
MONTANA	2,363	132,151	87,533		222,047	164	328	221,719	110,860
NEW MEXICO	10,948	50,801		6	61,755	123	246	61,509	30,754
NORTH CAROLINA	112				112	1	2	110	55
NORTH DAKOTA			350,910		350,910	77	154	350,756	175,378
Ohio	86,584				86,584	1,806	3,612	82,972	41,486
Oklahoma	54,951				54,951	166	332	54,619	27,309
PENNSYLVANIA	75,093			22,805	97,898	12,761	25,522	72,376	36,189
SOUTH DAKOTA			2,033		2,033	1	2	2,031	1,015
Tennessee	25,665				25,665	340	680	24,985	12,493
Texas	8,000		23,000		31,000	62	124	30,876	15,438
Utah	88,184	5,156			93,340	218	436	92,904	46,452
VIRGINIA	11,696			355	12,051	609	1,218	10,833	5,417
Washington	11,413	52,442		23	63,878	145	290	63,588	31,794

WEST VIRGINIA	116, 618				116, 618	5, 428	10, 856	105, 762	52, 881
WYOMING	13, 235	[9] 108, 319	(9)		121, 554	383	766	120, 788	60, 395
Other States	[10] 820	[11] 15, 500	[12] 50		16, 370	9	18	16, 352	8, 176
Total	1, 093, 740	373, 806	463, 616	24, 132	1, 955, 294	[13] 27, 785	55, 555	1, 899, 739	949, 870

[1] Production, 1800–85, from Eavenson, H. N., The First Century and a Quarter of American Coal Industry, Pittsburgh, 1942, pp. 432–434; production, 1886–1952, from Geol. Survey Mineral Resources volumes and Bureau of Mines Minerals Yearbooks unless otherwise indicated.
[2] Reserve estimates of States in lower case letters were prepared by, or under the direction of, M. R. Campbell before 1928.
[3] Reserve estimates of States in capital letters supersede earlier estimates by M. R. Campbell.
[4] Remaining reserves, January 1, 1950.
[5] Production, 1950–52.
[6] See discussion in text.
[7] Production, 1860–1949, Michigan Geological Survey Division, as cited in Cohee, G. V., Burns, R. N., Brown, Andrew, Brant, R. A., and Wright, Dorothy, Coal Resources of Michigan: Geol. Survey Circ. 77, 1950, p. 56.
[8] Past losses assumed to be 40 percent of coal originally in the ground.
[9] Small reserves and production of lignite included under subbituminous coal.
[10] Includes Arizona, California, Idaho, and Oregon.
[11] Includes Arizona, California, and Oregon.
[12] Includes California and Louisiana.
[13] Somewhat less than total recorded production. See footnote 5.

[1] Averitt, Paul, Berryhill, Louise R., and Taylor, Dorothy A., Coal Resources of the United States: Geol. Survey Circ. 293, 1954, p. 5.

THICKNESS OF BITUMINOUS COAL AND LIGNITE SEAMS

The Bureau of Mines compiled and published detailed data on thickness of seams for coal mines in 1955.[2] Because of the importance of seam thickness in mining, these data for 1955 follow. See also figure 1.

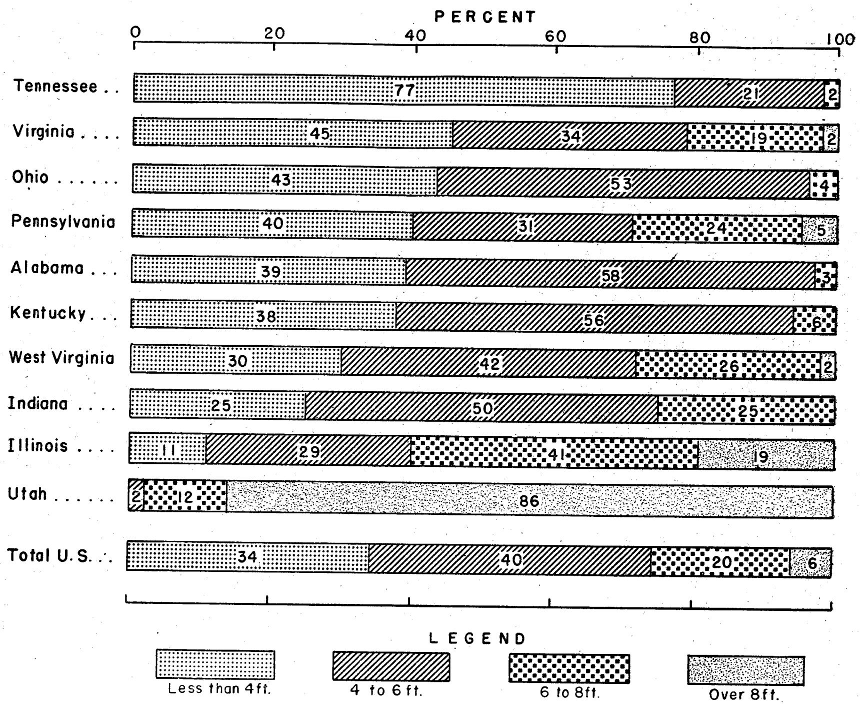

FIGURE 1.—Percentage of bituminous coal and lignite produced in the 10 leading coal-producing States and total United States, 1955, by thickness of seams mined.

[2] Young, W. H., and Anderson, R. L., Thickness of Bituminous-Coal and Lignite Seams at All Mines, and Thickness of Overburden at Strip Mines in the United States in 1955: Bureau of Mines Inf. Circ. 7812, 1957, 11 pp.

TABLE 3.—Number and production of bituminous coal and lignite mines in the United States, 1955, classified by thickness of seams mined

Item	Less than 2 feet	2 to 3 feet	3 to 4 feet	4 to 5 feet	5 to 6 feet	6 to 7 feet	7 to 8 feet	8 feet and over	Total
Number of mines:									
Underground	32	1,289	2,467	1,243	438	251	152	163	6,035
Strip	117	484	503	267	113	47	23	62	1,616
Auger		35	78	67	14	7		3	204
Total	149	1,808	3,048	1,577	565	305	175	228	7,855
Percentage of mines:									
Underground	.5	21.4	40.9	20.6	7.2	4.2	2.5	2.7	100.0
Strip	7.3	30.0	31.1	16.5	7.0	2.9	1.4	3.8	100.0
Auger		17.2	38.2	32.8	6.9	3.4		1.5	100.0
Total	1.9	23.0	38.8	20.1	7.2	3.9	2.2	2.9	100.0
Production (thousand tons):									
Underground	269	17,610	81,934	69,650	65,621	50,397	35,107	22,877	343,465
Strip	4,232	19,303	31,516	29,016	17,579	5,923	1,077	6,440	115,086
Auger		423	1,627	2,774	661	525		65	6,075
Total	4,501	37,336	115,077	101,440	83,861	56,845	36,184	29,382	464,626
Percentage of production:									
Underground	.1	5.1	23.9	20.2	19.1	14.7	10.2	6.7	100.0
Strip	3.7	16.8	27.4	25.2	15.2	5.2	.9	5.6	100.0
Auger		7.0	26.8	45.7	10.9	8.6		1.0	100.0
Total	1.0	8.0	24.8	21.8	18.1	12.2	7.8	6.3	100.0

TABLE 4.—Number of mines, production, output per man per day, and average thickness of seams mined, at underground, strip, and auger bituminous coal and lignite mines in the United States, by States, in 1955

State	Underground mines				Strip mines				Auger mines				Total, all mines			
	Number of mines	Production (net tons)	Average output per man per day (tons)	Average thickness of seams mined (feet)	Number of mines	Production (net tons)	Average output per man per day (tons)	Average thickness of seams mined (feet)	Number of mines	Production (net tons)	Average output per man per day (tons)	Average thickness of seams mined (feet)	Number of mines	Production (net tons)	Average output per man per day (tons)	Average thickness of seams mined (feet)
Alabama	195	10, 970, 610	6. 25	4. 4	39	2, 110, 979	14. 64	3. 2	1	6, 888	20. 00	8. 0	235	13, 088, 477	6. 89	4. 6
Alaska	6	239, 571	5. 64	20. 7	7	400, 125	16. 94	23. 7					13	639, 696	9. 68	22. 6
Arizona	2	8, 898	2. 78	5. 5									2	8, 898	2. 78	5. 5
Arkansas	19	317, 001	4. 36	2. 6	8	260, 725	11. 65	1. 7					27	577, 726	6. 08	2. 2
Colorado	110	3, 211, 125	5. 84	7. 1	7	356, 805	24. 41	6. 2					117	3, 567, 930	6. 32	7. 0
Georgia	6	12, 471	2. 70	1. 5									6	12, 471	2. 70	1. 5
Illinois	103	27, 256, 495	14. 23	7. 3	68	18, 675, 619	23. 87	4. 8					171	45, 932, 114	17. 02	6. 3
Indiana	44	4, 967, 089	10. 66	6. 2	56	11, 182, 221	27. 14	4. 4					100	16, 149, 310	18. 39	5. 0
Iowa	30	297, 490	4. 33	4. 5	30	960, 867	16. 35	3. 9					60	1, 258, 357	9. 87	4. 1
Kansas	5	14, 819	3. 17	2. 7	19	727, 463	11. 97	1. 6					24	742, 282	11. 34	1. 6
Kentucky	1, 852	54, 440, 144	8. 38	4. 4	118	13, 643, 240	25. 36	4. 8	34	936, 526	19. 17	4. 4	2, 004	69, 019, 910	9. 75	4. 4
Maryland	58	275, 454	3. 82	3. 8	26	237, 015	12. 22	4. 7					84	512, 469	5. 60	4. 2
Missouri	19	157, 103	2. 99	3. 6	28	3, 075, 382	20. 69	2. 5					47	3, 232, 485	16. 06	2. 6
Montana (bituminous and lignite)	19	439, 285	7. 95	5. 8	5	807, 968	67. 25	23. 5					24	1, 247, 253	18. 54	17. 3
New Mexico	28	174, 299	3. 86	5. 8	3	27, 280	14. 44	6. 3					31	201, 579	4. 28	5. 9
North Dakota (lignite)	5	21, 357	7. 99	10. 1	40	3, 080, 730	35. 90	12. 1					45	3, 102, 087	35. 06	12. 1
Ohio	233	12, 632, 165	8. 47	4. 8	259	23, 958, 329	22. 83	3. 8	38	1, 279, 297	35. 38	4. 1	530	37, 869, 791	14. 70	4. 2
Oklahoma	14	694, 323	4. 57	3. 7	21	1, 469, 213	17. 75	2. 3					35	2, 163, 536	9. 22	2. 8
Pennsylvania	797	64, 904, 231	7. 19	5. 5	585	20, 518, 113	14. 99	3. 2	29	291, 112	13. 50	3. 0	1, 411	85, 713, 456	8. 23	4. 9
South Dakota (lignite)					2	25, 782	10. 31	4. 5					2	25, 782	10. 31	4. 5
Tennessee	409	5, 340, 664	5. 72	3. 9	87	1, 635, 052	16. 72	2. 5	8	77, 128	11. 62	3. 3	504	7, 052, 844	6. 79	3. 6
Utah	50	6, 295, 524	9. 75	11. 1									50	6, 295, 524	9. 75	11. 1
Virginia	1, 007	22, 241, 262	7. 19	4. 5	31	981, 782	13. 78	5. 0	21	284, 465	14. 06	4. 5	1, 059	23, 507, 509	7. 38	4. 5
Washington	12	578, 076	5. 01	7. 6	1	31, 714	25. 66	5. 5					13	609, 790	5. 24	7. 5
West Virginia	996	126, 588, 262	8. 86	5. 1	168	9, 379, 643	22. 96	5. 8	73	3, 199, 984	22. 92	4. 7	1, 237	139, 167, 889	9. 38	5. 1
Wyoming	16	1, 387, 521	9. 35	8. 0	8	1, 539, 072	36. 32	33. 1					24	2, 926, 593	15. 34	21. 2
Total	6, 035	343, 465, 239	8. 28	5. 3	1, 616	115, 085, 119	21. 12	4. 9	204	6, 075, 400	22. 22	4. 4	7, 855	464, 625, 758	9. 84	5. 2

DOMESTIC PRODUCTION

TABLE 5.—Growth of the bituminous coal and lignite mining industry in the United States, 1890–1958

Year	Production (net tons)	Value of production		Number of mines	Capacity at 280 days (million tons)	Foreign trade [1]	
		Total	Average per ton			Exports (net tons)	Imports (net tons)
1890	111, 302, 322	$110, 420, 801	$0. 99	(2)	137	1, 272, 396	1, 047, 416
1891	117, 901, 238	117, 188, 400	. 99	(2)	148	1, 651, 694	1, 181, 677
1892	126, 856, 567	125, 124, 381	. 99	(2)	162	1, 904, 556	1, 491, 800
1893	128, 385, 231	122, 751, 618	. 96	(2)	174	1, 986, 383	1, 234, 499
1894	118, 820, 405	107, 653, 501	. 91	(2)	196	2, 439, 720	1, 286, 268
1895	135, 118, 193	115, 779, 771	. 86	2, 555	196	2, 659, 987	1, 411, 323
1896	137, 640, 276	114, 891, 515	. 83	2, 599	202	2, 515, 838	1, 393, 095
1897	147, 617, 519	119, 595, 224	. 81	2, 454	213	2, 670, 157	1, 442, 534
1898	166, 593, 623	132, 608, 713	. 80	2, 862	221	3, 004, 304	1, 426, 108
1899	193, 323, 187	167, 952, 104	. 87	3, 245	230	3, 897, 994	1, 409, 838
1900	212, 316, 112	220, 930, 313	1. 04	(2)	255	6, 060, 688	1, 911, 925
1901	225, 828, 149	236, 422, 049	1. 05	(2)	281	6, 455, 085	2, 214, 507
1902	260, 216, 844	290, 858, 483	1. 12	(2)	316	6, 048, 777	2, 174, 393
1903	282, 749, 348	351, 687, 933	1. 24	(2)	350	5, 835, 561	4, 043, 519
1904	278, 659, 689	305, 397, 001	1. 10	4, 650	386	7, 206, 879	2, 179, 882
1905	315, 062, 785	334, 658, 294	1. 06	5, 060	417	7, 512, 723	1, 704, 810
1906	342, 874, 867	381, 162, 115	1. 11	4, 430	451	8, 014, 263	2, 039, 169
1907	394, 759, 112	451, 214, 842	1. 14	4, 550	473	9, 869, 812	1, 892, 653
1908	332, 573, 944	374, 135, 268	1. 12	4, 730	482	11, 071, 152	2, 219, 243
1909	379, 744, 257	405, 486, 777	1. 07	5, 775	510	10, 101, 131	1, 375, 201
1910	417, 111, 142	469, 281, 719	1. 12	5, 818	538	11, 663, 052	1, 819, 766
1911	405, 907, 059	451, 375, 819	1. 11	5, 887	538	13, 259, 791	1, 972, 555
1912	450, 104, 982	517, 983, 445	1. 15	5, 747	566	16, 475, 029	1, 456, 333
1913	478, 435, 297	565, 234, 952	1. 18	5, 776	577	18, 013, 073	1, 767, 656
1914	422, 703, 970	493, 309, 244	1. 17	5, 592	608	17, 589, 562	1, 520, 962
1915	442, 624, 426	502, 037, 688	1. 13	5, 502	610	18, 776, 640	1, 703, 785
1916	502, 519, 682	665, 116, 077	1. 32	5, 726	613	21, 254, 627	1, 713, 837
1917	551, 790, 563	1, 249, 272, 837	2. 26	6, 939	636	23, 839, 558	1, 448, 453
1918	579, 385, 820	1, 491, 809, 940	2. 58	8, 319	650	22, 350, 730	1, 457, 073
1919	465, 860, 058	1, 160, 616, 013	2. 49	8, 994	669	20, 113, 536	1, 011, 550
1920	568, 666, 683	2, 129, 933, 000	3. 75	8, 921	725	38, 517, 084	1, 244, 990
1921	415, 921, 950	1, 199, 983, 600	2. 89	8, 038	781	23, 131, 166	1, 257, 589
1922	422, 268, 099	1, 274, 820, 000	3. 02	9, 299	832	12, 413, 085	5, 059, 999
1923	564, 564, 662	1, 514, 621, 000	2. 68	9, 331	885	21, 453, 579	1, 882, 306
1924	483, 686, 538	1, 062, 626, 000	2. 20	7, 586	792	17, 100, 347	417, 226
1925	520, 052, 741	1, 060, 402, 000	2. 04	7, 144	748	17, 461, 560	601, 737
1926	573, 366, 985	1, 183, 412, 000	2. 06	7, 177	747	35, 271, 937	485, 666
1927	517, 763, 352	1, 029, 657, 000	1. 99	7, 011	759	18, 011, 744	549, 843
1928	500, 744, 970	933, 774, 000	1. 86	6, 450	691	16, 164, 485	546, 526
1929	534, 988, 593	952, 781, 000	1. 78	6, 057	679	17, 429, 298	495, 219
1930	467, 526, 299	795, 483, 000	1. 70	5, 891	700	15, 877, 407	240, 886
1931	382, 089, 396	588, 895, 000	1. 54	5, 642	669	12, 126, 299	206, 303
1932	309, 709, 872	406, 677, 000	1. 31	5, 427	594	8, 814, 047	186, 909
1933	333, 630, 533	445, 788, 000	1. 34	5, 555	559	9, 036, 947	197, 429
1934	359, 368, 022	628, 383, 000	1. 75	6, 258	565	10, 868, 552	179, 661
1935	372, 373, 122	658, 063, 000	1. 77	6, 315	582	9, 742, 430	201, 871
1936	439, 087, 903	770, 955, 000	1. 76	6, 875	618	10, 654, 959	271, 798
1937	445, 531, 449	864, 042, 000	1. 94	6, 548	646	13, 144, 678	257, 996
1938	348, 544, 764	678, 653, 000	1. 95	5, 777	602	10, 490, 269	241, 305
1939	394, 855, 325	728, 348, 366	1. 84	5, 820	621	11, 590, 478	355, 115
1940	460, 771, 500	879, 327, 227	1. 91	6, 324	639	16, 465, 928	371, 571
1941	514, 149, 245	1, 125, 362, 836	2. 19	6, 822	666	20, 740, 471	390, 049
1942	582, 692, 937	1, 373, 990, 608	2. 36	6, 972	663	22, 943, 305	498, 103
1943	590, 177, 069	1, 584, 644, 477	2. 69	6, 620	626	25, 836, 208	757, 634
1944	619, 576, 240	1, 810, 900, 542	2. 92	6, 928	624	26, 032, 348	633, 689
1945	577, 617, 327	1, 768, 204, 320	3. 06	7, 033	620	27, 956, 192	467, 473
1946	533, 922, 068	1, 835, 539, 476	3. 44	7, 333	699	41, 197, 378	434, 680
1947	630, 623, 722	2, 622, 634, 946	4. 16	8, 700	755	68, 666, 963	290. 141
1948	599, 518, 229	2, 993, 267, 021	4. 99	9, 079	774	45, 930, 133	291, 337
1949	437, 868, 036	2, 136, 870, 571	4. 88	8, 559	781	27, 842, 056	314, 980
1950	516, 311, 053	2, 500, 373, 779	4. 84	9, 429	790	25, 468, 403	346, 706
1951	533, 664, 732	2, 626, 030, 137	4. 92	8, 009	736	56, 721, 547	292, 378
1952	466, 840, 782	2, 289, 180, 401	4. 90	7, 275	703	47, 643, 150	262, 268
1953	457, 290, 449	2, 247, 828, 694	4. 92	6, 671	670	33, 760, 263	226, 900
1954	391, 706, 300	1, 769, 619, 723	4. 52	6, 130	603	31, 040, 564	198, 799
1955	464, 633, 408	2, 092, 382, 737	4. 50	7, 856	620	51, 277, 256	337, 145
1956	500, 874, 077	2, 412, 004, 151	4. 82	8, 520	655	68, 552, 629	355, 701
1957	492, 703, 916	2, 504, 406, 042	5. 08	8, 539	680	76, 445, 529	366, 506
1958	410, 445, 547	1, 996, 281, 274	4. 86	8, 264	625	50, 279. 706	306, 940

[1] Figures for 1890–1914 represent fiscal year ended June 30.
[2] Data not available.

TABLE 6.—Growth of the bituminous coal and lignite mining industry in the United States, 1890–1958

Year	Men employed	Average number of days worked	Average days lost per man on strike	Net tons per man— Per day	Net tons per man— Per year	Percentage of underground production— Cut by machines [1]	Percentage of underground production— Mechanically loaded	Percentage of total production— Mechanically cleaned [2]	Percentage of total production— Mined by stripping
1890	192,204	226	(3)	2.56	579	(3)	(3)	(3)	(3)
1891	205,803	223	(3)	2.57	573	5.3	(3)	(3)	(3)
1892	212,893	219	(3)	2.72	596	(3)	(3)	(3)	(3)
1893	230,365	204	(3)	2.73	557	(3)	(3)	(3)	(3)
1894	244,603	171	(3)	2.84	486	(3)	(3)	(3)	(3)
1895	239,962	194	(3)	2.90	563	(3)	(3)	(3)	(3)
1896	244,171	192	(3)	2.94	564	11.9	(3)	(3)	(3)
1897	247,817	196	(3)	3.04	596	15.3	(3)	(3)	(3)
1898	255,717	211	(3)	3.09	651	19.5	(3)	(3)	(3)
1899	271,027	234	46	3.05	713	22.7	(3)	(3)	(3)
1900	304,375	234	43	2.98	697	24.9	(3)	(3)	(3)
1901	340,235	225	35	2.94	664	25.6	(3)	(3)	(3)
1902	370,056	230	44	3.06	703	26.8	(3)	(3)	(3)
1903	415,777	225	28	3.02	680	27.6	(3)	(3)	(3)
1904	437,832	202	44	3.15	637	28.2	(3)	(3)	(3)
1905	460,629	211	23	3.24	684	32.8	(3)	(3)	(3)
1906	478,425	213	63	3.36	717	34.7	(3)	2.7	(3)
1907	513,258	234	14	3.29	769	35.1	(3)	2.9	(3)
1908	516,264	193	38	3.34	644	37.0	(3)	3.6	(3)
1909	543,152	209	29	3.34	699	37.5	(3)	3.8	(3)
1910	555,533	217	89	3.46	751	41.7	(3)	3.8	(3)
1911	549,775	211	27	3.50	738	43.9	(3)	(3)	(3)
1912	548,632	223	35	3.68	820	46.8	(3)	3.9	(3)
1913	571,882	232	36	3.61	837	50.7	(3)	4.6	(3)
1914	583,506	195	80	3.71	724	51.8	(3)	4.8	0.3
1915	557,456	203	61	3.91	794	55.3	(3)	4.7	.6
1916	561,102	230	26	3.90	896	56.9	(3)	4.6	.8
1917	603,143	243	17	3.77	915	56.1	(3)	4.6	1.0
1918	615,305	249	7	3.78	942	56.7	(3)	3.8	1.4
1919	621,998	195	37	3.84	749	60.0	(3)	3.6	1.2
1920	639,547	220	22	4.00	881	60.7	(3)	3.3	1.5
1921	663,754	149	23	4.20	627	66.4	(3)	3.4	1.2
1922	687,958	142	117	4.28	609	64.8	(3)	(3)	2.4
1923	704,793	179	20	4.47	801	68.3	0.3	3.8	2.1
1924	619,604	171	73	4.56	781	71.5	.7	(3)	2.8
1925	588,493	195	30	4.52	884	72.9	1.2	(3)	3.2
1926	593,647	215	24	4.50	966	73.8	1.9	(3)	3.0
1927	593,918	191	153	4.55	872	74.9	3.3	5.3	3.6
1928	522,150	203	83	4.73	959	76.9	4.5	5.7	4.0
1929	502,993	219	11	4.85	1,064	78.4	7.4	6.9	3.8
1930	493,202	187	43	5.06	948	81.0	10.5	8.3	4.3
1931	450,213	160	35	5.30	849	83.2	13.1	9.5	5.0
1932	406,380	146	120	5.22	762	84.1	12.3	9.8	6.3
1933	418,703	167	30	4.78	797	84.7	12.0	10.4	5.5
1934	458,011	178	15	4.40	785	84.1	12.2	11.1	5.8
1935	462,403	179	[4] 7	4.50	805	84.2	13.5	12.2	6.4
1936	477,204	199	21	4.62	920	84.8	16.3	13.9	6.4
1937	491,864	193	[4] 19	4.69	906	(3)	20.2	14.6	7.1
1938	441,333	162	13	4.89	790	87.5	26.7	18.2	8.7
1939	421,788	178	36	5.25	936	87.9	31.0	20.1	9.6
1940	439,075	202	8	5.19	1,049	88.4	35.4	22.2	9.2
1941	456,981	216	27	5.20	1,125	89.0	40.7	22.9	10.7
1942	461,991	246	7	5.12	1,261	89.7	45.2	24.4	11.5
1943	416,007	264	[4] 15	5.38	1,419	90.3	48.9	24.7	13.5
1944	393,347	278	[4] 5	5.67	1,575	90.5	52.9	25.6	16.3
1945	383,100	261	[4] 9	5.78	1,508	90.8	56.1	25.6	19.0
1946	[5] 396,434	214	[4] 23	6.30	1,347	90.8	58.4	26.0	21.1
1947	[5] 419,182	234	[4] 5	6.42	1,504	90.0	60.7	27.7	22.1
1948	[5] 441,631	217	[4] 16	6.26	1,358	90.7	64.3	30.2	23.3
1949	[5] 433,698	157	[4] 15	6.43	1,010	91.4	67.0	35.1	24.2
1950	[5] 415,582	183	[4] 56	6.77	1,239	91.8	69.4	38.5	23.9
1951	[5] 372,897	203	[4] 4	7.04	1,429	93.4	73.1	45.0	22.0
1952	[5] 335,217	186	[4] 6	7.47	1,389	92.8	75.6	48.7	23.3
1953	[5] 293,106	191	[4] 3	8.17	1,560	92.3	79.6	52.9	23.1
1954	[5] 227,397	182	[4] 4	9.47	1,724	88.8	84.0	59.4	25.1
1955	[5] 225,093	210	[4] 4	9.84	2,064	88.1	84.6	58.7	24.8
1956	[5] 228,163	214	[4] 4	10.28	2,195	84.6	84.0	58.4	25.4
1957	[5] 228,635	203	[4] 3	10.59	2,155	80.9	84.8	61.7	25.2
1958	[5] 197,402	184	[4] 3	11.33	2,079	75.3	84.9	63.1	28.3

[1] Percentages for 1890–1913 are of total production, as a separation of underground and strip production is not available for these years.
[2] Percentages for 1906–26 are exclusive of coal cleaned at central washeries operated by consumers.
[3] Data not available.
[4] Bureau of Labor Statistics, U.S. Department of Labor.
[5] Average number of men working daily.

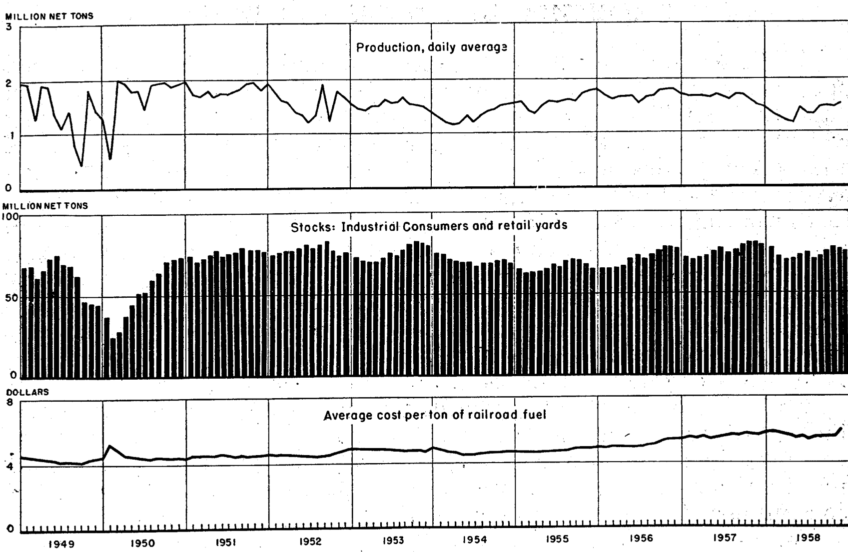

FIGURE 2.—Trends of production, stocks, and railroad-fuel prices of bituminous coal and lignite in the United States, 1949–58.

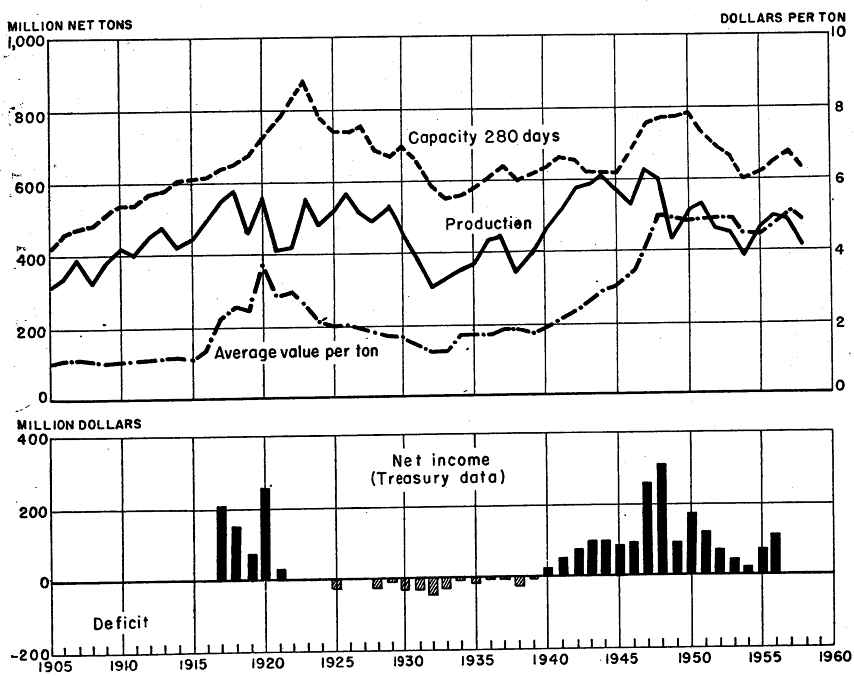

FIGURE 3.—Trends of bituminous coal and lignite production, realization, mine capacity, and net income or deficit in the United States, 1905–58.

PRODUCTION BY MONTHS AND WEEKS

The figures on monthly and weekly production are estimates based upon (1) railroad carloadings of coal reported daily and weekly by all important carriers, (2) shipments on the Allegheny and Monongahela Rivers reported by the U.S. Army Engineers, (3) direct reports from mining companies, and (4) monthly production statements compiled by certain local operators' associations and State mine departments. In computing the estimates, allowance is made for commercial truck shipments, local sales, colliery fuel, and small truck mines producing over 1,000 tons a year. Preliminary estimates are made currently and published in the Weekly Coal Reports. These preliminary estimates have proved very reliable and for many years have been within approximately 1 percent of the final figure of total production, based upon complete coverage of all mines producing over 1,000 tons a year. The preliminary estimates are revised later to agree with the final total production based on the canvass. Thus, the monthly and weekly estimates of production, summarized in tables 7–10, represent final figures and vary slightly from the preliminary figures of production published in the Weekly Coal Reports. See also figures 2, 3, 4, and 5.

FIGURE 4.—Production of bituminous coal and lignite in the United States 1957–58, by weeks.

TABLE 7.—Production of bituminous coal and lignite in the United States, 1957–58, with estimates by months

Month	Production (thousand net tons)		Maximum number of working days		Average production per working day (thousand net tons)	
	1957	1958	1957	1958	1957	1958
January	44,668	38,658	26	26	1,718	1,487
February	39,884	32,237	24	24	1,662	1,343
March	43,030	32,886	26	26	1,655	1,265
April	42,245	30,432	25.2	25.3	1,676	1,203
May	43,161	31,103	26.5	26.6	1,629	1,169
June	39,551	34,647	23.3	23.8	1,697	1,456
July	34,484	24,301	21	18	1,642	1,350
August	43,300	34,420	27	26	1,604	1,324
September	40,981	36,956	24	25	1,708	1,478
October	45,729	40,205	27	27	1,694	1,489
November	38,508	34,802	24.7	23.8	1,559	1,462
December	37,163	39,799	25	26	1,487	1,531
Total	492,704	410,446	299.7	297.5	1,644	1,380

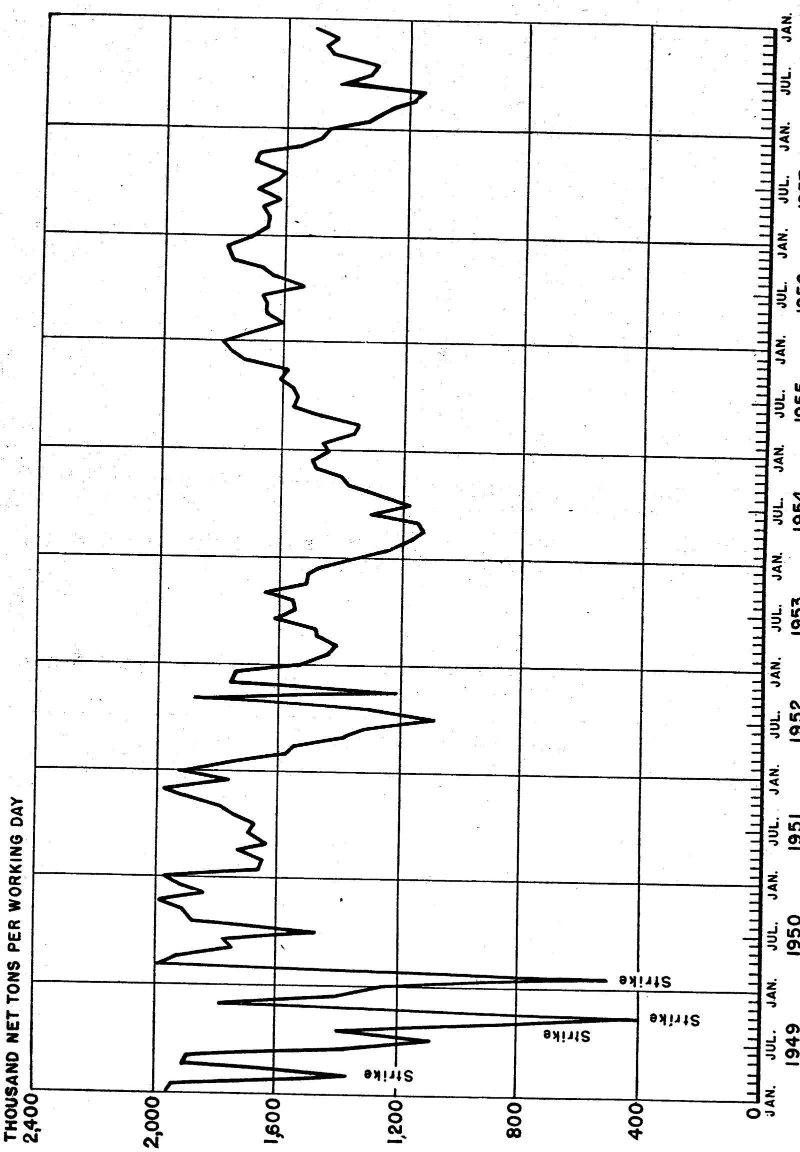

FIGURE 5.—Average production of bituminous coal and lignite in the United States per working day in each month, 1949–58.

TABLE 8.—Production of bituminous coal and lignite in the United States in 1958, by States, with estimates by months, in thousand net tons

[Totals for year are based on final complete returns from all operators known to have produced 1,000 or more tons per year. Monthly apportionment is based on current records of railroad carloadings and shipments on the Allegheny and Monongahela Rivers, supplemented by direct reports from local sources]

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alabama	1,094	981	1,043	977	935	857	611	837	877	951	920	1,099	11,182
Alaska	86	75	80	72	47	32	38	42	64	71	66	86	759
Arkansas	38	33	26	22	24	23	19	21	35	37	39	47	364
Colorado	323	254	251	208	155	165	130	184	251	334	317	402	2,974
Illinois	4,441	3,865	3,639	3,085	3,252	3,420	2,355	3,464	3,765	4,288	3,571	4,767	43,912
Indiana	1,647	1,431	1,345	1,137	1,078	1,062	740	1,053	1,174	1,362	1,253	1,740	15,022
Iowa	113	105	114	80	75	105	74	100	76	81	105	151	1,179
Kansas	101	102	100	61	62	62	45	56	51	68	53	62	823
Kentucky:													
Eastern	3,668	2,910	2,945	2,544	2,636	3,144	2,507	3,408	3,672	3,922	3,223	3,652	38,231
Western	2,668	2,425	2,157	2,132	2,126	2,404	1,859	2,223	2,455	2,615	2,237	2,780	28,081
Total Kentucky	6,336	5,335	5,102	4,676	4,762	5,548	4,366	5,631	6,127	6,537	5,460	6,432	66,312
Maryland	73	46	66	69	65	77	56	65	83	77	78	83	838
Missouri	273	249	203	188	193	202	111	183	190	248	227	325	2,592
Montana:													
Bituminous	43	18	14	11	10	10	4	9	21	29	19	23	211
Lignite	18	8	6	6	5	5	2	5	8	12	9	10	94
Total Montana	61	26	20	17	15	15	6	14	29	41	28	33	305
New Mexico	8	8	6	4	7	7	5	7	12	21	13	19	117
North Dakota (lignite)	279	256	204	93	77	70	87	89	156	231	293	479	2,314
Ohio	2,888	2,416	2,411	2,528	2,704	3,051	2,086	3,070	3,303	3,097	2,309	2,165	32,028
Oklahoma	176	157	121	114	114	128	114	133	136	145	135	157	1,630
Pennsylvania	6,074	5,154	5,438	5,221	5,092	5,446	4,082	5,403	5,961	6,848	6,190	6,862	67,771
South Dakota (lignite)	2	1	2	2	1	1	2	2	1	2	2	2	20
Tennessee	602	465	527	533	516	647	421	586	588	661	585	654	6,785
Utah	541	358	402	402	402	447	217	404	496	572	482	605	5,328
Virginia	2,376	1,795	2,266	2,078	2,064	2,377	1,878	2,367	2,497	2,593	2,134	2,401	26,826
Washington	30	22	23	17	32	21	10	13	16	24	18	26	252
West Virginia	10,915	8,948	9,353	8,740	9,348	10,815	6,791	10,585	10,928	11,718	10,347	10,980	119,468
Wyoming	179	153	143	107	82	68	56	110	139	197	175	220	1,629
Other States [1]	2	2	1	1	1	1	1	1	1	1	2	2	16
Total	38,658	32,237	32,886	30,432	31,103	34,647	24,301	34,420	36,956	40,205	34,802	39,799	410,446

[1] Includes Arizona and Georgia.

TABLE 9.—Production of bituminous coal and lignite in the United States in 1958, by districts, with estimates by months, in thousand net tons

[Totals for year are based on final complete returns from all operators known to have produced 1,000 or more tons per year. Monthly apportionment is based on current records of railroad carloadings and shipments on the Allegheny and Monongahela Rivers, supplemented by direct reports from local sources]

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
1. Eastern Pennsylvania	2, 893	2, 436	2, 588	2, 488	2, 428	2, 608	1, 945	2, 570	2, 845	3, 246	2, 946	3, 260	32, 253
2. Western Pennsylvania	3, 312	2, 811	2, 965	2, 847	2, 776	2, 970	2, 226	2, 946	3, 250	3, 735	3, 375	3, 741	36, 954
3. Northern West Virginia	3, 383	2, 794	2, 923	2, 746	2, 763	3, 201	1, 997	2, 930	3, 041	3, 357	3, 128	3, 304	35, 567
4. Ohio	2, 888	2, 416	2, 411	2, 528	2, 704	3, 051	2, 086	3, 070	3, 303	3, 097	2, 309	2, 165	32, 028
5. Michigan	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Panhandle	291	241	253	237	238	277	173	253	263	290	271	285	3, 072
7. Southern Numbered 1	3, 253	2, 697	2, 915	2, 709	2, 918	3, 359	2, 164	3, 441	3, 544	3, 693	3, 205	3, 366	37, 264
8. Southern Numbered 2	10, 375	8, 184	8, 775	7, 980	8, 425	9, 875	7, 089	10, 078	10, 589	11, 277	9, 436	10, 457	112, 540
9. West Kentucky	2, 668	2, 425	2, 157	2, 132	2, 126	2, 404	1, 859	2, 223	2, 455	2, 615	2, 237	2, 780	28, 081
10. Illinois	4, 441	3, 865	3, 639	3, 085	3, 252	3, 420	2, 355	3, 464	3, 765	4, 288	3, 571	4, 767	43, 912
11. Indiana	1, 647	1, 431	1, 345	1, 137	1, 078	1, 062	740	1, 053	1, 174	1, 362	1, 253	1, 740	15, 022
12. Iowa	113	105	114	80	75	105	74	100	76	81	105	151	1, 179
13. Southeastern	1, 296	1, 137	1, 219	1, 155	1, 109	1, 074	753	1, 034	1, 074	1, 172	1, 117	1, 319	13, 459
14. Arkansas-Oklahoma	118	104	81	73	75	80	71	81	96	102	99	118	1, 098
15. Southwestern	470	437	369	312	318	335	218	312	316	396	355	473	4, 311
16. Northern Colorado	82	53	54	34	12	7	5	14	31	83	90	123	588
17. Southern Colorado	244	204	199	175	146	160	127	172	224	258	231	285	2, 425
18. New Mexico	6	6	5	4	4	5	3	5	9	15	10	14	86
19. Wyoming	179	153	143	107	82	68	56	110	139	197	175	220	1, 629
20. Utah	541	358	402	402	402	447	217	404	496	572	482	605	5, 328
21. North-South Dakota	281	257	206	95	78	71	89	91	157	233	295	481	2, 334
22. Montana	61	26	20	17	15	15	6	14	29	41	28	33	305
23. Washington	116	97	103	89	79	53	48	55	80	95	84	112	1, 011
Total	38, 658	32, 237	32, 886	30, 432	31, 103	34, 647	24, 301	34, 420	36, 956	40, 205	34, 802	39, 799	410, 446

TABLE 10.—Production of bituminous coal and lignite in the United States, 1957–58, with estimates by weeks

1957				1958			
Week ended—	Production (thousand net tons)	Maximum number of working days	Average production per working day (thousand net tons)	Week ended—	Production (thousand net tons)	Maximum number of working days	Average production per working day (thousand net tons)
Jan. 5	[1] 6,641	[1] 4	[2] 1,854	Jan. 4	[1] 3,716	[1] 3	[2] 1,405
Jan. 12	10,497	6	1,750	Jan. 11	9,200	6	1,533
Jan. 19	10,179	6	1,697	Jan. 18	8,828	6	1,471
Jan. 26	10,426	6	1,738	Jan. 25	8,668	6	1,445
Feb. 2	9,040	6	1,507	Feb. 1	8,491	6	1,415
Feb. 9	9,926	6	1,654	Feb. 8	7,889	6	1,315
Feb. 16	9,922	6	1,654	Feb. 15	8,411	6	1,402
Feb. 23	10,031	6	1,672	Feb. 22	7,205	6	1,201
Mar. 2	9,810	6	1,635	Mar. 1	8,752	6	1,459
Mar. 9	9,758	6	1,626	Mar. 8	8,368	6	1,395
Mar. 16	10,294	6	1,716	Mar. 15	7,888	6	1,315
Mar. 23	10,412	6	1,735	Mar. 22	7,696	6	1,283
Mar. 30	10,646	6	1,774	Mar. 29	7,546	6	1,258
Apr. 6	8,356	5.2	1,607	Apr. 5	6,374	5.3	1,203
Apr. 13	9,934	6	1,656	Apr. 12	7,160	6	1,193
Apr. 20	10,238	6	1,706	Apr. 19	7,269	6	1,212
Apr. 27	10,031	6	1,672	Apr. 26	6,900	6	1,150
May 4	9,568	6	1,595	May 3	6,502	6	1,084
May 11	9,661	6	1,610	May 10	6,360	6	1,060
May 18	9,578	6	1,596	May 17	7,424	6	1,237
May 25	9,530	6	1,588	May 24	7,376	6	1,229
June 1	8,879	5.5	1,614	May 31	7,293	5.6	1,302
June 8	9,866	6	1,644	June 7	7,833	6	1,306
June 15	10,184	6	1,697	June 14	8,375	6	1,396
June 22	10,239	6	1,707	June 21	9,000	6	1,500
June 29	8,893	4.3	2,068	June 28	9,017	5.5	1,639
July 6	1,481	.8	1,851	July 5	1,356	1	1,356
July 13	7,508	5.2	1,444	July 12	1,417	1.3	1,090
July 20	9,856	6	1,643	July 19	7,646	6	1,274
July 27	9,907	6	1,651	July 26	8,011	6	1,335
Aug. 3	9,698	6	1,616	Aug. 2	7,829	6	1,305
Aug. 10	9,643	6	1,607	Aug. 9	8,033	6	1,339
Aug. 17	9,625	6	1,604	Aug. 16	8,154	6	1,359
Aug. 24	9,978	6	1,663	Aug. 23	8,336	6	1,389
Aug. 31	10,088	6	1,681	Aug. 30	8,361	6	1,394
Sept. 7	8,628	5	1,726	Sept. 6	7,204	5	1,441
Sept. 14	10,149	6	1,692	Sept. 13	8,575	6	1,429
Sept. 21	10,119	6	1,687	Sept. 20	8,653	6	1,442
Sept. 28	10,306	6	1,718	Sept. 27	9,131	6	1,522
Oct. 5	9,991	6	1,665	Oct. 4	8,663	6	1,444
Oct. 12	9,941	6	1,657	Oct. 11	8,971	6	1,495
Oct. 19	9,862	6	1,644	Oct. 18	8,700	6	1,450
Oct. 26	9,913	6	1,652	Oct. 25	8,712	6	1,452
Nov. 2	9,866	6	1,644	Nov. 1	8,791	6	1,465
Nov. 9	9,519	6	1,587	Nov. 8	8,859	6	1,477
Nov. 16	9,147	5.7	1,605	Nov. 15	8,759	5.8	1,510
Nov. 23	9,593	6	1,599	Nov. 22	9,179	6	1,530
Nov. 30	8,184	5	1,637	Nov. 29	7,766	5	1,553
Dec. 7	9,230	6	1,538	Dec. 6	9,160	6	1,527
Dec. 14	9,171	6	1,529	Dec. 13	9,433	6	1,572
Dec. 21	9,610	6	1,602	Dec. 20	9,442	6	1,574
Dec. 28	5,843	5	1,169	Dec. 27	6,526	5	1,305
Jan. 4	[1] 3,309	[1] 2	[2] 1,405	Jan. 3	[1] 5,238	[1] 3	[2] 1,403
Total	492,704	299.7	1,644	Total	410,446	297.5	1,380

[1] Figures represent output and number of working days in that part of week included in calendar year shown. Total production for the week ended Jan. 5, 1957, was 7,415,000 net tons, and for Jan. 3, 1959, 7,015,000 net tons.
[2] Average daily output for the entire week and not for working days in the calendar year shown.

SUMMARY BY STATES

TABLE 11.—Bituminous coal and lignite produced in the United States, by States, 1949–58, with production of maximum year and cumulative production from earliest record to end of 1958, in thousand net tons

State	Maximum production		Production, by years										Total production from earliest record to end of 1958
	Year	Quantity	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	
Alabama	1926	21, 001	12, 934	14, 422	13, 597	11, 383	12, 532	10, 282	13, 088	12, 663	13, 260	11, 182	934, 687
Arkansas	1907	2, 670	962	1, 169	1, 107	873	775	477	578	590	508	364	97, 817
Colorado	1917	12, 483	4, 636	4, 259	4, 103	3, 623	3, 575	2, 900	3, 568	3, 502	3, 594	2, 974	503, 219
Illinois	1918	89, 291	47, 208	56, 291	54, 200	45, 790	46, 010	41, 971	45, 932	48, 102	46, 993	43, 912	3, 560, 484
Indiana	1918	30, 679	16, 550	19, 957	19, 451	16, 350	15, 812	13, 400	16, 149	17, 089	15, 841	15, 022	1, 134, 359
Iowa	1917	8, 966	1, 725	1, 891	1, 630	1, 381	1, 388	1, 197	1, 258	1, 358	1, 312	1, 179	350, 327
Kansas	1918	7, 562	2, 031	2, 125	1, 961	2, 029	1, 715	1, 372	742	884	749	823	278, 451
Kentucky	1947	84, 241	62, 583	78, 495	74, 972	66, 114	65, 060	56, 964	69, 020	74, 555	74, 667	66, 312	2, 581, 933
Maryland	1907	5, 533	668	648	589	588	530	422	512	669	748	838	265, 369
Missouri	1917	5, 671	3, 647	2, 963	3, 269	2, 955	2, 393	2, 514	3, 232	3, 283	2, 976	2, 592	283, 645
Montana	1944	4, 844	2, 766	2, 520	2, 345	2, 070	1, 873	1, 491	1, 247	846	413	305	170, 373
New Mexico	1918	4, 023	1, 004	727	783	760	514	123	201	158	137	117	124, 960
North Dakota	1950	3, 261	2, 967	3, 261	3, 224	2, 984	2, 803	(1)	3, 102	2, 815	2, 561	2, 314	[2] 90, 704
Ohio	1920	45, 878	30, 961	37, 761	37, 949	36, 209	34, 737	32, 469	37, 870	38, 934	36, 862	32, 028	2, 022, 501
Oklahoma	1920	4, 849	3, 022	2, 679	2, 223	2, 193	2, 168	1, 915	2, 164	2, 007	2, 195	1, 630	177, 949
Pennsylvania	1918	178, 551	89, 215	105, 870	108, 164	89, 181	93, 331	72, 010	85, 713	90, 287	85, 365	67, 771	8, 163, 483
Tennessee	1956	8, 848	4, 172	5, 070	5, 401	5, 265	5, 467	6, 429	7, 053	8, 848	7, 955	6, 785	382, 585
Utah	1947	7, 429	6, 160	6, 670	6, 136	6, 140	6, 544	5, 008	6, 296	6, 522	6, 858	5, 328	253, 368
Virginia	1957	29, 506	14, 584	17, 667	21, 400	21, 579	19, 119	16, 387	23, 508	28, 063	29, 506	26, 826	758, 178
Washington	1918	4, 082	899	874	857	844	690	619	610	473	360	252	148, 028
West Virginia	1947	176, 157	122, 610	144, 116	163, 310	141, 713	134, 105	115, 996	139, 168	155, 891	156, 842	119, 468	6, 232, 352
Wyoming	1945	9, 847	6, 001	6, 348	6, 430	6, 088	5, 245	2, 831	2, 927	2, 553	2, 117	1, 629	399, 629
Other States [3]			563	528	564	729	904	4, 929	695	782	885	795	184, 074
Total	1947	630, 624	437, 868	516, 311	533, 665	466, 841	457, 290	391, 706	464, 633	500, 874	492, 704	410, 446	29, 098, 475

[1] North Dakota included in "Other States" in 1954 to avoid disclosing individual operations.
[2] Excludes production of North Dakota in 1954 to avoid disclosing individual operations.
[3] Production, if any, in Alaska, Arizona, California, Georgia, Idaho, Michigan, North Carolina, Oregon, South Dakota, or Texas included in "Other States."

TABLE 12.—Number of mines, production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States

State	Number of active mines	Production (net tons): Shipped by rail or water [1]	Production (net tons): Shipped by truck	Production (net tons): Used at mine [2]	Production (net tons): Total	Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
Alabama	141	9,007,877	746,992	1,427,074	11,181,943	$6.47	7,179	186	1,331,342	8.40
Alaska	11	750,750	4,347	4,185	759,282	9.13	267	224	59,814	12.69
Arizona	2		7,649		7,649	7.03	18	154	2,765	2.77
Arkansas	24	354,980	7,649	1,509	364,138	7.53	407	122	49,745	7.32
Colorado	108	2,139,481	729,568	105,140	2,974,189	6.49	2,273	176	400,641	7.42
Georgia	3		8,751		8,751	5.00	19	144	2,734	3.20
Illinois	157	38,325,376	5,396,625	190,404	43,912,405	4.02	10,753	209	2,243,234	19.58
Indiana	82	12,673,643	1,719,694	628,887	15,022,224	3.89	3,655	208	758,713	19.80
Iowa	53	711,811	465,911	891	1,178,613	3.52	502	202	101,221	11.64
Kansas	15	651,823	170,041	1,458	823,322	4.51	251	215	54,087	15.22
Kentucky	2,015	58,929,280	7,074,767	307,758	66,311,805	4.36	31,030	177	5,479,323	12.10
Maryland	82	446,383	391,310	45	837,738	3.77	614	202	124,116	6.75
Missouri	38	1,754,646	834,948	2,568	2,592,162	4.29	1,549	147	228,058	11.37
Montana:										
Bituminous	16	158,724	51,226	1,403	211,353	5.94	212	139	29,370	7.20
Lignite	9	73,657	19,898	53	93,608	2.34	42	105	4,426	21.15
Total Montana	25	232,381	71,124	1,456	304,961	4.84	254	133	33,796	9.02
New Mexico	24	38,391	78,215	50	116,656	6.15	191	221	42,254	2.76
North Dakota (lignite)	37	1,685,643	326,869	301,346	2,313,858	2.34	327	201	65,745	35.19
Ohio	493	18,432,307	10,728,965	2,867,124	32,028,396	3.94	9,501	210	1,996,296	16.04
Oklahoma	25	1,561,709	66,780	954	1,629,443	6.66	872	201	174,944	9.31
Pennsylvania	1,412	54,222,363	11,243,006	2,305,493	67,770,862	5.52	40,203	180	7,227,142	9.38
South Dakota (lignite)	1		19,371	200	19,571	4.00	9	266	2,390	8.19
Tennessee	500	4,013,271	2,761,277	10,052	6,784,600	3.83	5,834	141	825,351	8.22
Utah	48	4,860,913	416,460	50,143	5,327,516	5.70	2,584	203	523,945	10.17
Virginia	1,401	23,197,969	3,441,910	186,188	26,826,067	8.45	15,788	201	3,173,661	8.45
Washington	11	189,520	58,379	4,370	252,269	7.80	294	164	48,314	5.22
West Virginia	1,538	113,940,106	3,733,313	1,794,278	119,467,697	5.32	62,437	179	11,205,538	10.66
Wyoming	18	1,420,574	100,508	108,348	1,629,430	3.57	591	141	83,073	19.61
Total	8,264	349,541,197	50,604,429	10,299,921	410,445,547	4.86	197,402	184	36,238,242	11.33

[1] Includes coal loaded at mines directly into railroad cars or river barges, hauled by trucks to railroad sidings, and hauled by trucks to waterways.
[2] Includes coal transported from mines to point of use by conveyor belts or trams, used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, made into beehive coke at mines, and all other uses at mines.
[3] Value received or charged for coal, f.o.b. mines. Includes a value, estimated by producer, for coal not sold.

TABLE 13.—Number of mines, production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by districts

District	Number of active mines	Production (net tons)				Average value per ton ³	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
		Shipped by rail or water ¹	Shipped by truck	Used at mine ²	Total					
1. Eastern Pennsylvania	1,075	26,106,718	4,931,561	1,215,217	32,253,496	$4.95	20,721	175	3,632,403	8.88
2. Western Pennsylvania	438	29,101,996	6,761,312	1,090,329	36,953,637	5.93	20,428	184	3,760,107	9.83
3. Northern West Virginia	463	34,050,643	1,466,952	49,572	35,567,167	4.95	15,588	183	2,848,999	12.83
4. Ohio	493	18,432,307	10,728,965	2,867,124	32,028,396	3.94	9,501	210	1,996,296	16.04
5. Michigan										
6. Panhandle	20	1,752,857	180,155	1,138,673	3,071,685	4.66	1,433	204	291,628	10.53
7. Southern Numbered 1	903	35,277,919	1,470,944	515,059	37,263,922	6.39	25,807	167	4,304,606	8.66
8. Southern Numbered 2	3,718	100,022,695	11,931,724	585,605	112,540,024	4.82	63,313	183	11,595,426	9.71
9. West Kentucky	135	26,756,040	1,316,973	7,677	28,080,690	3.53	6,591	200	1,315,818	21.34
10. Illinois	157	38,325,376	5,396,625	190,404	43,912,405	4.02	10,753	209	2,243,234	19.58
11. Indiana	82	12,673,643	1,719,694	628,887	15,022,224	3.89	3,655	208	758,713	19.80
12. Iowa	53	711,811	465,911	891	1,178,613	3.52	502	202	101,221	11.64
13. Southeastern	340	10,688,381	1,341,705	1,428,756	13,458,842	6.06	9,223	176	1,620,220	8.31
14. Arkansas-Oklahoma	38	1,085,006	11,049	1,844	1,097,899	7.48	745	155	115,313	9.52
15. Southwestern	64	3,238,152	1,068,369	4,645	4,311,166	4.69	2,334	168	391,521	11.01
16. Northern Colorado	7	369,598	209,260	8,752	587,610	4.74	264	186	49,057	11.98
17. Southern Colorado	107	1,786,585	541,892	96,388	2,424,865	6.91	2,093	178	372,505	6.51
18. New Mexico	20	21,689	64,280	50	86,019	6.17	125	193	24,098	3.57
19. Wyoming	18	1,420,574	100,508	108,348	1,629,430	3.57	591	141	83,073	19.61
20. Utah	48	4,860,913	416,460	50,143	5,327,516	5.70	2,584	203	523,945	10.17
21. North-South Dakota	38	1,685,643	346,240	301,546	2,333,429	2.36	336	203	68,135	34.25
22. Montana	25	232,381	71,124	1,456	304,961	4.84	254	133	33,796	9.02
23. Washington	22	940,270	62,726	8,555	1,011,551	8.80	561	193	108,128	9.35
Total	8,264	349,541,197	50,604,429	10,299,921	410,445,547	4.86	197,402	184	36,238,242	11.33

¹ Includes coal loaded at mines directly into railroad cars or river barges, hauled by trucks to railroad sidings, and hauled by trucks to waterways.
² Includes coal transported from mines to point of use by conveyor belts or trams, used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, made into beehive coke at mines, and all other uses at mines.
³ Value received or charged for coal, f.o.b. mines. Includes a value, estimated by producer, for coal not sold.

NUMBER AND SIZE OF MINES

The unit in the statistical record is the mine, and operating companies are requested to make a separate report for each mine because its location is definitely known and can be related to a specific district or county; its identity can be followed through successive changes of ownership; and it is the natural operating unit from the standpoint of cost, mechanical equipment, mining practice, and output per man per day. See figure 6.

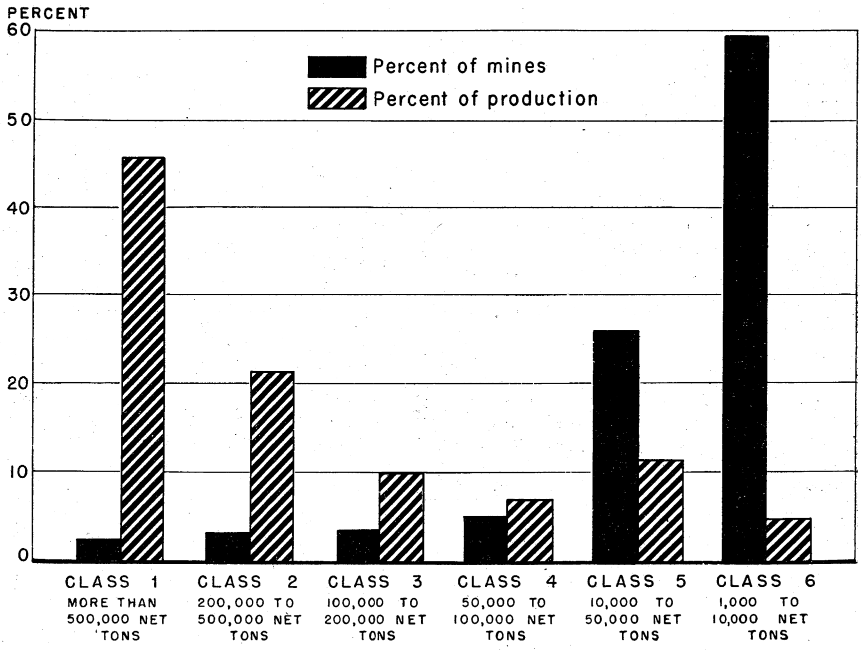

FIGURE 6.—Percentage of number of mines and of production of bituminous coal and lignite mines in the United States, 1958, by size of output.

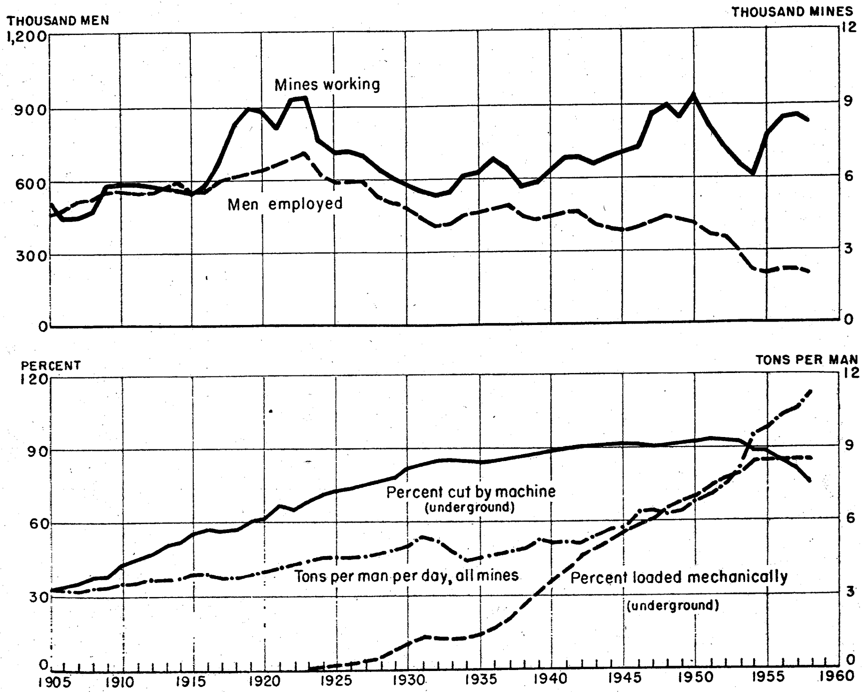

Figure 7.—Trends of employment, mechanization, and output per man at bituminous coal and lignite mines in the United States, 1905–58.

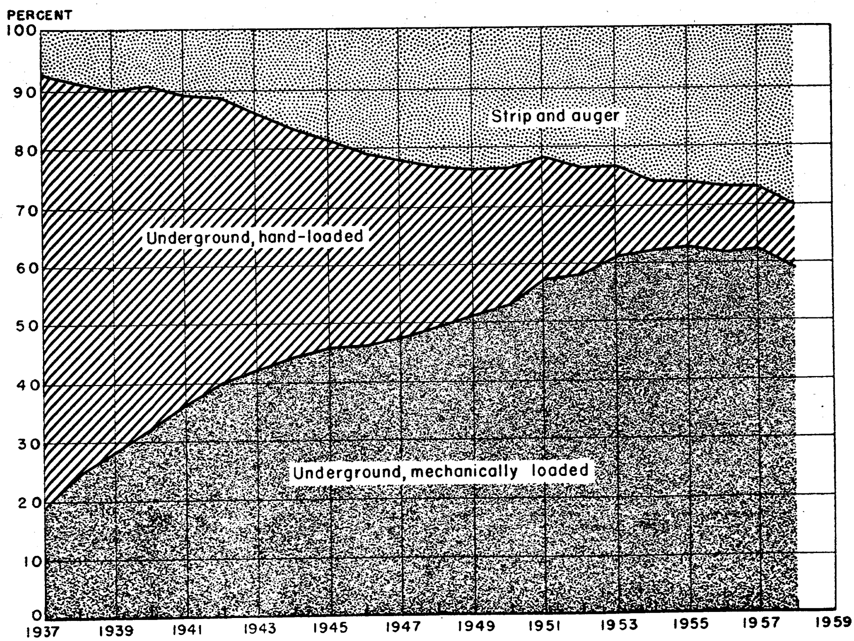

Figure 8.—Percentage of total production of bituminous coal and lignite in the United States, 1937–58, by type of mining and loading.

TABLE 14.—Number and production of bituminous coal and lignite mines in the United States, 1958, by States and size of output

State	Class 1—500,000 tons and over				Class 2—200,000 to 500,000 tons				Class 3—100,000 to 200,000 tons			
	Mines		Production		Mines		Production		Mines		Production	
	Number	Percentage	Net tons	Percentage	Number	Percentage	Net tons	Percentage	Number	Percentage	Net tons	Percentage
Alabama	5	3.5	5,330,796	47.7	8	5.7	2,469,965	22.1	14	9.9	2,075,093	18.5
Alaska					1	9.1	227,617	30.0	2	18.2	278,596	36.7
Arizona												
Arkansas									1	4.2	105,998	29.1
Colorado					3	2.8	951,040	32.0	5	4.6	654,774	22.0
Georgia												
Illinois	38	24.2	37,104,716	84.5	10	6.4	3,964,838	9.0	8	5.1	1,171,495	2.7
Indiana	9	11.0	8,633,154	57.5	13	15.8	4,882,417	32.5	3	3.7	399,444	2.6
Iowa					1	1.9	259,559	22.0	1	1.9	109,424	9.3
Kansas					2	13.3	697,504	84.7				
Kentucky	33	1.6	32,297,602	48.7	29	1.5	8,921,038	13.5	43	2.1	6,127,567	9.2
Maryland												
Missouri					6	15.8	1,914,237	73.9	2	5.3	257,197	9.9
Montana (bituminous and lignite)												
New Mexico												
North Dakota (lignite)					5	13.5	1,571,875	67.9	2	5.4	380,556	16.5
Ohio	11	2.2	12,749,286	39.8	19	3.9	6,428,779	20.1	36	7.3	5,040,502	15.7
Oklahoma					1	4.0	296,092	18.2	6	24.0	1,005,440	61.7
Pennsylvania	33	2.3	29,273,797	43.2	46	3.3	14,132,193	20.9	54	3.8	7,404,368	10.9
South Dakota (lignite)												
Tennessee	1	.2	457,544	6.7	4	.8	1,203,458	17.7	2	.4	241,077	3.6
Utah	1	2.1	503,391	9.4	8	16.7	2,838,381	53.3	7	14.6	1,044,033	19.6
Virginia	7	.5	5,596,376	20.9	13	.9	3,985,971	14.9	21	1.5	2,955,244	11.0
Washington												
West Virginia	62	4.0	55,970,169	46.9	93	6.1	30,765,405	25.8	87	5.7	12,124,340	10.1
Wyoming					3	16.7	1,114,605	68.4	1	5.5	176,673	10.9
Total	200	2.4	187,916,831	45.8	265	3.2	86,624,974	21.1	295	3.6	41,551,821	10.1

TABLE 14.—Number and production of bituminous coal and lignite mines in the United States, 1958, by States and size of output—Con.

State	Class 4—50,000 to 100,000 tons				Class 5—10,000 to 50,000 tons				Class 6—less than 10,000 tons				Total		
	Mines		Production		Mines		Production		Mines		Production		Mines	Production (net tons)	
	Number	Percentage	Net tons	Percentage	Number	Percentage	Net tons	Percentage	Number	Percentage	Net tons	Percentage		Total	Average per mine
Alabama	8	5.7	531,039	4.7	21	14.9	432,478	3.9	85	60.3	342,572	3.1	141	11,181,943	79,305
Alaska	2	18.2	113,047	14.9	4	36.3	137,022	18.0	2	18.2	3,000	.4	11	759,282	69,026
Arizona									2	100.0	7,649	100.0	2	7,649	3,825
Arkansas	1	4.1	53,525	14.7	7	29.2	160,489	44.1	15	62.5	44,126	12.1	24	364,138	15,172
Colorado	7	6.5	582,345	19.6	21	19.4	429,730	14.4	72	66.7	356,300	12.0	108	2,974,189	27,539
Georgia									3	100.0	8,751	100.0	3	8,751	2,917
Illinois	10	6.3	701,996	1.6	32	20.4	749,361	1.7	59	37.6	219,999	.5	157	43,912,405	279,697
Indiana	9	11.0	627,559	4.2	16	19.5	312,797	2.1	32	39.0	166,853	1.1	82	15,022,224	183,198
Iowa	3	5.7	217,571	18.5	22	41.5	457,746	38.8	26	49.0	134,313	11.4	53	1,178,613	22,238
Kansas	1	6.7	53,861	6.6	2	13.3	38,194	4.6	10	66.7	33,763	4.1	15	823,322	54,888
Kentucky	71	3.5	5,064,891	7.6	405	20.1	8,565,170	12.9	1,434	71.2	5,335,537	8.1	2,015	66,311,805	32,909
Maryland	3	3.7	210,237	25.1	21	25.6	413,642	49.4	58	70.7	213,859	25.5	82	837,738	10,216
Missouri	3	7.9	215,615	8.3	7	18.4	131,918	5.1	20	52.6	73,195	2.8	38	2,592,162	68,215
Montana (bituminous and lignite)	2	8.0	165,779	54.4	2	8.0	68,741	22.5	21	84.0	70,441	23.1	25	304,961	12,198
New Mexico					4	16.7	59,264	50.8	20	83.3	57,392	49.2	24	116,656	4,861
North Dakota (lignite)	1	2.7	57,738	2.5	11	29.7	230,895	10.0	18	48.7	72,794	3.1	37	2,313,858	62,537
Ohio	44	8.9	2,844,055	8.9	164	33.3	3,977,121	12.4	219	44.4	988,653	3.1	493	32,028,396	64,966
Oklahoma	2	8.0	115,377	7.1	7	28.0	179,998	11.0	9	36.0	32,536	2.0	25	1,629,443	65,178
Pennsylvania	86	6.1	6,063,244	8.9	330	23.4	7,636,358	11.3	863	61.1	3,260,902	4.8	1,412	67,770,862	47,996
South Dakota (lignite)					1	100.0	19,571	100.0					1	19,571	19,571
Tennessee	20	4.0	1,348,756	19.9	97	19.4	2,077,047	30.6	376	75.2	1,456,718	21.5	500	6,784,600	13,569
Utah	6	12.5	467,480	8.8	16	33.3	430,373	8.1	10	20.8	43,858	.8	48	5,327,516	110,990
Virginia	22	1.6	1,298,604	4.8	531	37.9	9,919,603	37.0	807	57.6	3,070,269	11.4	1,401	26,826,067	19,148
Washington					6	54.5	230,302	91.3	5	45.5	21,967	8.7	11	252,269	22,934
West Virginia	105	6.8	7,412,901	6.2	437	28.4	9,921,640	8.3	754	49.0	3,273,242	2.7	1,538	119,467,697	77,677
Wyoming	2	11.1	150,066	9.2	5	27.8	161,634	9.9	7	38.9	26,452	1.6	18	1,629,430	90,524
Total	408	4.9	28,295,686	6.9	2,169	26.3	46,741,094	11.4	4,927	59.6	19,315,141	4.7	8,264	410,445,547	49,667

EMPLOYMENT AND PRODUCTIVITY

The bituminous coal and lignite industry has become highly mechanized in recent years. Mechanization has strongly affected production per man per day and the number of employees. In the past 20 years productivity has more than doubled, and the number of employees declined 50 percent. See figures 7 and 8.

TABLE 15.—Production and average output per man per day of bituminous coal and lignite mines in the United States, 1958, by States and by underground, strip, and auger mining

State	Production (net tons)				Percentage of total production				Average tons per man per day			
	Underground	Strip	Auger	Total	Under-ground	Strip	Auger	Total	Under-ground	Strip	Auger	Total
Alabama	8,504,778	2,648,294	28,871	11,181,943	76.0	23.7	0.3	100.0	7.17	18.30	26.98	8.40
Alaska	201,446	557,836	----	759,282	26.5	73.5	----	100.0	7.01	17.95	----	12.69
Arizona	7,649	----	----	7,649	100.0	----	----	100.0	2.77	----	----	2.77
Arkansas	84,793	279,345	----	364,138	23.3	76.7	----	100.0	3.82	10.14	----	7.32
Colorado	2,551,414	422,775	----	2,974,189	85.8	14.2	----	100.0	6.67	23.22	----	7.42
Georgia	8,751	----	----	8,751	100.0	----	----	100.0	3.20	----	----	3.20
Illinois	23,373,347	20,521,981	17,077	43,912,405	53.2	46.7	.1	100.0	15.63	27.46	16.81	19.58
Indiana	4,702,834	10,319,390	----	15,022,224	31.3	68.7	----	100.0	12.21	27.62	----	19.80
Iowa	250,956	927,657	----	1,178,613	21.3	78.7	----	100.0	4.93	18.45	----	11.64
Kansas	9,118	814,204	----	823,322	1.1	98.9	----	100.0	2.57	16.11	----	15.22
Kentucky	46,121,674	18,302,100	1,888,031	66,311,805	69.6	27.6	2.8	100.0	9.63	29.52	27.35	12.10
Maryland	345,427	492,311	----	837,738	41.2	58.8	----	100.0	3.95	13.43	----	6.75
Missouri	113,147	2,479,015	----	2,592,162	4.4	95.6	----	100.0	3.48	12.68	----	11.37
Montana:												
Bituminous	185,112	26,241	----	211,353	87.6	12.4	----	100.0	6.59	20.20	----	7.20
Lignite	15,622	77,986	----	93,608	16.7	83.3	----	100.0	6.65	37.53	----	21.15
Total Montana	200,734	104,227	----	304,961	65.8	34.2	----	100.0	6.60	30.86	----	9.02
New Mexico	99,051	17,605	----	116,656	84.9	15.1	----	100.0	2.46	8.85	----	2.76
North Dakota (lignite)	3,049	2,310,809	----	2,313,858	.1	99.9	----	100.0	5.20	35.46	----	35.19
Ohio	9,198,612	21,759,345	1,070,439	32,028,396	28.7	67.9	3.4	100.0	9.81	21.21	32.56	16.04
Oklahoma	368,526	1,260,917	----	1,629,443	22.6	77.4	----	100.0	3.66	17.00	----	9.31
Pennsylvania	47,789,848	19,715,844	265,170	67,770,862	70.5	29.1	.4	100.0	8.03	15.62	17.17	9.38
South Dakota (lignite)	----	19,571	----	19,571	----	100.0	----	100.0	----	8.19	----	8.19
Tennessee	4,352,398	1,968,887	463,315	6,784,600	64.2	29.0	6.8	100.0	6.10	20.59	28.01	8.22
Utah	5,327,516	----	----	5,327,516	100.0	----	----	100.0	10.17	----	----	10.17
Virginia	24,425,476	1,738,924	661,667	26,826,067	91.1	6.5	2.4	100.0	7.96	21.45	26.68	8.45
Washington	247,389	4,880	----	252,269	98.1	1.9	----	100.0	5.15	16.54	----	5.22
West Virginia	108,232,333	8,310,418	2,924,946	119,467,697	90.6	7.0	2.4	100.0	10.13	18.36	27.24	10.66
Wyoming	363,978	1,265,452	----	1,629,430	22.3	77.7	----	100.0	8.05	33.45	----	19.61
Total	286,884,244	116,241,787	7,319,516	410,445,547	69.9	28.3	1.8	100.0	9.38	21.54	28.15	11.33

UNDERGROUND MINING

Three-fourths of the output of bituminous coal and lignite is mined underground. The major tasks underground are cutting, drilling shotholes, loading, and haulage. Loading is discussed later in the section on Mechanical Loading. For many years most of the underground production has been cut by machines, however, as the percentage of production by continuous mining machines increases the percentage cut by machines will decrease. The use of power drills for shotholes has increased rapidly in the past 15 years; 75 percent of the underground production in 1958 came from mines using power drills. Trolley locomotives are the principal method of underground haulage; however, in recent years the use of conveyor haulage has steadily increased.

TABLE 16.—Number of mines, production, men working daily, days active, man-days, and output per man per day at underground bituminous coal and lignite mines in the United States, 1958, by States [1].

State	Number of active mines	Production (net tons)	Average number of men working daily	Average Number of days worked	Number of man-days worked	Average tons per man per day
Alabama	104	8, 504, 778	6, 519	182	1, 185, 551	7. 17
Alaska	4	201, 446	135	213	28, 737	7. 01
Arizona	2	7, 649	18	154	2, 765	2. 77
Arkansas	16	84, 793	268	83	22, 192	3. 82
Colorado	101	2, 551, 414	2, 165	177	382, 436	6. 67
Georgia	3	8, 751	19	144	2, 734	3. 20
Illinois	74	23, 373, 347	7, 427	201	1, 494, 987	15. 63
Indiana	38	4, 702, 834	2, 048	188	385, 070	12. 21
Iowa	23	250, 956	290	176	50, 932	4. 93
Kansas	2	9, 118	35	101	3, 541	2. 57
Kentucky	1, 773	46, 121, 674	27, 515	174	4, 790, 389	9. 63
Maryland	50	345, 427	440	199	87, 447	3. 95
Missouri	13	113, 147	220	148	32, 488	3. 48
Montana (bituminous and lignite)	18	200, 734	195	156	30, 419	6. 60
New Mexico	21	99, 051	183	220	40, 265	2. 46
North Dakota (lignite)	1	3, 049	5	117	586	5. 20
Ohio	165	9, 198, 612	4, 732	198	937, 580	9. 81
Oklahoma	11	368, 526	527	191	100, 756	3. 66
Pennsylvania	809	47, 789, 848	34, 006	175	5, 949, 393	8. 03
Tennessee	415	4, 352, 398	5, 113	139	713, 189	6. 10
Utah	48	5, 327, 516	2, 584	203	523, 945	10. 17
Virginia	1, 325	24, 425, 476	15, 246	201	3, 067, 809	7. 96
Washington	10	247, 389	289	166	48, 019	5. 15
West Virginia	1, 283	108, 232, 333	59, 260	179	10, 654, 636	10. 13
Wyoming	10	363, 978	418	108	45, 240	8. 05
Total	6, 319	286, 884, 244	169, 657	180	30, 581, 106	9. 38

[1] Similar figures for 1952–57 published in Bureau of Mines Weekly Coal Report 2165, March 13, 1959.

TABLE 17.—Underground production of bituminous coal and lignite in the United States, 1958, by States and mining methods

State	Cut by hand and shot from solid		Cut by machines				Mined by continuous mining machines		Total underground (net tons)
	Net tons	Percentage of total underground	Net tons	Percentage of total underground	Number of coal-cutting machines	Average output per machine (net tons)	Net tons	Percentage of total underground	
Alabama	172, 156	2. 0	7, 079, 914	83. 3	182	38, 901	1, 252, 708	14. 7	8, 504, 778
Alaska	201, 446	100. 0							201, 446
Arizona	3, 924	51. 3	3, 725	48. 7	1	3, 725			7, 649
Arkansas	1, 040	1. 2	78, 547	92. 7	42	1, 870	5, 206	6. 1	84, 793
Colorado	458, 057	18. 0	1, 621, 624	63. 5	255	6, 359	471, 733	18. 5	2, 551, 414
Georgia	8, 751	100. 0							8, 751
Illinois	21, 126	. 1	17, 630, 751	75. 4	173	101, 912	5, 721, 470	24. 5	23, 373, 347
Indiana	5, 717	. 1	4, 371, 179	93. 0	83	52, 665	325, 938	6. 9	4, 702, 834
Iowa	75, 193	30. 0	175, 763	70. 0	18	9, 765			250, 956
Kansas			9, 118	100. 0	3	3, 039			9, 118
Kentucky	3, 542, 985	7. 7	39, 371, 448	85. 3	1, 370	28, 738	3, 207, 241	7. 0	46, 121, 674
Maryland	64, 797	18. 8	280, 630	81. 2	35	8, 018			345, 427
Missouri	1, 000	. 9	112, 147	99. 1	19	5, 902			113, 147
Montana:									
Bituminous			185, 112	100. 0	26	7, 120			185, 112
Lignite	15, 622	100. 0							15, 622
Total Montana	15, 622	7. 8	185, 112	92. 2	26	7, 120			200, 734
New Mexico	39, 084	39. 5	59, 967	60. 5	13	4, 613			99, 051
North Dakota (lignite)	3, 049	100. 0							3, 049
Ohio	59, 122	. 6	6, 189, 376	67. 3	261	23, 714	2, 950, 114	32. 1	9, 198, 612
Oklahoma	11, 982	3. 3	356, 544	96. 7	55	6, 483			368, 526
Pennsylvania	1, 124, 497	2. 3	24, 884, 477	52. 1	1, 447	17, 197	21, 780, 874	45. 6	47, 789, 848
Tennessee	884, 360	20. 3	3, 468, 038	79. 7	225	15, 414			4, 352, 398
Utah	3, 589	. 1	4, 264, 659	80. 0	120	35, 539	1, 059, 268	19. 9	5, 327, 516
Virginia	4, 658, 742	19. 1	18, 821, 770	77. 0	975	19, 304	944, 964	3. 9	24, 425, 476
Washington	126, 962	51. 3	22, 715	9. 2	3	7, 572	97, 712	39. 5	247, 389
West Virginia	3, 126, 260	2. 9	86, 587, 044	80. 0	2, 406	35, 988	18, 519, 029	17. 1	108, 232, 333
Wyoming	3, 955	1. 1	322, 983	88. 7	32	10, 072	37, 040	10. 2	363, 978
Total	14, 613, 416	5. 1	215, 897, 531	75. 2	7, 744	27, 879	56, 373, 297	19. 7	286, 884, 244

TABLE 18.—Use of power drills in underground bituminous coal and lignite mines in the United States, 1958, by States

State	Number of mines using power drills	Number of power drills: Face or coal drills: Handheld and post-mounted	Number of power drills: Face or coal drills: Mobile	Number of power drills: Roof or rock drills: Rotary	Number of power drills: Roof or rock drills: Percussion	Production where shotholes are power-drilled (net tons): Handheld and post-mounted drills	Production where shotholes are power-drilled (net tons): Mobile drills	Production where shotholes are power-drilled (net tons): Total	Percentage of total underground
Alabama	61	233	------	32	104	7, 136, 728	----------	7, 136, 728	83. 9
Alaska	4	32	------	------	------	198, 446	----------	198, 446	98. 5
Arizona	1	1	------	------	------	3, 725	----------	3, 725	48. 7
Arkansas	10	20	------	1	2	61, 289	----------	61, 289	72. 3
Colorado	85	281	18	15	107	1, 866, 276	179, 291	2, 045, 567	80. 2
Illinois	69	82	127	113	1	1, 210, 390	16, 425, 030	17, 635, 420	75. 5
Indiana	34	49	44	25	3	687, 128	3, 679, 395	4, 366, 523	92. 8
Iowa	18	34	------	3	------	236, 010	----------	236, 010	94. 0
Kansas	1	1	------	------	------	5, 618	----------	5, 618	61. 6
Kentucky	1, 030	1, 656	120	194	144	28, 820, 353	11, 610, 502	40, 430, 855	87. 7
Maryland	23	35	------	------	------	271, 429	----------	271, 429	78. 6
Missouri	6	11	------	1	1	92, 342	----------	92, 342	81. 6
Montana:									
Bituminous	11	18	2	------	------	169, 187	9, 921	179, 108	96. 8
Lignite	5	10	------	------	------	15, 622	----------	15, 622	100. 0
Total Montana	16	28	2	------	------	184, 809	9, 921	194, 730	97. 0
New Mexico	12	13	2	------	2	65, 508	16, 702	82, 210	83. 0
North Dakota (lignite)	1	1	------	------	------	3, 049	----------	3, 049	100. 0
Ohio	131	243	41	59	5	3, 608, 221	2, 517, 042	6, 125, 263	66. 6
Oklahoma	5	53	------	------	1	350, 479	----------	350, 479	95. 1
Pennsylvania	436	1, 367	146	282	545	19, 060, 315	5, 285, 579	24, 345, 894	50. 9
Tennessee	188	316	------	16	9	3, 745, 524	----------	3, 745, 524	86. 1
Utah	42	42	95	12	109	1, 145, 802	3, 122, 446	4, 268, 248	80. 1
Virginia	1, 276	1, 442	3	31	78	20, 571, 777	113, 030	20, 684, 807	84. 7
Washington	7	49	------	4	4	143, 149	----------	143, 149	57. 9
West Virginia	949	2, 918	139	553	479	70, 859, 574	12, 615, 123	83, 474, 697	77. 1
Wyoming	5	47	------	12	------	324, 304	----------	324, 304	89. 1
Total	4, 410	8, 954	737	1, 353	1, 594	160, 652, 245	55, 574, 061	216, 226, 306	75. 4

TABLE 19.—Number of underground bituminous coal and lignite mines and number of haulage units in use in the United States, in selected years [1]

Year	Underground mines	Locomotives: Trolley	Locomotives: Battery	Locomotives: Other types	Locomotives: Total	Rope-haulage units: Portable	Rope-haulage units: Stationary	Rope-haulage units: Total	Shuttle cars: Cable reel	Shuttle cars: Battery	Shuttle cars: Total	Gathering and haulage conveyors	Animals
1924	7, 352	[2] 12, 765	1, 515	443	14, 723	(3)	(3)	649	(3)	(3)	(3)	(3)	36, 352
1946	5, 888	14, 110	1, 011	110	15, 231	4, 084	1, 009	5, 093	(3)	(3)	(3)	457	10, 185
1948	7, 108	14, 617	904	74	15, 595	3, 886	1, 044	4, 930	(3)	(3)	(3)	755	10, 834
1949	6, 798	14, 090	928	59	15, 077	3, 904	1, 073	4, 977	2, 144	623	2, 767	860	10, 313
1950	7, 559	13. 822	949	62	14, 833	4. 225	1, 037	5, 262	2, 782	512	3, 294	1, 013	10, 033
1951	6, 225	13, 327	900	51	14, 278	3, 875	916	4, 791	3, 191	567	3, 758	1, 094	7, 478
1952	5, 632	12, 545	812	41	13. 398	3, 584	852	4, 436	3, 382	462	3, 844	1, 066	6, 555
1953	5, 034	11, 311	678	45	12. 034	2, 838	727	3, 565	3, 797	425	4, 222	1, 042	5, 354
1954	4. 653	10, 155	762	38	10, 955	1, 926	781	2, 707	4, 400	431	4, 831	1, 081	5, 409
1955	6, 035	9, 538	658	40	10, 236	1, 327	577	1, 904	4, 413	241	4, 654	1, 002	6, 440
1956	6, 542	9, 445	861	102	10, 408	1, 420	575	1, 995	5, 047	260	5, 307	1, 114	6, 097
1957	6, 512	8, 997	898	138	10, 033	1, 214	616	1, 830	5, 513	280	5, 793	1, 233	5, 054
1958	6, 319	8, 057	920	138	9, 115	926	538	1, 464	5, 328	295	5, 623	1, 235	4, 678

[1] Exclusive of lignite and Virginia semianthracite mines in 1946, 1948, and 1949.
[2] Includes combination trolley and battery locomotives.
[3] Data not available.

TABLE 20.—Number of haulage units in use in underground bituminous coal and lignite mines in the United States, 1957–58, by States

State	Locomotives						Shuttle cars				Rope-haulage units				Gathering and haulage conveyor units		Animals	
	Trolley		Battery		Other types		Cable reel		Battery		Portable		Stationary					
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	354	297	1				179	171	3		67	16	20	8	48	42	93	71
Alaska	2		11	11							2	2		1				
Arizona																	4	3
Arkansas	3	4	10	7	1						2	5	9	9	7	4	7	5
Colorado	92	85	51	52		4	69	75	19	21	30	30	55	53	14	14	69	60
Georgia																	6	2
Illinois	353	292	66	45			340	305	6	1			16	18	91	99	78	62
Indiana	126	138	3	3	1	1	101	109				1	12	15		8	39	32
Iowa	2	3	2	2	1		2	2	3	3	1		9	6			70	54
Kansas													1				6	3
Kentucky	1,417	1,143	45	62	12	11	1,212	1,201	63	61	75	78	58	59	160	159	1,661	1,373
Maryland	8	8	3	4									9	8			78	93
Missouri			2	3									1	2			27	24
Montana:																		
Bituminous	15	17	1	2			6	7			1	3	5	6			5	5
Lignite									2				1	1			4	8
Total Montana	15	17	1	2			6	7	2		1	3	6	7			9	13
New Mexico	3	5	6				3	6				7	9	5			27	24
North Dakota (lignite)																	2	1
Ohio	251	263	22	27	2	3	121	112	4		22	32	23	20	31	21	110	100
Oklahoma	4	4	6	6			4	4					4	4			3	4
Pennsylvania	2,414	2,201	127	113	34	29	1,132	1,068	61	87	675	488	217	213	253	241	731	602
Tennessee	146	118	9	8	1	1	44	30		2	2	9	8	4	18	20	323	394
Utah	167	161	21	12	1	1	184	180	11	9	2	2	29	26	35	36	12	11
Virginia	643	660	308	350	32	26	246	236	1	3	29	37	36	3	42	35	849	595
Washington	23	17									11	4	9	6	2	2	2	3
West Virginia	2,875	2,623	200	209	53	62	1,841	1,803	107	108	232	211	62	62	524	550	846	1,146
Wyoming	99	18	4	4			29	19			63	1	23	9	8	4	2	3
Total	8,997	8,057	898	920	138	138	5,513	5,328	280	295	1,214	926	616	538	1,233	1,235	5,054	4,678

TABLE 21.—Number and production of underground bituminous coal and lignite mines using gathering and haulage conveyors and number and length of units in use in the United States, 1945–58 [1]

Year	Number of mines	Production (net tons)	Number of units in use	Average length (feet)	Total length (miles)
1945	117	40, 189, 857	359	1, 438	97. 6
1946	161	46, 022, 710	457	1, 484	128. 5
1947	199	70, 690, 920	594	1, 470	165. 3
1948	270	81, 821, 361	755	1, 460	208. 8
1949	314	69, 947, 713	860	1, 514	246. 7
1950	374	92, 413, 644	1, 013	1, 538	294. 9
1951	372	99, 643, 003	1, 094	1, 568	325. 0
1952	358	92, 168, 992	1, 066	1, 526	308. 2
1953	322	100, 155, 249	1, 042	1, 541	303. 9
1954	291	83, 211, 284	1, 081	1, 626	332. 9
1955	314	97, 677, 313	1, 002	1, 682	319. 6
1956	314	126, 717, 518	1, 114	1, 656	349. 4
1957	362	136, 914, 192	1, 233	1, 672	390. 4
1958	366	115, 419, 740	1, 235	1, 711	400. 3

[1] Includes all gathering and haulage conveyors with capacity over 500 feet, except main-slope conveyors. Excludes lignite and Virginia semianthracite mines in 1945–49.

TABLE 22.—Number and production of underground bituminous coal and lignite mines using gathering and haulage conveyors, and number and length of units in use in the United States, 1957–58, by States [1]

State	Number of mines		Production (net tons)		Number of units in use		Average length (feet)		Total length (miles)	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	11	8	6, 007, 763	5, 080, 548	48	42	1, 724	1, 784	15. 7	14. 2
Arkansas	3	2	90. 628	14, 606	7	4	617	800	. 8	. 6
Colorado	4	4	988, 053	710, 319	14	14	1, 821	1, 643	4. 8	4. 4
Illinois	15	13	13, 870, 267	14, 102, 538	91	99	2, 332	1, 968	40. 2	36. 9
Indiana	-----	3	----------	960, 008	-----	8	-----	975	-----	1. 5
Kentucky	44	50	18, 660, 137	18, 765, 507	160	159	1, 871	2, 227	56. 7	67. 1
Ohio	12	9	5, 622, 594	3, 352, 267	31	21	1, 592	1, 676	9. 3	6. 7
Pennsylvania	68	64	22, 755, 999	16, 403, 953	253	241	1, 671	1, 713	80. 1	78. 2
Tennessee	6	6	1, 004, 810	678, 748	18	20	1, 348	1, 596	4. 6	6. 0
Utah	16	15	3, 897, 663	2, 877, 411	35	36	1, 108	1, 155	7. 3	7. 9
Virginia	12	11	4, 465, 421	2, 891, 018	42	35	1, 862	1, 800	14. 8	11. 9
Washington	1	1	38, 184	45, 611	2	2	3, 500	3, 500	1. 3	1. 3
West Virginia	167	178	59, 398, 106	49, 485, 807	524	550	1, 541	1, 561	152. 9	162. 6
Wyoming	3	2	114, 567	51, 399	8	4	1, 225	1, 275	1. 9	1. 0
Total	362	366	136, 914, 192	115, 419, 740	1, 233	1, 235	1, 672	1, 711	390. 4	400. 3

[1] Includes all mines using belt conveyors, other than main slope conveyors, 500 feet or more long for transporting coal underground.

STRIP MINING

Strip mines have two substantial advantages over underground mines. First, the output per man per day in strip mines is more than double that in underground mines; and, second, the average value of strip coal, f.o.b. mines, is about one-third lower than that of coal from underground mines. See figures 9 and 10.

The rapid growth of strip mining was made possible by the development of larger and improved stripping and drilling equipment and trucks. The most notable recent change in stripping equipment has been replacement of virtually all steam shovels by diesel-powered and large electric shovels and draglines.

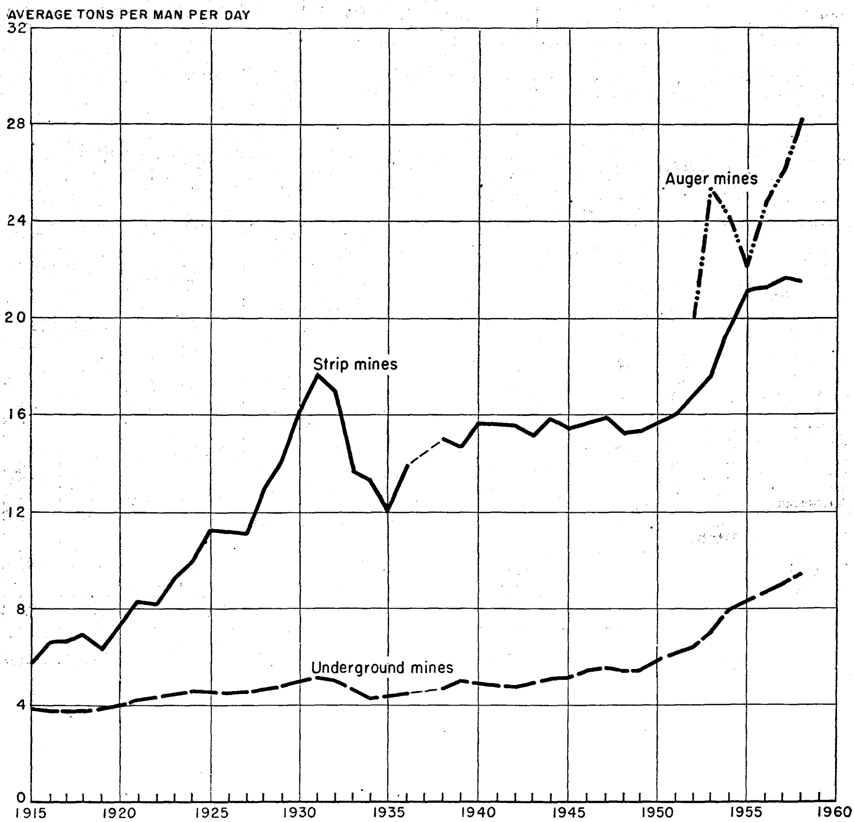

FIGURE 9.—Average tons per man per day at bituminous coal and lignite mines in the United States, 1915–58, by underground, strip, and auger mines.

An increase in the average capacity of trucks used in strip mines has reduced the number required. The average hauling distance from strip mines to tipples or ramps has remained approximately 4 miles.

The average thickness of overburden at all bituminous coal and lignite strip mines in the United States was 42 feet in 1955, the latest year for which figures are available. Several strip mines handled an average of more than 60 feet of overburden in 1955, and a few handled more than 70 feet.

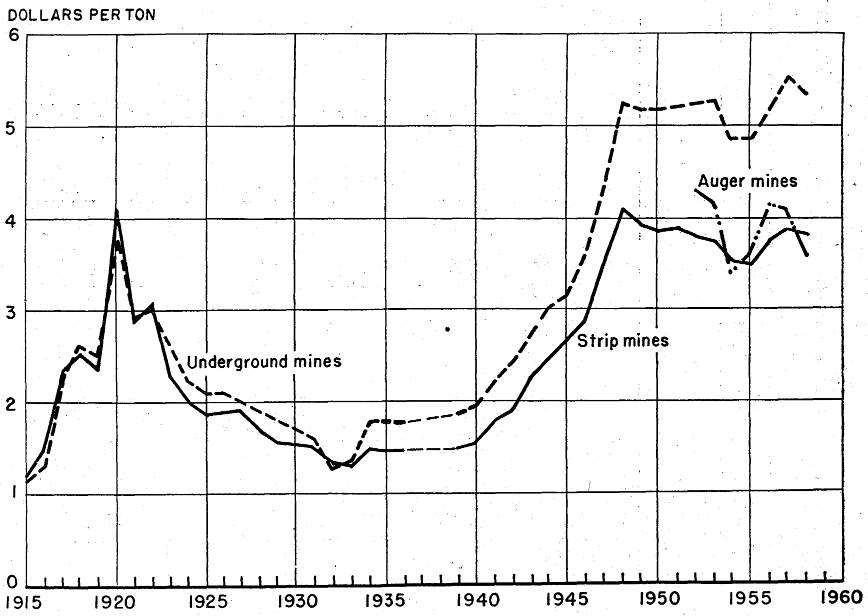

FIGURE 10.—Average value per ton, f.o.b. mines, of bituminous coal and lignite produced in the United States, 1915–58, by underground, strip, and auger mines.

TABLE 23.—Growth of strip mining at bituminous coal and lignite mines in the United States, 1914–58, compared with underground and auger mining

Year	Production (thousand net tons)				Percentage of total mined by stripping	Average tons per man per day				Average value per ton f.o.b. mine				Number of strip mines	Number of power shovels and draglines
	Underground mines	Strip mines [1]	Auger mines	Total		Underground mines	Strip mines [1]	Auger mines	Total	Underground mines	Strip mines [1]	Auger mines	Total		
1914	421,423	1,281	----------	422,704	0.3	3.71	5.06	----------	3.71	(2)	(2)	----------	$1.17	[3] 35	48
1915	439,792	2,832	----------	442,624	.6	3.90	5.81	----------	3.91	$1.13	$1.18	----------	1.13	[3] 60	87
1916	498,587	3,933	----------	502,520	.8	3.88	6.67	----------	3.90	1.32	1.51	----------	1.32	[3] 79	111
1917	546,001	5,790	----------	551,791	1.0	3.75	6.52	----------	3.77	2.26	2.34	----------	2.26	[3] 126	182
1918	571,098	8,288	----------	579,386	1.4	3.76	6.81	----------	3.78	2.58	2.54	----------	2.58	[3] 165	276
1919	460,225	5,635	----------	465,860	1.2	3.82	6.21	----------	3.84	2.49	2.33	----------	2.49	[3] 168	287
1920	559,807	8,860	----------	568,667	1.5	3.97	7.20	----------	4.00	3.74	4.12	----------	3.75	[3] 174	312
1921	410,865	5,057	----------	415,922	1.2	4.18	8.28	----------	4.20	2.89	2.87	----------	2.89	[3] 155	279
1922	412,059	10,209	----------	422,268	2.4	4.24	8.09	----------	4.28	3.02	3.07	----------	3.02	272	379
1923	552,625	11,940	----------	564,565	2.1	4.43	9.32	----------	4.47	2.69	2.31	----------	2.68	263	442
1924	470,080	13,607	----------	483,687	2.8	4.50	9.91	----------	4.56	2.20	2.00	----------	2.20	234	420
1925	503,182	16,871	----------	520,053	3.2	4.45	11.18	----------	4.52	2.05	1.84	----------	2.04	227	389
1926	556,444	16,923	----------	573,367	3.0	4.42	11.13	----------	4.50	2.07	1.89	----------	2.06	237	410
1927	499,385	18,378	----------	517,763	3.6	4.47	11.06	----------	4.55	1.99	1.90	----------	1.99	255	455
1928	480,956	19,789	----------	500,745	4.0	4.61	13.02	----------	4.73	1.87	1.69	----------	1.86	250	415
1929	514,721	20,268	----------	534,989	3.8	4.73	14.08	----------	4.85	1.79	1.57	----------	1.78	200	411
1930	447,684	19,842	----------	467,526	4.3	4.93	16.21	----------	5.06	1.71	1.54	----------	1.70	218	341
1931	363,157	18,932	----------	382,089	5.0	5.12	17.68	----------	5.30	1.54	1.51	----------	1.54	235	314
1932	290,069	19,641	----------	309,710	6.3	4.99	16.95	----------	5.22	1.31	1.32	----------	1.31	255	332
1933	315,360	18,270	----------	333,630	5.5	4.60	13.59	----------	4.78	1.34	1.33	----------	1.34	289	389
1934	338,578	20,790	----------	359,368	5.8	4.23	13.28	----------	4.40	1.76	1.49	----------	1.75	344	458
1935	348,726	23,647	----------	372,373	6.4	4.32	12.01	----------	4.50	1.79	1.47	----------	1.77	368	507
1936	410,962	28,126	----------	439,088	6.4	4.42	13.91	----------	4.62	1.77	1.49	----------	1.76	381	562
1937	413,780	31,751	----------	445,531	7.1	(2)	(2)	----------	4.69	(2)	(2)	----------	1.94	449	(2)
1938	318,138	30,407	----------	348,545	8.7	4.60	15.00	----------	4.89	(2)	(2)	----------	1.95	465	737
1939	357,133	37,722	----------	394,855	9.6	4.92	14.68	----------	5.25	1.88	1.49	----------	1.84	537	914
1940	417,604	43,167	----------	460,771	9.4	4.86	15.63	----------	5.19	1.94	1.56	----------	1.91	638	1,071
1941	459,078	55,071	----------	514,149	10.7	4.83	15.59	----------	5.20	2.23	1.79	----------	2.19	769	1,321
1942	515,490	67,203	----------	582,693	11.5	4.74	15.52	----------	5.12	2.41	1.90	----------	2.36	834	1,438
1943	510,492	79,685	----------	590,177	13.5	4.89	15.15	----------	5.38	2.75	2.28	----------	2.69	1,004	1,839
1944	518,678	100,898	----------	619,576	16.3	5.04	15.89	----------	5.67	3.01	2.48	----------	2.92	1,240	2,312

1945	467, 630	109, 987	----------	577, 617	19. 0	5. 04	15. 46	----------	5. 78	3. 16	2. 65	----------	3. 06	1, 370	2, 439
1946	420, 958	112, 964	----------	533, 922	21. 1	5. 43	15. 73	----------	6. 30	3. 59	2. 87	----------	3. 44	1, 445	2, 744
1947	491, 229	139, 395	----------	630, 624	22. 1	5. 49	15. 93	----------	6. 42	4. 35	3. 47	----------	4. 16	1, 750	3, 254
1948	460, 012	139, 506	----------	599, 518	23. 3	5. 31	15. 28	----------	6. 26	5. 26	4. 11	----------	4. 99	1, 971	3, 712
1949	331, 823	106, 045	----------	437, 868	24. 2	5. 42	15. 33	----------	6. 43	5. 18	3. 94	----------	4. 88	1, 761	3, 576
1950	392, 844	123, 467	----------	516, 311	23. 9	5. 75	15. 66	----------	6. 77	5. 15	3. 87	----------	4. 84	1, 870	3, 877
1951	416, 047	117, 618	----------	533, 665	22. 0	6. 08	16. 02	----------	7. 04	5. 21	3. 88	----------	4. 92	1, 784	3, 810
1952	356, 425	108, 910	1, 506	466, 841	23. 3	6. 37	16. 77	20. 07	7. 47	5. 24	3. 81	$4. 31	4. 90	1, 643	3, 527
1953	349, 551	105, 448	2, 291	457, 290	23. 1	7. 01	17. 62	25. 30	8. 17	5. 27	3. 75	4. 15	4. 92	1, 554	3, 390
1954	289, 112	98, 134	4, 460	391, 706	25. 1	7. 99	19. 64	24. 12	9. 47	4. 87	3. 52	3. 41	4. 52	1, 329	3, 409
1955	343, 465	115, 093	6, 075	464, 633	24. 8	8. 28	21. 12	22. 22	9. 84	4. 86	3. 48	3. 60	4. 50	1, 617	3, 265
1956	365, 774	127, 055	8, 045	500, 874	25. 4	8. 62	21. 18	24. 85	10. 28	5. 20	3. 74	4. 17	4. 82	1, 728	3, 705
1957	360, 649	124, 109	7, 946	492, 704	25. 2	8. 91	21. 64	26. 19	10. 59	5. 52	3. 89	4. 12	5. 08	1, 756	3, 723
1958	286, 884	116, 242	7, 320	410, 446	28. 3	9. 38	21. 54	28. 15	11. 33	5. 33	3. 80	3. 60	4. 86	1, 646	3, 515

[1] Includes power strip pits proper and excludes horse stripping operations and mines combining stripping and underground in the same operation for the period 1914–42. The years 1943–58 include data on all strip mines.

[2] Data not available.

[3] Exclusive of horse stripping operations.

TABLE 24.—Number and production of bituminous coal and lignite strip mines, and units of stripping and loading equipment in use in the United States, 1932–58

Year	Number of strip mines	Production (thousand net tons)	Number of power shovels and dragline excavators												Number of carryall scrapers	Number of bulldozers
			By type of power					By capacity of dipper or bucket, cubic yards				By type of machine		Total		
			Electric	Diesel-electric	Diesel	Gasoline	Steam	Less than 3	3–5, inclusive	6–12, inclusive	More than 12	Power shovels	Dragline excavators			
1932	255	19,641	[1] 105	(2)	[3] 61	(4)	166	(5)	(5)	(5)	(5)	(5)	(5)	332	(5)	(5)
1933	289	18,270	[1] 117	(2)	[3] 103	(4)	169	(5)	(5)	(5)	(5)	(5)	(5)	389	(5)	(5)
1934	344	20,790	[1] 121	(2)	[3] 149	(4)	188	(5)	(5)	(5)	(5)	(5)	(5)	458	(5)	(5)
1935	368	23,647	[1] 139	(2)	[3] 194	(4)	174	(5)	(5)	(5)	(5)	(5)	(5)	507	(5)	(5)
1936	381	28,126	[1] 151	(2)	[3] 223	(4)	188	(5)	(5)	(5)	(5)	(5)	(5)	562	(5)	(5)
1937	449	31,751	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
1938	465	30,407	[1] 155	(2)	[3] 440	(4)	142	(5)	(5)	(5)	(5)	(5)	(5)	737	(5)	(5)
1939	537	37,722	[1] 184	(2)	[3] 524	(4)	206	(5)	(5)	(5)	(5)	(5)	(5)	914	(5)	(5)
1940	638	43,167	[1] 194	(2)	[3] 697	(4)	180	(5)	(5)	(5)	(5)	(5)	(5)	1,071	(5)	(5)
1941	769	55,071	[1] 210	(2)	[3] 911	(4)	200	1,009	153	95	64	(5)	(5)	1,321	(5)	(5)
1942	834	67,203	[1] 219	(2)	[3] 1,020	(4)	199	1,114	159	97	68	(5)	(5)	1,438	(5)	(5)
1943	1,004	79,685	[1] 234	(2)	[3] 1,433	(4)	172	1,488	173	106	72	(5)	(5)	1,839	(5)	(5)
1944	1,240	100,898	[1] 244	(2)	[3] 1,902	(4)	166	1,900	225	113	74	(5)	(5)	2,312	(5)	(5)
1945	1,370	109,987	[1] 256	(2)	[3] 2,042	(4)	141	2,004	243	117	75	(5)	(5)	2,439	(5)	(5)
1946	1,445	112,964	[1] 261	(2)	1,619	753	111	2,256	302	112	74	2,406	338	2,744	263	(5)
1947	1,750	139,395	[1] 301	(2)	2,279	591	83	2,685	362	123	84	2,822	432	3,254	275	(5)
1948	1,971	139,506	[1] 337	(2)	2,675	646	54	3,048	446	130	88	3,177	535	3,712	362	(5)
1949	1,761	106,045	[1] 352	(2)	2,646	527	51	2,931	367	168	110	3,011	565	3,576	320	(5)
1950	1,870	123,467	[1] 348	(2)	2,880	607	42	3,182	416	170	109	3,247	630	3,877	286	(5)
1951	1,784	117,618	[1] 346	(2)	2,905	533	26	3,088	420	187	115	3,164	646	3,810	220	(5)
1952	1,643	108,910	[1] 321	(2)	2,642	545	19	2,800	425	183	119	2,892	635	3,527	218	(5)
1953	1,554	105,448	[1] 317	(2)	2,629	446	17	2,692	413	193	111	2,793	616	3,409	244	1,954
1954	1,329	98,134	[1] 381	(2)	2,617	374	18	2,480	579	211	120	2,605	785	3,390	269	2,599
1955	1,617	115,093	[1] 315	(2)	2,603	337	10	2,381	550	223	111	2,592	673	3,265	187	2,106
1956	1,728	127,055	285	136	2,914	365	5	2,693	634	249	129	2,899	806	3,705	226	2,381
1957	1,756	124,109	325	164	2,839	389	6	2,748	566	266	143	2,894	829	3,723	215	2,499
1958	1,646	116,242	315	273	2,607	315	5	2,507	591	275	142	2,704	811	3,515	173	2,472

[1] Includes diesel-electric shovels.
[2] Included with electric shovels.
[3] Includes gasoline shovels.
[4] Included with diesel shovels.
[5] Data not available.

TABLE 25.—Number and production of bituminous coal and lignite strip mines and units of stripping and loading equipment in use in the United States, 1958, by States

State	Number of strip mines	Production (net tons)	Number of power shovels and dragline excavators												Number of carryall scrapers	Number of bulldozers
			By type of power					By capacity of dipper or bucket				By type of machine		Total		
			Electric	Diesel electric	Diesel	Gas	Steam	Less than 3 cubic yards	3–5 cubic yards	6–12 cubic yards	More than 12 cubic yards	Power shovels	Dragline excavators			
Alabama	35	2,648,294	14	13	61	1		62	12	12	3	69	20	89	5	57
Alaska	7	557,836			14	1		14	1			14	1	15	7	33
Arkansas	8	279,345	1	2	10			7	3	2	1	7	6	13	3	15
Colorado	7	422,775	1	1	8			6	1	2	1	5	5	10	5	11
Illinois	78	20,521,981	98	14	70	9		52	50	45	44	121	70	191	1	115
Indiana	44	10,319,390	46	10	50	19		50	37	18	20	70	55	125	6	82
Iowa	30	927,657	3		41	19		45	13	5		33	30	63	3	40
Kansas	13	814,204	6	3	10	2	1	13	4	2	3	11	11	22	1	16
Kentucky:																
Eastern	95	2,066,319	5	2	108	4		104	14	1		118	1	119	3	85
Western	70	16,235,781	35	8	99	3		70	35	23	17	104	41	145	2	109
Total Kentucky	165	18,302,100	40	10	207	7		174	49	24	17	222	42	264	5	194
Maryland	32	492,311			40	10		43	6	1		40	10	50		36
Missouri	25	2,479,015	16	4	16	7	2	20	9	5	11	30	15	45	1	25
Montana:																
Bituminous	3	26,241	3			1		1		1	2	3	1	4		2
Lignite	4	77,986	1		1	2		2	1	1		3	1	4	1	3
Total Montana	7	104,227	4		1	3		3	1	2	2	6	2	8	1	5
New Mexico	3	17,605			1	1		2				2		2		2
North Dakota (lignite)	36	2,310,809	20	4	15	15		35	8	10	1	45	9	54		36
Ohio	278	21,759,345	46	39	444	85		441	99	51	23	489	125	614	22	499
Oklahoma	14	1,260,917	5	5	16		1	13	6	4	4	18	9	27	47	12
Pennsylvania	565	19,715,844	10	119	1,109	107		1,057	200	79	9	969	376	1,345		833
South Dakota (lignite)	1	19,571		1	1	1		2	1			1	2	3	24	1
Tennessee	70	1,968,887		3	106	8		102	14	1		113	4	117	1	69
Virginia	42	1,738,924		10	44	6		50	9	1		60		60	4	49
Washington	1	4,880													9	1
West Virginia	177	8,310,418	1	33	336	12		308	62	9	3	366	16	382	16	328
Wyoming	8	1,265,452	4	2	7	2	1	8	6	2		13	3	16	12	13
Total	1,646	116,241,787	315	273	2,607	315	5	2,507	591	275	142	2,704	811	3,515	173	2,472

TABLE 26.—Bituminous coal and lignite strip mines using power drills in bank or overburden in the United States, 1946–58

Year	Number of mines	Production		Number of power drills
		Quantity (net tons)	Percentage of total	
1946	514	75,375,841	66.7	764
1947	598	95,915,346	68.8	875
1948	728	98,809,393	72.3	1,195
1949	756	78,146,655	73.7	1,256
1950	692	87,205,280	70.6	1,201
1951	650	85,331,204	72.5	1,125
1952	629	79,252,284	73.0	1,070
1953	603	80,259,365	76.1	1,048
1954	541	70,107,205	71.4	983
1955	564	85,623,050	74.4	953
1956	696	96,278,779	75.8	1,041
1957	722	96,418,089	77.7	1,104
1958	737	91,659,662	78.9	1,079

TABLE 27.—Summary of operations at bituminous coal and lignite strip mines using power drills in bank or overburden in the United States, 1957–58, by States

State	Number of mines		Production at mines using power drills				Number of power drills					
			Quantity (net tons)		Percentage of total strip production		Horizontal		Vertical		Total	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	20	35	1,870,825	2,282,895	86.1	86.2	12	14	19	17	31	31
Alaska	6	7	544,594	557,836	100.0	100.0	4	3	9	13	13	16
Arkansas	5	7	171,543	266,945	77.7	95.6	5	7	1	3	6	10
Colorado	3	7	323,497	350,942	89.1	83.0	3	3	3	4	6	7
Illinois	52	41	17,651,894	17,772,835	88.3	86.6	40	37	40	31	80	68
Indiana	35	37	10,536,073	10,206,443	96.7	98.9	34	39	27	21	61	60
Iowa	21	24	926,973	892,678	89.3	96.2	23	25	12	11	35	36
Kansas	7	7	713,631	802,029	96.7	98.5	12	10	1	2	13	12
Kentucky:												
Eastern	34	31	1,274,710	1,192,011	53.4	57.7	30	23	7	10	37	33
Western	39	40	13,698,699	15,480,893	90.0	95.4	35	34	33	35	68	69
Total Kentucky	73	71	14,973,409	16,672,904	85.0	91.1	65	57	40	45	105	102
Maryland	1	4	2,610	113,568	.6	23.1	---	---	1	2	1	2
Missouri	13	12	2,741,421	2,026,583	95.4	81.7	17	18	3	3	20	21
Montana:												
Bituminous	1	2	164,311	20,241	98.9	77.1	---	---	2	3	2	3
Lignite	---	---	---	---	---	---	---	---	---	---	---	---
Total Montana	1	2	164,311	20,241	98.9	77.1	---	---	2	3	2	3
New Mexico	1	1	13,086	16,376	88.8	93.0	---	---	2	1	2	1
North Dakota (lignite)	3	5	660,290	592,384	25.8	25.6	1	4	2	1	3	5
Ohio	106	105	18,488,350	16,794,967	77.2	77.2	87	83	85	83	172	166
Oklahoma	11	12	1,466,137	1,190,483	83.5	94.4	10	10	8	6	18	16
Pennsylvania	197	183	11,845,765	10,897,910	55.8	55.3	155	143	117	118	272	261
South Dakota (lignite)	1	1	21,118	19,571	100.0	100.0	1	1	---	---	1	1
Tennessee	30	31	818,444	1,117,727	31.3	56.8	29	30	5	8	34	38
Virginia	18	20	1,594,156	1,371,180	85.3	78.9	18	17	9	7	27	24
Washington	---	1	---	4,880	---	100.0	---	---	---	1	---	1
West Virginia	112	116	9,444,295	6,442,583	81.7	77.5	118	108	75	79	193	187
Wyoming	6	8	1,445,667	1,245,702	98.5	98.4	6	6	3	5	9	11
Total	722	737	96,418,089	91,659,662	77.7	78.9	640	615	464	464	1,104	1,079

TABLE 28.—Summary of method of haulage from bituminous coal and lignite strip mines to tipple or ramp, in the United States, 1948–58 [1]

Year	Strip mines reporting method of haulage: Strip mines using trucks: Production (net tons)	Number of trucks	Average capacity per truck (net tons)	Average distance hauled (miles)	Strip mines using rail, rail and truck, truck and tram—production (net tons)	Production of strip mines reporting: Quantity (net tons)	Percentage of total strip production	Strip mines not reporting method of haulage—production (net tons)	Total strip production (net tons)
1948	97, 450, 399	7, 214	9. 4	3. 7	6, 327, 989	103, 778, 388	74. 4	35, 727, 532	139, 505, 920
1949	73, 229, 556	6, 694	10. 1	3. 7	5, 365, 432	78, 594, 988	74. 1	27, 450, 311	106, 045, 299
1950	88, 666, 733	6, 564	10. 3	3. 8	4, 364, 333	93, 031, 066	75. 3	30, 435, 498	123, 466, 564
1951	87, 427, 029	6, 173	10. 6	4. 0	2, 424, 994	89, 852, 023	76. 4	27, 765, 653	117, 617, 676
1952	88, 589, 637	5, 799	11. 3	4. 0	2, 296, 744	90, 886, 381	83. 5	18, 023, 375	108, 909, 756
1953	84, 764, 694	5, 287	12. 2	4. 0	2, 104, 609	86, 869, 303	82. 4	18, 579, 266	105, 448, 569
1954	73, 794, 489	4, 250	13. 2	3. 9	1, 203, 753	74, 998, 242	76. 4	23, 136, 008	98, 134, 250
1955	94, 150, 171	4, 798	13. 3	3. 9	2, 290, 600	96, 440, 771	83. 9	18, 651, 998	115, 092, 769
1956	103, 127, 374	5, 432	13. 3	4. 4	1, 056, 627	104, 184, 001	82. 0	22, 871, 381	127, 055, 382
1957	104, 796, 728	5, 532	14. 0	4. 3	164, 311	104, 961, 039	84. 6	19, 147, 499	124, 108, 538
1958	99, 223, 676	5, 151	14. 5	4. 4	19, 241	99, 242, 917	85. 4	16, 998, 870	116, 241, 787

[1] Excludes lignite in 1948 and 1949.

TABLE 29.—Summary of method of haulage from bituminous coal and lignite strip mines to tipple or ramp, in the United States, 1958, by States

State	Strip mines reporting method of haulage							Strip mines not reporting method of haulage—production (net tons)	Total strip production (net tons)
	Strip mines using trucks				Strip mines using rail, rail and truck, truck and tram—production (net tons)	Production of strip mines reporting			
	Production (net tons)	Number of trucks	Average capacity per truck (net tons)	Average distance hauled (miles)		Quantity (net tons)	Percentage of total strip production		
Alabama	2, 320, 503	112	15. 3	4. 2		2, 320, 503	87. 6	327, 791	2, 648, 294
Alaska	557, 836	42	14. 8	3. 3		557, 836	100. 0		557, 836
Arkansas	279, 345	37	7. 9	3. 4		279, 345	100. 0		279, 345
Colorado	396, 405	21	16. 2	2. 7		396, 405	93. 8	26, 370	422, 775
Illinois	19, 753, 672	393	25. 6	3. 3		19, 753, 672	96. 3	768, 309	20, 521, 981
Indiana	10, 051, 249	169	27. 0	3. 4		10, 051, 249	97. 4	268, 141	10, 319, 390
Iowa	889, 051	72	9. 8	4. 8		889, 051	95. 8	38, 606	927, 657
Kansas	806, 135	25	19. 3	2. 3		806, 135	99. 0	8, 069	814, 204
Kentucky	15, 720, 119	492	14. 4	3. 3		15, 720, 119	85. 9	2, 581, 981	18, 302, 100
Maryland	311, 902	42	14. 2	5. 9		311, 902	63. 4	180, 409	492, 311
Missouri	2, 053, 280	70	25. 9	3. 3		2, 053, 280	82. 8	425, 735	2, 479, 015
Montana:									
Bituminous	7, 000	5	6. 4	. 3	19, 241	26, 241	100. 0		26, 241
Lignite	75, 667	5	13. 6	. 7		75, 667	97. 0	2, 319	77, 986
Total Montana	82, 667	10	10. 0	. 7	19, 241	101, 908	97. 8	2, 319	104, 227
New Mexico	17, 605	4	5. 8	. 6		17, 605	100. 0		17, 605
North Dakota (lignite)	2, 226, 542	84	13. 7	2. 3		2, 226, 542	96. 4	84, 267	2, 310, 809
Ohio	17, 990, 567	757	15. 0	6. 1		17, 990, 567	82. 7	3, 768, 778	21, 759, 345
Oklahoma	1, 190, 483	86	11. 2	5. 2		1, 190, 483	94. 4	70, 434	1, 260, 917
Pennsylvania	15, 589, 524	1, 831	11. 4	5. 5		15, 589, 524	79. 1	4, 126, 320	19, 715, 844
South Dakota (lignite)	19, 571	3	6. 0	. 5		19, 571	100. 0		19, 571
Tennessee	163, 033	24	8. 8	10. 4		163, 033	8. 3	1, 805, 854	1, 968, 887
Virginia	1, 386, 961	103	10. 9	5. 3		1, 386, 961	79. 8	351, 963	1, 738, 924
Washington	4, 880	2	10. 0	1. 0		4, 880	100. 0		4, 880
West Virginia	6, 166, 644	745	13. 5	6. 4		6, 166, 644	74. 2	2, 143, 774	8, 310, 418
Wyoming	1, 245, 702	27	25. 3	1. 9		1, 245, 702	98. 4	19, 750	1, 265, 452
Total	99, 223, 676	5, 151	14. 5	4. 4	19, 241	99, 242, 917	85. 4	16, 998, 870	116, 241, 787

TABLE 30.—Stripping operations in the bituminous coal and lignite fields of the United States, 1958, by States and counties

State and county	Number of strip mines	Production (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
Alabama:						
Blount	(1)	(1)	(1)	(1)	(1)	(1)
Cullman	1	2,700	1	150	219	12.34
Jefferson	8	484,544	111	222	24,546	19.74
Marion	(1)	(1)	(1)	(1)	(1)	(1)
Tuscaloosa	9	721,745	177	238	42,232	17.09
Walker	12	1,120,427	258	213	54,977	20.38
Other counties	5	318,878	106	215	22,747	14.01
Total Alabama	35	2,648,294	653	222	144,721	18.30
Alaska	7	557,836	132	236	31,077	17.95
Arkansas:						
Franklin	1	12,400	5	239	1,103	11.24
Johnson	5	173,652	87	183	15,844	10.96
Pope	(1)	(1)	(1)	(1)	(1)	(1)
Sebastian	(1)	(1)	(1)	(1)	(1)	(1)
Other counties	2	93,293	47	226	10,606	8.80
Total Arkansas	8	279,345	139	198	27,553	10.14
Colorado:						
El Paso	1	7,599	3	213	610	12.45
Fremont	2	43,456	11	143	1,573	27.63
Jackson	1	30,103	14	59	826	36.44
Routt	3	341,617	80	190	15,196	22.48
Total Colorado	7	422,775	108	169	18,205	23.22
Illinois:						
Adams	1	37,995	15	183	2,745	13.84
Bureau	(1)	(1)	(1)	(1)	(1)	(1)
Fulton	11	4,638,473	842	210	176,906	26.22
Gallatin	5	53,125	41	47	1,950	27.25
Greene	1	7,229	2	300	601	12.02
Grundy	(1)	(1)	(1)	(1)	(1)	(1)
Jackson	3	501,563	98	252	24,574	20.41
Jefferson	1	17,720	6	215	1,283	13.74
Kankakee	(1)	(1)	(1)	(1)	(1)	(1)
Knox	(1)	(1)	(1)	(1)	(1)	(1)
La Salle	(1)	(1)	(1)	(1)	(1)	(1)
Mercer	1	2,390	2	163	326	7.33
Peoria	(1)	(1)	(1)	(1)	(1)	(1)
Perry	5	3,193,830	510	253	129,148	24.73
Randolph	1	31,176	3	286	976	31.93
St. Clair	(1)	(1)	(1)	(1)	(1)	(1)
Saline	(1)	(1)	(1)	(1)	(1)	(1)
Schuyler	(1)	(1)	(1)	(1)	(1)	(1)
Vermilion	5	1,046,048	138	257	35,471	29.49
Will	(1)	(1)	(1)	(1)	(1)	(1)
Williamson	15	2,319,896	281	243	68,292	33.97
Other counties	29	8,672,536	1,378	221	304,959	28.44
Total Illinois	78	20,521,981	3,316	225	747,231	27.46
Indiana:						
Clay	10	765,135	181	226	40,982	18.67
Daviess	1	18,000	13	188	2,449	7.35
Fountain	1	37,820	20	225	4,497	8.41
Greene	6	1,546,710	333	201	66,841	23.14
Knox	(1)	(1)	(1)	(1)	(1)	(1)
Owen	(1)	(1)	(1)	(1)	(1)	(1)
Parke	(1)	(1)	(1)	(1)	(1)	(1)
Pike	7	2,150,284	401	263	105,561	20.37
Spencer	(1)	(1)	(1)	(1)	(1)	(1)
Sullivan	(1)	(1)	(1)	(1)	(1)	(1)
Vermillion	1	113,484	32	194	6,205	18.29
Vigo	2	477,648	57	195	11,113	42.98
Warrick	8	4,469,690	378	258	97,634	45.78
Other counties	8	740,619	192	200	38,361	19.31
Total Indiana	44	10,319,390	1,607	233	373,643	27.62

See footnote at end of table.

TABLE 30.—Stripping operations in the bituminous coal and lignite fields of the United States, 1958, by States and counties—Continued

State and county	Number of strip mines	Production (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
Iowa:						
Keokuk	(1)	(1)	(1)	(1)	(1)	(1)
Lucas	(1)	(1)	(1)	(1)	(1)	(1)
Mahaska	7	156,695	44	250	10,965	14.29
Marion	11	634,710	119	237	28,209	22.50
Monroe	4	41,994	17	236	4,019	10.45
Polk	1	12,085	2	280	560	21.58
Van Buren	1	16,257	10	180	1,800	9.03
Wapello	(1)	(1)	(1)	(1)	(1)	(1)
Warren	(1)	(1)	(1)	(1)	(1)	(1)
Other counties	6	65,916	20	237	4,736	13.92
Total Iowa	30	927,657	212	237	50,289	18.45
Kansas:						
Bourbon	1	4,400	6	127	717	6.14
Cherokee	(1)	(1)	(1)	(1)	(1)	(1)
Coffey	1	2,138	2	144	288	7.42
Crawford	(1)	(1)	(1)	(1)	(1)	(1)
Linn	1	1,204	5	98	468	2.57
Osage	1	2,150	2	144	288	7.47
Other counties	9	804,312	201	243	48,785	16.49
Total Kansas	13	814,204	216	234	50,546	16.11
Kentucky, Eastern:						
Bell	14	394,790	142	180	25,553	15.45
Boyd	1	105,687	41	285	11,601	9.11
Breathitt	1	20,000	7	180	1,220	16.39
Clay	18	357,794	80	191	15,330	23.34
Harlan	(1)	(1)	(1)	(1)	(1)	(1)
Jackson	2	3,508	7	150	1,047	3.35
Johnson	1	1,750	1	131	131	13.36
Knox	5	90,829	31	143	4,422	20.54
Laurel	5	197,485	92	223	20,507	9.63
Lee	2	40,647	18	95	1,728	23.52
Leslie	(1)	(1)	(1)	(1)	(1)	(1)
Letcher	6	272,737	83	235	19,426	14.04
McCreary	4	86,203	25	168	4,187	20.59
Morgan	7	42,163	21	146	3,121	13.51
Perry	2	19,986	20	80	1,630	12.26
Pike	(1)	(1)	(1)	(1)	(1)	(1)
Pulaski	5	93,050	18	220	3,863	24.09
Rockcastle	3	21,488	14	210	2,972	7.23
Whitley	12	237,223	99	161	15,942	14.88
Other counties	7	80,970	28	119	3,341	24.24
Total Eastern Kentucky	95	2,066,319	727	187	136,021	15.19
Kentucky, Western:						
Butler	1	79,169	441	132	58,213	1.36
Christian	(1)	(1)	(1)	(1)	(1)	(1)
Daviess	2	837,067	59	321	18,938	44.20
Edmonson	1	1,795	2	100	200	8.98
Grayson	1	1,586	3	90	270	5.87
Hancock	3	22,792	18	72	1,314	17.35
Hopkins	22	4,686,619	496	234	115,948	40.42
Muhlenberg	13	6,301,396	598	252	150,607	41.84
Ohio	12	2,727,412	231	285	65,895	41.39
Union	(1)	(1)	(1)	(1)	(1)	(1)
Webster	9	1,486,196	290	230	66,795	22.25
Other counties	6	91,749	42	136	5,704	16.09
Total Western Kentucky	70	16,235,781	2,180	222	483,884	33.55
Total Kentucky	165	18,302,100	2,907	213	619,905	29.52
Maryland:						
Allegany	12	107,047	64	236	15,206	7.04
Garrett	20	385,264	110	195	21,463	17.95
Total Maryland	32	492,311	174	211	36,669	13.43

See footnote at end of table.

TABLE 30.—Stripping operations in the bituminous coal and lignite fields of the United States, 1958, by States and counties—Continued

State and county	Number of strip mines	Production (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
Missouri:						
Barton	(1)	(1)	(1)	(1)	(1)	(1)
Bates	1	1,442	2	125	250	5.77
Callaway	(1)	(1)	(1)	(1)	(1)	(1)
Clark	1	10,573	8	204	1,632	6.48
Dade	1	16,442	11	285	3,138	5.24
Henry	(1)	(1)	(1)	(1)	(1)	(1)
Macon	(1)	(1)	(1)	(1)	(1)	(1)
Putnam	2	133,012	34	295	10,024	13.27
Ralls	1	4,000	6	110	657	6.09
Randolph	(1)	(1)	(1)	(1)	(1)	(1)
St. Clair	2	221,392	60	235	14,092	15.71
Vernon	4	88,017	35	196	6,841	12.86
Other counties	13	2,004,137	1,173	135	158,933	12.61
Total Missouri	25	2,479,015	1,329	147	195,570	12.68
Montana (bituminous):						
Carbon	1	1,000	3	78	238	4.21
Rosebud	2	25,241	34	31	1,061	23.79
Total Montana (bituminous)	3	26,241	37	35	1,299	20.20
Montana (lignite):						
Dawson	(1)	(1)	(1)	(1)	(1)	(1)
Richland	(1)	(1)	(1)	(1)	(1)	(1)
Sheridan	(1)	(1)	(1)	(1)	(1)	(1)
Other counties	4	77,986	22	94	2,078	37.53
Total Montana (lignite)	4	77,986	22	94	2,078	37.53
Total Montana	7	104,227	59	57	3,377	30.86
New Mexico: McKinley	3	17,605	8	249	1,989	8.85
North Dakota (lignite):						
Adams	1	29,269	8	200	1,596	18.34
Bowman	1	182,575	18	209	3,768	48.45
Burke	2	381,536	45	220	9,897	38.55
Burleigh	1	13,844	3	200	600	23.07
Divide	1	207,370	39	207	8,072	25.69
Dunn	3	9,682	6	159	954	10.15
Grant	3	26,469	4	195	781	33.89
Hettinger	2	7,270	9	115	1,034	7.03
McLean	4	97,485	21	175	3,680	26.49
Mercer	5	824,166	101	197	19,898	41.42
Morton	4	25,314	13	187	2,429	10.42
Oliver	2	9,119	5	107	534	17.07
Stark	3	56,944	11	204	2,240	25.42
Ward	4	439,766	39	248	9,676	45.45
Total North Dakota (lignite)	36	2,310,809	322	202	65,159	35.46
Ohio:						
Athens	(1)	(1)	(1)	(1)	(1)	(1)
Belmont	27	1,846,164	430	214	91,986	20.07
Carroll	8	315,901	70	283	19,670	16.06
Columbiana	44	1,424,448	610	149	90,845	15.68
Coshocton	12	1,159,107	241	255	61,458	18.86
Gallia	7	639,467	129	277	35,865	17.83
Guernsey	10	214,195	84	143	11,946	17.93
Harrison	12	4,661,211	660	225	148,541	31.38
Hocking	6	43,131	22	163	3,585	12.03
Holmes	2	31,242	9	270	2,409	12.97
Jackson	11	221,860	68	231	15,635	14.19
Jefferson	23	2,069,470	434	236	102,348	20.22
Lawrence	4	219,133	66	165	10,832	20.23
Mahoning	15	685,391	172	271	46,594	14.71
Meigs	(1)	(1)	(1)	(1)	(1)	(1)
Morgan	4	1,969,242	249	252	62,755	31.38
Muskingum	6	278,400	53	233	12,429	22.40
Noble	6	936,204	99	209	20,772	45.07
Perry	13	1,975,393	345	257	88,742	22.26

See footnote at end of table.

TABLE 30.—Stripping operations in the bituminous coal and lignite fields of the United States, 1958, by States and counties—Continued

State and county	Number of strip mines	Production (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
Ohio—Continued						
Portage	2	104,514	27	250	6,738	15.51
Stark	16	466,013	140	218	30,578	15.24
Tuscarawas	31	1,693,103	428	275	117,822	14.37
Vinton	7	151,100	44	251	11,127	13.58
Washington	4	128,296	30	167	5,085	25.23
Wayne	2	90,723	23	306	7,093	12.79
Other counties	6	435,637	97	216	20,981	20.76
Total Ohio	278	21,759,345	4,530	226	1,025,836	21.21
Oklahoma:						
Craig	4	74,817	32	255	8,132	9.20
Haskell	3	234,933	73	165	11,986	19.60
Latimer	1	10,596	12	28	340	31.16
Le Flore	(1)	(1)	(1)	(1)	(1)	(1)
McIntosh	(1)	(1)	(1)	(1)	(1)	(1)
Rogers	(1)	(1)	(1)	(1)	(1)	(1)
Sequoyah	1	193,953	30	305	9,201	21.08
Other counties	5	746,618	198	225	44,529	16.77
Total Oklahoma	14	1,260,917	345	215	74,188	17.00
Pennsylvania:						
Allegheny	25	423,625	158	188	29,728	14.25
Armstrong	37	1,125,232	329	181	59,505	18.91
Beaver	13	197,325	101	201	20,301	9.72
Bedford	4	42,449	28	99	2,785	15.24
Blair	2	98,494	32	250	8,120	12.13
Bradford	(1)	(1)	(1)	(1)	(1)	(1)
Butler	38	1,607,569	381	228	86,849	18.51
Cambria	20	364,175	186	162	30,072	12.11
Cameron	(1)	(1)	(1)	(1)	(1)	(1)
Centre	19	872,539	307	215	65,902	13.24
Clarion	29	2,664,479	659	244	160,898	16.56
Clearfield	109	4,194,252	1,498	211	316,070	13.27
Clinton	7	599,143	122	245	29,808	20.10
Elk	8	169,978	79	164	12,877	13.20
Fayette	30	295,564	155	109	16,860	17.53
Greene	3	13,504	15	43	663	20.36
Huntingdon	4	29,665	21	128	2,639	11.24
Indiana	30	944,850	325	219	71,202	13.27
Jefferson	30	901,745	303	201	60,888	14.81
Lawrence	24	1,043,989	246	276	67,836	15.39
Lycoming	2	45,398	15	260	3,893	11.66
McKean	3	47,432	14	225	3,156	15.03
Mercer	8	582,428	135	231	31,096	18.73
Somerset	59	1,185,085	398	158	62,869	18.85
Tioga	3	265,149	46	256	11,837	22.40
Venango	14	621,285	140	252	35,180	17.66
Washington	25	1,202,723	296	205	60,713	19.81
Westmoreland	17	138,893	66	122	8,028	17.30
Other counties	2	38,874	16	158	2,526	15.39
Total Pennsylvania	565	19,715,844	6,071	208	1,262,301	15.62
South Dakota (lignite): Dewey	1	19,571	9	266	2,390	8.19
Tennessee:						
Anderson	12	281,518	111	70	7,749	36.33
Campbell	14	380,204	113	182	20,607	18.45
Claiborne	6	91,864	47	144	6,765	13.58
Cumberland	3	34,837	14	127	1,832	19.02
Fentress	1	4,327	1	186	201	21.54
Grundy	(1)	(1)	(1)	(1)	(1)	(1)
Hamilton	2	31,031	12	123	1,480	20.97
Marion	2	117,305	39	172	6,792	17.27
Morgan	11	444,242	91	214	19,501	22.78
Scott	13	394,195	132	161	21,228	18.57
Sequatchie	(1)	(1)	(1)	(1)	(1)	(1)
Van Buren	1	7,245	4	113	451	16.05
White	1	10,006	6	100	600	16.67
Other counties	4	172,113	46	183	8,416	20.45
Total Tennessee	70	1,968,887	616	155	95,622	20.59

See footnote at end of table.

TABLE 30.—Stripping operations in the bituminous coal and lignite fields of the United States, 1958, by States and counties—Continued

State and county	Number of strip mines	Production (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
Virginia:						
Buchanan	3	34,509	18	135	2,465	14.00
Dickenson	6	337,956	49	239	11,694	28.90
Lee	3	12,034	3	219	707	17.02
Russell	3	230,200	57	223	12,761	18.04
Tazewell	3	111,687	38	206	7,816	14.29
Wise	24	1,012,538	195	234	45,610	22.20
Total Virginia	42	1,738,924	360	225	81,053	21.45
Washington: Kittitas	1	4,880	5	58	295	16.54
West Virginia:						
Barbour	16	811,180	147	176	25,809	31.43
Boone	5	269,711	97	208	20,233	13.33
Braxton	1	6,552	2	212	325	20.16
Brooke	5	151,460	61	185	11,354	13.34
Fayette	9	160,604	80	126	10,120	15.87
Gilmer	2	179,005	30	104	3,116	57.45
Grant	(1)	(1)	(1)	(1)	(1)	(1)
Greenbrier	9	292,558	102	175	17,893	16.35
Harrison	31	1,342,324	426	218	92,830	14.46
Kanawha	3	165,371	42	233	9,785	16.90
Lewis	(1)	(1)	(1)	(1)	(1)	(1)
Logan	(1)	(1)	(1)	(1)	(1)	(1)
Marion	1	55,707	27	205	5,483	10.16
Mason	1	39,080	10	263	2,630	14.86
McDowell	12	646,549	171	180	30,832	20.97
Mercer	8	202,387	72	134	9,619	21.04
Mineral	(1)	(1)	(1)	(1)	(1)	(1)
Monongalia	3	25,087	12	65	794	31.59
Nicholas	7	391,444	126	184	23,273	16.82
Ohio	(1)	(1)	(1)	(1)	(1)	(1)
Pocahontas	1	27,206	28	242	6,785	4.01
Preston	11	769,697	151	256	38,698	19.89
Raleigh	10	430,696	135	156	20,989	20.52
Randolph	4	146,340	25	264	6,713	21.80
Taylor	4	93,747	49	170	8,348	11.23
Tucker	2	404,769	138	112	15,420	26.25
Upshur	8	220,831	103	109	11,255	19.62
Webster	2	91,309	24	234	5,609	16.28
Wyoming	7	598,246	164	172	28,126	21.27
Other counties	15	788,558	293	156	45,665	17.27
Total West Virginia	177	8,310,418	2,515	181	451,704	18.36
Wyoming:						
Campbell	1	375,947	27	265	7,155	52.54
Carbon	2	96,057	31	204	6,357	15.11
Converse	2	35,040	10	61	610	57.44
Lincoln	1	393,659	46	201	9,254	42.54
Sheridan	2	364,749	59	245	14,457	25.23
Total Wyoming	8	1,265,452	173	219	37,833	33.45
Total United States	1,646	116,241,787	25,806	209	5,397,156	21.54

[1] Included in "Other counties" to avoid disclosing individual operations.

AUGER MINING

Augers are generally used in areas where strip mining has become economically impracticable because of thick overburden. They were used first about 1945, and separate statistics on coal-recovery augers begin with 1952. The rapidly expanded production of coal by stripping during World War II in the mountainous areas of the northern Appalachian region left many miles of highwall containing exposed coal seams. After several years of experimentation, large, efficient augers as much as 60 inches in diameter were developed to recover the coal from these exposed coal seams.

Production at auger mines increased rapidly from less than 2 million tons in 1952 to 7 million tons in 1958. Augers were used to mine coal in eight States in 1958, and sales of augers reported by four manufacturers indicate continued growth of auger mining. A few coal-recovery augers have been sold for underground use; these units and the coal produced by them have been included with coal loaded mechanically underground.

TABLE 31.—Auger mines in the bituminous coal and lignite fields of the United States, 1958, by States and counties

State and county	Number of auger mines	Equipment in use (number of units)				Mined by augers (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
		Augers	Power shovels	Power drills	Bulldozers					
Alabama: Walker	2	2				28,871	7	153	1,070	26.98
Illinois:										
Gallatin	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Saline	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total Illinois	5	3			3	17,077	10	102	1,016	16.81
Kentucky, Eastern:										
Bell	6	7	1		1	205,781	14	144	1,948	105.62
Boyd	1	3				86,471	21	167	3,476	24.88
Clay	1	1				10,246	12	45	541	18.94
Harlan	12	12	8	2	11	128,631	131	64	8,374	15.36
Knott	4	4				95,335	60	149	8,877	10.74
Lee	1	1				9,150	3	114	371	26.45
Leslie	4	4	2	4	2	90,040	28	112	3,125	28.81
Letcher	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Magoffin	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Owsley	1	1				1,649	2	60	120	13.74
Perry	13	13	2		3	481,672	102	121	12,376	38.92
Pike	25	27	16	15	20	623,771	200	133	26,600	23.45
Other counties	7	7	1		2	102,489	29	82	2,365	43.34
Total Eastern Kentucky	75	80	30	21	39	1,835,235	602	113	68,173	26.92
Kentucky, Western:										
Hopkins	1	1			1	10,967	1	130	181	60.66
Webster	1	1			1	41,829	5	135	675	61.97
Total Western Kentucky	2	2			2	52,796	6	143	856	61.68
Total Kentucky	77	82	30	21	41	1,888,031	608	114	69,029	27.35
Ohio:										
Athens	3	3			2	18,866	6	92	538	35.07
Belmont	4	4			2	154,368	17	212	3,678	41.97
Carroll	2	2				9,206	8	32	264	34.92
Columbiana	11	10			4	109,675	69	77	5,350	20.50
Gallia	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Guernsey	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Harrison	5	6	1		4	170,592	44	110	4,844	35.22
Hocking	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Jackson	1	1			1	3,462	6	124	743	4.66
Jefferson	8	8	2	1	7	192,890	16	179	2,862	67.40
Meigs	1	1			1	40,638	9	278	2,502	16.24
Muskingum	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Perry	3	3	1		2	87,787	12	118	1,447	60.65
Tuscarawas	6	6			4	116,764	19	220	4,283	27.26
Washington	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other counties	6	6			6	166,191	33	193	6,369	26.09
Total Ohio	50	50	4	1	33	1,070,439	239	138	32,880	32.56
Pennsylvania:										
Armstrong	6	5				44,837	28	95	2,688	16.68
Beaver	1	1				6,161	7	40	280	22.00
Blair	1	1		1		4,399	3	22	66	66.65
Butler	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cambria	2	2				4,974	5	57	285	17.45
Centre	2	2		1		13,760	2	260	550	25.00
Clearfield	7	8		2		38,412	25	144	3,540	10.85
Elk	3	3				43,606	11	167	1,837	23.74
Fayette	1	1			1	3,942	4	38	143	27.58
Indiana	5	5		2		31,849	13	81	1,030	30.91
Jefferson	3	3		1		26,821	9	191	1,784	15.03
Somerset	3	3		3		16,248	7	105	729	22.28
Washington	1	1			1	15,300	2	220	440	34.77
Westmoreland	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other counties	3	3				14,861	10	208	2,076	7.16
Total Pennsylvania	38	38		10	2	265,170	126	123	15,448	17.17

See footnote at end of table.

TABLE 31.—Auger mines in the bituminous coal and lignite fields of the United States, 1958, by States and counties—Continued

State and county	Number of auger mines	Equipment in use (number of units)				Mined by augers (net tons)	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day
		Augers	Power shovels	Power drills	Bulldozers					
Tennessee:										
Anderson	3	3	-------	-------	2	81,232	10	160	1,608	50.52
Campbell	3	4	-------	-------	1	137,161	15	173	2,590	52.96
Clairborne	3	5	-------	-------	1	55,098	18	150	2,755	20.00
Cumberland	1	1	-------	-------		1,000	2	60	120	8.33
Marion	1	1	-------	-------	-------	16,229	2	166	410	39.59
Morgan	2	2	-------	-------	-------	67,015	32	159	5,058	13.25
Scott	2	2	-------	1	3	105,580	26	154	3,999	26.40
Total Tennessee	15	18	-------	1	7	463,315	105	158	16,540	28.01
Virginia:										
Buchanan	10	10	1	-------	6	89,189	30	95	2,874	31.03
Dickenson	1	1	-------	-------	1	11,720	3	226	678	17.29
Lee	4	4	-------	-------	4	11,218	3	205	590	19.01
Russell	4	4	-------	-------	4	135,686	20	215	4,384	30.95
Tazewell	6	6	-------	-------	3	53,897	65	55	3,558	15.15
Wise	9	14	-------	-------	10	359,957	61	209	12,715	28.31
Total Virginia	34	39	1	-------	28	661,667	182	136	24,799	26.68
West Virginia:										
Barbour	2	2	-------	-------	2	22,730	11	43	470	48.35
Boone	6	10	1	-------	7	404,415	90	137	12,289	32.91
Brooke	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Clay	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Fayette	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Gilmer	1	1	-------	-------	1	34,261	5	81	405	84.60
Grant	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Harrison	13	14	2	-------	13	360,353	77	247	19,036	18.93
Kanawha	7	9	5	1	10	710,147	103	183	18,847	37.68
Lewis	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Logan	3	3	2	-------	5	76,131	33	118	3,951	19.27
Mason	1	1	-------	1	1	16,132	4	252	1,008	16.00
McDowell	10	16	-------	-------	3	204,084	62	131	8,067	25.30
Mercer	2	3	-------	-------	1	14,330	10	130	1,304	10.99
Mineral	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Mingo	3	5	2	1	6	215,962	58	160	9,225	23.41
Monongalia	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Nicholas	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Pocahontas	1	1	-------	-------	1	2,101	5	55	275	7.64
Preston	1	1	-------	-------	1	8,353	4	200	800	10.44
Putnam	1	1	-------	-------	-------	5,545	3	31	93	59.62
Raleigh	7	11	-------	3	5	126,947	26	143	3,738	33.96
Taylor	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Webster	1	1	-------	-------	-------	3,901	4	108	437	8.92
Wyoming	3	6	-------	-------	2	105,477	12	71	818	128.91
Other counties	16	22	4	2	22	614,077	155	119	18,435	33.31
Total West Virginia	78	107	16	8	80	2,924,946	662	152	99,198	27.24
Total United States	299	339	51	41	194	7,319,516	1,939	134	259,980	28.15

[1] Included in "Other counties" to avoid disclosing individual operations.

TABLE 32.—Units of coal-recovery augers sold to bituminous coal and lignite mines for surface use in the United States, as reported by manufacturers, 1954–58, by States

State	1954	1955	1956	1957	1958
Alabama	1				1
Colorado		1			
Illinois		1	2		
Kentucky	10	11	15	16	13
Missouri				1	
Ohio	12	5	12	7	4
Pennsylvania	9	8	10	7	6
Tennessee			2	1	5
Virginia	1	6	7	5	4
West Virginia	21	33	41	16	9
Total	54	65	89	53	42

MECHANICAL LOADING

In the past 5 years mechanical loading of bituminous coal and lignite at underground mines has increased from 80 to 85 percent of the total output. Although overall mechanization gained gradually during this period, the following changes occurred in the methods of loading: Mobile loading into mine cars decreased from 24 to 6 percent of the total mechanically loaded; mobile loading into shuttle cars increased from 56 to 62 percent; Duckbills or other self-loading conveyors decreased from 3 to 1 percent; hand-loaded conveyors decreased from 9 to 3 percent; and production from continuous mining machines increased from 4 to 23 percent.

The most important change that has taken place in mechanical loading in recent years was the introduction of continuous mining machines. In 1958, 56 million tons of bituminous coal was produced at 213 mines by continuous mining machines, compared with 54 million tons in 1957 from 193 mines. In 1958, 45 mines used continuous mining machines exclusively, compared with 33 in 1957.

Sales of all types of loading and mining equipment shipped to bituminous coal and lignite mines, as reported by manufacturers, decreased in 1958 from 1957.

TABLE 33.—Growth of mechanical loading at underground bituminous coal and lignite mines in the United States, 1923–58

[Production in thousand net tons]

Year	Underground production mechanically loaded: Loaded by machines: Mobile loading machines	Loaded by machines: Scrapers	Loaded by machines: Conveyors equipped with Duckbills or other self-loading heads	Loaded by machines: Total	Continuous mining machines	Handled by conveyors: Pit-car loaders	Handled by conveyors: Hand-loaded conveyors	Handled by conveyors: Total	Total mechanically loaded	Underground production mechanically loaded, percent	Number of mechanical loading units: Mobile loading machines	Scrapers	Conveyors equipped with Duck-bills or other self-loading heads	Continuous mining machines	Pit-car loaders	Hand-loaded conveyors
1923	(1)	(1)	(1)	(1)	--------	(1)	(1)	(1)	[2] 1,880	[2] 0.3	(1)	(1)	(1)	--------	(1)	(1)
1924	(1)	(1)	(1)	(1)	--------	(1)	(1)	(1)	[2] 3,496	.7	(1)	(1)	(1)	--------	(1)	(1)
1925	(1)	(1)	(1)	(1)	--------	(1)	(1)	(1)	[2] 6,243	[2] 1.2	(1)	(1)	(1)	--------	(1)	(1)
1926	7,786	1,554	682	10,022	--------	523	(1)	(1)	[2] 10,545	[2] 1.9	295	133	27	--------	(1)	(1)
1927	(1)	(1)	(1)	(1)	--------	(1)	(1)	(1)	16,500	3.3	(1)	(1)	(1)	--------	(1)	(1)
1928	11,811	1,548	1,200	14,559	--------	4,117	2,883	7,000	21,559	4.5	397	130	82	--------	1,040	(1)
1929	16,432	1,550	1,309	19,291	--------	14,979	3,592	18,571	37,862	7.4	488	126	99	--------	2,521	(1)
1930	20,073	1,637	1,628	23,338	--------	19,116	4,528	23,644	46,982	10.5	545	150	140	--------	2,876	(1)
1931	19,407	1,471	1,811	22,689	--------	19,172	5,701	24,873	47,562	13.1	583	146	165	--------	3,428	(1)
1932	14,825	1,132	1,630	17,587	--------	12,590	5,640	18,230	35,817	12.3	548	128	159	--------	3,112	(1)
1933	17,865	991	1,656	20,512	--------	11,413	5,896	17,309	37,821	12.0	523	93	132	--------	2,453	525
1934	20,750	1,004	2,082	23,836	--------	11,089	6,508	17,597	41,433	12.2	534	119	157	--------	2,288	574
1935	24,675	1,118	2,595	28,388	--------	11,098	7,691	18,789	47,177	13.5	657	78	179	--------	2,098	670
1936	40,970	1,273	3,240	45,483	--------	10,538	10,956	21,494	66,977	16.3	980	106	234	--------	1,851	936
1937	(1)	(1)	(1)	(1)	--------	(1)	(1)	(1)	83,500	20.2	(1)	(1)	(1)	--------	(1)	(1)
1938	57,824	1,031	4,248	63,103	--------	5,653	16,337	21,990	85,093	26.7	1,405	117	346	--------	1,392	1,526
1939	76,442	1,007	6,759	84,208	--------	5,038	21,466	26,504	110,712	31.0	1,573	131	559	--------	873	1,834
1940	100,962	1,255	10,362	112,579	--------	3,979	31,312	35,291	147,870	35.4	1,720	116	656	--------	697	2,263
1941	126,478	1,290	14,918	142,686	--------	3,447	40,534	43,981	186,667	40.7	1,985	109	788	--------	607	2,807
1942	160,301	1,405	20,683	182,389	--------	3,252	47,262	50,514	232,903	45.2	2,301	93	1,062	--------	481	3,041
1943	179,008	1,349	22,917	203,274	--------	2,669	43,862	46,531	249,805	48.9	2,525	83	1,226	--------	321	3,191
1944	202,875	1,341	23,164	227,380	--------	1,835	44,974	46,809	274,189	52.9	2,737	87	1,331	--------	241	3,236

See footnotes at end of table.

TABLE 33.—Growth of mechanical loading at underground bituminous coal and lignite mines in the United States, 1923–58—Con.

Year	Underground production mechanically loaded									Underground production mechanically loaded, percent	Number of mechanical loading units					
	Loaded by machines				Continuous mining machines	Handled by conveyors			Total mechanically loaded		Mobile loading machines	Scrapers	Conveyors equipped with Duckbills or other self-loading heads	Continuous mining machines	Pit-car loaders	Hand-loaded conveyors
	Mobile loading machines	Scrapers	Conveyors equipped with Duckbills or other self-loading heads	Total		Pit-car loaders	Hand-loaded conveyors	Total								
1945	198,668	1,252	21,506	221,426	---------	986	40,100	41,086	262,512	56.1	2,950	87	1,383	---------	142	3,385
1946	186,975	917	19,678	207,570	---------	623	37,148	37,771	245,341	58.3	3,200	75	1,521	---------	93	3,470
1947	229,836	854	21,921	252,611	---------	353	45,193	45,546	298,157	60.7	3,569	67	1,531	---------	71	3,979
1948	[3] 232,667	743	19,634	253,044	(4)	184	42,578	42,762	295,806	64.3	[3] 3,980	56	1,632	(4)	37	4,125
1949	[3] 177,239	339	13,994	191,572	(4)	54	30,750	30,804	222,376	67.0	[3] 4,205	46	1,483	(4)	17	4,312
1950	[3] 222,976	318	13,985	237,279	(4)	39	35,407	35,446	272,725	69.4	[3] 4,318	39	1,329	(4)	12	4,434
1951	[5] 252,663	126	13,884	266,673	(4)	(6)	37,583	37,583	304,256	73.1	[5] 4,410	22	1,242	(4)	(6)	3,904
1952	218,982	77	10,590	229,649	8,215	(6)	31,130	31,130	268,994	75.5	4,083	19	1,049	152	(6)	3,569
1953	232,585	239	8,531	241,355	11,830	(6)	25,144	25,144	278,329	79.6	3,985	29	849	219	(6)	2,994
1954	206,546	411	4,672	211,629	16,336	(6)	15,005	15,005	242,970	84.0	4,314	48	633	325	(6)	2,162
1955	243,204	141	4,369	247,714	27,460	(6)	15,497	15,497	290,671	84.6	3,819	23	487	385	(6)	1,925
1956	248,341	156	3,727	252,224	39,907	(6)	15,271	15,271	307,402	84.0	3,854	35	437	510	(6)	1,819
1957	236,720	82	2,699	239,501	53,783	(6)	12,453	12,453	305,737	84.8	3,755	14	361	614	(6)	1,528
1958	178,014	10	1,550	179,574	56,373	(6)	7,626	7,626	243,573	84.9	3,434	7	242	679	(6)	1,230

[1] Data not available.
[2] Exclusive of tonnage "Handled by conveyors."
[3] Includes continuous mining machines.
[4] Included with mobile loading machines.
[5] Includes continuous mining machines and augers.
[6] Canvass of pit-car loaders discontinued in 1951.

TABLE 34.—Bituminous coal and lignite mechanically loaded underground in the United States, 1957–58, by types of loading equipment

Type of equipment	1957		1958	
	Net tons	Percentage of total	Net tons	Percentage of total
Mobile loading machines:				
Loading direct into mine cars	24, 796, 785	8. 1	13, 657, 990	5. 6
Loading onto conveyors	14, 418, 819	4. 7	13, 563, 199	5. 6
Loading into shuttle cars	197, 505, 881	64. 6	150, 792, 401	61. 9
Continuous mining machines	53, 782, 910	17. 6	56, 373, 297	23. 2
Scrapers	81, 702	----------	10, 449	----------
Conveyors equipped with Duckbills or other self-loading heads	2, 698, 796	. 9	1, 550, 103	. 6
Hand loaded conveyors	12, 452, 572	4. 1	7, 625, 648	3. 1
Total mechanically loaded	305, 737, 465	100. 0	243, 573, 087	100. 0

TABLE 35.—Comparative changes in underground mechanical loading of bituminous coal and lignite by principal types of loading devices in the United States, 1957–58, by States

State	Net tons by— Loading machines [1] 1957	Loading machines [1] 1958	Continuous mining machines 1957	Continuous mining machines 1958	Hand loaded conveyors 1957	Hand loaded conveyors 1958	Total mechanically loaded (net tons) 1957	Total mechanically loaded (net tons) 1958	Total production at mines using mechanical loading devices (net tons) 1957	Total production at mines using mechanical loading devices (net tons) 1958	Handled by each class (percent) Loading machines [1] 1957	Loading machines [1] 1958	Continuous mining machines 1957	Continuous mining machines 1958	Hand-loaded conveyors 1957	Hand-loaded conveyors 1958
Alabama	8, 540, 245	6, 536, 231	1, 224, 996	1, 252, 708	660, 618	357, 992	10, 425, 859	8, 146, 931	10, 456, 565	8, 146, 931	81. 9	80. 2	11. 8	15. 4	6. 3	4. 4
Alaska	58, 615	7, 703	12, 865	----------	----------	----------	71, 480	7, 703	251, 098	158, 081	82. 0	100. 0	18. 0	------	------	------
Arkansas	----------	3, 000	30, 900	5, 206	245, 991	69, 732	276, 891	77, 938	276, 891	77, 938	------	3. 8	11. 2	6. 7	88. 8	89. 5
Colorado	2, 348, 903	1, 466, 685	190, 144	471, 733	315, 691	256, 409	2, 854, 738	2, 194, 827	3, 118, 484	2, 445, 402	82. 3	66. 8	6. 7	21. 5	11. 0	11. 7
Illinois	20, 848, 568	17, 432, 826	5, 877, 774	5, 721, 470	----------	----------	26, 726, 342	23, 154, 296	26, 737, 016	23, 169, 667	78. 0	75. 3	22. 0	24. 7	------	------
Indiana	4, 570, 493	4, 272, 885	281, 074	325, 938	----------	----------	4, 851, 567	4, 598, 823	4, 851, 567	4, 598, 823	94. 2	92. 9	5. 8	7. 1	------	------
Iowa	89, 391	100, 068	----------	----------	----------	----------	89, 391	100, 068	90, 941	100, 068	100. 0	100. 0	------	------	------	------
Kentucky	35, 231, 945	29, 612, 417	2, 320, 504	3, 207, 241	877, 826	306, 280	38, 430, 275	33, 125, 938	39, 346, 921	33, 536, 427	91. 7	89. 4	6. 0	9. 7	2. 3	. 9
Maryland	----------	----------	----------	----------	121, 312	139, 017	121, 312	139, 017	122, 995	143, 880	------	------	------	------	100. 0	100. 0
Montana:																
Bituminous	203, 033	171, 935	----------	----------	1, 078	4, 361	204, 111	176, 296	204, 111	176, 296	99. 5	97. 5	------	------	. 5	2. 5
Lignite	1, 260	----------	----------	----------	----------	----------	1, 260	----------	2, 521	----------	100. 0	------	------	------	------	------
Total Montana	204, 293	171, 935	----------	----------	1, 078	4, 361	205, 371	176, 296	206, 632	176, 296	99. 5	97. 5	------	------	. 5	2. 5
New Mexico	27, 206	16, 702	----------	----------	900	600	28, 106	17, 302	38, 633	30, 171	96. 8	96. 5	------	------	3. 2	3. 5
Ohio	7, 241, 998	5, 180, 226	3, 334, 812	2, 950, 114	99, 889	86, 176	10, 676, 699	8, 216, 516	10, 689, 475	8, 253, 516	67. 8	63. 0	31. 2	35. 9	1. 0	1. 1
Oklahoma	52, 460	52, 877	----------	----------	369, 611	296, 484	422, 071	349, 361	422, 071	349, 361	12. 4	15. 1	------	------	87. 6	84. 9
Pennsylvania	34, 398, 255	20, 613, 282	21, 103, 601	21, 780, 874	2, 964, 012	1, 884, 856	58, 465, 868	44, 279, 012	58, 847, 563	44, 460, 653	58. 8	46. 5	36. 1	49. 2	5. 1	4. 3
Tennessee	2, 380, 869	1, 828, 149	----------	----------	69, 645	112, 467	2, 450, 514	1, 940, 616	2, 451, 184	1, 956, 785	97. 2	94. 2	------	------	2. 8	5. 8
Utah	5, 856, 999	4, 248, 082	991, 383	1, 059, 268	1, 825	7, 555	6, 850, 207	5, 314, 905	6, 850, 207	5, 314, 905	85. 5	79. 9	14. 5	19. 9	------	. 2
Virginia	13, 560, 056	11, 726, 203	1, 502, 505	944, 964	251, 898	170, 446	15, 314, 459	12, 841, 613	15, 879, 390	13, 154, 516	88. 6	91. 3	9. 8	7. 4	1. 6	1. 3
Washington	49, 355	37, 740	138, 024	97, 712	105, 682	94, 850	293, 061	230, 302	322, 992	230, 302	16. 8	16. 4	47. 1	42. 4	36. 1	41. 2
West Virginia	103, 495, 381	75, 974, 040	16, 732, 110	18, 519, 029	6, 323, 056	3, 806, 053	126, 550, 547	98, 299, 122	128, 801, 608	99, 167, 324	81. 8	77. 3	13. 2	18. 8	5. 0	3. 9
Wyoming	546, 951	293, 091	42, 218	37, 040	43, 538	32, 370	632, 707	362, 501	632, 707	362, 501	86. 4	80. 9	6. 7	10. 2	6. 9	8. 9
Total	239, 501, 983	179, 574, 142	53, 782, 910	56, 373, 297	12, 452, 572	7, 625, 648	305, 737, 465	243, 573, 087	310, 394, 940	245, 833, 547	78. 3	73. 7	17. 6	23. 2	4. 1	3. 1

[1] Includes mobile loading machines, scrapers, and conveyors equipped with Duckbills or other self-loading heads.

TABLE 36.—Number of underground bituminous coal and lignite mines using mechanical loading devices and number of units in use in the United States, 1957–58, by States

State	Number of mines										Number of loading devices									
	Using loading machines only [1]		Using continuous-mining machines only		Using hand-loaded conveyors only		Using more than one type of mechanical loading		Total		Loading machines						Continuous-mining machines		Hand-loaded conveyors (number of units)	
											Mobile		Scrapers		Duckbills or other self-loading conveyors					
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	14	14			12	13	5	5	31	32	117	111			4	1	12	18	100	79
Alaska	1	2					1		2	2	5	2	1		8		1			
Arkansas					10	11	1	1	11	12		2					1	1	22	24
Colorado	34	38		1	17	16	9	6	60	61	60	57	2	1	103	103	9	10	53	42
Illinois	51	44	2	1			5	6	58	51	179	144			8	10	38	38		
Indiana	22	18					2	2	24	20	78	71					4	4		
Iowa	3	3							3	3	5	5								
Kentucky	133	121	2	7	20	21	18	12	173	161	574	501			3		30	38	97	50
Maryland					7	7			7	7									18	18
Montana:																				
Bituminous	8	8			1	1			9	9	9	10			8	8			1	2
Lignite	1								1		2									
Total Montana	9	8			1	1			10	9	11	10			8	8			1	2
New Mexico	1	1			1	1			2	2	2	2							1	1
Ohio	24	21	4	4	10	15	5	4	43	44	117	104			1		34	34	20	27
Oklahoma					4	4	1	1	5	5	5	5							78	78
Pennsylvania	73	64	9	13	117	109	61	60	260	246	794	661	2		71	72	291	303	438	347
Tennessee	16	12			2	6	1		19	18	35	28	1		14	16			11	15
Utah	32	32	1	1	1		6	7	40	40	152	138			6	3	16	19	2	1
Virginia	49	56	1		6	4	8	11	64	71	171	186			2	2	18	18	23	20
Washington	3		1	1		1	1	3	5	5	3	5	2				6	6	20	26
West Virginia	235	212	12	16	63	63	68	77	378	368	1,420	1,385			40	16	152	189	626	478
Wyoming	5	7	1	1			2	1	8	9	27	17	6	6	93	11	2	1	18	22
Total	705	653	33	45	271	272	194	196	1,203	1,166	3,755	3,434	14	7	361	242	614	679	1,528	1,230

[1] Includes mobile loading machines, scrapers, and conveyors equipped with Duckbills or other self-loading heads.

TABLE 37.—Underground production at bituminous coal and lignite mines in the United States, 1957–58, by States and methods of loading

State	Hand-loaded (net tons)		Mechanically loaded (net tons)		Total underground production (net tons)		Underground output handloaded (percent)		Underground output mechanically loaded (percent)	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	652,437	357,847	10,425,859	8,146,931	11,078,296	8,504,778	5.9	4.2	94.1	95.8
Alaska	226,264	193,743	71,480	7,703	297,744	201,446	76.0	96.2	24.0	3.8
Arizona	8,901	7,649	------	------	8,901	7,649	100.0	100.0	------	------
Arkansas	9,984	6,855	276,891	77,938	286,875	84,793	3.5	8.1	96.5	91.9
Colorado	375,759	356,587	2,854,738	2,194,827	3,230,497	2,551,414	11.6	14.0	88.4	86.0
Georgia	13,464	8,751	------	------	13,464	8,751	100.0	100.0	------	------
Illinois	267,339	219,051	26,726,342	23,154,296	26,993,681	23,373,347	1.0	.9	99.0	99.1
Indiana	98,479	104,011	4,851,567	4,598,823	4,950,046	4,702,834	2.0	2.2	98.0	97.8
Iowa	183,798	150,888	89,391	100,068	273,189	250,956	67.3	60.1	32.7	39.9
Kansas	11,324	9,118	------	------	11,324	9,118	100.0	100.0	------	------
Kentucky	17,083,851	12,995,736	38,430,275	33,125,938	55,514,126	46,121,674	30.8	28.2	69.2	71.8
Maryland	204,422	206,410	121,312	139,017	325,734	345,427	62.8	59.8	37.2	40.2
Missouri	100,885	113,147	------	------	100,885	113,147	100.0	100.0	------	------
Montana:										
Bituminous	17,107	8,816	204,111	176,296	221,218	185,112	7.7	4.8	92.3	95.2
Lignite	15,122	15,622	1,260	------	16,382	15,622	92.3	100.0	7.7	------
Total Montana	32,229	24,438	205,371	176,296	237,600	200,734	13.6	12.2	86.4	87.8
New Mexico	94,310	81,749	28,106	17,302	122,416	99,051	77.0	82.5	23.0	17.5
North Dakota (lignite)	4,018	3,049	------	------	4,018	3,049	100.0	100.0	------	------
Ohio	1,087,351	982,096	10,676,699	8,216,516	11,764,050	9,198,612	9.2	10.7	90.8	89.3
Oklahoma	17,939	19,165	422,071	349,361	440,010	368,526	4.1	5.2	95.9	94.8
Pennsylvania	5,312,059	3,510,836	58,465,868	44,279,012	63,777,927	47,789,848	8.3	7.3	91.7	92.7
Tennessee	2,594,987	2,411,782	2,450,514	1,940,616	5,045,501	4,352,398	51.4	55.4	48.6	44.6
Utah	8,090	12,611	6,850,207	5,314,905	6,858,297	5,327,516	.1	.2	99.9	99.8
Virginia	11,746,657	11,583,863	15,314,459	12,841,613	27,061,116	24,425,476	43.4	47.4	56.6	52.6
Washington	50,400	17,087	293,061	230,302	343,461	247,389	14.7	6.9	85.3	93.1
West Virginia	14,709,677	9,933,211	126,550,547	98,299,122	141,260,224	108,232,333	10.4	9.2	89.6	90.8
Wyoming	17,052	1,477	632,707	362,501	649,759	363,978	2.6	.4	97.4	99.6
Total	54,911,676	43,311,157	305,737,465	243,573,087	360,649,141	286,884,244	15.2	15.1	84.8	84.9

TABLE 38.—Units of mechanical loading equipment sold to bituminous coal and lignite mines for underground use in the United States, as reported by manufacturers, 1954–58

Type of equipment	1954	1955	1956	1957	1958	Change from 1957 (percent)
Mobile loading machines	92	120	239	209	97	−53.6
Continuous mining machines	101	109	154	168	107	−36.3
Scrapers	5	--	--	--	1	--
Conveyors [1]	61	143	232	159	92	−42.1
Total	259	372	625	536	297	−44.6
Number of manufacturers reporting	23	22	22	21	18	−14.3

[1] Includes hand-loaded conveyors and those equipped with Duckbills or other self-loading heads.

TABLE 39.—Units of mechanical loading equipment sold for use in bituminous coal and lignite mines in the United States, as reported by manufacturers, 1957–58, by States

State	Mobile loading machines		Continuous mining machines		Room conveyors [1]	
	1957	1958	1957	1958	1957	1958
Alabama	7	12	7	3	--	4
Alaska	--	--	--	--	1	--
Arkansas	--	--	--	--	1	--
Colorado	--	1	2	3	--	1
Illinois	1	--	3	3	--	--
Indiana	3	3	2	1	--	--
Kentucky	17	16	12	11	20	6
New Mexico	1	--	--	--	--	--
Ohio	--	1	8	3	--	1
Oklahoma	--	--	1	--	--	--
Pennsylvania	30	8	59	24	28	14
Tennessee	7	1	--	--	2	--
Utah	14	--	6	1	--	--
Virginia	14	10	11	1	5	4
West Virginia	115	45	57	57	102	62
Total	209	97	168	107	159	92

[1] Includes hand-loaded conveyors and those equipped with Duckbills or other self-loading heads.

TABLE 40.—Units of conveying equipment sold for use in bituminous coal and lignite mines in the United States, as reported by manufacturers, 1957–58, by States

State	Bridge conveyors		Shuttle cars		Gathering and haulage conveyors [1]	
	1957	1958	1957	1958	1957	1958
Alabama	7	6	49	7	2	1
Colorado	--	--	5	3	2	--
Illinois	--	--	4	4	6	5
Indiana	--	--	3	8	1	8
Kentucky	16	3	30	39	15	7
New Mexico	--	--	2	2	--	--
Ohio	--	1	--	2	16	--
Oklahoma	1	--	--	--	2	--
Pennsylvania	14	11	99	18	40	14
Tennessee	--	--	2	--	1	--
Utah	--	--	30	7	5	1
Virginia	7	1	21	24	9	18
West Virginia	51	44	241	67	73	43
Wyoming	--	--	2	--	--	--
Total	96	66	488	181	172	97

[1] Includes all gathering and haulage conveyors with capacity over 500 feet, except main slope conveyors

MECHANICAL CLEANING

Mechanical cleaning refers to cleaning raw coal with mechanical devices that separate out impurities, usually by differences in specific gravity, and does not include coal that is only screened. Mechanical devices are divided into two general classes—wet and pneumatic. About 93 percent of the coal cleaned in 1958 was cleaned by various wet methods. Approximately half of all bituminous coal cleaned in the United States is cleaned with jigs. The various types of mechanical cleaning equipment are described in detail in Minerals Yearbook, volume II, Fuels, 1953, pp. 94–96.

Mechanical cleaning of bituminous coal increased more rapidly at underground mines than at strip mines from 1954 to 1958; the percentage of total production cleaned at underground mines increased about 6 percent during this period; whereas, at strip mines the increase was only 2 percent. Increased mechanical loading at underground mines was the major reason for the increased proportion of underground coal that required cleaning.

In the following tables on mechanical cleaning, where data are tabulated by States, the tonnage is credited to the State from which the coal was mined. The cleaning plant has been credited to the State where most of the coal was mined.

TABLE 41.—Growth of mechanical cleaning at bituminous coal and lignite mines in the United States, 1927–58

Year	Total production (thousand tons)	Mechanical cleaning: Number of cleaning plants	Raw coal (thousand tons)	Cleaned coal (thousand tons)	Refuse (thousand tons)	Percentage of refuse to raw coal	Percentage of total production mechanically cleaned
1927	517,763	(1)	(1)	27,692	(1)	(1)	5.3
1928	500,745	236	(1)	28,783	(1)	(1)	5.7
1929	534,989	280	40,241	36,799	3,442	8.6	6.9
1930	467,526	297	42,645	38,800	3,845	9.0	8.3
1931	382,089	312	39,529	36,172	3,357	8.5	9.5
1932	309,710	309	32,903	30,278	2,625	8.0	9.8
1933	333,630	290	37,682	34,558	3,124	8.3	10.4
1934	359,368	293	43,556	39,827	3,729	8.6	11.1
1935	372,373	320	49,473	45,361	4,112	8.3	12.2
1936	439,088	342	67,162	61,095	6,067	9.0	13.9
1937	445,531	(1)	(1)	65,000	(1)	(1)	14.6
1938	348,545	374	71,207	63,455	7,752	10.9	18.2
1939	394,855	366	88,895	79,429	9,466	10.6	20.1
1940	460,771	387	115,692	102,270	13,422	11.6	22.2
1941	514,149	417	133,379	117,540	15,839	11.9	22.9
1942	582,693	438	162,598	142,187	20,411	12.6	24.4
1943	590,177	432	167,310	145,576	21,734	13.0	24.7
1944	619,576	439	182,071	158,727	23,344	12.8	25.6
1945	577,617	439	172,899	147,886	25,013	14.5	25.6
1946	533,922	445	163,633	138,670	24,963	15.3	26.0
1947	630,624	461	206,620	174,436	32,184	15.6	27.7
1948	599,518	502	215,217	180,880	34,337	16.0	30.2
1949	437,868	571	184,691	153,652	31,039	16.8	35.1
1950	516,311	612	238,391	198,699	39,692	16.7	38.5
1951	533,665	631	289,838	240,010	49,828	17.2	45.0
1952	466,841	625	274,246	227,265	46,981	17.1	48.7
1953	457,290	611	295,654	241,759	53,895	18.2	52.9
1954	391,706	613	287,004	232,764	54,240	18.9	59.4
1955	464,633	575	335,458	272,715	62,743	18.7	58.7
1956	500,874	583	359,378	292,365	67,013	18.6	58.4
1957	492,704	593	376,546	304,027	72,519	19.3	61.7
1958	410,446	573	320,898	259,035	61,863	19.3	63.1

[1] Data not available.

TABLE 42.—Mechanical cleaning at bituminous coal and lignite mines in the United States, 1958, by States

State	Total production (net tons)	Mechanical cleaning: Number of cleaning plants	Raw coal (net tons)	Cleaned coal (net tons)	Refuse (net tons)	Percentage of refuse to raw coal	Percentage of total production mechanically cleaned
Alabama	11,181,943	32	15,764,809	10,019,196	5,745,613	36.4	89.6
Alaska	759,282	3	513,036	323,650	189,386	36.9	42.6
Arkansas	364,138	(1)	(1)	(1)	(1)	(1)	(1)
Colorado	2,974,189	[2] 3	[2] 1,359,479	[2] 1,112,421	[2] 247,058	[2] 18.2	[2] 33.3
Illinois	43,912,405	61	49,154,528	41,440,230	7,714,298	15.7	94.4
Indiana	15,022,224	19	12,418,054	10,503,303	1,914,751	15.4	69.9
Kansas	823,322	4	1,143,069	753,793	389,276	34.1	91.6
Kentucky	66,311,805	79	49,350,262	41,065,537	8,284,725	16.8	61.9
Missouri	2,592,162	9	2,575,123	1,881,331	693,792	26.9	72.6
Montana (bituminous)	211,353	2	9,139	8,234	905	9.9	3.9
New Mexico	116,656	1	20,042	16,702	3,340	16.7	14.3
Ohio	32,028,396	24	17,777,466	14,651,854	3,125,612	17.6	45.7
Oklahoma	1,629,443	3	636,964	538,607	98,357	15.4	33.1
Pennsylvania	67,770,862	94	50,337,350	39,957,169	10,380,181	20.6	59.0
Tennessee	6,784,600	4	332,600	297,455	35,145	10.6	4.4
Utah	5,327,516	6	4,038,321	3,362,093	676,228	16.7	63.1
Virginia	26,826,067	30	12,921,094	10,566,897	2,354,197	18.2	39.4
Washington	252,269	5	423,230	240,094	183,136	43.3	95.2
West Virginia	119,467,697	192	102,084,855	82,258,768	19,826,087	19.4	68.9
Wyoming	1,629,430	2	38,800	37,517	1,283	3.3	2.3
Other States [3]	4,459,788	------	------	------	------	------	------
Total	410,445,547	573	320,898,221	259,034,851	61,863,370	19.3	63.1

[1] Included in Colorado.
[2] Includes Arkansas.
[3] Includes Arizona, Georgia, Iowa, Maryland, and lignite from Montana, North Dakota, and South Dakota.

TABLE 43.—Mechanical cleaning of bituminous coal and lignite in the United States, 1927–58, by types of equipment

Year	Wet methods								Pneumatic methods	Grand total
	Jigs	Concentrating tables	Classifiers	Launders	Dense-medium processes	Jigs and tables	Other combinations	Total		
CLEAN COAL (THOUSAND NET TONS)										
1927	18,741	3,200	(1)	[2] 1,000	(1)	300	800	24,041	3,651	27,692
1928	17,927	3,412	(1)	[2] 2,446	(1)	1,056	156	24,997	3,786	28,783
1928	18,915	3,532	(1)	[2] 7,103	(1)	1,214	191	30,955	5,844	36,799
1930	17,724	2,272	(1)	[2] 9,818	(1)	1,029	62	30,905	7,895	38,800
1931	13,957	1,551	(1)	[2] 11,213	(1)	926	11	27,658	8,514	36,172
1932	9,963	821	(1)	[2] 12,140	(1)	806	9	23,739	6,539	30,278
1933	11,895	1,119	(1)	[2] 13,272	(1)	693	5	26,984	7,574	34,558
1934	14,012	1,116	(1)	[2] 15,168	(1)	1,227	6	31,529	8,298	39,827
1935	15,735	1,118	(1)	[2] 18,454	(1)	1,549	----------	36,856	8,505	45,361
1936	23,417	1,843	(1)	[2] 22,631	(1)	2,613	----------	50,504	10,591	61,095
1937	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	65,000
1938	27,615	984	4,521	10,681	4,450	2,791	2,145	53,187	10,268	63,455
1939	37,056	1,402	5,917	12,809	4,683	3,256	2,611	67,734	11,695	79,429
1940	47,064	2,330	7,762	16,269	6,692	2,765	4,408	87,290	14,980	102,270
1941	53,287	2,510	8,177	16,954	9,344	4,364	5,742	100,378	17,162	117,540
1942	66,876	3,138	10,529	18,658	12,495	4,366	5,938	122,000	20,187	142,187
1943	66,092	2,929	11,854	17,424	13,388	4,322	8,366	124,375	21,201	145,576
1944	74,175	2,753	14,780	19,686	13,869	4,649	8,751	138,663	20,064	158,727
1945	68,609	2,594	14,203	18,980	12,875	4,754	8,455	130,470	17,416	147,886
1946	64,702	1,447	13,883	16,021	14,173	3,776	8,057	122,059	16,611	138,670
1947	85,931	2,980	14,648	17,902	17,702	4,303	12,617	156,083	18,353	174,436
1948	87,506	4,360	18,304	16,788	20,638	5,252	11,816	164,664	16,216	180,880
1949	72,423	4,040	14,865	11,238	17,821	3,288	17,033	140,708	12,944	153,652
1950	94,161	4,693	18,059	11,630	28,948	6,153	19,526	183,170	15,529	198,699
1951	101,746	5,811	23,174	10,362	33,840	7,613	38,884	221,430	18,580	240,010
1952	97,336	3,723	19,296	11,738	31,321	8,280	36,925	208,619	18,646	227,265
1953	101,001	4,002	18,312	11,988	36,805	8,647	41,739	222,494	19,265	241,759
1954	99,913	6,606	16,115	12,156	43,104	9,024	27,119	214,037	18,727	232,764
1955	114,538	7,443	17,656	11,400	49,332	13,953	38,098	252,420	20,295	272,715
1956	124,858	9,535	15,064	10,223	56,937	10,978	40,459	268,054	24,311	292,365
1957	133,844	14,389	14,282	8,306	63,678	11,557	33,203	279,259	24,768	304,027
1958	115,321	18,142	8,793	6,768	52,735	10,076	28,318	240,153	18,882	259,035
PERCENTAGE CLEANED BY EACH TYPE										
1927	67.6	11.6	(1)	[2] 3.6	(1)	1.1	2.9	86.8	13.2	100.0
1928	62.3	11.8	(1)	[2] 8.5	(1)	3.7	.5	86.8	13.2	100.0
1929	51.4	9.6	(1)	[2] 19.3	(1)	3.3	.5	84.1	15.9	100.0
1930	45.6	5.9	(1)	[2] 25.3	(1)	2.7	.2	79.7	20.3	100.0
1931	38.6	4.3	(1)	[2] 31.0	(1)	2.6	----------	76.5	23.5	100.0
1932	32.8	2.7	(1)	[2] 40.2	(1)	2.7	----------	78.4	21.6	100.0
1933	34.4	3.2	(1)	[2] 38.5	(1)	2.0	----------	78.1	21.9	100.0
1934	35.2	2.8	(1)	[2] 38.1	(1)	3.1	----------	79.2	20.8	100.0
1935	34.7	2.5	(1)	[2] 40.7	(1)	3.4	----------	81.3	18.7	100.0
1936	38.3	3.0	(1)	[2] 37.1	(1)	4.3	----------	82.7	17.3	100.0
1937	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	100.0
1938	43.5	1.6	7.1	16.8	7.0	4.4	3.4	83.8	16.2	100.0
1939	46.6	1.8	7.5	16.1	5.9	4.1	3.3	85.3	14.7	100.0
1940	46.0	2.3	7.6	15.9	6.5	2.7	4.3	85.3	14.7	100.0
1941	45.3	2.2	7.0	14.4	7.9	3.7	4.9	85.4	14.6	100.0
1942	47.0	2.2	7.4	13.1	8.8	3.1	4.2	85.8	14.2	100.0
1943	45.4	2.0	8.1	12.0	9.2	3.0	5.7	85.4	14.6	100.0
1944	46.7	1.8	9.3	12.4	8.8	2.9	5.5	87.4	12.6	100.0
1945	46.4	1.8	9.6	12.8	8.7	3.2	5.7	88.2	11.8	100.0
1946	46.7	1.0	10.0	11.6	10.2	2.7	5.8	88.0	12.0	100.0
1947	49.3	1.7	8.4	10.3	10.1	2.5	7.2	89.5	10.5	100.0
1948	48.4	2.4	10.1	9.3	11.4	2.9	6.5	91.0	9.0	100.0
1949	47.1	2.6	9.7	7.3	11.6	2.2	11.1	91.6	8.4	100.0
1950	47.4	2.4	9.1	5.8	14.6	3.1	9.8	92.2	7.8	100.0
1951	42.4	2.4	9.7	4.3	14.1	3.2	16.2	92.3	7.7	100.0
1952	42.8	1.6	8.5	5.2	13.8	3.6	16.3	91.8	8.2	100.0
1953	41.8	1.6	7.6	4.9	15.2	3.6	17.3	92.0	8.0	100.0
1954	42.8	3.0	5.7	3.9	21.8	3.5	14.4	95.1	4.9	100.0
1955	42.0	2.7	6.5	4.2	18.1	5.1	14.0	92.6	7.4	100.0
1956	42.7	3.3	5.1	3.5	19.5	3.8	13.8	91.7	8.3	100.0
1957	44.0	4.8	4.7	2.7	21.0	3.8	10.9	91.9	8.1	100.0
1958	44.5	7.0	3.4	2.6	20.4	3.9	10.9	92.7	7.3	100.0

[1] Included in launders. [2] Includes classifiers and dense-medium processes. [3] Data not available.

TABLE 44.—Mechanical cleaning at bituminous coal and lignite mines in the United States, 1954–58, by underground, strip, and auger mining

Type of mine	1954	1955	1956	1957	1958
Underground:					
Total production net tons	289, 112, 031	343, 465, 239	365, 774, 043	360, 649, 141	286, 884, 244
Cleaned do	184, 372, 053	217, 199, 126	232, 231, 914	242, 981, 446	198, 710, 828
Cleaned percent	63. 8	63. 2	63. 5	67. 4	69. 3
Strip:					
Total production net tons	98, 134, 250	115, 092, 769	127, 055, 382	124, 108, 538	116, 241, 787
Cleaned do	47, 772, 295	54, 423, 341	58, 271, 513	59, 317, 324	58, 932, 257
Cleaned percent	48. 7	47. 3	45. 9	47. 8	50. 7
Auger:					
Total production net tons	4, 460, 019	6, 075, 400	8, 044, 652	7, 946, 237	7, 319, 516
Cleaned do	619, 675	1, 093, 017	1, 861, 957	1, 728, 424	1, 391, 766
Cleaned percent	13. 9	18. 0	23. 1	21. 8	19. 0
Grand total:					
Total production net tons	391, 706, 300	464, 633, 408	500, 874, 077	492, 703, 916	410, 445, 547
Cleaned do	232, 764, 023	272, 715, 484	292, 365, 384	304, 027, 194	259, 034, 851
Cleaned percent	59. 4	58. 7	58. 4	61. 7	63. 1

TABLE 45.—Mechanical cleaning at bituminous coal and lignite mines in the United States, 1958, by States and by underground, strip, and auger mining, in net tons

State	Underground mines			Strip mines		
	Total production	Mechanically cleaned	Percentage cleaned	Total production	Mechanically cleaned	Percentage cleaned
Alabama	8, 504, 778	8, 066, 506	94. 8	2, 648, 294	1, 926, 831	72. 8
Alaska	201, 446	42, 365	21. 0	557, 836	281, 285	50. 4
Arkansas	84, 793	(1)	(1)	279, 345	(1)	(1)
Colorado	2, 551, 414	[2] 847, 929	[2] 32. 2	422, 775	[2] 264, 492	[2] 37. 7
Illinois	23, 373, 347	21, 391, 470	91. 5	20, 521, 981	20, 045, 820	97. 7
Indiana	4, 702, 834	3, 712, 803	78. 9	10, 319, 390	6, 790, 500	65. 8
Kansas	9, 118	----------	----------	814, 204	753, 793	92. 6
Kentucky	46, 121, 674	27, 457, 283	59. 5	18, 302, 100	13, 430, 411	73. 4
Missouri	113, 147	29, 174	25. 8	2, 479, 015	1, 852, 157	74. 7
Montana (bituminous)	185, 112	7, 358	4. 0	26, 241	876	3. 3
New Mexico	99, 051	16, 702	16. 9	17, 605	----------	----------
Ohio	9, 198, 612	6, 501, 796	70. 7	21, 759, 345	7, 931, 752	36. 5
Oklahoma	368, 526	182, 666	49. 6	1, 260, 917	355, 941	28. 2
Pennsylvania	47, 789, 848	36, 799, 518	77. 0	19, 715, 844	3, 157, 651	16. 0
Tennessee	4, 352, 398	141, 782	3. 3	1, 968, 887	90, 393	4. 6
Utah	5, 327, 516	3, 362, 093	63. 1	----------	----------	----------
Virginia	24, 425, 476	10, 519, 138	43. 1	1, 738, 924	----------	----------
Washington	247, 389	235, 214	95. 1	4, 880	4, 880	100. 0
West Virginia	108, 232, 333	79, 359, 514	73. 3	8, 310, 418	2, 045, 475	24. 6
Wyoming	363, 978	37, 517	10. 3	1, 265, 452	----------	----------
Other States [3]	631, 454	----------	----------	3, 828, 334	----------	----------
Total	286, 884, 244	198, 710, 828	69. 3	116, 241, 787	58, 932, 257	50. 7

See footnotes at end of table.

TABLE 45.—Mechanical cleaning at bituminous coal and lignite mines in the United States, 1958, by States and by underground, strip, and auger mining, in net tons—Continued

State	Auger mines			Total, all mines		
	Total production	Mechanically cleaned	Percentage cleaned	Total production	Mechanically cleaned	Percentage cleaned
Alabama	28,871	25,859	89.6	11,181,943	10,019,196	89.6
Alaska	-----	-----	-----	759,282	323,650	42.6
Arkansas	-----	-----	-----	364,138	(1)	(1)
Colorado	-----	-----	-----	2,974,189	[2] 1,112,421	[2] 33.3
Illinois	17,077	2,940	17.2	43,912,405	41,440,230	94.4
Indiana	-----	-----	-----	15,022,224	10,503,303	69.9
Kansas	-----	-----	-----	823,322	753,793	91.6
Kentucky	1,888,031	177,843	9.4	66,311,805	41,065,537	61.9
Missouri	-----	-----	-----	2,592,162	1,881,331	72.6
Montana (bituminous)	-----	-----	-----	211,353	8,234	3.9
New Mexico	-----	-----	-----	116,656	16,702	14.3
Ohio	1,070,439	218,306	20.4	32,028,396	14,651,854	45.7
Oklahoma	-----	-----	-----	1,629,443	538,607	33.1
Pennsylvania	265,170	-----	-----	67,770,862	39,957,169	59.0
Tennessee	463,315	65,280	14.1	6,784,600	297,455	4.4
Utah	-----	-----	-----	5,327,516	3,362,093	63.1
Virginia	661,667	47,759	7.2	26,826,067	10,566,897	39.4
Washington	-----	-----	-----	252,269	240,094	95.2
West Virginia	2,924,946	853,779	29.2	119,467,697	82,258,768	68.9
Wyoming	-----	-----	-----	1,629,430	37,517	2.3
Other States [3]	-----	-----	-----	4,459,788	-----	-----
Total	7,319,516	1,391,766	19.0	410,445,547	259,034,851	63.1

1 Included in Colorado.
2 Includes Arkansas.
3 Includes Arizona, Georgia, Iowa, Maryland and lignite from Montana, North Dakota, and South Dakota.

MECHANICAL CRUSHING

TABLE 46.—Mechanical crushing of bituminous coal and lignite at mines in the United States, 1940 and 1944–58 [1]

Year	Number of mines crushing coal	Coal crushed (net tons)	Percentage of production crushed at mines where crushing is done	Percentage of total production crushed	Percentage of production mechanically cleaned at mines where crushing is done
1940	716	35,251,061	19.3	7.7	(2)
1944	814	66,460,564	29.6	10.8	(2)
1945	830	70,936,898	32.4	12.3	(2)
1946	851	66,663,732	31.8	12.5	39.9
1947	904	88,985,858	35.7	14.1	41.4
1948	995	91,564,311	36.6	15.3	42.1
1949	1,120	77,327,691	39.0	17.7	47.3
1950	1,210	101,594,731	40.1	19.7	50.6
1951	1,374	118,663,712	39.6	22.2	54.8
1952	1,325	108,102,158	40.5	23.2	59.6
1953	1,239	116,493,415	42.5	25.5	62.7
1954	982	122,288,369	51.8	31.2	69.8
1955	1,225	161,470,318	52.8	34.8	68.4
1956	1,370	172,389,802	54.6	34.4	68.0
1957	1,452	173,098,257	52.5	35.0	70.5
1958	1,359	146,749,108	53.8	35.8	74.5

1 Data not available for 1941–43. Lignite and Virginia semianthracite mines not included in 1940–49.
2 Data not available.

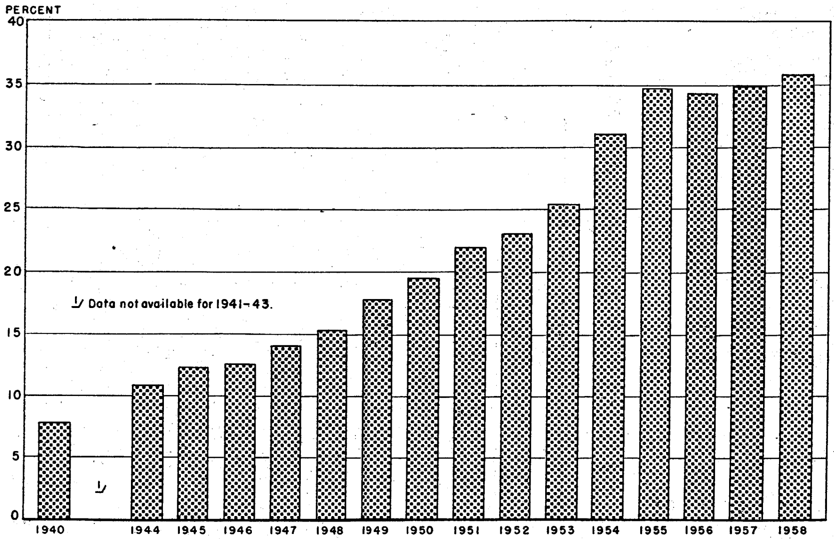

FIGURE 11.—Percentage of total production of bituminous coal and lignite crushed at mines in the United States, 1940 and 1944–58.

TABLE 47.—Mechanical crushing of bituminous coal and lignite at mines in the United States, 1957–58, by States

State	Number of mines crushing coal		Coal crushed (net tons)		Percentage of production crushed at mines where crushing is done		Percentage of total production crushed	
	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	31	26	7,476,692	6,143,012	64.8	65.4	56.4	54.9
Alaska	7	6	659,214	507,822	92.9	88.6	78.3	66.9
Arizona	1	1	3,845	3,090	81.8	83.0	43.2	40.4
Arkansas	7	12	251,367	270,868	90.2	97.4	49.5	74.4
Colorado	53	56	2,073,648	1,501,888	66.9	61.2	57.7	50.5
Illinois	83	81	19,600,711	19,682,043	47.2	49.9	41.7	44.8
Indiana	37	23	7,166,162	7,610,566	47.7	53.7	45.2	50.7
Iowa	25	24	735,915	729,508	75.9	80.1	56.1	61.9
Kansas	4	4	589,572	543,610	98.4	98.4	78.7	66.0
Kentucky	146	144	23,320,679	24,263,825	54.3	58.0	31.2	36.6
Maryland	10	10	252,354	414,326	87.3	92.3	33.7	49.5
Missouri	14	13	1,480,101	1,334,658	52.8	58.1	49.7	51.5
Montana:								
Bituminous	6	7	78,752	82,768	41.4	48.1	20.3	39.2
Lignite	2	1	1,400	73,657	24.1	99.9	5.5	78.7
Total Montana	8	8	80,152	156,425	40.9	63.6	19.4	51.3
New Mexico	7	7	40,976	40,315	72.8	68.3	29.9	34.6
North Dakota (lignite)	19	19	2,276,584	2,115,407	92.6	95.8	88.9	91.4
Ohio	132	129	14,549,391	12,549,959	55.6	51.4	39.5	39.2
Oklahoma	12	10	1,157,191	951,882	82.8	88.9	52.7	58.4
Pennsylvania	348	345	36,110,471	30,122,613	68.1	64.5	42.3	44.4
South Dakota (lignite)	1	1	800	1,800	3.8	9.2	3.8	9.2
Tennessee	19	19	1,078,025	935,695	74.6	56.2	13.6	13.8
Utah	41	40	4,384,723	3,442,858	64.6	64.7	63.9	64.6
Virginia	46	57	3,754,042	4,803,451	41.8	54.5	12.7	17.9
Washington	6	3	66,070	15,228	19.7	14.3	18.3	6.0
West Virginia	355	310	44,696,036	27,559,504	41.6	40.1	28.5	23.1
Wyoming	13	11	1,293,536	1,048,755	79.9	79.7	61.1	64.4
Total	1,425	1,359	173,098,257	146,749,108	52.5	53.8	35.1	35.8

TREATMENT FOR ALLAYING DUST

TABLE 48.—Production and number of mines treating bituminous coal and lignite to allay dust in the United States, 1940–58, in tons and percentage[1]

Year	Grand total production (net tons)	Total production at mines where coal was treated (net tons)	Percentage of production treated at mines where treating is done	Percentage of total production treated	Year	Net tons treated with— Calcium chloride	Oil	Calcium chloride and oil	All other materials	Total
1940	460,771,500	161,089,959	22.1	7.7	1940	2,633,291	25,767,651	4,428,113	2,807,728	35,636,783
1941	514,149,245	197,476,343	20.0	7.7	1941	3,957,459	29,258,462	2,482,899	3,844,476	39,543,296
1942	582,692,937	202,973,885	17.3	6.0	1942	10,132,809	11,302,020	6,544,658	7,148,064	35,127,551
1943	590,177,069	153,863,052	17.3	4.5	1943	15,049,176	1,720,176	1,947,219	7,966,484	26,683,055
1944	619,576,240	172,955,108	17.8	5.0	1944	7,276,702	13,188,883	4,744,580	5,562,565	30,772,730
1945	577,617,327	166,935,955	20.1	5.8	1945	5,115,090	18,875,674	4,647,872	4,910,602	33,549,238
1946	533,922,068	166,814,848	22.2	6.9	1946	4,957,622	24,310,109	3,193,070	4,572,360	37,033,161
1947	630,623,722	195,840,059	26.4	8.2	1947	5,822,483	34,667,571	5,571,953	5,732,101	51,794,108
1948	599,518,229	196,600,489	25.6	8.4	1948	6,275,121	34,466,534	4,177,987	5,462,054	50,381,696
1949	437,868,036	160,978,742	26.0	9.5	1949	3,670,120	30,448,670	4,380,961	3,275,151	41,774,902
1950	516,311,053	210,083,657	25.9	10.5	1950	4,643,186	41,688,159	4,278,212	3,724,314	54,333,871
1951	533,664,732	228,802,637	25.6	11.0	1951	4,694,938	46,142,726	4,587,940	3,172,205	58,597,809
1952	466,840,782	211,437,141	24.4	11.0	1952	4,954,080	41,409,886	3,432,199	1,772,111	51,568,276
1953	457,290,449	206,374,498	23.7	10.7	1953	3,362,552	40,671,431	2,769,833	2,154.985	48,958,801
1954	391,706,300	202,098,539	27.9	14.4	1954	2,959,979	47,782,165	3,366,955	2,255,872	56,364,971
1955	464,633,408	236,115,318	26.5	13.5	1955	3,160,729	51,157,769	5,696,447	2,513,752	62,528,697
1956	500.874,077	243,513,231	26.6	12.9	1956	5,500,522	52,008,545	4,912,374	2,309,732	64,731,173
1957	492,703,916	241,733,935	25.6	12.5	1957	4,112,934	52,051,076	3,809,132	1,852,051	61,825,193
1958	410.445,547	188,245,095	28.3	13.0	1958	3,359,434	42,922,129	4,122,397	2,862,670	53,266,630

Year	Number of mines treating with—					Year	Percentage of tonnage treated with—				
	Calcium chloride	Oil	Calcium chloride and oil	All other materials	Total[2]		Calcium chloride	Oil	Calcium chloride and oil	All other materials	Total
1940	51	486	22	62	614	1940	7.4	72.3	12.4	7.9	100.0
1941	67	564	15	58	668	1941	10.0	74.0	6.3	9.7	100.0
1942	167	334	73	117	603	1942	28.8	32.2	18.6	20.4	100.0
1943	212	67	28	101	393	1943	56.4	6.4	7.3	29.9	100.0
1944	145	192	47	83	434	1944	23.6	42.9	15.4	18.1	100.0
1945	105	296	43	67	487	1945	15.2	56.3	13.9	14.6	100.0
1946	79	380	41	51	546	1946	13.4	65.6	8.6	12.4	100.0
1947	67	384	58	45	546	1947	11.2	66.9	10.8	11.1	100.0
1948	68	474	48	46	629	1948	12.5	68.4	8.3	10.8	100.0
1949	91	586	62	34	769	1949	8.8	72.9	10.5	7.8	100.0
1950	106	688	32	45	838	1950	8.5	76.7	7.9	6.9	100.0
1951	98	764	40	27	898	1951	8.0	78.8	7.8	5.4	100.0
1952	101	723	30	20	865	1952	9.6	80.3	6.7	3.4	100.0
1953	81	681	28	26	785	1953	6.8	83.1	5.7	4.4	100.0
1954	83	614	29	29	737	1954	5.2	84.8	6.0	4.0	100.0
1955	63	650	33	28	757	1955	5.1	81.8	9.1	4.0	100.0
1956	73	642	35	30	763	1956	8.5	80.3	7.6	3.6	100.0
1957	71	665	31	34	785	1957	6.6	84.2	6.2	3.0	100.0
1958	60	596	36	33	720	1958	6.3	80.6	7.7	5.4	100.0

[1] All items except "Grand total production" exclude lignite and semianthracite, 1940–49. Data for 1940–45 include all mines with an average daily production of 50 tons and all mines with rail or river connections regardless of size. Data for 1946–58 include all mines producing 1,000 or more tons. The figures are reasonably comparable for all years.

[2] Because some mines used more than 1 method of treatment, this total is not the sum of the individual items.

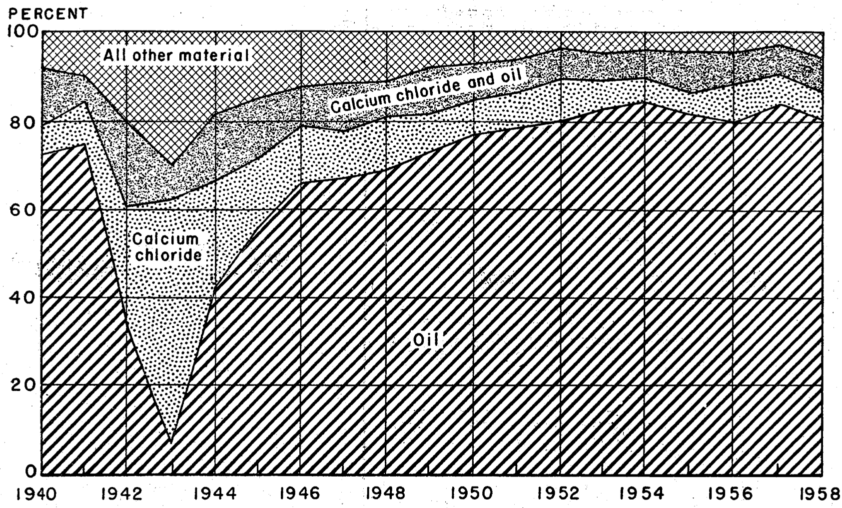

FIGURE 12.—Percentage of total bituminous coal and lignite treated for allaying dust at mines in the United States, 1940–58, by type of agent used.

TABLE 49.—Treatment of bituminous coal and lignite at mines for allaying dust, in the United States, 1957–58, by States

State	Number of mines treating coal		Coal treated (net tons)		Percentage of production treated at mines where treating is done		Percentage of total production treated	
	1957	1958	1957	1958	1957	1958	1957	1958
Alabama	9	8	69,429	96,937	13.4	23.3	0.5	0.9
Arkansas	5	5	18,244	6,300	17.0	20.4	3.6	1.7
Colorado	44	47	292,827	240,154	20.9	19.2	8.1	8.1
Illinois	80	78	5,195,685	5,212,426	12.4	13.4	11.1	11.9
Indiana	33	25	1,183,567	1,230,288	10.4	12.1	7.5	8.2
Iowa	6	6	13,660	13,038	8.7	8.2	1.0	1.1
Kansas	1	2	48,800	41,575	10.0	6.0	6.5	5.0
Kentucky	132	117	16,897,580	15,672,616	42.0	43.4	22.6	23.6
Maryland	3	2	41,000	53,295	80.9	95.2	12.6	6.4
Missouri	9	8	162,629	114,633	7.0	7.1	5.5	4.4
Montana:								
Bituminous	8	9	35,700	32,625	17.7	18.1	9.2	15.4
Lignite	2	---	1,600	---	27.6	---	6.3	---
Total Montana	10	9	37,300	32,625	18.0	18.1	9.0	10.7
North Dakota (lignite)	17	16	446,675	500,485	18.7	23.2	17.4	21.6
Ohio	35	37	3,322,178	3,908,603	21.2	29.4	9.0	12.2
Oklahoma	5	6	102,594	99,509	13.7	14.8	4.7	6.1
Pennsylvania	115	109	7,094,512	6,072,634	27.9	27.6	8.3	9.0
South Dakota (lignite)	---	1	---	1,500	---	7.7	---	7.7
Tennessee	4	2	62,790	19,200	39.9	14.6	.8	.3
Utah	33	34	1,293,828	1,469,217	31.9	40.6	18.9	27.6
Virginia	40	36	3,448,206	3,421,589	23.9	39.8	11.7	12.8
Washington	---	1	---	900	---	1.0	---	.4
West Virginia	188	157	21,819,429	14,805,983	27.9	31.8	13.9	12.4
Wyoming	16	14	274,260	253,123	13.3	16.4	13.0	15.5
Total	785	720	61,825,193	53,266,630	25.6	28.3	12.5	13.0

THERMAL DRYING

Because most of the bituminous coal produced in the United States is sprayed with water underground to reduce the dust in mining, cleaned by wet methods, or subjected to wet screening in the tipple, the problem of removing surface moisture from the coal is ever-increasing. The moisture must be removed from bituminous coal for any one or a combination of the following reasons: (1) To avoid freezing difficulties and to facilitate the handling of the coal during shipment and in transfer to the fire box; (2) to reduce the heat wasted in evaporation of surface moisture on the coal, thus increasing efficiency in burning; (3) to decrease transportation costs; (4) to improve the coal so that it may be used for specific purposes, as in producing coke and briquets; and (5) to pretreat before dry cleaning.

Removal of surface water from fine bituminous coal usually presents an individual problem at each preparation plant. Fine coal has a greater surface area per unit weight than does coarse coal; therefore, its capacity for retaining moisture is proportionately greater. Removing water from coarse coal is relatively easy, but the problem is major when working with coal that is minus 10-mesh or finer. A detailed report on Dewatering and Thermal Drying by Orville R. Lyons was published in A.I.M.E. Coal Preparation 1950, pp. 648–715.

The two components of the total moisture content of wetwashed coal are inherent and surface moisture. Inherent moisture, in general, is that present in the coal in the bed. Surface moisture is that attached to the surface of the coal particles or retained in cracks and fissures other than capillary openings in the coal substance itself.

There are three principal methods of removing surface moisture from coal; (1) Gravity drainage, (2) mechanical dewatering, and (3) thermal drying. Thermal drying is generally used on coals that cannot be readily dried by gravity drainage or mechanical means, such as screens, centrifuges, and filters.

The annual reports of bituminous coal and lignite producers to the Bureau of Mines for 1957 included for the first time data on thermal drying. These reports included data on thermal drying at only the preparation plant and did not include thermal drying at powerplants or other industrial plants.

Thermal driers have been arranged into six groups: (1) Rotary, (2) screen, (3) vertical tray and cascade, (4) continuous carrier, (5) suspension or flash (including fluidized-bed) and (6) multilouvre driers. A few producers did not furnish figures by type of equipment and estimates were made for these plants.

Each thermal drier has been designed to handle a definite size of coal. Table 51 shows the minimum and maximum top sizes of bituminous coal dried by the various types of driers in use in 1958. The size of feed data listed in this table are from reports submitted by bituminous coal producers and may not include all sizes that the driers will handle. The sizes of coal most commonly dried by all types of driers, except screen type, were ¼ inch by 0 inch and ⅜ inch by 0 inch. The size of coal most commonly dried by the screen type drier was 1¼ by ¼ inch.

Comparison, by States, of bituminous coal thermally dried with that mechanically cleaned is shown in table 52. In ten States mines that operated bituminous coal cleaning plants in 1958 did no thermal drying.

Thermal drying of bituminous coal by States in 1957–58 is presented in table 53. The total quantity of bituminous coal thermally dried in 1958 amounted to 32 million tons, or approximately 8 percent of the total production in the United States.

TABLE 50.—Thermal drying of bituminous coal and lignite in the United States, by type of drying equipment, 1957–58

Type of drier	Number of thermal drying units		Net tons thermally dried		Percentage of total	
	1957	1958	1957	1958	1957	1958
Rotary	5	6	272, 380	405, 067	0. 8	1. 3
Screen	62	59	7, 492, 425	7, 094, 868	23. 5	22. 5
Vertical tray and cascade	50	58	5, 643, 303	5, 775, 347	17. 7	18. 3
Continuous carrier	5	5	1. 430, 983	679, 222	4. 5	2. 2
Suspension or flash, including fluidized-bed	34	50	8, 529, 806	8, 171, 253	26. 7	25. 9
Multilouvre	45	50	8, 573, 719	9, 416, 368	26. 8	29. 8
Total	201	228	31, 942, 616	31, 542, 125	100. 0	100. 0

TABLE 51.—Relation between size of feed and type of thermal drier used at bituminous coal and lignite mines in the United States, 1958

Type of drier	Top size reported: Minimum, in inches	Top size reported: Maximum, in inches	Type of drier	Top size reported: Minimum, in inches	Top size reported: Maximum, in inches
Suspension or flash and fluidized-bed	1/8	5/8	Vertical tray and cascade	1/4	1 1/2
Multilouvre	1/8	1 1/2	Screen	5/16	2
Rotary	3/16	3/8	Continuous carrier	3/8	1

TABLE 52.—Comparison of thermal drying of bituminous coal and lignite with mechanical cleaning at mines in the United States, 1957–58, by States

State	Total number of cleaning plants		Number of cleaning plants with thermal drying		Production mechanically cleaned (net tons)		Net tons thermally dried		Percentage of cleaned coal thermally dried	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Illinois	60	61	16	17	42, 455, 159	41, 440, 230	3, 297, 509	3, 705, 169	7. 8	8. 9
Indiana	21	19	9	10	11, 587, 572	10, 503, 303	2, 539, 485	2, 607, 665	21. 9	24. 8
Kentucky	87	79	9	9	43, 264, 992	41, 065, 537	1, 891, 874	2, 533, 529	4. 4	6. 2
Ohio	26	24	4	5	16, 657, 808	14, 651, 854	2, 687, 883	1, 493, 290	16. 1	10. 2
Pennsylvania	99	94	8	11	52, 601, 639	39, 957, 169	3, 075, 151	3, 283, 452	5. 8	8. 2
Utah	5	6	2	2	2, 986, 881	3, 362, 093	96, 500	315, 570	3. 2	9. 4
Virginia	30	30	3	4	13, 304, 259	10, 566, 897	2, 147, 366	2, 617, 446	16. 1	24. 8
Washington	4	5	1	2	336, 070	240, 094	155, 678	107, 226	46. 3	44. 7
West Virginia	194	192	36	40	102, 017, 793	82, 258, 768	16, 051, 170	14, 878, 778	15. 7	18. 1
Other States	67	63	------	------	18, 815, 021	14, 988, 906	----------	----------	-----	-----
Total	593	573	88	100	304, 027, 194	259, 034, 851	31, 942, 616	31, 542, 125	10. 5	12. 2

TABLE 53.—Thermal drying of bituminous coal and lignite at mines in the United States, 1957–58, by States

State	Number of thermal drying units		Grand total production (net tons)		Net tons thermally dried		Percentage of total production thermally dried	
	1957	1958	1957	1958	1957	1958	1957	1958
Illinois	40	41	46, 993, 025	43, 912, 405	3, 297, 509	3, 705, 169	7. 0	8. 4
Indiana	26	28	15, 841, 288	15, 022, 224	2, 539, 485	2, 607, 665	16. 0	17. 4
Kentucky	16	15	74, 666, 796	66, 311, 805	1, 891, 874	2, 533, 529	2. 5	3. 8
Ohio	13	16	36, 861, 607	32, 028, 396	2, 687, 883	1, 493, 290	7. 3	4. 7
Pennsylvania	21	25	85, 365, 254	67, 770, 862	3, 075, 151	3, 283, 452	3. 6	4. 8
Utah	2	2	6, 858, 297	5, 327, 516	96, 500	315, 570	1. 4	5. 9
Virginia	10	12	29, 505, 579	26, 826, 067	2, 147, 366	2, 617, 446	7. 3	9. 8
Washington	2	3	360, 336	252, 269	155, 678	107, 226	43. 2	42. 5
West Virginia	71	86	156, 842, 038	119, 467, 697	16, 051, 170	14, 878, 778	10. 2	12. 5
Other States			39, 409, 696	33, 526, 306				
Total	201	228	492, 703, 916	410, 445, 547	31, 942, 616	31, 542, 125	6. 5	7. 7

PRODUCTION BY STATES AND COUNTIES

Detailed production and employment statistics are shown in table 54 for each coal-producing county in the United States, from which three or more operators submitted reports for 1958. Statistics on counties with less than three reporting producers have been combined with data for "Other counties" to avoid disclosing individual figures, except when the Bureau has been granted permission to publish statistics separately. Production of mines on the border between two States has been credited to the State in which the coal was mined rather than to the State in which the tipple was located. If the coal was mined in both States, the tonnage was apportioned accordingly.

Bituminous coal and lignite were mined in 25 States and Alaska and 333 counties in 1958. As soft coal is the source of a large part of the economic activity in many counties, the key items pertaining to the industry are published by counties and are useful in analyzing potential markets. These key items are (1) method of shipping the coal, (2) value, (3) number of men working daily, (4) days worked, and (5) tons per man per day.

The most striking fact brought out by the following table is the wide variation among several counties in the same State, not only in production, but even in average value and average tons per man per day. The differences in average value are due to quality of coal, method of transportation, or market conditions. The differences in output per man per day are caused largely by physical conditions, mining methods, and extent of mechanization.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
ALABAMA									
Bibb	22,976			22,976	$4.73	110	36	3,955	5.81
Blount	190,895	41,935		232,830	6.65	87	207	18,034	12.91
Cullman	5,700	15,434		21,134	6.31	41	126	5,174	4.08
Jackson		15,000		15,000	5.21	10	200	2,000	7.50
Jefferson	6,906,658	137,683	15,751	7,060,092	6.66	5,040	184	926,542	7.62
Marion	103,025	100,224	256	203,505	5.19	319	148	47,347	4.30
Shelby	7,380	67,265	52	74,697	7.18	139	184	25,581	2.92
Tuscaloosa	705,554	22,532	1,191	729,277	4.37	197	226	44,593	16.35
Walker	1,065,689	346,919	1,409,824	2,822,432	6.61	1,236	209	258,116	10.93
Total Alabama	9,007,877	746,992	1,427,074	11,181,943	6.47	7,179	186	1,331,342	8.40

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
ALASKA									
Total Alaska	750,750	4,347	4,185	759,282	$9.13	267	224	59,814	12.69
ARIZONA									
Coconino	----------	3,924	----------	3,924	$5.64	12	160	1,924	2.04
Navajo	----------	3,725	----------	3,725	8.50	6	140	841	4.43
Total Arizona	----------	7,649	----------	7,649	7.03	18	154	2,765	2.77
ARKANSAS									
Franklin	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Johnson	186,564	----------	----------	186,564	$8.20	136	138	18,799	9.92
Logan	17,885	1,223	2	19,110	9.62	66	68	4,475	4.27
Pope	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Sebastian	86,113	5,386	----------	91,499	7.88	179	109	19,528	4.69
Other counties	64,418	1,040	1,507	66,965	6.09	26	267	6,943	9.64
Total Arkansas	354,980	7,649	1,509	364,138	7.53	407	122	49,745	7.32
COLORADO									
Delta	24,743	23,740	1,020	49,503	$5.67	50	142	7,113	6.96
El Paso	----------	7,599	----------	7,599	7.11	3	203	610	12.46
Fremont	8,832	241,622	180	250,634	3.76	125	186	23,267	10.77
Garfield	----------	20,184	----------	20,184	6.24	28	186	5,202	3.88
Gunnison	212,262	53,500	17,899	283,661	5.88	232	164	38,126	7.44
Huerfano	20,911	42,358	----------	63,269	6.41	72	182	13,099	4.83
Jackson	30,050	1,083	----------	31,133	2.32	16	74	1,176	26.47
La Plata	3,323	29,717	18	33,058	5.03	32	173	5,547	5.96
Las Animas	743,545	21,117	3,613	768,275	10.24	951	187	177,841	4.32
Mesa	----------	17,009	67,379	84,388	5.57	62	186	11,513	7.33
Moffat	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Montrose	----------	1,991	----------	1,991	7.49	4	195	781	2.55
Pitkin	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Rio Blanco	----------	12,643	10	12,653	7.20	8	176	1,411	8.97
Routt	357,596	35,304	6,269	399,169	3.89	263	101	26,570	15.02
Weld	369,598	201,661	8,752	580,011	4.70	245	193	47,271	12.27
Other counties	368,621	20,040	----------	388,661	7.37	182	226	41,114	9.45
Total Colorado	2,139,481	729,568	105,140	2,974,189	6.49	2,273	176	400,641	7.42
GEORGIA									
Walker	----------	8,751	----------	8,751	$5.00	19	144	2,734	3.20

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
				ILLINOIS					
Adams	—	37,720	275	37,995	$6.82	15	183	2,745	13.84
Bureau	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Christian	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Clinton	7,062	47,153	1,966	56,181	5.21	107	150	16,006	3.51
Douglas	279,055	196,151	1,800	477,006	4.56	89	251	22,353	21.34
Franklin	4,423,143	138,138	90,174	4,651,455	4.25	1,481	223	330,359	14.08
Fulton	4,478,155	204,048	10,702	4,692,905	4.11	903	206	185,978	25.23
Gallatin	67,754	27,323	1,000	96,077	2.79	90	83	7,476	12.85
Greene	—	7,209	20	7,229	5.00	2	301	601	12.03
Grundy	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Henry	84,092	8,965	137	93,194	4.46	41	254	10,401	8.96
Jackson	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Jefferson	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Kankakee	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Knox	2,153,632	2,139	—	2,155,771	4.09	322	193	62,234	34.64
La Salle	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Logan	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Macoupin	361,832	66,713	7,565	436,110	4.02	252	189	47,662	9.15
Madison	70,269	573,692	2,625	646,586	4.18	311	196	60,884	10.62
Marion	8,201	6,123	2,284	16,608	4.35	28	174	4,870	3.41
Menard	—	15,176	201	15,377	6.04	27	143	3,864	3.98
Mercer	8,088	11,852	30	19,970	5.03	25	228	5,702	3.50
Montgomery	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Peoria	—	329,027	460	329,487	4.87	98	185	18,153	18.15
Perry	3,749,566	187,912	10,346	3,947,824	3.49	748	235	175,462	22.50
Randolph	609,385	50,088	—	659,473	3.30	148	189	28,011	23.54
St. Clair	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Saline	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Sangamon	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Schuyler	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Vermilion	842,413	258,687	3,385	1,104,485	4.43	192	235	45,146	24.46
Washington	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Will	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Williamson	5,641,099	358,068	21,924	6,021,091	3.97	1,490	211	313,729	19.19
Other counties	15,541,630	2,870,441	35,510	18,447,581	4.02	4,384	206	901,598	20.46
Total Illinois	38,325,376	5,396,625	190,404	43,912,405	4.02	10,753	209	2,243,234	19.58
				INDIANA					
Clay	458,522	307,264	2,196	767,982	$4.15	184	226	41,670	18.43
Daviess	—	18,000	—	18,000	3.80	13	188	2,449	7.35
Dubois	—	27,576	—	27,576	3.78	18	180	3,244	8.50
Fountain	—	37,820	—	37,820	6.75	20	225	4,497	8.41
Gibson	356,894	84,845	18,291	460,030	4.50	367	134	49,202	9.35
Greene	1,414,162	137,148	4,380	1,555,690	4.16	356	196	69,875	22.26
Knox	1,111,730	163,092	2,412	1,277,234	3.84	421	197	82,961	15.40
Owen	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Parke	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Pike	2,081,447	111,392	3,797	2,196,636	3.78	433	259	112,192	19.58
Spencer	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Sullivan	356,706	165,168	3,228	525,102	4.38	201	191	38,292	13.71
Vermillion	98,598	37,814	734	137,146	4.60	69	153	10,571	12.97
Vigo	2,078,212	253,072	583,040	2,914,324	4.10	856	220	188,455	15.46
Warrick	4,578,112	283,524	4,825	4,866,461	3.53	627	219	137,551	35.38
Other counties	139,260	92,979	5,984	238,223	4.40	90	197	17,754	13.42
Total Indiana	12,673,643	1,719,694	628,887	15,022,224	3.89	3,655	208	758,713	19.80

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
IOWA									
Appanoose	20,139	54,949	607	75,695	$5.32	164	161	26,467	2.86
Keokuk	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Lucas	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Mahaska	93,948	66,119	----------	160,067	3.35	47	244	11,471	13.95
Marion	545,172	181,970	50	727,192	3.32	164	226	37,136	19.58
Monroe	34,579	57,649	234	92,462	3.32	79	188	14,826	6.24
Polk	----------	12,085	----------	12,085	3.31	2	280	560	21.58
Van Buren	----------	16,257	----------	16,257	5.44	10	180	1,800	9.03
Wapello	----------	53,022	----------	53,022	3.31	16	230	3,682	14.40
Warren	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Other counties	17,973	23,860	----------	41,833	4.37	20	264	5,279	7.92
Total Iowa	711,811	465,911	891	1,178,613	3.52	502	202	101,221	11.64
KANSAS									
Bourbon	----------	4,400	----------	4,400	$3.91	6	120	717	6.14
Cherokee	409,651	117,780	1,050	528,481	4.32	120	258	30,978	17.06
Coffey	----------	2,138	----------	2,138	4.49	2	144	288	7.42
Crawford	242,172	38,869	408	281,449	4.79	104	190	19,785	14.22
Linn	----------	1,204	----------	1,204	6.00	5	94	468	2.57
Osage	----------	5,650	----------	5,650	7.70	14	132	1,851	3.05
Total Kansas	651,823	170,041	1,458	823,322	4.51	251	215	54,087	15.22
KENTUCKY									
Eastern Kentucky:									
Bell	761,867	413,481	10,723	1,186,071	$3.77	673	167	112,232	10.57
Boyd	64,240	225,228	----------	289,468	3.93	169	217	36,750	7.88
Breathitt	702,823	10,625	1,140	714,588	6.01	388	203	78,655	9.09
Carter	89,269	146,789	----------	236,058	6.18	170	205	34,920	6.76
Clay	751,599	349,948	3	1,101,550	3.91	834	178	148,035	7.40
Clinton	----------	26,022	----------	26,022	3.65	42	139	5,821	4.47
Elliott	----------	15,992	----------	15,992	3.86	16	212	3,395	4.71
Floyd	4,044,766	210,334	8,225	4,263,325	5.88	2,876	170	488,913	8.72
Greenup	----------	3,100	----------	3,100	5.05	4	180	720	4.31
Harlan	6,260,754	652,078	26,602	6,939,434	5.84	4,392	183	805,646	8.61
Jackson	----------	131,300	45	131,345	4.15	134	196	26,261	5.00
Johnson	258,523	45,397	880	304,800	3.48	401	108	43,301	7.04
Knott	658,425	824,339	----------	1,482,764	3.20	1,104	129	142,541	10.40
Knox	82,891	115,442	150	198,483	3.73	298	95	28,187	7.04
Laurel	206,950	44,028	----------	250,978	4.08	138	203	28,063	8.94
Lawrence	----------	60,371	----------	60,371	4.00	116	120	13,975	4.32
Lee	42,537	70,985	----------	113,522	4.22	500	100	50,013	2.27
Leslie	2,122,759	534,932	1,862	2,659,553	4.10	1,758	177	311,131	8.55
Letcher	4,993,236	724,385	25,322	5,742,943	5.28	2,814	180	505,867	11.35
McCreary	364,799	96,287	8,940	470,026	4.02	249	216	53,841	8.73
Magoffin	54,150	19,310	----------	73,460	3.37	47	158	7,447	9.86
Martin	49,531	----------	----------	49,531	3.31	53	158	8,381	5.91
Morgan	----------	46,936	----------	46,936	4.93	48	99	4,750	9.88
Owsley	----------	1,649	----------	1,649	3.89	2	60	120	13.74
Perry	4,559,351	224,409	6,083	4,789,843	4.59	2,265	192	434,005	11.04
Pike	5,759,474	436,653	209,450	6,405,577	4.94	4,297	157	673,670	9.51
Pulaski	39,600	147,538	----------	187,138	3.52	103	202	20,816	8.99
Rockcastle	22,156	27,625	----------	49,781	3.47	66	151	9,993	4.98
Wayne	----------	14,655	----------	14,655	9.16	24	106	2,549	5.75
Whitley	283,540	129,956	656	414,152	3.89	440	185	81,471	5.08
Wolfe	----------	8,000	----------	8,000	5.00	18	113	2,036	3.93
Total Eastern Kentucky	32,173,240	5,757,794	300,081	38,231,115	4.98	24,439	170	4,163,505	9.18

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
KENTUCKY—Continued									
Western Kentucky:									
Butler		172,216		172,216	$3.42	470	135	63,512	2.71
Christian	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Daviess	668,979	206,168		875,147	2.89	85	259	22,054	39.68
Edmonson		1,795		1,795	3.30	2	100	200	8.98
Grayson		1,586		1,586	5.00	3	90	270	5.87
Hancock	2,980	19,812		22,792	3.30	18	73	1,314	17.35
Henderson		240,936	693	241,629	2.91	126	229	28,800	8.39
Hopkins	11,065,610	361,867	592	11,428,069	3.76	2,997	197	591,110	19.33
Muhlenberg	8,686,872	159,937	5,267	8,852,076	3.30	1,481	216	320,087	27.65
Ohio	2,749,691	34,764	913	2,785,368	3.34	430	203	87,440	31.85
Union	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Webster	1,430,644	97,381		1,528,025	3.00	295	229	67,470	22.65
Other counties	2,151,264	20,511	212	2,171,987	4.20	684	195	133,561	16.26
Total Western Kentucky	26,756,040	1,316,973	7,677	28,080,690	3.53	6,591	200	1,315,818	21.34
Total Kentucky	58,929,280	7,074,767	307,758	66,311,805	4.36	31,030	177	5,479,323	12.10
MARYLAND									
Allegany	43,315	152,557	45	195,917	$4.11	213	190	40,382	4.85
Garrett	403,068	238,753		641,821	3.67	401	209	83,734	7.66
Total Maryland	446,383	391,310	45	837,738	3.77	614	202	124,116	6.75
MISSOURI									
Adair		51,720	1,891	53,611	$4.57	68	182	12,353	4.34
Barton	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Bates		1,442		1,442	6.00	2	125	250	5.77
Callaway	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Clark	2,200	8,373		10,573	5.38	8	204	1,632	6.48
Dade		16,442		16,442	5.00	11	285	3,138	5.24
Harrison		2,761		2,761	4.88	8	130	1,042	2.65
Henry	792,857	382,904		1,175,761	4.08	284	165	46,862	25.09
Lafayette		9,611		9,611	6.93	37	156	5,755	1.67
Macon	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Putnam	20,000	120,445		140,445	4.30	58	229	13,256	10.59
Ralls		4,000		4,000	6.00	6	110	657	6.09
Randolph	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Ray		1,000		1,000	4.88	13	65	840	1.19
St. Clair	219,609	1,251	532	221,392	4.32	60	235	14,092	15.71
Vernon	69,404	18,613		88,017	3.82	35	196	6,844	12.86
Other counties	650,576	216,386	145	867,107	4.52	959	127	121,337	7.15
Total Missouri	1,754,646	834,948	2,568	2,592,162	4.29	1,549	147	228,058	11.37
MONTANA									
Bituminous coal:									
Blaine		4,243	100	4,343	$7.85	5	300	1,498	2.90
Carbon	1,954	8,919	48	10,921	7.54	21	108	2,266	4.82
Cascade		1,816		1,816	6.77	3	109	328	5.54
Musselshell	138,678	30,248	106	169,032	6.16	149	163	24,217	6.98
Rosebud	18,092	6,000	1,149	25,241	3.40	34	31	1,061	23.79
Total bituminous coal	158,724	51,226	1,403	211,353	5.94	212	139	29,370	7.20

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
MONTANA—Continued									
Lignite:									
Custer	----------	5,216	----------	5,216	$4.50	5	120	600	8.69
Dawson	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Powder River	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Richland	73,657	6,070	----------	79,727	2.03	25	107	2,676	29.79
Sheridan	----------	4,985	53	5,038	3.52	8	91	725	6.95
Other counties	----------	3,627	----------	3,627	4.10	4	106	425	8.53
Total lignite	73,657	19,898	53	93,608	2.34	42	105	4,426	21.25
Total Montana	232,381	71,124	1,456	304,961	4.84	254	133	33,796	9.02
NEW MEXICO									
Colfax	16,702	21,584	----------	38,286	$6.32	84	249	20,921	1.83
McKinley	11,777	44,155	----------	55,932	6.47	54	235	12,665	4.42
Rio Arriba	9,912	2,400	----------	12,312	5.64	23	178	4,090	3.01
Sandoval	----------	1,306	----------	1,306	2.96	6	143	859	1.52
San Juan	----------	6,770	50	6,820	4.34	18	157	2,818	2.42
Socorro	----------	2,000	----------	2,000	6.00	6	150	901	2.22
Total New Mexico	38,391	78,215	50	116,656	6.15	191	221	42,254	2.76
NORTH DAKOTA (LIGNITE)									
Adams	11,479	13,367	4,423	29,269	$3.50	8	200	1,596	18.34
Bowman	166,041	16,355	179	182,575	1.72	18	209	3,768	48.45
Burke	297,848	28,337	55,351	381,536	2.25	45	220	9,897	38.55
Burleigh	----------	13,844	----------	13,844	3.30	3	200	600	23.07
Divide	182,939	24,431	----------	207,370	2.52	39	207	8,072	26.49
Dunn	----------	9,632	50	9,682	2.97	6	159	954	10.15
Grant	----------	26,469	----------	26,469	3.15	4	195	781	33.89
Hettinger	350	6,920	----------	7,270	2.91	9	115	1,034	7.03
McLean	46,812	50,473	200	97,485	3.00	21	175	3,680	26.49
Mercer	729,721	22,206	72,239	824,166	2.25	101	197	19,898	41.42
Morton	----------	25,314	----------	25,314	2.52	13	187	2,429	10.42
Oliver	----------	9,119	----------	9,119	2.49	5	107	534	17.08
Stark	----------	13,779	43,165	56,944	2.62	11	204	2,240	25.42
Ward	250,453	63,574	125,739	439,766	2.36	39	248	9,676	45.45
Williams	----------	3,049	----------	3,049	4.73	5	117	586	5.20
Total North Dakota	1,685,643	326,869	301,346	2,313,858	2.34	327	201	65,745	35.19
OHIO									
Athens	102,648	264,766	11,093	378,507	$4.57	263	187	49,219	7.69
Belmont	6,026,047	202,099	26,224	6,254,370	4.38	2,127	205	436,790	14.32
Carroll	97,581	267,210	15,091	379,882	3.48	127	238	30,288	12.54
Columbiana	32,836	1,546,491	2,908	1,582,235	3.62	739	143	105,483	15.00
Coshocton	197,863	1,107,584	2,992	1,308,439	3.91	342	248	84,791	15.43
Gallia	754,357	41,650	608	796,615	3.60	213	230	49,002	16.26
Guernsey	220,742	50,016	2,377	273,135	3.49	137	163	22,302	12.25
Harrison	5,600,895	443,608	817,653	6,862,156	4.43	1,896	214	404,978	16.94
Hocking	2,111	64,990	193	67,294	4.39	50	165	8,225	8.18
Holmes	----------	34,375	----------	34,375	3.12	13	241	3,134	10.97
Jackson	22,325	248,060	100	270,485	3.90	117	215	25,097	10.78
Jefferson	2,210,466	1,163,334	3,096	3,376,896	3.83	967	202	195,602	17.26
Lawrence	----------	222,633	----------	222,633	3.07	69	167	11,491	19.37
Mahoning	----------	685,391	----------	685,391	3.98	172	271	46,594	14.71

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
OHIO—Continued									
Meigs	443, 568	35, 903	----------	479, 471	$3. 23	141	181	25, 570	18. 75
Morgan	11, 314	16, 634	1, 952, 608	1, 980, 556	3. 46	266	248	66. 073	29. 98
Muskingum	47, 608	345, 176	----------	392, 784	3. 16	139	225	31, 241	12. 57
Noble	880, 885	55, 233	86	936, 204	2. 38	99	210	20, 772	45. 07
Perry	1, 520, 687	652, 063	4, 260	2, 177, 010	3. 66	466	228	106, 450	20. 45
Portage	----------	102, 699	1, 815	104, 514	3. 93	27	250	6, 738	15. 51
Stark	----------	548, 228	----------	548, 228	3. 29	174	224	38, 993	14. 06
Tuscarawas	174, 958	2, 254, 666	26, 020	2, 455, 644	3. 72	781	245	191, 618	12. 82
Vinton	82, 438	128, 399	----------	210, 837	4. 33	111	192	21, 304	9. 90
Washington	2, 978	157, 034	----------	160, 012	2. 79	42	177	7, 448	21. 48
Wayne	----------	90. 723	----------	90, 723	3. 98	23	308	7, 093	12. 79
Total Ohio	18, 432, 307	10, 728, 965	2, 867, 124	32, 028, 396	3. 94	9, 501	210	1, 996, 296	16. 04
OKLAHOMA									
Craig	32, 718	42, 099	----------	74, 817	$4. 51	32	254	8, 132	9. 20
Haskell	236, 848	1, 250	----------	238, 098	7. 52	82	157	12, 860	18. 51
Latimer	10, 596	----------	----------	10, 596	6. 04	12	28	340	31. 16
Le Flore	299, 225	2, 150	335	301, 710	7. 31	226	193	43, 507	6. 93
McIntosh	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Okmulgee	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Pittsburg	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Rogers	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Sequoyah	193, 953	----------	----------	193, 953	7. 57	30	307	9, 201	21. 08
Other counties	788, 369	21, 281	619	810, 269	6. 16	490	206	100, 904	8. 03
Total Oklahoma	1, 561, 709	66, 780	954	1, 629, 443	6. 66	872	201	174, 944	9. 31
PENNSYLVANIA									
Allegheny	3, 822, 135	1, 075, 054	81, 577	4, 978, 766	$6. 05	2, 908	187	543, 981	9. 15
Armstrong	1, 808, 085	512, 667	13, 375	2, 334, 127	4. 25	1, 126	183	206, 082	11. 33
Beaver	----------	228, 822	----------	228, 822	3. 64	153	177	27, 044	8. 46
Bedford	500	169, 374	45	169, 919	3. 85	205	159	32, 637	5. 21
Blair	28, 377	93, 135	----------	121, 512	4. 34	70	202	14, 116	8. 61
Bradford	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Butler	672, 787	1, 206, 295	134	1, 879, 216	3. 80	677	205	139, 033	13. 52
Cambria	7, 154, 356	402, 830	627, 341	8, 184, 527	6. 49	7, 626	160	1, 219, 912	6. 71
Cameron	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Centre	562, 462	384, 539	196	947, 197	3. 74	408	209	85, 306	11. 10
Clarion	1, 912, 155	822, 436	8, 667	2, 743, 258	3. 77	758	238	180, 207	15. 22
Clearfield	4, 979, 821	556, 575	7, 440	5, 543, 836	4. 18	2, 921	185	541, 843	10. 23
Clinton	430, 695	183, 330	10	614, 035	3. 72	138	229	31, 536	19. 47
Elk	198, 479	171, 276	85	369, 840	4. 36	229	178	40, 800	9. 06
Fayette	2, 668, 401	161, 609	33. 455	2, 863, 465	6. 24	2, 121	181	383, 807	7. 46
Greene	9, 674, 064	28, 641	44, 020	9, 746, 725	6. 38	5, 621	182	1, 020, 917	9. 55
Huntingdon	----------	45. 265	37	45, 302	3. 84	60	145	8, 676	5. 22
Indiana	4, 769, 915	450, 278	512, 937	5, 733, 130	5. 37	3, 185	194	618, 948	9. 26
Jefferson	1, 295, 996	98, 678	2, 114	1, 396, 788	4. 25	900	171	153, 766	9. 08
Lawrence	----------	1, 050, 814	----------	1, 050, 814	3. 47	255	272	69, 427	15. 14
Lycoming	----------	62, 993	----------	62, 993	4. 56	32	223	7, 121	8. 85
McKean	----------	47, 432	----------	47, 432	4. 55	14	225	3, 156	15. 03
Mercer	261, 739	362, 738	3, 070	627, 547	3. 78	191	233	44, 484	14. 11
Somerset	2, 310, 251	477, 211	26, 422	2, 813, 884	4. 68	2, 257	154	346, 999	8. 11
Tioga	----------	294, 233	33	294, 266	4. 98	92	255	23, 484	12. 53
Venango	311, 041	310, 244	----------	621, 285	3. 81	140	251	35. 180	17. 66
Washington	9, 099, 768	1, 481, 335	132, 145	10, 713, 248	6. 51	5, 741	190	1, 089, 888	9. 83
Westmoreland	2, 260, 935	526, 729	812. 390	3, 600, 054	5. 58	2, 359	151	356. 266	10. 10
Other counties	401	38, 473	----------	38, 874	4. 57	16	158	2, 526	15. 39
Total Pennsylvania	54, 222, 363	11, 243, 006	2, 305, 493	67, 770, 862	5. 52	40, 203	180	7, 227, 142	9. 38

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons): Shipped by rail or water [1]	Production (net tons): Shipped by truck	Production (net tons): Used at mine [2]	Production (net tons): Total	Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
SOUTH DAKOTA (LIGNITE)									
Dewey		19,371	200	19,571	$4.00	9	266	2,390	8.19
TENNESSEE									
Anderson	441,525	859,302	1,497	1,302,324	$3.72	630	167	105,037	12.38
Bledsoe	28,534	2,012		30,546	4.36	56	137	7,675	3.98
Campbell	536,661	268,797	452	805,910	3.31	799	140	111,708	7.21
Claiborne	259,449	20,707	60	280,216	3.94	280	131	36,659	7.64
Cumberland	41,268	44,521		85,789	3.43	141	102	14,409	5.95
Fentress	54,358	24,613		78,971	2.60	615	59	36,436	2.17
Grundy	143,543	4,288	300	148,131	3.48	52	166	8,630	17.16
Hamilton	40,041	44,141		84,182	3.06	146	114	16,580	5.08
Marion	1,153,941	230,261	1,312	1,385,514	4.63	1,084	159	171,936	8.06
Morgan	58,842	633,363		692,205	4.06	532	211	112,398	6.16
Overton	67,758	7,663		75,421	3.13	167	114	19,046	3.96
Putnam	349,190	39,932	6,341	395,463	4.22	112	237	26,595	14.87
Rhea	764	188,951		189,715	2.35	268	92	24,670	7.69
Roane		2,500		2,500	4.14	3	141	422	5.92
Scott	523,716	273,917	20	797,653	3.70	530	144	76,497	10.43
Sequatchie	275,644	63,201	70	338,915	3.26	303	138	41,853	8.10
Van Buren	38,037	37,445		75,482	3.20	92	130	11,919	6.33
White		15,663		15,663	3.74	24	120	2,881	5.44
Total Tennessee	4,013,271	2,761,277	10,052	6,784,600	3.83	5,834	141	825,351	8.22
UTAH									
Carbon	3,803,503	112,991	39,902	3,956,396	$6.09	1,945	199	387,123	10.22
Emery	1,056,910	199,322	10,191	1,266,423	4.50	588	213	125,141	10.12
Garfield		1,034		1,034	5.20	3	170	509	2.03
Iron		34,714		34,714	5.24	17	228	3,870	8.97
Kane		1,291		1,291	5.20	2	194	388	3.33
Sevier	500	49,603		50,103	5.61	16	229	3,657	13.70
Summit		17,505	50	17,555	4.47	13	251	3,257	5.39
Total Utah	4,860,913	416,460	50,143	5,327,516	5.70	2,584	203	523,945	10.17
VIRGINIA									
Buchanan	8,284,439	1,272,014	13,018	9,569,471	$4.51	6,681	201	1,345,165	7.11
Dickenson	3,837,934	1,328,267	102	5,166,303	4.82	2,432	206	500,365	10.33
Lee	310,905	52,350	1,002	364,257	5.66	374	178	66,127	5.51
Montgomery	4,734	7,605		12,339	6.06	22	202	4,454	2.77
Russell	2,430,975	240,654		2,671,629	4.93	1,178	213	250,520	10.66
Scott		2,389		2,389	4.76	1	294	294	8.13
Tazewell	2,574,816	167,802	9,525	2,752,143	6.61	1,889	192	363,287	7.58
Wise	5,754,166	370,829	162,541	6,287,536	4.56	3,211	200	643,449	9.77
Total Virginia	23,197,969	3,441,910	186,188	26,826,067	4.86	15,788	201	3,173,661	8.45
WASHINGTON									
King	61,256	29,939		91,195	$8.20	75	216	16,227	5.62
Kittitas	128,264	11,342	4,370	143,976	7.87	205	147	30,080	4.79
Lewis	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Thurston	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Other counties		17,098		17,098	5.06	14	143	2,007	8.52
Total Washington	189,520	58,379	4,370	252,269	7.80	294	164	48,314	5.22

See footnotes at end of table.

TABLE 54.—Production, value, men working daily, days active, man-days, and output per man per day at bituminous coal and lignite mines in the United States, 1958, by States and counties—Continued

County	Production (net tons)				Average value per ton [3]	Average number of men working daily	Average number of days worked	Number of man-days worked	Average tons per man per day [4]
	Shipped by rail or water [1]	Shipped by truck	Used at mine [2]	Total					
WEST VIRGINIA									
Barbour	3,189,956	24,154	6,893	3,221,003	$4.51	1,165	181	210,611	15.29
Boone	5,317,041	121,515	17,679	5,456,235	4.83	2,549	188	479,031	11.39
Braxton	196,788			196,788	4.14	145	176	25,555	7.70
Brooke	124,973	99,326	524,112	748,411	4.78	517	162	83,860	8.92
Clay	885,755	6,737	8,470	900,962	4.58	664	144	95,671	9.42
Fayette	5,005,548	135,079	12,447	5,153,074	6.01	4,237	166	704,083	7.32
Gilmer	396,398	10,974		407,372	3.82	178	163	29,061	14.02
Grant	66,106	28,073		94,179	2.96	100	131	13,052	7.22
Greenbrier	852,590	231,102	847	1,084,539	4.75	755	174	131,520	8.25
Harrison	6,388,242	149,097	1,163	6,538,502	4.49	2,434	189	459,517	14.23
Kanawha	9,295,026	283,616	5,220	9,583,862	4.72	3,737	210	786,538	12.18
Lewis	779,906		10,291	790,197	3.38	162	177	28,639	27.59
Logan	16,338,409	80,728	30,549	16,449,686	4.82	7,539	201	1,513,437	10.87
Marion	9,366,451	96,230	8,950	9,471,631	5.62	3,836	188	721,523	13.13
Marshall	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Mason	218,197	128,155	45	346,397	3.34	193	228	44,080	7.86
McDowell	13,098,346	461,533	395,227	13,955,106	6.86	10,103	145	1,460,208	9.56
Mercer	834,810	50,678	3,020	888,508	5.96	732	153	111,641	7.96
Mineral	67,054	30,484	8	97,546	3.81	85	135	11,506	8.48
Mingo	5,878,025	10,168	16,915	5,905,108	5.01	2,204	198	436,338	13.53
Monongalia	6,834,129	110,462	1,082	6,945,673	5.04	2,458	188	463,081	15.00
Nicholas	4,537,779	184,456	4,361	4,726,596	5.06	3,145	179	563,725	8.38
Ohio	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Pocahontas	547,155	29,293		576,448	4.84	452	189	85,335	6.76
Preston	1,188,007	848,696	2,473	2,039,176	3.66	1,171	187	219,402	9.29
Putnam		67,493		67,493	3.45	51	201	10,265	6.58
Raleigh	7,568,501	180,595	28,504	7,777,600	6.20	5,585	170	946,816	8.21
Randolph	810,376	53,416	10,281	874,073	5.41	747	175	130,900	6.68
Summers		11,519		11,519	4.29	101	15	1,516	7.60
Taylor	165,038	3,610	6,000	174,648	3.37	147	133	19,516	8.95
Tucker	406,808			406,808	2.78	147	114	16,694	24.37
Upshur	1,050,408	35,006		1,085,414	4.39	567	160	90,647	11.97
Wayne	43,837	12,500		56,337	3.41	38	209	7,946	7.09
Webster	756,713	11,161	1,350	769,224	5.73	546	158	86,381	8.91
Wyoming	10,103,850	156,628	83,830	10,344,308	5.96	5,031	201	1,009,675	10.25
Other counties	1,627,884	80,829	614,561	2,323,274	4.62	916	227	207,768	11.18
Total West Virginia	113,940,106	3,733,313	1,794,278	119,467,697	5.32	62,437	179	11,205,538	10.66
WYOMING									
Campbell	310,153	24,630	41,164	375,947	$1.28	27	265	7,155	52.54
Carbon	88,906	5,543	2,765	97,214	6.61	32	203	6,500	14.96
Converse		35,020	20	35,040	3.34	10	61	610	57.44
Fremont		1,477		1,477	5.73	3	295	884	1.67
Hot Springs	3,632	5,138	1,913	10,683	9.04	14	143	2,004	5.33
Lincoln	440,183		2,031	442,214	2.87	143	120	17,201	25.71
Sheridan	327,124	24,342	17,875	369,341	3.39	68	223	15,177	24.34
Sweetwater	250,576	4,358	42,580	297,514	6.57	294	114	33,542	8.87
Total Wyoming	1,420,574	100,508	108,348	1,629,430	3.57	591	141	83,073	19.61
UNITED STATES									
Total United States	349,541,197	50,604,429	10,299,921	410,445,547	$4.86	197,402	184	36,238,242	11.33

[1] Includes coal loaded at mines directly into railroad cars or river barges, hauled by trucks to railroad sidings, and hauled by trucks to waterways.

[2] Includes coal transported from mines to point of use by conveyor belts or trams, used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, made into beehive coke at mines, and all other uses at mines.

[3] Value received or charged for coal f. o. b. mines. Includes a value for coal not sold but used by producers, such as mine fuel and coal coked, as estimated by producers at average prices that might have been received if such coal had been sold commercially.

[4] In certain counties the average tons per man per day is large due to auger mining, strip mining, or mechanical loading underground.

[5] Included in "Other counties" to avoid disclosing individual operations.

TRANSPORTATION

Within recent years methods of shipping bituminous coal and lignite from the mines have changed radically; shipments by rail have declined; whereas, shipments by water and truck have increased. The cost by water or truck (particularly for short distances) is usually less than rail freight rate. See figure 13.

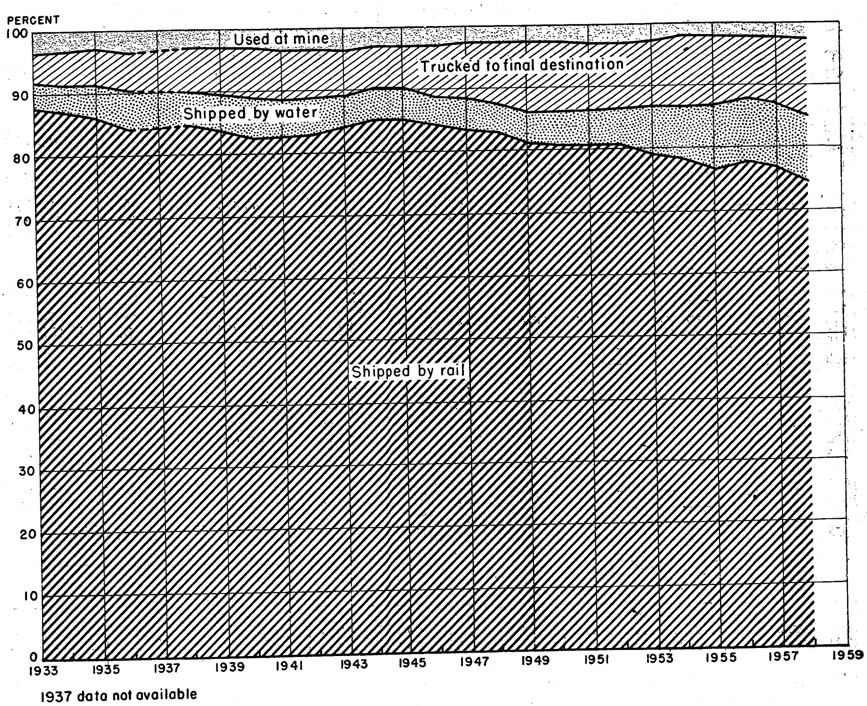

FIGURE 13.—Percentage of total production of bituminous coal and lignite, 1933–58, by methods of shipment from mines and used at mines.

TABLE 55.—Method of shipment of bituminous coal and lignite from mines, and used at mines, in the United States, 1933–58

Year	Method of shipment from mines			Used at mines [1]	Total production
	Shipped by rail and trucked to rail	Shipped by water and trucked to water	Trucked to final destination		
THOUSAND NET TONS					
1933	293,258	13,021	15,463	11,888	333,630
1934	313,304	15,128	18,739	12,197	359,368
1935	319,742	18,327	21,960	12,344	372,373
1936	370,763	24,868	27,929	15,528	439,088
1937	(2)	(2)	(2)	(2)	445,531
1938	295,336	16,903	25,592	10,714	348,545
1939	331,190	22,229	29,534	11,902	394,855
1940	380,388	29,493	35,540	15,350	460,771
1941	425,184	30,240	40,056	18,669	514,149
1942	482,814	34,018	45,154	20,707	582,693
1943	495,863	30,188	42,433	21,693	590,177
1944	527,136	31,518	40,123	20,799	619,576
1945	490,472	27,548	41,477	18,120	577,617
1946	450,615	24,642	42,731	15,934	533,922
1947	527,282	29,803	55,859	17,680	630,624
1948	498,194	26,735	58,260	16,329	599,518
1949	356,602	21,829	47,786	11,651	437,868
1950	417,225	27,583	58,286	13,217	516,311
1951	430,387	29,984	58,132	15,162	533,665
1952	375,911	27,746	50,231	12,953	466,841
1953	362,133	35,648	47,102	12,407	457,290
1954	305,918	32,912	44,689	8,187	391,706
1955	355,924	47,476	51,607	9,626	464,633
1956	390,015	50,732	49,768	10,359	500,874
1957	380,471	51,171	50,334	10,728	492,704
1958	305,642	43,899	50,605	10,300	410,446
PERCENTAGE OF TOTAL					
1933	87.9	3.9	4.6	3.6	100.0
1934	87.2	4.2	5.2	3.4	100.0
1935	85.9	4.9	5.9	3.3	100.0
1936	84.4	5.7	6.4	3.5	100.0
1937	(2)	(2)	(2)	(2)	100.0
1938	84.7	4.9	7.3	3.1	100.0
1939	83.9	5.6	7.5	3.0	100.0
1940	82.6	6.4	7.7	3.3	100.0
1941	82.7	5.9	7.8	3.6	100.0
1942	82.9	5.8	7.7	3.6	100.0
1943	84.0	5.1	7.2	3.7	100.0
1944	85.1	5.1	6.5	3.3	100.0
1945	84.9	4.8	7.2	3.1	100.0
1946	84.4	4.6	8.0	3.0	100.0
1947	83.6	4.7	8.9	2.8	100.0
1948	83.1	4.5	9.7	2.7	100.0
1949	81.4	5.0	10.9	2.7	100.0
1950	80.8	5.3	11.3	2.6	100.0
1951	80.7	5.6	10.9	2.8	100.0
1952	80.5	5.9	10.8	2.8	100.0
1953	79.2	7.8	10.3	2.7	100.0
1954	78.1	8.4	11.4	2.1	100.0
1955	76.6	10.2	11.1	2.1	100.0
1956	77.9	10.1	9.9	2.1	100.0
1957	77.2	10.4	10.2	2.2	100.0
1958	74.5	10.7	12.3	2.5	100.0

[1] Includes coal used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, transported from mines to point of use by conveyors or trams, made into beehive coke at mines, and all other uses at mines.
[2] Data not available.

TABLE 56.—Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1958, as reported by mine operators

Route	State	Net tons: By State	Net tons: Total for route
RAILROAD			
Alabama Central	Alabama	167,313	167,313
Alaska	Alaska	750,750	750,750
Atchison, Topeka & Santa Fe	Colorado	6,432	177,246
	Illinois	142,335	
	New Mexico	28,479	
Baltimore & Ohio	Illinois	279,055	32,878,346
	Maryland	184,849	
	Ohio	2,332,976	
	Pennsylvania	5,856,984	
	West Virginia	24,224,482	
Bessemer & Lake Erie	Pennsylvania	1,335,305	1,335,305
Cambria & Indiana	do	2,100,182	2,100,182
Campbell's Creek	West Virginia	421,446	421,446
Carbon County	Utah	1,382,103	1,382,103
Central of Georgia	Alabama	38,489	38,489
Chesapeake & Ohio	Kentucky	9,513,414	45,778,780
	Ohio	104,057	
	West Virginia	36,161,309	
Cheswick & Harmar	Pennsylvania	498,968	498,968
Chicago, Burlington & Quincy	Illinois	6,999,866	8,310,651
	Iowa	235,670	
	Missouri	434,206	
	Wyoming	640,909	
Chicago & Eastern Illinois	Illinois	2,332,248	2,797,750
	Indiana	465,502	
Chicago & Illinois Midland	Illinois	2,694,071	2,694,071
Chicago, Milwaukee, St. Paul & Pacific	Indiana	1,885,115	2,201,663
	Montana (bituminous)	138,678	
	North Dakota (lignite)	177,870	
Chicago & North Western	Illinois	521,130	521,130
Chicago, Rock Island & Pacific	do	1,060,229	1,262,223
	Iowa	104,424	
	Missouri	80,307	
	Oklahoma	17,263	
Clinchfield	Virginia	4,148,898	4,148,898
Colorado & Southern	Colorado	7,430	7,430
Colorado & Wyoming	do	736,115	736,115
Conemaugh & Black Lick	Pennsylvania	435,628	435,628
Denver & Rio Grande Western	Colorado	989,856	3,594,395
	New Mexico	9,912	
	Utah	2,594,627	
Erie	Ohio	10,296	295,771
	Pennsylvania	285,475	
Great Northern	North Dakota (lignite)	480,787	480,787
Gulf, Mobile & Ohio	Alabama	312,619	947,171
	Illinois	634,552	
Illinois Central	do	8,812,476	22,426,717
	Indiana	15,583	
	Kentucky	13,598,658	
Illinois Terminal	Illinois	1,229,167	1,229,167
Interstate	Kentucky	40,456	4,198,632
	Virginia	4,158,176	
Johnstown & Stony Creek	Pennsylvania	142,076	142,076
Kansas City Southern	Oklahoma	482,295	482,295
Kentucky & Tennessee	Kentucky	361,799	361,799
Lake Erie, Franklin & Clarion	Pennsylvania	494,968	494,968
Louisville & Nashville	Alabama	2,702,141	28,144,965
	Illinois	3,620	
	Kentucky	23,915,622	
	Tennessee	1,365,966	
	Virginia	157,616	
Mary Lee	Alabama	363,786	363,786
Midland Valley	Arkansas	34,147	270,995
	Oklahoma	236,848	
Minneapolis & St. Louis	Illinois	1,063,256	1,071,256
	Iowa	8,000	
Missouri-Illinois	Illinois	580,133	580,133
Missouri-Kansas-Texas	Kansas	385,003	1,244,164
	Missouri	499,065	
	Oklahoma	360,096	

TABLE 56.—Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1958, as reported by mine operators—Continued

Route	State	Net tons: By State	Net tons: Total for route
RAILROAD—continued			
Missouri Pacific	Arkansas	268,867	4,235,419
	Illinois	3,894,836	
	Kansas	2,312	
	Missouri	69,404	
Monon	Indiana	343,633	343,633
Monongahela	Pennsylvania	789,433	5,780,983
	West Virginia	4,991,550	
Montour	Pennsylvania	1,143,696	1,143,696
New York Central (includes coal shipped over Kanawha & Michigan, Kelley's Creek, Toledo & Ohio Central, and Zanesville & Western).	Illinois	4,280,464	18,973,193
	Indiana	4,431,269	
	Ohio	2,688,679	
	Pennsylvania	4,285,141	
	West Virginia	3,287,640	
New York, Chicago & St. Louis	Ohio	4,939,366	4,939,366
Norfolk & Western	Kentucky	3,089,668	36,133,700
	Virginia	14,057,687	
	West Virginia	18,986,345	
Northern Pacific	Montana (bituminous)	93,703	951,688
	North Dakota (lignite)	729,721	
	Washington	128,264	
Pacific Coast	do	61,256	61,256
Pennsylvania	Illinois	2,831	23,266,191
	Indiana	3,030,684	
	Ohio	3,963,488	
	Pennsylvania	16,269,188	
Pittsburgh & Lake Erie	do	706,287	706,287
Pittsburg & Shawmut	do	877,070	877,070
Pittsburgh & West Virginia	Ohio	718,095	776,297
	Pennsylvania	48,000	
	West Virginia	10,202	
St. Louis & Belleville Electric Ry. Co	Illinois	1,694,315	1,694,315
St. Louis-San Francisco	Alabama	838,233	2,139,793
	Arkansas	51,966	
	Kansas	264,508	
	Missouri	519,879	
	Oklahoma	465,207	
Soo Line	North Dakota (lignite)	297,265	297,265
Southern	Alabama	282,529	2,771,147
	Indiana	392,677	
	Kentucky	433,310	
	Tennessee	987,039	
	Virginia	675,592	
Southern Iowa	Iowa	15,761	15,761
Tennessee	Tennessee	674,769	674,769
Tennessee Central	do	506,729	506,729
Tennessee Coal, Iron & Railroad Co	Alabama	2,535,172	2,535,172
Toledo, Peoria, & Western	Illinois	433,863	433,863
Union Pacific	Colorado	399,648	1,179,313
	Wyoming	779,665	
Unity	Pennsylvania	279,875	279,875
Utah	Utah	884,183	884,183
Virginian	West Virginia	13,355,368	13,355,368
Wabash	Iowa	347,956	499,741
	Missouri	151,785	
Western Allegheny	Pennsylvania	146,925	146,925
Western Maryland	Maryland	261,534	4,304,888
	Pennsylvania	401,222	
	West Virginia	3,642,132	
Woodward Iron Company	Alabama	760,651	760,651
Total railroad shipments		305,642,101	305,642,101

TABLE 56.—Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1958, as reported by mine operators—Continued

Route	State	Net tons: By State	Net tons: Total for route
WATERWAY			
Allegheny River	Pennsylvania	1,789,890	1,789,890
Black Warrior River	Alabama	760,247	760,247
Green River	Kentucky	4,696,186	4,696,186
Illinois River	Illinois	1,513,875	1,513,875
Inland Water Way	Alabama	246,697	246,697
Kanawha River	West Virginia	3,695,345	3,695,345
Kentucky River	Kentucky	58,960	58,960
Monongahela River	Pennsylvania	16,336,050	20,586,370
	West Virginia	4,250,320	
Ohio River	Illinois	153,054	9,984,092
	Indiana	2,109,180	
	Kentucky	3,132,541	
	Ohio	3,675,350	
	West Virginia	913,967	
Tennessee River	Tennessee	478,768	478,768
Tradewater River	Kentucky	88,666	88,666
Total waterway shipments		43,899,096	43,899,096
Total loaded at mines for shipment by railroads and waterways.		349,541,197	349,541,197
Shipped by truck from mine to final destination.		50,604,429	50,604,429
Used at mine [1]		10,299,921	10,299,921
Total production, 1958		410,445,547	410,445,547

[1] Includes coal used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, transported from mines to point of use by conveyors, pipelines, or trams, made into beehive coke at mines, and all other uses at mines.

CONSUMPTION

The statistics on consumption of bituminous coal and lignite, by major consumer classes, are based upon complete coverage of all consumers in each class except "Other manufacturing and mining industries" and "Retail deliveries to other consumers." The figures for each of these 2 categories are based upon a monthly sample approximating 35-percent coverage. A new benchmark representing complete coverage for "Other manufacturing and mining industries" was established for 1954, based upon data from the Census of Manufactures and the Census of Mineral Industries. The new benchmark for "Retail deliveries to other consumers" for 1954 represents the residual tonnage not otherwise accounted for and includes some coal shipped by truck from mine to final destination.

Data for each month are determined by matching identical plants reporting for the latest month with those for the previous month, calculating the percentage of change from the previous month, and applying this percentage change to the published figure for the previous month. The results obtained have been reasonably reliable over a period of years. A detailed analysis of the establishment of the new benchmarks and the revisions in "Cement mills," "Steel and rolling mills," and "Bunker, foreign and lake vessels," is given in Bureau of Mines Weekly Coal Report 2113, March 14, 1958. The above described revisions apply to the figures in table 57 for 1933–58. The total of classes shown approximates total consumption and is a much more reliable figure than "calculated" consumption based on production, imports, exports, and changes in stocks, because certain significant items of stocks are not included in yearend stocks. See figure 14.

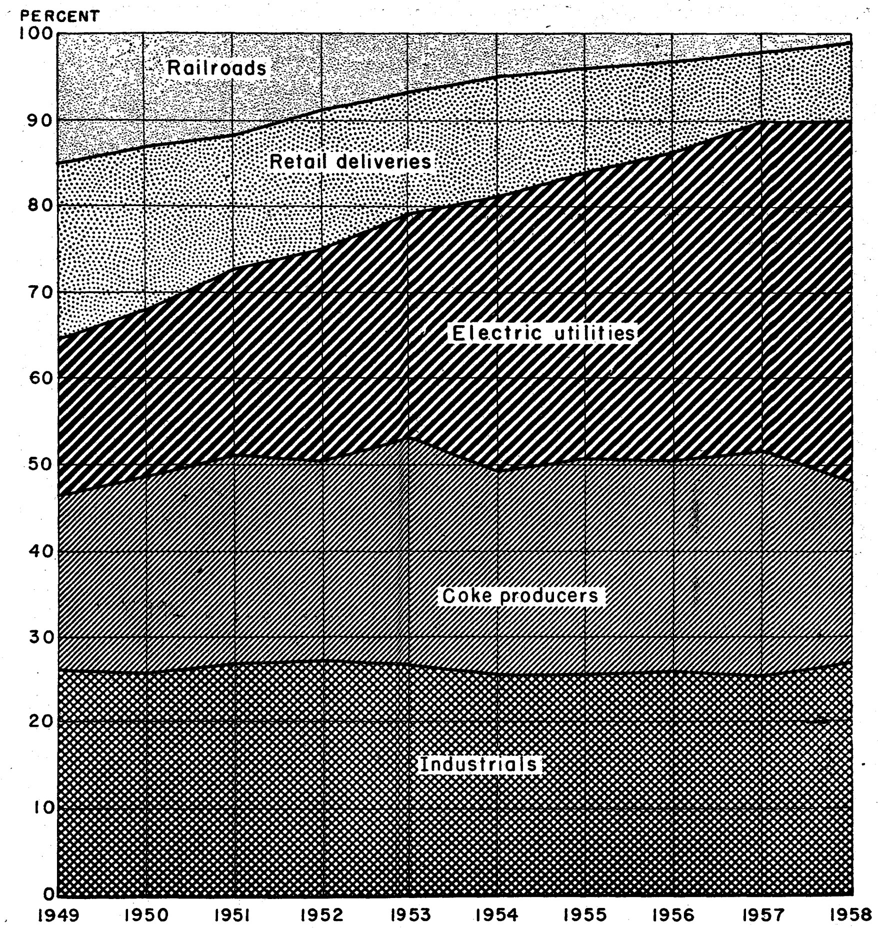

FIGURE 14.—Percentage of total consumption of bituminous coal and lignite, by consumer class, and retail deliveries in the United States, 1949–58.

TABLE 57.—Consumption of bituminous coal and lignite, by consumer class, with retail deliveries in the United States, 1933–58, in thousand net tons

Year and month	Electric power utilities [1]	Bunker, foreign and lake vessel [2]	Railroads (class I) [3]	Manufacturing and mining industries: Beehive coke plants	Oven coke plants	Steel and rolling mills [4]	Cement mills	Other manufacturing and mining industries [5]	Retail deliveries to other consumers [6]	Total of classes shown [7]
1933	27,088	2,298	72,548	1,408	38,681	14,129	2,760	81,377	77,396	317,685
1934	29,707	2,423	76,037	1,635	44,343	15,391	3,457	87,314	83,507	343,814
1935	30,936	2,683	77,109	1,469	49,046	16,585	3,456	94,598	80,444	356,326
1936	38,104	3,052	86,391	2,698	63,244	19,019	4,711	111,030	80,044	408,293
1937	41,045	3,433	88,080	4,927	69,575	18,148	5,182	124,056	76,331	430,777
1938	36,440	2,310	73,921	1,360	45,266	11,877	4,413	94,196	66,498	336,281
1939	42,304	2,764	79,072	2,298	61,216	13,843	5,194	100,637	68,770	376,098
1940	49,126	2,989	85,130	4,803	76,583	14,169	5,559	107,864	84,687	430,910
1941	59,888	3,304	97,384	10,529	82,609	15,384	6,735	121,880	94,402	492,115
1942	63,472	3,226	115,410	12,876	87,974	14,722	7,462	132,767	102,141	540,050
1943	74,036	3,042	130,283	12,441	90,019	15,864	5,842	142,149	120,121	593,797
1944	76,656	3,069	132,049	10,858	94,438	15,152	3,767	131,498	122,112	589,599
1945	71,603	3,192	125,120	8,135	87,214	14,241	4,203	126,562	119,297	559,567
1946	68,743	2,632	110,166	7,167	76,121	12,151	6,990	117,732	98,684	500,386
1947	86,009	3,087	109,296	10,475	94,325	14,195	7,919	123,928	96,657	545,891
1948	95,620	2,552	94,838	10,322	96,984	14,193	8,546	110,060	86,794	519,909
1949	80,610	2,056	68,123	5,354	85,882	10,529	7,966	96,629	88,389	445,538
1950	88,262	2,042	60,969	9,088	94,757	10,877	7,923	95,862	84,422	454,202
1951	101,898	2,220	54,005	11,418	102,030	11,260	8,507	103,188	74,378	468,904
1952	103,309	1,839	37,962	6,912	90,702	9,632	7,903	93,637	66,861	418,757
1953	112,283	1,839	27,735	8,226	104,648	8,764	8,167	95,160	59,976	426,798
1954	115,235	1,244	17,370	980	84,411	6,983	7,924	77,115	51,798	363,060
1955	140,550	1,499	15,473	2,869	104,508	7,353	8,529	89,611	53,020	423,412
1956	154,983	1,470	12,308	4,043	101,870	7,189	9,026	93,302	48,667	432,858
1957:										
January	15,669	6	978	437	9,366	835	787	8,967	5,778	42,823
February	12,937	7	802	420	8,464	677	699	7,756	4,233	35,995
March	13,565	17	865	448	9,391	669	752	7,989	3,598	37,294
April	12,237	120	729	364	8,805	585	715	7,246	2,573	33,374
May	12,322	185	685	305	9,119	544	701	6,753	1,580	32,194
June	12,210	191	614	262	8,775	437	629	6,233	1,417	30,768
July	12,443	183	621	242	9,027	433	442	5,996	1,430	30,817
August	13,034	185	671	263	9,037	436	782	6,446	2,042	32,896
September	12,469	170	619	235	8,746	452	734	6,414	2,469	32,308
October	13,521	165	626	205	8,723	569	789	7,594	3,510	35,702
November	13,345	113	607	153	7,865	621	786	7,685	3,159	34,334
December	13,646	22	584	139	7,229	680	817	8,123	3,923	35,163
Total	157,398	1,364	8,401	3,473	104,547	6,938	8,633	87,202	35,712	413,668
1958:										
January	14,563	--------	521	86	6,691	800	706	8,407	5,006	36,780
February	13,352	3	452	66	5,753	787	615	7,592	5,031	33,651
March	13,165	3	400	71	6,126	734	626	7,562	3,627	32,314
April	11,290	41	320	60	5,443	583	629	6,556	2,198	27,120
May	11,012	106	276	66	5,553	559	700	6,150	1,567	25,989
June	11,183	124	227	79	5,573	486	718	5,806	1,451	25,647
July	11,821	121	191	54	5,635	438	729	5,829	1,454	26,272
August	12,381	141	197	69	6,112	466	673	6,097	2,063	28,199
September	12,087	137	215	95	6,344	472	683	6,609	2,826	29,468
October	13,094	137	281	109	7,201	538	735	6,931	3,428	32,454
November	13,265	111	282	123	7,386	575	682	6,833	3,068	32,325
December	15,715	31	363	139	7,746	830	760	7,000	3,900	36,484
Total	152,928	955	3,725	1,017	75,563	7,268	8,256	81,372	35,619	366,703

[1] Federal Power Commission.
[2] Bureau of the Census, U.S. Department of Commerce. Ore and Coal Exchange.
[3] Association of American Railroads. Represents consumption of bituminous coal and lignite for all uses, including locomotive, powerhouse, shop, and station fuel.
[4] Estimates based upon reports collected from a selected list of representative steel and rolling mills.
[5] Estimates based upon reports collected from a selected list of representative manufacturing plants.
[6] Estimates based upon reports collected from a selected list of representative retailers. Includes some coal shipped by truck from mine to final destination.
[7] The total of classes shown approximates total consumption. The calculation of consumption from production, imports, exports, and changes in stocks is not as accurate as the "Total of classes shown" because certain significant items of stocks are not included in year-end stocks. These items are: Stocks on Lake and Tidewater docks, stocks at other intermediate storage piles between mine and consumer, and coal in transit.

TABLE 58.—Fuel economy in consumption of coal at electric-utility powerplants in the United States, 1919–58

Year	Coal consumed per kilowatt hour (pounds)	Index numbers based on 1919 as 100	Year	Coal consumed per kilowatt hour (pounds)	Index numbers based on 1919 as 100	Year	Coal consumed per kilowatt hour (pounds)	Index numbers based on 1919 as 100
1919	3.20	100.0	1933	1.46	45.6	1947	1.31	40.9
1920	3.00	93.8	1934	1.45	45.3	1948	1.30	40.6
1921	2.70	84.4	1935	1.44	45.0	1949	1.24	38.8
1922	2.50	78.1	1936	1.44	45.0	1950	1.19	37.2
1923	2.40	75.0	1937	1.44	45.0	1951	1.14	35.6
1924	2.20	68.8	1938	1.40	43.8	1952	1.10	34.4
1925	2.00	62.5	1939	1.38	43.1	1953	1.06	33.1
1926	1.90	59.4	1940	1.34	41.9	1954	.99	30.9
1927	1.82	56.9	1941	1.34	41.9	1955	.95	29.7
1928	1.73	54.1	1942	1.30	40.6	1956	.94	29.4
1929	1.66	51.9	1943	1.30	40.6	1957	.93	29.1
1930	1.60	50.0	1944	1.29	40.3	1958	.90	28.1
1931	1.52	47.5	1945	1.30	40.6			
1932	1.49	46.6	1946	1.29	40.3			

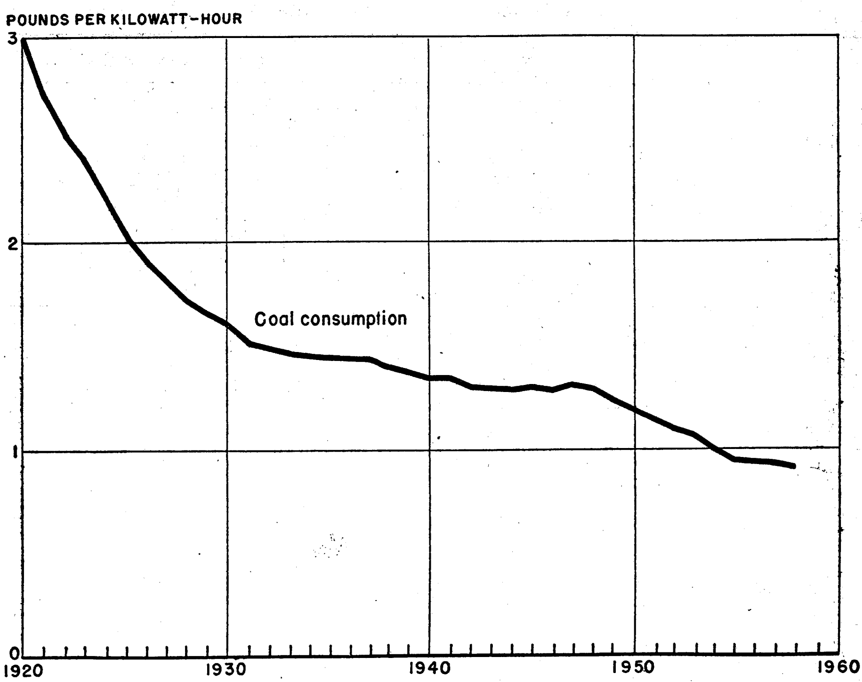

FIGURE 15.—Trend in fuel economy at electric-utility powerplants in the United States, 1920–58.

RELATIVE RATE OF GROWTH OF MINERAL FUELS AND WATERPOWER

Information on the trends in consumption of the various energy fuels and waterpower is presented in the Review of Mineral-Fuel Industries, Minerals Yearbook, volume II, 1958.

STOCKS

The figures on stocks are based on complete coverage for all categories except "Other manufacturing and mining industries" and "Retail dealer stocks." Stocks for these two categories are based on samples, and the statistical procedure followed is that for calculating total consumption.

TABLE 59.—Stocks of bituminous coal and lignite in hands of commercial consumers and in retail dealers' yards in the United States, 1957–58

Date	Total stocks (net tons)	Days' supply at current rate of consumption on date of stock taking							
		Electric power utilities	Railroads (class I)	Manufacturing and mining industries				Retail dealers	Total
				Oven coke plants	Steel and rolling mills	Cement mills	Other manufacturing and mining industries		
1957									
Jan. 31	73,182,000	86	25	42	27	53	45	4	53
Feb. 28	71,508,000	91	28	42	29	50	45	5	55
Mar. 31	72,160,000	98	25	44	33	49	49	6	60
Apr. 30	73,548,000	108	28	45	38	50	52	7	66
May 31	76,307,000	115	30	47	44	55	58	14	73
June 30	78,531,000	117	36	48	61	61	62	18	76
July 31	75,260,000	118	33	40	52	94	62	19	76
Aug. 31	77,889,000	117	30	43	55	53	59	14	73
Sept. 30	80,021,000	121	32	45	47	58	58	12	74
Oct. 31	81,583,000	117	31	50	37	59	50	8	71
Nov. 30	81,520,000	115	31	53	31	59	48	9	71
Dec. 31	80,779,000	114	34	60	30	58	48	7	71
1958									
Jan. 31	77,355,000	104	39	61	23	60	45	5	65
Feb. 28	72,264,000	97	38	59	21	56	41	3	60
Mar. 31	70,922,000	106	46	60	25	56	46	4	68
Apr. 30	71,296,000	121	52	65	32	51	51	7	79
May 31	72,613,000	133	57	65	34	48	55	13	87
June 30	74,646,000	131	65	63	42	48	57	18	87
July 31	71,144,000	124	67	55	38	46	58	20	84
Aug. 31	72,256,000	120	63	51	37	52	56	15	79
Sept. 30	74,020,000	123	56	50	39	53	49	11	75
Oct. 31	77,807,000	120	45	50	35	56	54	10	74
Nov. 30	77,212,000	114	41	50	37	63	48	11	72
Dec. 31	76,285,000	96	29	52	29	61	49	8	65

PRICES

TABLE 60.—Average value per ton, f.o.b. mines, of bituminous coal and lignite produced in the United States, 1957–58, by States

State	1957				1958			
	Underground mines	Strip mines	Auger mines	Total, all mines	Underground mines	Strip mines	Auger mines	Total, all mines
Alabama	$6.74	$5.25	$3.40	$6.49	$6.87	$5.17	$8.53	$6.47
Alaska	8.41	8.80		8.66	8.72	9.28		9.13
Arizona	7.02			7.02	7.03			7.03
Arkansas	8.55	6.89		7.83	8.22	7.34		7.53
Colorado	6.36	3.57		6.08	6.97	3.60		6.49
Georgia	4.65			4.65	5.00			5.06
Illinois	4.02	3.97		4.00	4.09	3.94	3.96	4.02
Indiana	4.19	3.79		3.92	4.20	3.76		3.89
Iowa	4.06	3.31		3.46	4.13	3.35		3.52
Kansas	5.69	4.43		4.45	6.08	4.49		4.51
Kentucky	4.91	3.38	3.86	4.53	4.81	3.33	3.51	4.36
Maryland	5.21	3.28		4.12	4.69	3.13		3.77
Missouri	4.26	4.23		4.26	4.94	4.26		4.29
Montana:								
Bituminous	5.83	4.65		5.33	6.30	3.44		5.94
Lignite	4.03	3.38		3.80	4.27	1.95		2.34
Total, Montana	5.71	4.59		5.23	6.14	2.33		4.84
New Mexico	6.04	6.13		6.05	6.52	4.17		6.15
North Dakota (lignite)	4.11	2.32		2.32	4.73	2.33		2.34
Ohio	4.65	3.64	3.71	3.96	4.68	3.64	3.65	3.94
Oklahoma	8.91	5.84		6.45	8.85	6.02		6.66
Pennsylvania	6.34	4.10	3.55	5.77	6.21	3.86	3.12	5.52
South Dakota (lignite)		3.75		3.75		4.00		4.00
Tennessee	4.25	3.38	2.88	3.92	3.99	3.67	2.99	3.83
Utah	5.87			5.87	5.70			5.70
Virginia	5.33	3.96	4.11	5.22	4.98	3.74	3.15	4.86
Washington	7.68	7.30		7.66	7.81	7.30		7.80
West Virginia	5.71	4.43	4.48	5.58	5.46	4.02	3.83	5.32
Wyoming	6.37	2.48		3.67	6.53	2.72		3.57
Total	5.52	3.89	4.12	5.08	5.33	3.80	3.60	4.86

TABLE 61.—Production and average value per ton, f.o.b. mines, sold in open market and not sold in open market, 1958, by States

State	Production (net tons)			Average value per ton, f.o.b. mines		
	Sold in open market	Not sold in open market	Total	Sold in open market	Not sold in open market	Total
Alabama	4,625,091	6,556,852	11,181,943	$5.25	$7.33	$6.47
Alaska	753,336	5,946	759,282	9.15	7.00	9.13
Arizona	3,924	3,725	7,649	5.64	8.50	7.03
Arkansas	361,982	2,156	364,138	7.54	6.62	7.33
Colorado	2,096,606	877,583	2,974,189	5.18	9.62	6.47
Georgia	8,751		8,751	5.00		5.00
Illinois	43,370,050	542,355	43,912,405	4.03	3.10	4.02
Indiana	15,016,550	5,674	15,022,224	3.89	3.78	3.89
Iowa	1,178,613		1,178,613	3.52		3.52
Kansas	823,322		823,322	4.51		4.51
Kentucky	58,927,006	7,384,799	66,311,805	4.13	6.27	4.36
Maryland	837,738		837,738	3.77		3.77
Missouri	2,590,271	1,891	2,592,162	4.29	4.76	4.29
Montana:						
Bituminous	192,112	19,241	211,353	6.25	2.82	5.94
Lignite	93,608		93,608	2.34		2.34
Total Montana	285,720	19,241	304,961	4.97	2.82	4.84
New Mexico	105,064	11,592	116,656	6.18	6.00	6.15
North Dakota (lignite)	2,270,693	43,165	2,313,858	2.33	2.50	2.34
Ohio	28,512,954	3,515,442	32,028,396	4.04	3.14	3.94
Oklahoma	1,343,237	286,206	1,629,443	6.11	9.24	6.66
Pennsylvania	40,997,065	26,773,797	67,770,862	4.81	6.59	5.52
South Dakota (lignite)	19,571		19,571	4.00		4.00
Tennessee	6,710,721	73,879	6,784,600	3.83	3.24	3.83
Utah	2,741,907	2,585,609	5,327,516	5.05	6.38	5.70
Virginia	26,577,919	248,148	26,826,067	4.85	5.73	4.86
Washington	237,018	15,251	252,269	7.73	8.88	7.80
West Virginia	105,781,731	13,685,966	119,467,697	5.15	6.59	5.32
Wyoming	976,271	653,159	1,629,430	3.48	3.71	3.57
Total	347,153,111	63,292,436	410,445,547	4.58	6.41	4.86

LIGNITE

TABLE 62.—Summary of number of mines, production, value, men working daily, days operated, number of man-days worked, output per man per day, and detailed operations at underground and strip lignite mines in the United States, 1958, by States [1]

Item	Montana	North Dakota	South Dakota	Total
OPERATIONS AT UNDERGROUND MINES				
Number of mines	5	1		6
Shot from solid ... net tons	15,622	3,049		18,671
Cut by machines ... do				
Total production ... do	15,622	3,049		18,671
Number of cutting machines				
Average output per machine ... net tons				
Underground production cut by machine ... percent				
Average value per ton	$4.27	$4.73		$4.34
Average number of men working daily	20	5		25
Average number of days worked	117	117		117
Number of man-days worked	2,348	586		2,934
Average tons per man per day	6.65	5.20		6.36
OPERATIONS AT STRIP MINES				
Number of strip mines	4	36	1	41
Production ... net tons	77,986	2,310,809	19,571	2,408,366
Average value per ton	$1.95	$2.33	$4.00	$2.34
Number of shovels and draglines	4	54	3	61
Average number of men working daily	22	322	9	353
Average number of days worked	94	202	266	197
Number of man-days worked	2,078	65,159	2,390	69,627
Average tons per man per day	37.53	35.46	8.19	34.59
TOTAL OPERATIONS AT ALL LIGNITE MINES				
Number of mines	9	37	1	47
Production (net tons):				
Shipped by rail [2]	73,657	1,685,643		1,759,300
Shipped by truck	19,898	326,869	19,371	366,138
Used at mines [3]	53	301,346	200	301,599
Total	93,608	2,313,858	19,571	2,427,037
Average value per ton	$2.34	$2.34	$4.00	$2.35
Average number of men working daily	42	327	9	378
Average number of days worked	105	201	266	192
Number of man-days worked	4,426	65,745	2,390	72,561
Average tons per man per day	21.15	35.19	8.19	33.45

[1] Exclusive of Texas (lignite).
[2] Includes coal loaded at mines directly into railroad cars and hauled by trucks to railroad sidings.
[3] Includes coal transported from mines to point of use by conveyor belts or trams, used by mine employees, taken by locomotive tenders at tipples, used at mines for power and heat, made into beehive coke at mines, and all other uses at mines.

FOREIGN TRADE[3]

Imports of bituminous coal and lignite are very small. Exports have been an important item of foreign trade for many years, particularly since the close of World War II.

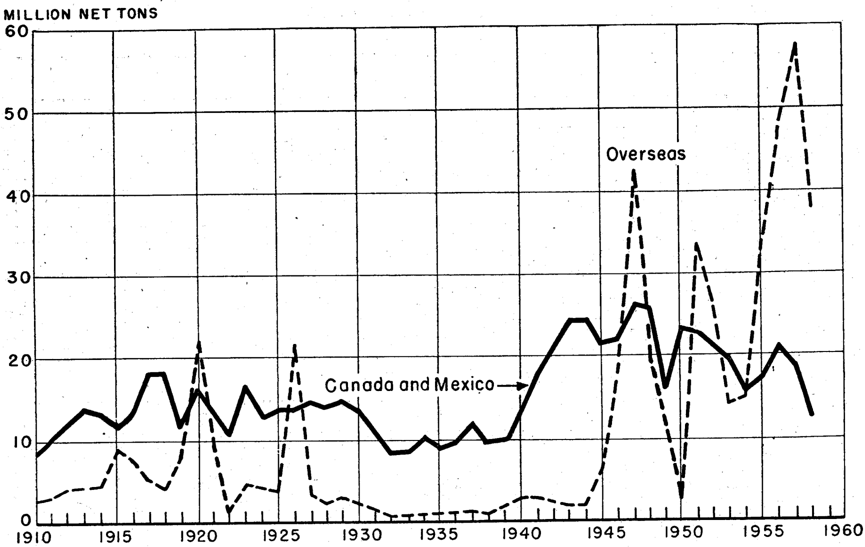

FIGURE 16.—Exports of bituminous coal and lignite from the United States to Canada and Mexico and overseas, 1910–58.

TABLE 63.—Bituminous coal[1] imported for consumption in the United States, 1956–58, by countries and customs districts, in net tons

[Bureau of the Census]

Country and customs district	1956	1957	1958
Country:			
North America: Canada	353,899	366,506	306,940
Europe: Germany, West	1,802		(2)
Total	355,701	366,506	306,940
Customs district:			
Alaska[3]	260	202	140
Chicago			(2)
Dakota			45
Duluth and Superior	90		67
Maine and New Hampshire	212,119	217,376	190,290
Montana and Idaho	137,264	137,418	98,359
New York	386	1,648	
North Carolina	355		
St. Lawrence	64		
Vermont			146
Washington	5,163	9,862	17,893
Total	355,701	366,506	306,940

[1] Includes slack, culm, and lignite.
[2] Less than 1 ton.
[3] In the Minerals Yearbook, 1956, p. 110, table 58, figures for the 1954 Alaska customs district should be changed to read 606 net tons; delete Hawaii.

[3] Figures on imports and exports compiled by M. B. Price and E. D. Page, of the Bureau of Mines, from records of the Bureau of the Census, U.S. Department of Commerce.

TABLE 64.—Exports of bituminous coal, by country groups, 1949–53 (average) and 1954–58, in thousand net tons

[Bureau of the Census]

Year	Canada (including Newfoundland) and Mexico	Overseas (all other countries)								Grand total
		West Indies and Central America [1]	Miquelon, Bermuda, and Greenland	South America	Europe	Asia	Africa	Oceania	Total overseas	
1949–53 (average)	20,508	104	6	1,833	13,277	2,080	453	26	17,779	38,287
1954	15,964	58	(2)	1,385	10,471	3,049	114	--------	15,077	31,041
1955	17,232	51	6	1,447	28,677	3,726	138	--------	34,045	51,277
1956	20,705	40	2	2,828	41,156	3,509	313	--------	47,848	68,553
1957	[3]18,493	35	4	[3]2,269	[3]49,701	5,673	271	--------	[3]57,953	[3]76,446
1958	12,269	34	1	1,452	32,879	3,550	95	--------	38,011	50,280

[1] Includes Bahamas and Panama.
[2] Less than 1,000 tons.
[3] Revised figure.

TABLE 65.—Bituminous coal exported from the United States, 1955–58, by countries, in net tons [1]

[Bureau of the Census]

Country	1955	1956	1957	1958
North America:				
Bermuda	1,911	2,350	1,134	1,211
Canada	17,185,204	20,654,885	[2]18,444,949	12,235,447
Central America:				
Costa Rica	25	125	----------	120
El Salvador	----------	245	120	45
Guatemala	290	1,032	360	160
Honduras	90	50	140	65
Other Central America	25	----------	25	25
Greenland	4,485	----------	2,264	----------
Mexico	46,548	50,059	47,913	33,997
West Indies:				
British:				
Barbados	----------	----------	----------	537
Jamaica	12,631	5,468	51	888
Trinidad and Tobago	3,398	1,975	2,237	653
Cuba	30,804	27,863	30,905	29,404
Dominican Republic	75	548	230	218
French	3,304	2,249	1,259	988
Haiti	150	----------	----------	----------
Total North America	17,288,940	20,746,849	[2]18,531,587	12,303,758
South America:				
Argentina	64,743	1,518,775	914,006	216,186
Bolivia	13,538	14,454	1,203	----------
Brazil	1,115,433	969,383	1,059,802	977,988
Chile	139,285	222,819	194,333	192,694
Peru	----------	----------	3,390	44
Surinam	2,689	----------	----------	7
Uruguay	111,433	101,634	95,564	65,143
Other South America	50	116	127	267
Total South America	1,447,171	2,827,181	2,268,425	1,452,329

See footnotes at end of table.

TABLE 65.—Bituminous coal exported from the United States, 1955–58, by countries, in net tons [1]—Continued

Country	1955	1956	1957	1958
Europe:				
Austria	809,807	1,353,150	926,780	1,083,078
Azores			2,390	
Belgium-Luxembourg	1,142,452	1,858,989	2,146,214	2,280,116
Denmark	357,752	363,954	[2] 355,551	495,360
Finland	188,772	421,773	242,266	102,960
France	1,016,888	6,589,043	[2] 7,116,005	3,000,913
Germany, West	6,678,504	10,243,077	[2] 15,569,712	9,708,332
Gibraltar	22,355	23,663	22,305	7,158
Greece	151,934	127,613	212,043	74,129
Hungary			167,819	
Iceland	6,417	7,180	8,447	
Ireland				516,970
Italy	6,056,130	7,556,640	[2] 8,761,669	6,989,027
Netherlands	4,641,931	6,593,850	8,062,538	5,515,399
Norway	459,956	392,258	[2] 367,525	214,799
Poland and Danzig			85,388	52,223
Portugal	76,317	204,153	303,744	221,709
Spain	433,096	358,707	757,629	733,492
Sweden	656,223	903,947	1,282,666	788,379
Switzerland	58,552	266,989	402,483	421,038
Trieste	378,709	501,088	648,835	263,872
United Kingdom	4,850,677	2,754,117	1,748,879	20,156
Yugoslavia	690,284	636,302	510,234	389,222
Total Europe	28,676,756	41,156,493	[2] 49,701,122	32,878,332
Asia:				
Indonesia	45,409	47,695	44,170	24,479
Israel	795	2,259	1,903	553
Japan	2,760,495	3,178,329	4,872,589	3,299,133
Korea, Republic of	919,129	280,257	754,645	225,877
Other Asia	32	350	32	37
Total Asia	3,725,860	3,508,890	5,673,339	3,550,079
Africa:				
Algeria		58,097	138,928	
Angola	65,302	128,763	26,125	11,506
Belgian Congo	21,033			
Canary Islands	12,830	8,375	12,382	9,192
Ethiopia		10,894		
Madeira Island	1,680	4,149	1,350	
Morocco		[3] 22,316	11,496	
Libya		14,416	32,159	32,590
Tunisia		11,340	13,806	
United Arab Republic (Egypt Region)[4]	31,772	49,454	34,810	24,470
Other Africa	5,912	5,412		17,450
Total Africa	138,529	313,216	271,056	95,208
Grand total	51,277,256	68,552,629	[2] 76,445,529	50,279,706

[1] Amounts stated do not include fuel or bunker coal loaded on vessels engaged in foreign trade, which aggregated 444,806 tons in 1955, 498,967 tons in 1956, 419,360 tons in 1957, and 358,519 tons in 1958.
[2] Revised figure.
[3] French Morocco.
[4] Effective July 1, 1958.

TABLE 66.—Bituminous coal exported from the United States, 1955–58, by customs districts, in net tons

[Bureau of the Census]

Customs district	1955	1956	1957	1958
North Atlantic:				
Connecticut			61	
Maine and New Hampshire	13,296	1,383	12,165	1,893
Massachusetts	47	2,274	7,341	58
New York	4,072	1,675	3,282	656
Philadelphia	201,844	464,432	617,457	342,737
Rhode Island			3,121	
South Atlantic:				
Maryland	3,643,684	4,789,671	4,913,765	3,452,683
North Carolina			46	
Virginia	29,398,882	42,158,581	[1] 51,212,392	33,864,445
Gulf Coast:				
Florida			99	
Galveston	119	77	66	278
Mobile	648,862	241,002	123,399	118,156
New Orleans	43,473	155	11,761	6,176
Mexican border:				
Arizona	105	88	49	114
El Paso	272	2,038	4,556	24,632
Laredo	327	180	142	160
Pacific Coast:				
Los Angeles	33,187		45,403	
Oregon	20,157		555,524	27,232
San Diego	76		66	
San Francisco	43,615		143,427	191,558
Washington	67,413	426	99,832	33,160
Northern border:				
Buffalo	460,188	346,235	[1] 286,697	306,146
Chicago	891,817	1,081,059	[1] 717,255	157,384
Dakota	30,967	16,866	30,820	45,090
Duluth and Superior	61,209	171,942	66,187	70,489
Indiana				3,723
Michigan	1,995,191	1,152,505	1,141,216	831,930
Minnesota	53			701
Montana and Idaho	298	286	158	164
Ohio	10,682,968	11,871,058	11,984,090	8,652,892
Rochester	1,964,639	2,773,170	[1] 2,905,362	1,581,147
St. Lawrence	983,437	738,873	1,178,122	507,380
Vermont	1,326			43
Wisconsin				49
Miscellaneous:				
Alaska	205			
Pittsburgh	11,117			
Total [2]	51,277,256	68,552,629	[1] 76,445,529	50,279,706

[1] Revised figure.
[2] Includes 74,410 tons in 1955, 2,738,653 tons in 1956, 381,668 tons in 1957, and 58,630 tons in 1958 representing estimated data for which district breakdown is not available.

TABLE 67.—Shipments of bituminous coal to possessions and other areas administered by the United States, 1956–58, in net tons

[Bureau of the Census]

Territory	1956	1957	1958
Guam	6	4	
Puerto Rico	7,610	4,555	1,209
Virgin Islands			1

WORLD PRODUCTION

The United States supplied 432 million tons of bituminous coal, anthracite, and lignite, or 16 percent of the world output, in 1958.

Most coal-producing countries in Europe enjoyed slightly increased production during 1958; however, consumption requirements of the principal coal-producing countries on the European Continent exceeded available supplies. Production from the United States offset a large part of the deficit.

TABLE 68.—World production of bituminous coal, anthracite, and lignite, by countries, 1954–58, in thousand short tons [1]

[Compiled by Pearl J. Thompson and Berenice B. Mitchell]

Country	1954	1955	1956	1957	1958 [2]
North America:					
Canada:					
Bituminous	12,797	12,525	12,574	10,940	9,434
Lignite	2,117	2,294	2,342	2,249	2,253
Greenland: Bituminous [3]	8	8	8	19	19
Mexico: Bituminous	1,448	1,479	1,552	1,566	1,621
United States:					
Anthracite (Pennsylvania)	29,083	26,205	28,900	25,338	21,171
Bituminous	389,157	461,468	497,997	490,097	408,019
Lignite	2,843	3,166	2,878	2,607	2,427
Total	437,453	507,145	546,251	532,816	444,944
South America:					
Argentina: Bituminous	103	150	169	230	285
Brazil: Bituminous (including lignite)	2,265	2,500	2,463	2,285	2,428
Chile: Bituminous (mined)	2,499	2,544	2,511	2,310	2,011
Colombia: Bituminous	1,653	1,984	2,094	[3] 2,480	2,425
Peru: Bituminous and anthracite	227	150	160	155	192
Venezuela: Bituminous	35	33	34	39	40
Total	6,782	7,361	7,431	7,499	7,381
Europe:					
Albania: Lignite	169	220	[3] 255	260	282
Austria:					
Bituminous	195	188	183	168	155
Lignite	6,928	7,296	7,419	7,581	7,158
Belgium: Bituminous and anthracite	32,241	32,981	32,475	32,062	29,831
Bulgaria:					
Anthracite	[3] 33	132	137	[3] 150	[3] 150
Lignite (including bituminous)	9,806	10,947	11,787	12,957	13,867
Czechoslovakia:					
Bituminous	23,815	24,401	25,806	26,655	29,321
Lignite	41,733	44,920	51,036	56,235	57,100
Denmark: Lignite	754	839	1,534	[3] 2,100	[3] 3,300
France:					
Bituminous and anthracite	59,981	60,997	60,773	62,606	63,626
Lignite	2,105	2,263	2,484	2,528	2,555
Germany: Bituminous and anthracite:					
East	2,919	2,956	3,024	3,035	3,200
West	142,233	145,250	149,427	148,068	147,183
Lignite:					
East	200,525	221,137	226,928	234,346	236,961
West	96,797	99,579	104,976	106,716	103,052
Pech coal: West	1,905	2,003	1,979	2,048	2,013
Greece: Lignite	772	862	880	1,100	1,077
Hungary:					
Bituminous	2,684	2,967	2,619	2,510	2,895
Lignite	21,055	21,632	20,080	20,856	23,826
Ireland: Bituminous and anthracite	226	222	239	278	265
Italy:					
Bituminous and anthracite	1,184	1,251	1,188	1,128	798
Liginite	710	462	445	425	898
Netherlands:					
Bituminous	13,306	13,112	13,047	12,540	13,095
Lignite	190	281	298	317	281
Poland:					
Bituminous	100,972	104,142	104,884	103,723	104,699
Lignite	6,504	6,663	6,816	6,563	8,313
Portugal:					
Bituminous and anthracite	476	445	456	550	625
Lignite	72	97	161	203	172
Rumania:					
Bituminous and anthracite [3]	280	210	210	275	330
Lignite [3]	5,900	6,500	6,900	7,400	7,800
Saar: Bituminous	18,539	19,102	18,838	18,139	18,103
Spain:					
Bituminous and anthracite	13,891	13,696	14,165	15,356	15,907
Lignite	1,933	2,024	2,125	2,777	2,927
Svalbard (Spitsbergen): Bituminous [4]	686	697	816	858	[3] 760
Sweden: Bituminous	294	311	324	335	352

See footnotes at end of table.

TABLE 68.—World production of bituminous coal, anthracite, and lignite, by countries, 1954–58, in thousand short tons [1]—Continued

Country	1954	1955	1956	1957	1958 [2]
Europe—Continued					
Switzerland: Bituminous and anthracite (incl. lignite) [3]	11	11	11	11	11
U.S.S.R.: [5]					
Bituminous and anthracite	268,612	304,941	334,772	360,455	385,809
Lignite	114,010	126,348	138,340	149,914	160,937
United Kingdom: Bituminous and anthracite	250,942	248,188	248,646	250,464	241,721
Yugoslavia:					
Bituminous	1,089	1,250	1,358	1,353	1,332
Lignite	13,972	15,510	17,493	18,497	20,928
Total [5]	1,460,449	1,547,033	1,615,334	1,673,542	1,713,615
Asia:					
Afghanistan: Bituminous	17	25	26	30	[3] 22
China: Bituminous, anthracite, and lignite	88,100	102,700	116,700	144,100	297,600
India: Bituminous	41,306	42,813	43,994	48,720	50,777
Indonesia: Bituminous	992	897	914	788	661
Iran: Bituminous [6]	278	270	209	194	187
Japan:					
Bituminous and anthracite	47,088	46,763	51,318	57,025	54,300
Lignite	1,592	1,508	1,676	1,832	1,744
Korea:					
North: Anthracite and lignite [3]	1,860	3,500	4,500	5,500	7,600
Republic of: Anthracite	982	1,442	2,001	2,691	2,944
Malaya: Bituminous	251	230	204	171	75
Pakistan: Bituminous	621	608	722	578	669
Philippines: Bituminous	132	143	168	211	119
Taiwan: Bituminous	2,334	2,600	2,788	3,214	3,508
Thailand: Lignite	7	44	96	110	138
Turkey (mined):					
Bituminous	6,295	6,058	6,490	6,917	7,234
Lignite	2,315	2,663	3,318	3,899	4,212
Vietnam:					
North: Anthracite	1,099	1,213	1,213	[3] 1,200	[3] 1,200
South: Anthracite	----------	----------	2	13	22
Total [5]	195,269	213,477	236,339	277,193	433,012
Africa:					
Algeria: Bituminous and anthracite	334	333	327	260	169
Belgian Congo: Bituminous	418	529	463	477	324
Madagascar: Bituminous	1	----------	----------	1	----------
Morocco: Southern zone: Anthracite	536	515	531	574	562
Mozambique: Bituminous	157	191	240	298	273
Nigeria: Bituminous	712	839	882	913	1,036
Rhodesia and Nyasaland, Federation of: Southern Rhodesia: Bituminous	3,029	3,654	3,918	4,247	3,897
Tanganyika: Bituminous	1	1	1	1	1
Union of South Africa: Bituminous and anthracite (marketable)	32,314	35,436	37,040	38,325	40,879
Total	37,502	41,498	43,402	45,096	47,141
Oceania:					
Australia:					
Bituminous	22,134	21,588	21,587	22,310	22,844
Lignite	10,451	11,326	11,827	12,030	13,041
New Zealand:					
Bituminous and anthracite	912	877	897	931	939
Lignite	1,994	1,985	2,046	1,994	2,108
Total	35,491	35,776	36,357	37,265	38,932
Other countries (estimate)	110	110	110	110	110
Lignite (total of items shown above) (estimate)	545,254	590,566	624,140	655,496	677,365
Bituminous and anthracite (by subtraction)	1,627,802	1,761,834	1,861,084	1,918,025	2,007,770
World total all grades (estimate)	2,173,056	2,352,400	2,485,224	2,573,521	2,685,135

[1] This table incorporates a number of revisions of data published in previous Coal chapters.
[2] Preliminary.
[3] Estimate.
[4] Includes the following quantities, in thousand short tons, produced in U.S.S.R.-controlled mines: 1954, 311; 1955, 342; 1956, 386; 1957, 434; and 1958, 440 (estimated).
[5] Output from U.S.S.R. in Asia (including Sakhalin) included with U.S.S.R. in Europe.
[6] Year ended March 20 of year following that stated.

TECHNOLOGY

During 1958 research on coal was continued by the Bureau of Mines, Bituminous Coal Research, Inc., by the Federal Geological Survey, State Mine Experiment Stations, State Geological Surveys, universities and colleges, independent research organizations, coal-producing companies, other governmental and private organizations, and equipment manufacturers.

Congressional interest in coal research continued high. Several bills for expanding coal research received favorable consideration by the Committees on Interior and Insular Affairs in the Senate and the House of Representatives. A Senate bill was passed by that body but the House bill was not acted upon before the 85th Congress adjourned.

The importance of coal research to the economic growth of the industry was illustrated by announced plans of several leading coal producers to construct coal research facilities to assist them in testing and evaluating the chemical and physical properties of their coal and coke. Bituminous Coal Research, Inc., embarked upon a fund raising program to establish a consolidated research center in the suburbs of Pittsburgh to house all of their research activities.

Based upon the successful use of high-pressure water jets to extract coal in New Zealand, Poland, and the U.S.S.R., experimental mining studies using this technique were begun in Germany and Great Britain. In the United States, a site was selected to study the adaptability of hydraulic mining to the coals and geologic conditions here, and the necessary high-pressure equipment was purchased.

The construction of the world's largest dragline bucket was announced by an American manufacturing company. The capacity of the unit is in excess of 960 cubic feet; it will be used to uncover a bed of coal 125 feet below the surface.

The development of a new roof-bolting machine was reported. The platform of the machine can be adjusted to conform to the contours of the roof while providing level footing for the operators.

Final commercial development was undertaken on a remotely controlled continuous mining system wherein the coal mining machine is actuated from an electronic control center away from the point of operation. The mining machine is equipped with electronic detection elements that assure the proper directional passage of the machine. The application of the machine to the recovery of coal from the highwall of strip pits has been tested successfully, and further development is expected to make the system applicable to underground deep mines.

A leading Virginia coal operator began constructing a lightweight aggregate plant, using coal preparation plant washery refuse as the raw material.

A small tube was developed, utilizing ultraviolet rays, to detect fire, smoke, and combustible vapors. The tube is being tested as a safety device in coal mining.

The 108-mile coalpipe constructed by the Consolidation Coal Company to transport coal hydraulically from its mine in eastern Ohio to the East Lake powerplant of the Cleveland Electric Illuminating Company became operable. Coal is being moved through the pipeline at and above the design capacity of 3,600 tons per day. Based upon the apparent success of this venture, plans have been announced by another company to construct a 30-mile coal pipeline from East Liverpool to Youngstown, Ohio. According to reports, the proposed pipeline will carry 33 million tons of coal annually.

The drying of fine coal to meet market specifications is one of the more costly coal-preparation procedures. To achieve the necessary reduction in moisture content, thermal drying is often necessary. The Bureau of Mines studies of radiant heat to dry filter cakes while under vacuum indicate that substantial reduction in moisture content can be achieved. Based upon experimental data obtained in the laboratory, this novel drying method may be considerably less costly than thermal drying alone.

A major problem in transporting lignite during the winter season in the North Central Plain States is the tendency of the fuel to freeze during transit. The use of partly dried lignite (15 percent by weight) mixed with the natural lignite was found to be an effective freezeproofing method.

To assist the coal industry in the coal export field, the Bureau of Mines in cooperation with the ASTM and the ISO classified American coals according to an international system for hard coal developed by the Coal Committee of the Economic Commission for Europe.

One of the major uses of coal in the past was in the railroad fuel market. During the past decade this formerly important solid fuel market has diminished to one of relative insignificance. In an attempt to reverse this trend, the possibility of using coal as fuel for diesel engines was being explored.

A major coal producer and a large petroleum company announced a joint study in the basic research field to explore methods of manufacturing hydrocarbon liquid fuels from coal. A number of years of research and development are anticipated before the results of the study have commercial application.

A leading industrial firm reported the availability of an instrumented prototype carbonizer for low-temperature carbonizing of coal. The economic disposal of the liquid and gaseous byproducts still must be solved before the process is commercially successful.

The conversion of coal into liquid and gaseous fuels on a commercial basis would require tremendous quantities of coal. The time when conversion processes become economically feasible depends primarily upon technological achievements. Economic studies were made of a number of processes to measure technological progress over the past few years. These studies revealed that as a result of advancement in technology, the cost of Fischer-Tropsch gasoline has been reduced greatly from its prewar level but is still much more expensive than the natural product.

An annual report is published covering the coal research activities of the Bureau of Mines.

Coal—Pennsylvania Anthracite

By J. A. Corgan, J. A. Vaughan, and Marian I. Cooke

Contents

GENERAL SUMMARY

PRODUCTION of Pennsylvania anthracite dropped to 21.2 million tons in 1958, a decline of 16 percent. On the basis of f.o.b. mine value, producers received $187.9 million for the year's output—a decrease of 18 percent—as the average realization fell from $8.99 per ton in 1957 to $8.88. The factors most responsible for the decline in production were a 2-million-ton drop in exports to Canada and overseas, depressed business conditions, and continued losses to competitive fuels in the space-heating field.

The average number of men working daily and the number of days mines were active declined in 1958 as a result of decreased production. The average labor force dropped 14 percent (from 30,825 men in 1957 to 26,540 in 1958), and the number of active days decreased from 196 to 183. By continuing to concentrate production at the most efficient operations, the industry again established a record productivity rate of 4.36 tons per man-day, compared with 4.18 tons in 1957 and the old record of 4.25 tons set in 1956. The wage rates in effect at the end of 1957 remained unchanged; however, according to the Bureau of Labor Statistics, U.S. Department of Labor, average weekly earnings declined 7 percent (from $81.79 in 1957 to $76.01 in 1958) as the result of less working time.

In accordance with provisions of the contract of December 1, 1956, the United Mine Workers of America gave the operators 60-day written notice that the contract would be terminated December 31. Negotiations on a new contract were begun early in December, but no settlement had been reached by the end of the year.

For the past few years, demand for the smaller sizes of anthracite has been relatively stronger than for the larger coals; however, decreased requirements by American industries and the sharp decline in shipments of "anthrafines" to Western Europe halted this trend in 1958. For example, production of the sizes most commonly used for domestic space heating (Buckwheat No. 1 and larger) declined 13 percent, whereas output of Buckwheat No. 2 (Rice) and smaller fell 21 percent. On the other hand, production of the finest industrial sizes (Buckwheat No. 4 and smaller) fell substantially (26 percent) below the 1957 level. This development was reflected in the output of coal from the various sources. Production from culm and silt banks, which usually contain no coal larger than Buckwheat No. 1, declined 36 percent, while output from underground mines and strip pits fell only 15 and 9 percent respectively. The proportion of the total produced at banks fell from 18 percent of total production in 1957 to 14 percent in 1958. The proportion produced at underground mines increased from 50 to 51 percent, at strip mines from 30 to 32 percent, and dredging from 2 to 3 percent.

In the United States, all major markets showed losses of various degrees; however, total apparent consumption fell only 9 percent (from 20.8 million tons to 19.0 million) owing primarily to the colder weather. Public utilities reduced consumption approximately 600,000 tons (17 percent) and curtailed purchases by reducing stockpiles almost 600,000 tons. As a result of decreased demand for coke in the iron and steel industry, the amount of anthracite used as an admixture with bituminous coal in cokemaking fell 35 percent, from 389,000 tons in 1957 to 255,000 tons in 1958. The downward trend in fuel-briquet output continued in 1958; consequently, the quantity of anthracite used in manufacturing this fuel fell to 120,000 tons, 23 percent less than in 1957. According to the American Iron and Steel Institute, anthracite used in pelletizing and sintering iron ore declined from 868,000 tons in 1957 to 685,000 tons in 1958. Railroads and cement mills also reported less consumption of anthracite than in 1957.

Although competitive fuels continued to make inroads into anthracite markets in 1958, apparently the space-heating demand for this fuel did not decline as much as total production because of greater demand for heat. According to degree-day data compiled by the Anthracite Institute, the weather in 1958 in the anthracite-burning area averaged 5 percent colder than normal (average 1921–50) and 11 percent colder than in 1957.

The overall injury experience in the anthracite industry showed marked improvement in 1958, as the frequency rate for all injuries (fatal and nonfatal) declined from 66.08 per million man-hours of work in 1957 to 60.78 in 1958. Fatalities decreased from 51 in 1957 to 32 in 1958 and the number of nonfatal injuries from 2,877 to 2,124. Details on injuries in the Pennsylvania anthracite industry are presented in the chapter, Employment and Injuries in the Fuel Industries, Minerals Yearbook.

Tables 1 and 2 present summarized annual and monthly data on developments in the anthracite industry, table 3 gives revised data on employee wages and hours, and table 4 shows statistical trends in the industry, 1890–1958.

TABLE 1.—Salient statistics of the Pennsylvania anthracite industry, 1954–58

	1954	1955	1956	1957	1958
Production:					
Loaded at mines for shipment outside producing region:					
Breakers and washeries..net tons..	24, 021, 867	21, 250, 344	23, 581, 689	20, 355, 414	15, 497, 828
Dredges................do....	654, 410	752, 580	688, 379	630, 237	631, 717
Sold to local trade and used by employees..............net tons..	3, 798, 919	3, 782, 366	4, 288, 532	4, 073, 406	[1] 4, 846, 646
Used at collieries for power and heat..................net tons..	608, 281	419, 264	341, 620	279, 264	194, 951
Total production......do....	29, 083, 477	26, 204, 554	28, 900, 220	25, 338, 321	21, 171, 142
Value at breaker, washery, or dredge..	$247, 870, 023	$206, 096, 662	$236, 785, 062	$227, 753, 802	$187, 898, 316
Average sales realization per net ton on breaker and washery shipments to points outside producing region:					
Pea and larger..................	$11, 67	$10. 83	$11. 50	$12. 50	$11. 76
Buckwheat No. 1 and smaller.....	$5. 83	$5. 05	$5. 31	$6. 38	$6. 94
Total all sizes...............	$8. 76	$8. 00	$8. 33	$9. 11	$9. 31
Percentage of total breaker and washery shipments to points outside producing region:					
Pea and larger..................	50. 1	51. 0	48. 8	44. 6	49. 1
Buckwheat No. 1 and smaller.....	49. 9	49. 0	51. 2	55. 4	50. 9
Producers' stocks at end of year [2] net tons..	1, 292, 922	719, 569	341, 505	499, 620	406, 375
Exports [3]......................do....	2, 851, 239	3, 152, 313	5, 244, 349	4, 331, 785	2, 279, 859
Imports [3]......................do....	5, 831	170	46	1, 138	4, 363
Consumption (apparent)........do....	26, 900, 000	23, 600, 000	24, 000, 000	20, 800, 000	19, 000, 000
Average number of days worked.......	164	[4] 197	216	196	183
Average number of men working daily.	43, 996	[4] 33, 523	31, 516	30, 825	26, 540
Output per man per day....net tons..	4. 02	[4] 3. 96	4. 25	4. 18	4. 36
Output per man per year.......do....	659	[4] 780	918	819	798
Quantity cut by machines......do....	381, 424	393, 932	400, 402	292, 307	184, 028
Quantity mined by stripping...do....	7, 939, 680	7, 703, 907	8, 354, 230	7, 543, 157	6, 877, 761
Quantity loaded by machines underground..................net tons..	6, 978, 035	6, 660, 939	7, 308, 110	6, 657, 479	5, 332, 043
Distribution:					
Total receipts in New England [5] do....	1, 897, 283	1, 718, 404	1, 619, 605	1, 264, 726	1, 012, 035
Exports to Canada [3]........do....	2, 456, 747	2, 434, 981	2, 356, 351	1, 778, 551	1, 522, 408
Loaded into vessels at Lake Erie [6] net tons..	283, 922	467, 886	588, 085	454, 121	260, 050
Receipts at Duluth-Superior [7] do....	94, 835	170, 754	311, 599	260, 931	93, 499

[1] An undetermined part included in local sales in 1958 was reported as shipped outside region in 1957.
[2] Anthracite Committee.
[3] U.S. Department of Commerce.
[4] Estimated.
[5] Commonwealth of Massachusetts, Division on the Necessaries of Life, and Association of American Railroads.
[6] Ore and Coal Exchange, Cleveland, Ohio.
[7] U.S. Engineer Office, Duluth, Minn.

SCOPE OF REPORT

The data in this chapter refer exclusively to the anthracite or "hard coal" that occurs in 10 counties of northeastern Pennsylvania. Geologically, the anthracite area is divided into four producing fields: The Northern, of which 176 square miles are underlain by coal measures; the Eastern Middle with 33 square miles; the Western Middle with 94 square miles; and the Southern with 181 square miles. The area is also divided by coal-trade usage into three regions: The Wyoming, Lehigh, and Schuylkill. The Wyoming region encompasses the entire Northern field, the Lehigh comprises the Eastern Middle field and that part of the Southern field lying east of Tamaqua. The Schuylkill includes all of the Western Middle and the remainder of the Southern field. Data on the anthracitic coals of Arkansas, Colo-

TABLE 2.—Statistical summary of monthly developments in the Pennsylvania anthracite industry in 1958

(All tonnage figures represent net tons)

	January	February	March	April	May	June	July	August	September	October	November	December	Year 1958	Change from 1957 (percent)	Year 1957
Production (including mine fuel, local sales, and dredge coal)	2,161,000	1,753,000	1,476,000	1,545,000	1,612,000	1,963,000	1,377,000	1,750,000	2,050,000	1,966,000	1,559,000	1,959,000	21,171,000	−16.4	25,338,000
Shipments (breakers and washeries only, all sizes):															
By rail [1]	1,258,922	1,077,059	790,362	808,539	976,920	1,164,729	849,984	1,124,253	1,268,673	1,277,020	1,027,959	1,332,173	12,956,593	−25.5	17,389,376
By truck [2]	921,645	931,330	604,910	963,217	665,113	686,953	467,091	589,508	719,071	742,490	637,660	1,120,271	9,049,259	+8.2	8,365,920
Carloadings [3]	25,011	20,513	17,262	17,450	18,624	24,320	17,340	22,279	26,935	26,021	20,571	26,349	262,675	−22.6	339,260
Distribution:															
Lake Erie loadings [4]				19,783	28,156	28,725	4,406	45,952	61,498	43,916	27,614		260,050	−42.7	454,121
Lake Ontario loadings [5]								2,352		5,033	2,623		10,008	+1,216.8	760
Receipts at Duluth-Superior [6]						11,333	4,406	15,675	44,506	17,579			93,499	−64.2	260,931
Upper Lake dock trade: [7]															
Receipts:															
Lake Superior			51	50	4	11,333	4,406	15,729	44,481	17,445	61		93,560	−18.4	114,622
Lake Michigan	1,522	2,866	2,783	18,833	6,968	4,634	2,311	4,800	4,473	9,544	1,628	2,726	63,088	−24.4	83,407
Deliveries (reloadings):															
Lake Superior	8,808	4,292	1,832	2,647	4,975	29,100	5,715	12,858	11,877	11,259	8,456	11,595	113,414	−5.8	120,397
Lake Michigan	8,816	8,418	3,917	2,252	4,678	7,104	7,603	4,863	4,665	6,810	4,839	6,839	70,804	−33.1	105,906
New England receipts:															
Tidewater [3]								3,279					3,279	+3.7	3,163
Rail [8]	74,021	62,000	65,452	47,708	74,806	114,569	86,467	93,029	97,756	109,270	77,518	106,160	1,008,756	−20.0	1,261,563
Exports [9]	225,193	210,621	129,603	116,990	189,750	232,037	138,626	158,369	235,256	252,489	198,440	192,485	2,279,859	−47.4	4,331,785
Imports [9]	354	163	903	70	409	404		269	686	488	555	62	4,363	+283.4	1,138
Industrial consumption and stocks:															
Railroads (Class 1 only): [3]															
Consumption	47,957	46,144	39,618	31,860	19,530	14,760	14,291	14,105	16,410	24,087	25,920	39,928	334,610	−7.3	361,111
Stocks	33,357	26,359	21,500	17,723	19,054	28,989	27,829	32,292	36,091	37,494	36,092	40,349	40,349	+23.8	32,604
Electric utilities: [10]															
Consumption	242,191	220,048	210,636	215,263	228,858	218,544	222,118	232,546	248,282	254,444	232,999	255,602	2,781,531	−17.3	3,363,172
Stocks	2,609,621	2,490,895	2,455,861	2,456,074	2,447,848	2,455,734	2,428,730	2,408,149	2,381,440	2,377,399	2,345,821	2,236,265	2,236,265	−20.1	2,798,145
Used for cokemaking:															
Consumption	29,000	25,700	24,700	20,700	18,900	15,000	15,100	17,300	19,200	22,000	21,900	25,300	254,800	−34.6	389,334
Stocks	118,859	101,751	89,855	82,121	81,514	82,716	73,007	91,358	97,399	112,265	113,980	103,599	103,599	−25.0	138,085
Stocks on Upper Lake docks: [7]															
Lake Superior	67,591	65,538	63,753	60,988	56,012	38,245	35,939	38,800	71,244	77,425	62,029	57,432	57,432	−22.5	74,088
Lake Michigan	27,546	21,994	20,828	37,396	39,686	37,216	31,924	31,861	31,669	34,403	31,191	27,078	27,078	−22.3	34,841

Producers' stocks [11]	420,047	290,597	275,422	282,933	341,115	366,237	394,969	445,684	500,686	526,569	580,297	406,375	406,375	−18.7	499,620
Stocks in retail dealer yards [12]	1,072,000	799,000	692,000	762,000	824,000	1,067,000	1,147,000	1,310,000	1,381,000	1,392,000	1,384,000	1,240,000	1,240,000	−4.7	1,301,000
Retail dealer deliveries [13]	1,218,000	1,292,000	896,000	532,000	515,000	557,000	545,000	585,000	676,000	795,000	621,000	1,154,000	9,386,000	−12.0	10,670,000
Wholesale price indexes (1947–49=100): [14]															
F.o.b. mines:															
Chestnut	136.2	136.2	136.2	116.6	116.6	116.6	120.1	120.1	122.5	125.9	126.5	126.5	125.0	−3.0	128.8
Pea	128.3	128.3	128.3	115.1	115.1	115.1	117.4	117.4	118.5	123.0	123.5	123.5	121.1	+1.3	119.6
Buckwheat No. 1	169.5	169.5	169.5	151.7	151.7	151.7	155.0	155.0	156.6	162.3	163.0	163.0	159.9	+1.7	157.3
Buckwheat No. 3	180.5	180.5	180.5	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.2	+5.8	171.3
Employee wages and hours: [15]															
Average weekly earnings	$81.74	$73.70	$66.25	$58.65	$67.60	$80.96	$79.77	$74.59	$80.08	$77.52	$78.04	$93.19	$76.01	−7.1	$81.79
Average hourly earnings	$2.68	$2.68	$2.65	$2.63	$2.62	$2.62	$2.59	$2.59	$2.60	$2.61	$2.61	$2.64	$2.63		$2.63
Average number of hours worked per week	30.5	27.5	25.0	22.3	25.8	30.9	30.8	28.8	30.8	29.7	29.9	35.3	28.9	−7.1	31.1

1 Furnished by Anthracite Institute.
2 Pennsylvania Department of Mines.
3 Association of American Railroads.
4 Ore and Coal Exchange, Cleveland, Ohio.
5 Buffalo Branch, Ore and Coal Exchange, Cleveland, Ohio.
6 U.S. Engineer Office, Duluth, Minn.
7 Includes all commercial docks on Lake Superior and west shore of Lake Michigan as far south as Kenosha. Based on data courteously supplied by Maher Coal Bureau and direct reports to the Bureau of Mines.
8 Furnished by Commonwealth of Massachusetts, Division on the Necessaries of Life.
9 U.S. Department of Commerce.
10 Federal Power Commission.
11 Anthracite Committee. Represents coal in ground storage on nearest available date to end of month.
12 Estimated from reports submitted by a selected list of retail dealers.
13 Estimated from reports submitted by a selected list of retail dealers. Does not include local sales.
14 Bureau of Labor Statistics. Based on data obtained from authorized trade publications.
15 Bureau of Labor Statistics. See table 3 for revisions for 1951–56.

TABLE 3.—Revision of employee wages and hours in the Pennsylvania anthracite industry, 1951–56 [1]

Averages	January	February	March	April	May	June	July	August	September	October	November	December	Total
1951:													
Weekly earnings	$71.44	$66.74	$50.59	$47.30	$66.82	$68.82	$79.43	$58.65	$60.38	$78.27	$81.70	$69.98	$66.66
Hourly earnings	$1.99	$2.21	$2.19	$2.19	$2.22	$2.22	$2.25	$2.23	$2.22	$2.23	$2.22	$2.25	$2.20
Hours worked per week	35.9	30.2	23.1	21.6	30.1	31.0	35.3	26.3	27.2	35.1	36.8	31.1	30.3
1952:													
Weekly earnings	$73.68	$68.91	$67.12	$62.66	$74.59	$66.82	$59.27	$65.70	$76.73	$71.58	$80.91	$85.56	$71.19
Hourly earnings	$2.26	$2.23	$2.23	$2.23	$2.24	$2.22	$2.22	$2.25	$2.25	$2.23	$2.26	$2.48	$2.26
Hours worked per week	32.6	30.9	30.1	28.1	33.3	30.1	26.7	29.2	34.1	32.1	35.8	34.5	31.5
1953:													
Weekly earnings	$70.75	$75.05	$63.49	$60.02	$74.29	$82.32	$79.77	$61.48	$67.59	$72.47	$62.95	$63.16	$69.34
Hourly earnings	$2.50	$2.51	$2.48	$2.46	$2.46	$2.45	$2.41	$2.43	$2.44	$2.44	$2.44	$2.42	$2.45
Hours worked per week	28.3	29.9	25.6	24.4	30.2	33.6	33.1	25.3	27.7	29.7	25.8	26.1	28.3
1954:													
Weekly earnings	$72.22	$72.03	$62.19	$63.62	$67.24	$88.70	$77.11	$77.44	$63.28	$81.63	$81.53	$84.61	$73.68
Hourly earnings	$2.44	$2.45	$2.42	$2.41	$2.41	$2.43	$2.38	$2.39	$2.37	$2.38	$2.37	$2.37	$2.40
Hours worked per week	29.6	29.4	25.7	26.4	27.9	36.5	32.4	32.4	26.7	34.3	34.4	35.7	30.7
1955:													
Weekly earnings	$76.61	$87.84	$74.58	$66.92	$72.52	$82.49	$82.48	$79.33	$79.45	$87.35	$76.19	$80.37	$78.73
Hourly earnings	$2.35	$2.40	$2.36	$2.34	$2.37	$2.35	$2.33	$2.34	$2.33	$2.38	$2.33	$2.35	$2.35
Hours worked per week	32.6	36.6	31.6	28.6	30.6	35.1	35.4	33.9	34.1	36.7	32.7	34.2	33.5
1956:													
Weekly earnings	$82.32	$75.60	$65.84	$73.63	$69.02	$76.85	$83.07	$75.11	$82.32	$84.72	$83.15	$94.87	$78.96
Hourly earnings	$2.40	$2.37	$2.36	$2.33	$2.38	$2.35	$2.36	$2.34	$2.40	$2.40	$2.41	$2.65	$2.40
Hours worked per week	34.3	31.9	27.9	31.6	29.0	32.7	35.2	32.1	34.3	35.3	34.5	35.8	32.9

[1] U.S. Department of Labor, Bureau of Labor Statistics.

rado, New Mexico, Virginia, and Washington are included in the Bituminous Coal and Lignite chapter of the Minerals Yearbook.

As only a small part of the total annual production of Pennsylvania anthracite is consumed without preparation, virtually all of the Bureau's statistics represent cleaned and sized output of preparation plants and river dredges, expressed in short or net tons of 2,000 pounds. Although the principal questionnaire used by the Bureau is the one mailed to preparation plants, related schedules are sent to operators of underground mines, strip pits, and culm or silt banks for data on run-of-mine production, names of preparation plants at which raw coal is prepared for market, number and type of mechanical equipment used, and other phases of the mining operation. On the basis of the data filed by these producers of raw coal, the Bureau can assign tonnages to the county, field, and region of origin and, by cross-checking each report with that of the applicable preparation plant, eliminate duplicate reporting and insure complete coverage on the output of cleaned and sized coal. The data thus obtained account for virtually all production. The small percentage (seldom exceeding 2 percent) for which no reports are received is estimated by the Bureau from data released by the Pennsylvania Department of Mines and Mineral Industries and collateral sources.

In reporting production, each preparation plant is requested to include all tonnages produced and shipped into, but not out of, storage yards; therefore, the shipment data represent all production except coal used as colliery fuel. The originating railroads report carloading data to the Association of American Railroads in a similar manner. Upon release by the association, these data are used by the Bureau of Mines in preparing weekly and monthly estimates of production.

For 1954 and prior years data on employment in the Pennsylvania anthracite industry were collected in connection with the canvass of production. However, beginning with 1956, employment statistics have been compiled from the Bureau of Mines questionnaire, Mine Injuries and Employment—Pennsylvania Anthracite, to reduce the reporting burden of respondents. As identical mailing lists are used for both canvasses, overall coverage has not been affected. Moreover, Bureau employment data, as in the past, include only production, development, maintenance, repair, supervisory and technical personnel, and those owners or firm members who are actually producing coal. Excluded are sales personnel, clerical and office staffs, and employees of affiliated companies not producing anthracite.

The methods used in collecting and compiling data on the distribution and marketing of anthracite differ widely from those used to obtain production data. The distribution canvass is described in the Distribution section of this chapter.

ACKNOWLEDGMENTS

As the Bureau's mail canvass of the anthracite industry is limited to statistics on production, value, mining equipment, injuries, employment, distribution, and retail-dealer stocks and deliveries, it is necessary to assemble data on other aspects of the industry from numerous

TABLE 4.—Statistical trends in the Pennsylvania anthracite industry, 1890–1958

	Production (net tons)	Value of production	Average value per net ton	Exports [1] (net tons)	Imports [1] (net tons)	Apparent consumption [2] (net tons)	Average number of employees	Average number of days worked	Average tons per man per day	Average tons per man per year	Quantity cut by machines [3] (net tons)	Quantity produced by stripping [4] (net tons)	Quantity loaded mechanically underground [5] (net tons)
1890	46,468,641	$66,383,772	$1.43	889,655	16,962	45,596,000	126,000	200	1.85	369			
1891	50,665,431	73,944,735	1.46	964,601	42,120	49,743,000	126,350	203	1.98	401			
1892	52,472,504	82,442,000	1.57	953,836	72,865	51,592,000	129,050	198	2.06	407			
1893	53,967,543	85,687,078	1.59	1,493,281	60,220	52,534,000	132,944	197	2.06	406			
1894	51,921,121	78,488,063	1.51	1,613,500	100,876	50,408,000	131,603	190	2.08	395			
1895	57,999,337	82,019,272	1.41	1,647,195	158,297	56,510,000	142,917	196	2.07	406			
1896	54,346,081	81,748,651	1.50	1,512,000	113,892	52,948,000	148,991	174	2.10	365			
1897	52,611,681	79,301,954	1.51	1,454,620	27,478	51,185,000	149,884	150	2.34	351			
1898	53,382,645	75,414,537	1.41	1,513,062	3,527	51,873,000	145,504	152	2.41	367			
1899	60,418,005	88,142,130	1.46	1,912,732	68	58,505,000	139,608	173	2.50	433			
1900	57,367,915	85,757,851	1.49	1,853,163	132	55,515,000	144,206	166	2.40	398			
1901	67,471,667	112,504,020	1.67	2,232,504	320	65,239,000	145,309	196	2.37	464			
1902	41,373,595	76,173,586	1.84	1,016,934	190,636	40,547,000	148,141	116	2.40	279			
1903	74,607,068	152,036,448	2.04	2,249,920	196,837	72,554,000	150,483	206	2.41	496			
1904	73,156,709	138,974,020	1.90	2,495,799	81,232	70,742,000	155,861	200	2.35	469			
1905	77,659,850	141,879,000	1.83	2,497,581	38,350	75,201,000	165,406	215	2.18	470			
1906	71,282,411	131,917,694	1.85	2,483,005	36,236	68,836,000	162,355	195	2.25	439			
1907	85,604,312	163,584,056	1.91	3,021,841	11,085	82,594,000	167,234	220	2.33	512			
1908	83,268,754	158,178,849	1.90	3,082,641	18,462	80,205,000	174,174	200	2.39	478			
1909	81,070,359	149,181,587	1.84	3,183,840	3,574	77,890,000	[6] 171,195	205	[7] 2.31	[7] 474			
1910	84,485,236	160,275,302	1.90	3,384,222	9,180	81,110,000	169,497	229	2.17	498			
1911	90,464,067	175,189,392	1.94	3,980,479	2,759	86,486,000	172,585	246	2.13	524	69,907		
1912	84,361,598	177,622,626	2.11	4,131,444	1,870	80,232,000	174,030	231	2.10	485	246,216		
1913	91,524,922	195,181,127	2.13	4,652,912	1,004	85,474,000	175,745	257	2.02	520	555,776		
1914	90,821,507	188,181,399	2.07	4,289,873	17,696	84,041,000	179,679	245	2.06	505	916,596		
1915	88,995,061	184,653,498	2.07	3,965,255	814	88,144,000	176,552	230	2.19	504	1,307,756	1,121,603	
1916	87,578,493	202,009,561	2.31	4,665,530	6,000	87,118,000	159,869	253	2.16	548	1,839,506	1,987,800	
1917	99,611,811	283,650,723	2.85	6,007,306	13,000	94,068,000	154,174	285	2.27	646	1,955,223	2,301,588	
1918	98,826,084	336,480,347	3.40	4,967,808	37,272	92,775,000	147,121	293	2.29	672	1,857,514	2,360,183	
1919	88,092,201	364,926,950	4.14	4,976,598	82,818	81,518,000	154,571	266	2.14	570	1,575,205	2,006,879	
1920	89,598,249	434,252,198	4.85	5,403,749	31,748	85,786,000	145,074	271	2.28	618	938,073	2,054,441	
1921	90,473,451	452,304,903	5.00	4,677,368	8,894	81,950,000	159,499	271	2.09	567	979,145	2,027,790	
1922	54,683,022	273,700,125	5.01	2,649,457	233,528	56,799,000	156,849	151	2.31	349	502,793	949,745	
1923	93,339,009	506,786,768	5.43	5,090,138	300,360	86,914,000	157,743	268	2.21	592	1,208,542	2,263,098	
1924	87,926,862	477,230,852	5.43	4,017,785	117,951	80,717,000	160,009	274	2.00	550	1,423,884	1,865,677	
1925	61,817,149	327,664,512	5.30	3,179,006	382,894	64,061,000	160,312	182	2.12	386	941,189	1,578,478	
1926	84,437,452	474,164,252	5.62	4,029,683	813,956	77,221,000	165,386	244	2.09	511	931,650	2,401,356	
1927	80,095,564	420,941,726	5.26	3,325,507	119,030	74,672,000	165,259	225	2.15	485	1,171,888	2,153,156	[6] 2,223,281
1928	75,348,069	393,637,690	5.22	3,336,272	384,707	73,650,000	160,681	217	2.17	469	1,289,809	2,422,924	[6] 2,351,074

1929	73, 828, 195	385, 642, 751	5. 22	3, 406, 369	487, 172	71, 457, 000	151, 501	225	2. 16	487	1, 159, 910	1, 911, 766	3, 470, 158
1930	69, 384, 837	354, 574, 191	5. 11	2, 551, 659	674, 812	67, 628, 000	150, 804	208	2. 21	460	1, 410, 123	2, 536, 288	4, 467, 750
1931	59, 645, 652	296, 354, 586	4. 97	1, 778, 308	637, 951	58, 408, 000	139, 431	181	2. 37	428	1, 587, 265	3, 813, 237	4, 384, 780
1932	49, 855, 221	222, 375, 129	4. 46	1, 303, 355	607, 097	50, 500, 000	121, 243	162	2. 54	411	1, 674, 223	3, 980, 973	5, 433, 340
1933	49, 541, 344	206, 718, 405	4. 17	1, 034, 562	456, 252	49, 600, 000	104, 633	182	2. 60	473	1, 648, 249	4, 932, 069	6, 557, 267
1934	57, 168, 291	244, 152, 245	4. 27	1, 297, 610	478, 118	55, 500, 000	109, 050	207	2. 53	524	1, 981, 088	5, 798, 138	9, 284, 486
1935	52, 158, 783	210, 130, 565	4. 03	1, 608, 549	571, 439	51, 100, 000	103, 269	189	2. 68	505	1, 848, 095	5, 187, 072	9, 279, 057
1936	54, 579, 535	227, 003, 538	4. 16	1, 678, 024	614, 639	53, 200, 000	102, 081	192	2. 79	535	2, 162, 744	6, 203, 267	10, 827, 946
1937	51, 856, 433	197, 598, 849	3. 81	1, 914, 173	395, 737	50, 400, 000	99, 085	189	2. 77	523	1, 984, 512	5, 696, 018	10, 683, 837
1938	46, 099, 027	180, 600, 167	3. 92	1, 908, 911	362, 895	45, 200, 000	96, 417	171	2. 79	478	1, 588, 407	5, 095, 341	10, 151, 669
1939	51, 487, 377	187, 175, 324	3. 64	2, 590, 000	298, 153	49, 700, 000	93, 138	183	3. 02	553	1, 881, 884	5, 486, 479	11, 773, 833
1940	51, 484, 640	205, 489, 814	3. 99	2, 667, 632	135, 436	49, 000, 000	91, 313	186	3. 02	562	1, 816, 483	6, 352, 700	12, 326, 000
1941	[8] 56, 368, 267	240, 275, 126	4. 26	3, 380, 189	74, 669	52, 700, 000	88, 054	203	[9] 3. 04	617	1, 855, 422	7, 316, 574	13, 441, 987
1942	[8] 60, 327, 729	271, 673, 380	4. 50	4, 438, 588	140, 115	56, 500, 000	82, 121	239	[9] 2. 95	705	2, 285, 640	9, 070, 933	14, 741, 459
1943	[8] 60, 643, 620	306, 816, 018	5. 06	4, 138, 680	166, 020	57, 100, 000	79, 153	270	[9] 2. 78	751	1, 624, 883	8, 989, 387	14, 745, 793
1944	[8] 63, 701, 363	354, 582, 884	5. 57	4, 185, 933	11, 847	59, 400, 000	77, 591	292	[9] 2. 79	815	1, 336, 082	10, 953, 030	14, 975, 146
1945	[8] 54, 933, 909	323, 944, 435	5. 90	3, 691, 247	149	51, 600, 000	72, 842	269	[9] 2. 79	751	1, 210, 171	10, 056, 325	13, 927, 955
1946	[8] 60, 506, 873	413, 417, 070	6. 83	6, 497, 245	9, 556	53, 900, 000	78, 145	271	[9] 2. 84	770	1, 232, 828	12, 858, 930	15, 619, 162
1947	[8] 57, 190, 009	413, 019, 486	7. 22	8, 509, 995	10, 350	48, 200, 000	78, 600	259	[9] 2. 78	720	1, 209, 983	12, 603, 545	16, 054, 011
1948	[8] 57, 139, 948	467, 051, 800	8. 17	6, 675, 914	945	50, 200, 000	76, 215	265	[9] 2. 81	745	1, 016, 757	13, 352, 874	15, 742, 368
1949	[8] 42, 701, 724	358, 008, 451	8. 38	4, 942, 670		37, 700, 000	75, 377	195	[9] 2. 87	560	557, 599	10, 376, 808	11, 858, 088
1950	[8] 44, 076, 703	392, 398, 006	8. 90	3, 891, 569	18, 289	39, 900, 000	72, 624	211	[9] 2. 83	597	611, 734	11, 833, 934	12, 335, 650
1951 [10]	42, 669, 997	405, 817, 963	9. 51	5, 955, 535	26, 812	37, 000, 000	68, 995	208	2. 97	618	496, 085	11, 135, 990	10, 847, 787
1952	40, 582, 558	379, 714, 076	9. 36	4, 592, 060	29, 370	35, 300, 000	65, 923	201	3. 06	615	386, 128	10, 696, 705	10, 034, 464
1953	30, 949, 152	299, 139, 687	9. 67	2, 724, 270	31, 443	28, 000, 000	57, 862	163	3. 28	535	318, 699	8, 606, 482	6, 838, 769
1954	29, 083, 477	247, 870, 023	8. 52	2, 851, 239	5, 831	26, 900, 000	43, 996	164	4. 02	659	381, 424	7, 939, 680	6, 978, 035
1955	26, 204, 554	206, 096, 662	7. 86	3, 152, 313	170	23, 600, 000	[11] 33, 523	[11] 197	[11] 3. 96	[11] 780	393, 932	7, 703, 907	6, 660, 939
1956	28, 900, 220	236, 785, 062	8. 19	5, 244, 349	46	24, 000, 000	31, 516	216	4. 25	918	400, 402	8, 354, 230	7, 308, 110
1957	25, 338, 321	227, 753, 802	8. 99	4, 331, 785	1, 138	20, 800, 000	30, 825	196	4. 18	819	292, 307	7, 543, 157	6, 657, 479
1958	21, 171, 142	187, 898, 316	8. 88	2, 279, 859	4, 363	19, 000, 000	26, 540	183	4. 36	798	184, 028	6, 877, 761	5, 332, 043

[1] U.S. Department of Commerce.
[2] Before 1913 the figures of consumption take no account of producer's stocks, there being no data available for this item.
[3] Data first collected in 1911.
[4] Data first collected in 1915.
[5] Data first collected in 1929.
[6] As reported by the Commonwealth of Pennsylvania, Department of Mines.
[7] Calculated on basis of Pennsylvania Department of Mines employment data.
[8] Includes some "bootleg" coal purchased by authorized operators and prepared at their breakers.
[9] Output per man calculated on authorized tonnages only; bootleg purchases excluded.
[10] Figures for 1951 and subsequent years are not strictly comparable with previous years. See Production and Employment sections, Coal—Pennsylvania Anthracite, Minerals Yearbook, 1951.
[11] Estimated.

sources. Although credit has been given by textual and footnote references, the Bureau is particularly grateful for the continued cooperation of the Pennsylvania Department of Mines and Mineral Industries, the Anthracite Committee, the Anthracite Institute, the Association of American Railroads, the Commonwealth of Massachusetts, the Ore and Coal Exchange, and the Maher Coal Bureau. To the hundreds of producing companies that voluntarily submit detailed annual reports on their operations, the Bureau also extends its sincere thanks.

The production and employment data for 1958 were collected and tabulated by Ruth A. Cooper, Kathryn S. Huling, and Elizabeth M. Battease, under the supervision of C. S. Kuebler, director, Anthracite Experiment Station, Schuylkill Haven, Pa.

PRODUCTION, MINING METHODS, AND EQUIPMENT [1]

Production of Pennsylvania anthracite dropped to 21.2 million tons in 1958, 16 percent less than in 1957. Although continued strong competition from other fuels contributed materially to the decline in American sales, a major part of the loss was due to a sharp break in the demand for the smaller industrial sizes and a 2-million-ton decline in exports to Canada and overseas. Reasons for the slump in exports are discussed in the Foreign Trade section of this chapter.

For several years, demand for the smaller sizes of anthracite has been relatively stronger than for the larger sizes; however, this trend was reversed sharply in 1958 when output of the smaller sizes declined proportionately more than that of the larger coals. Many users of the finer industrial sizes (Buckwheat No. 4 and smaller) not only reduced their consumption of anthracite in 1958 because of depressed business conditions but curtailed purchases by substantially reducing their inventories.

Data on production by fields, regions, and counties are shown in tables 5 to 10. Shipments of anthracite, by sizes and percentage of total, are shown in tables 11 to 13. Figure 1 shows shipments by regions, 1935–58.

The relative proportion of the year's total contributed by each region changed little from 1957. The Lehigh region accounted for 17 percent of total production in both years, the Wyoming for 37 percent in 1957 and 36 percent in 1958, and the Schuylkill for 46 percent in 1957 and 47 percent in 1958. However, production in the Lehigh region decreased 22 percent from 1957, in the Wyoming 17 percent, and in the Schuylkill 13 percent. For the first time in several years output was reported in both Susquehanna and Wayne Counties, where a small amount was recovered by stripping and from culm banks. Each of the major producing counties recorded decreases, ranging from 3 percent in Columbia County to 81 percent in Carbon. The sharp drop in Carbon County was caused by the cessation of mining operations at some large underground mines in the Coaldale area.

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[1] A detailed description of the underground, strip, culm-bank, and dredging methods used in producing Pennsylvania anthracite is given in the Coal—Pennsylvania Anthracite chapter of Bureau of Mines Minerals Yearbook, 1953.

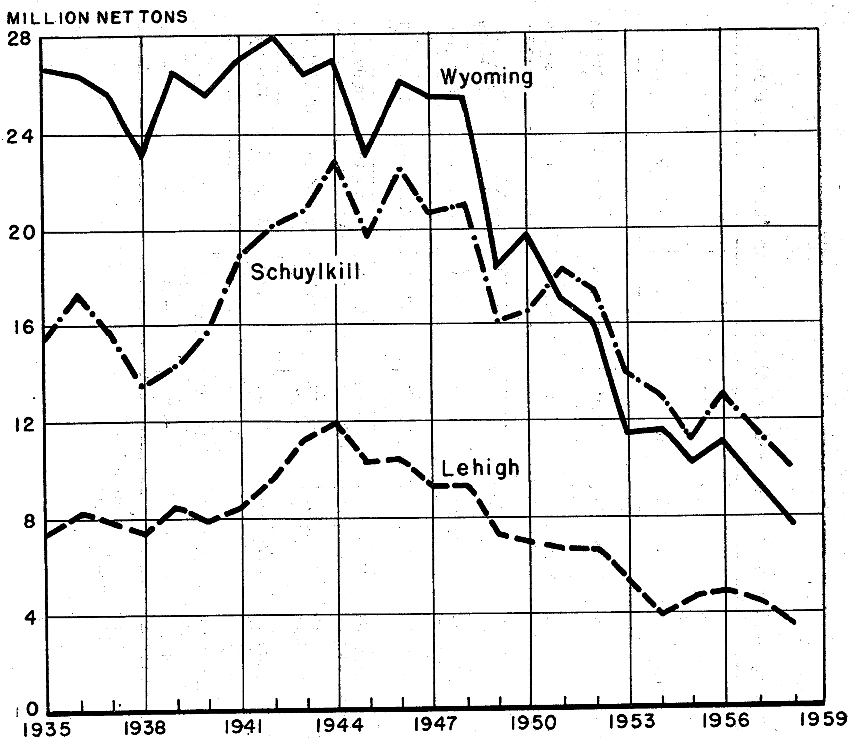

FIGURE 1.—Pennsylvania anthracite shipped from the Lehigh, Schuylkill, and Wyoming regions, 1935–58.

TABLE 5.—Pennsylvania anthracite produced, 1954–58, by fields, in net tons

Field	1954	1955	1956	1957	1958
Eastern Middle: Breakers and washeries	2,514,873	2,409,794	2,391,906	2,404,609	1,738,555
Western Middle:					
Breakers and washeries	7,911,794	6,527,929	7,268,150	6,930,428	5,982,747
Dredges	83,547	52,169	46,348	38,497	68,986
Total Western Middle	7,995,341	6,580,098	7,314,498	6,968,925	6,051,733
Southern:					
Breakers and washeries	5,952,615	5,958,776	7,425,427	6,061,879	5,086,583
Dredges	635,371	712,724	625,310	594,941	610,668
Total Southern	6,587,986	6,671,500	8,050,737	6,656,820	5,697,251
Northern:					
Breakers and washeries	11,961,914	10,509,309	11,091,748	9,278,845	7,657,301
Dredges	6,989	23,950	44,629	24,263	12,139
Total Northern	11,968,903	10,533,259	11,136,377	9,303,108	7,669,440
Total, excluding Sullivan County:					
Breakers and washeries	28,341,196	25,405,808	28,177,231	24,675,761	20,465,186
Dredges	725,907	788,843	716,287	657,701	691,793
Total, excluding Sullivan County	29,067,103	26,194,651	28,893,518	25,333,462	21,156,979
Sullivan County: [1] Breakers	16,374	9,903	6,702	4,859	14,163
Grand total	29,083,477	26,204,554	28,900,220	25,338,321	21,171,142

[1] For purposes of historical comparison and statistical convenience, the mines of Sullivan County are grouped with the Pennsylvania anthracite region, although the product is classified as semianthracite according to the American Society for Testing Materials Tentative Standard.

TABLE 6.—Pennsylvania anthracite shipped outside producing region, sold locally, and used as colliery fuel in 1958, by regions

Region	Shipments outside region		Local sales		Colliery fuel		Total	
	Net tons	Value [1]	Net tons	Value	Net tons	Value	Net tons	Value [1]
Lehigh:								
Breakers and washeries	2,843,228	$25,860,521	[2] 567,643	[2] $4,601,391	34,806	$260,502	3,445,677	$30,722,414
Dredges	30,763	116,832					30,763	116,832
Total Lehigh	2,873,991	25,977,353	[2] 567,643	[2] 4,601,391	34,806	260,502	3,476,440	30,839,246
Schuylkill:								
Breakers and washeries	7,098,609	62,084,703	[2] 2,230,121	[2] 16,512,582	33,478	248,150	9,362,208	78,845,435
Dredges	588,815	946,966	59,651	217,809	425	850	648,891	1,165,625
Total Schuylkill	7,687,424	63,031,669	[2] 2,289,772	[2] 16,730,391	33,903	249,000	10,011,099	80,011,060
Wyoming:								
Breakers and washeries	5,548,526	56,308,646	1,982,543	19,884,174	126,232	723,949	7,657,301	76,916,769
Dredges	12,139	42,486					12,139	42,486
Total Wyoming	5,560,665	56,351,132	1,982,543	19,884,174	126,232	723,949	7,669,440	76,959,255
Total, excluding Sullivan County:								
Breakers and washeries	15,490,363	144,253,870	[2] 4,780,307	[2] 40,998,147	194,516	1,232,601	20,465,186	186,484,618
Dredges	631,717	1,106,284	59,651	217,809	425	850	691,793	1,324,943
Total	16,122,080	145,360,154	[2] 4,839,958	[2] 41,215,956	194,941	1,233,451	21,156,979	187,809,561
Sullivan County: Breakers	7,465	51,581	6,688	37,074	10	100	14,163	88,755
Grand total:								
1958	16,129,545	145,411,735	[2] 4,846,646	[2] 41,253,030	194,951	1,233,551	21,171,142	187,898,316
1957	20,985,651	186,537,549	4,073,406	39,489,115	279,264	1,727,138	25,338,321	227,753,802
Change, percent	−23.1	−22.0	+19.0	+4.5	−30.2	−28.6	−16.4	−17.5

[1] Value given for shipments is value at which coal left possession of producing company; does not include margins of separately incorporated sales companies.

[2] An undetermined part included in "Local Sales" in 1958 was reported as shipped "Outside region" in 1957.

Underground Mines.—The 16-percent drop in overall production was accompanied by a decrease of 15 percent in output from underground mines. Although this decrease primarily reflected the industry's effort to gear underground output to demand, it apparently marked a continuation of attempts to curtail operations at, or close down, uneconomic deep mines. The practice of purchasing underground run-of-mine coal from small operators and lessees was expanded in 1958. The growth of small underground mines has been especially rapid in the Schuylkill region, where mining conditions are more favorable for operations of this type. Consequently, underground output in the Schuylkill region has declined less, proportionately, during the past few years than in other regions. In 1958, underground output fell only 8 percent in the Schuylkill region, whereas in the Lehigh and Wyoming regions it declined 13 and 21 percent, respectively. The Schuylkill output represented 40 percent of the 1958 underground total, compared with 36 percent in 1957. The Lehigh region contributed 11 percent of the coal produced underground in both 1957 and 1958. The Wyoming output continued to decline, accounting for 49 percent of total underground production compared with 53 percent in 1957.

TABLE 7.—Pennsylvania anthracite produced in 1958, classified as fresh-mined, culm-bank, and river coal, by regions, in net tons

Region	From mines			From culm banks	From river dredging	Total
	Underground		Strip pits			
	Mechanically loaded	Hand loaded				
Lehigh	272,866	901,237	1,665,833	605,741	30,763	3,476,440
Schuylkill	625,021	3,610,418	3,384,413	1,742,356	648,891	10,011,099
Wyoming	4,434,156	852,049	1,820,340	550,756	12,139	7,669,440
Total, excluding Sullivan County	5,332,043	5,363,704	6,870,586	2,898,853	691,793	21,156,979
Sullivan County		3,088	7,175	3,900		14,163
Total	5,332,043	5,366,792	6,877,761	2,902,753	691,793	21,171,142

TABLE 8.—Pennsylvania anthracite produced in 1958, classified as fresh-mined, culm-bank, and river coal, by fields, in net tons

Field	From mines			From culm banks	From river dredging	Total
	Underground		Strip pits			
	Mechanically loaded	Hand loaded				
Eastern Middle	196,502	67,731	942,458	531,864		1,738,555
Western Middle	282,325	2,284,357	2,370,827	1,045,238	68,986	6,051,733
Southern	419,060	2,159,567	1,736,961	770,995	610,668	5,697,251
Northern	4,434,156	852,049	1,820,340	550,756	12,139	7,669,440
Total, excluding Sullivan County	5,332,043	5,363,704	6,870,586	2,898,853	691,793	21,156,979
Sullivan County		3,088	7,175	3,900		14,163
Total	5,332,043	5,366,792	6,877,761	2,902,753	691,793	21,171,142

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TABLE 9.—Pennsylvania anthracite shipped in 1958, by regions and sizes

Size	From breakers and washeries								
	Lehigh region			Schuylkill region			Wyoming region		
	Outside region	Local sales	Total	Outside region	Local sales	Total	Outside region	Local sales	Total
NET TONS									
Lump [1] and Broken	824		824	15,425	629	16,054	5,463		5,463
Egg	34,383	1,673	36,056	54,919	1,166	56,085	63,931	1,250	65,181
Stove	393,634	13,156	406,790	1,071,926	189,122	1,261,048	1,297,871	49,505	1,347,376
Chestnut	496,960	56,315	553,275	1,239,973	348,192	1,588,165	1,444,661	238,005	1,682,666
Pea	299,255	95,824	395,079	656,251	272,766	929,017	536,630	596,711	1,133,341
Total Pea and larger	1,225,056	166,968	1,392,024	3,038,494	811,875	3,850,369	3,348,556	885,471	4,234,027
Buckwheat No. 1	351,579	61,916	413,495	945,493	260,058	1,205,551	722,827	399,690	1,122,517
Buckwheat No. 2 (Rice)	243,873	98,138	342,011	662,311	224,330	886,641	437,745	236,594	674,339
Buckwheat No. 3 (Barley)	311,897	31,351	343,248	1,072,825	209,956	1,282,781	590,302	188,408	778,710
Buckwheat No. 4	263,185	1,714	264,899	523,509	68,316	591,825	139,020	3,303	142,323
Buckwheat No. 5	348,549	9,308	357,857	623,123	48,109	671,232	50,910	50,093	101,003
Other [2]	99,089	[3] 198,248	297,337	232,854	[3] 607,477	840,331	259,166	218,984	478,150
Total Buckwheat No. 1 and smaller	1,618,172	[3] 400,675	2,018,847	4,060,115	[3] 1,418,246	5,478,361	2,199,970	1,097,072	3,297,042
Grand total	2,843,228	[3] 567,643	3,410,871	7,098,609	[3] 2,230,121	9,328,730	5,548,526	1,982,543	7,531,069
VALUE									
Lump [1] and Broken	$9,880		$9,880	$212,292	$8,361	$220,653	$67,735		$67,735
Egg	413,653	$19,692	433,345	664,670	14,390	679,060	759,089	$17,062	776,151
Stove	5,059,630	168,869	5,228,499	12,782,408	2,133,933	14,916,341	15,799,921	663,363	16,463,284
Chestnut	6,469,711	823,337	7,293,048	14,791,506	4,045,851	18,837,357	17,794,218	3,332,018	21,126,236
Pea	2,984,308	1,205,237	4,189,545	6,356,459	2,647,356	9,003,815	5,383,325	7,179,615	12,562,940
Total Pea and larger	14,937,182	2,217,135	17,154,317	34,807,335	8,849,891	43,657,226	39,804,288	11,192,058	50,996,346
Buckwheat No. 1	3,269,904	681,317	3,951,221	8,336,702	2,240,524	10,577,226	6,675,526	4,301,568	10,977,094
Buckwheat No. 2 (Rice)	2,180,969	1,018,289	3,199,258	5,613,181	1,839,986	7,453,167	3,798,489	2,263,616	6,062,105
Buckwheate No. 3 (Barley)	2,145,636	238,290	2,383,926	7,099,294	1,285,729	8,385,023	3,975,137	1,314,022	5,289,159
Buckwheat No. 4	1,319,101	8,746	1,327,847	2,537,777	276,465	2,814,242	699,261	15,295	714,556
Buckwheat No. 5	1,661,932	33,974	1,695,906	2,765,483	136,173	2,901,656	215,419	192,162	407,581

Other [2]	345,797	[3] 403,640	749,437	924,931	[3] 1,883,814	2,808,745	1,140,526	605,453	1,745,979
Total Buckwheat No. 1 and smaller	10,923,339	[3] 2,384,256	13,307,595	27,277,368	[3] 7,662,691	34,940,059	16,504,358	8,692,116	25,196,474
Grand total	25,860,521	[3] 4,601,391	30,461,912	62,084,703	[3] 16,512,582	78,597,285	56,308,646	19,884,174	76,192,820
AVERAGE VALUE PER TON									
Lump [1] and Broken	$11.99		$11.99	$13.76	$13.29	$13.74	$12.40		$12.40
Egg	12.03	$11.77	12.02	12.10	12.34	12.11	11.87	$13.65	11.91
Stove	12.85	12.84	12.85	11.92	11.28	11.83	12.17	13.40	12.22
Chestnut	13.02	14.62	13.18	11.93	11.62	11.86	12.32	14.00	12.56
Pea	9.97	12.58	10.60	9.69	9.71	9.69	10.03	12.03	11.08
Total Pea and larger	12.19	13.28	12.32	11.46	10.90	11.34	11.89	12.64	12.04
Buckwheat No. 1	9.30	11.00	9.56	8.82	8.62	8.77	9.24	10.76	9.78
Buckwheat No. 2 (Rice)	8.94	10.38	9.35	8.48	8.20	8.41	8.68	9.57	8.99
Buckwheat No. 3 (Barley)	6.88	7.60	6.95	6.62	6.12	6.54	6.73	6.97	6.79
Buckwheat No. 4	5.01	5.10	5.01	4.85	4.05	4.76	5.03	4.63	5.02
Buckwheat No. 5	4.77	3.65	4.74	4.44	2.83	4.32	4.23	3.84	4.04
Other [2]	3.49	[3] 2.04	2.52	3.97	[3] 3.10	3.34	4.40	2.76	3.65
Total Buckwheat No. 1 and smaller	6.75	[3] 5.95	6.59	6.72	[3] 5.40	6.38	7.50	7.92	7.64
Grand total	9.10	[3] 8.11	8.93	8.75	[3] 7.40	8.43	10.15	10.03	10.12

See footnotes at end of table.

TABLE 9.—Pennsylvania anthracite shipped in 1958, by regions and sizes—Continued

Size	From breakers and washeries—(Continued)								
	Sullivan County			Total					
				Excluding Sullivan County			Including Sullivan County		
	Outside region	Local sales	Total	Outside region	Local sales	Total	Outside region	Local sales	Total
NET TONS									
Lump [1] and Broken				21,712	629	22,341	21,712	629	22,341
Egg				153,233	4,089	157,322	153,233	4,089	157,322
Stove	490		490	2,763,431	251,783	3,015,214	2,763,921	251,783	3,015,704
Chestnut	587	996	1,583	3,181,594	642,512	3,824,106	3,182,181	643,508	3,825,689
Pea	708	850	1,558	1,492,136	965,301	2,457,437	1,492,844	966,151	2,458,995
Total Pea and larger	1,785	1,846	3,631	7,612,106	1,864,314	9,476,420	7,613,891	1,866,160	9,480,051
Buckwheat No. 1	454	942	1,396	2,019,899	721,664	2,741,563	2,020,353	722,606	2,742,959
Buckwheat No. 2 (Rice)	381		381	1,343,929	559,062	1,902,991	1,344,310	559,062	1,903,372
Buckwheat No. 3 (Barley)	361		361	1,975,024	429,715	2,404,739	1,975,385	429,715	2,405,100
Buckwheat No. 4				925,714	73,333	999,047	925,714	73,333	999,047
Buckwheat No. 5				1,022,582	107,510	1,130,092	1,022,582	107,510	1,130,092
Other [2]	4,484	3,900	8,384	591,109	[3] 1,024,709	1,615,818	595,593	[3] 1,028,609	1,624,202
Total Buckwheat No. 1 and smaller	5,680	4,842	10,522	7,878,257	[3] 2,915,993	10,794,250	7,883,937	[3] 2,920,835	10,804,772
Grand total	7,465	6,688	14,153	15,490,363	[3] 4,780,307	20,270,670	15,497,828	[3] 4,786,995	20,284,823
VALUE									
Lump [1] and Broken				$289,907	$8,361	$298,268	$289,907	$8,361	$298,268
Egg				1,837,412	51,144	1,888,556	1,837,412	51,144	1,888,556
Stove	$5,914		$5,914	33,641,959	2,966,165	36,608,124	33,647,873	2,966,165	36,614,038
Chestnut	7,128	$9,960	17,088	39,055,435	8,201,206	47,256,641	39,062,563	8,211,166	47,273,729
Pea	7,087	7,650	14,737	14,724,092	11,032,208	25,756,300	14,731,179	11,039,858	25,771,037
Total Pea and larger	20,129	17,610	37,739	89,548,805	22,259,084	111,807,889	89,568,934	22,276,694	111,845,628
Buckwheat No. 1	4,380	6,594	10,974	18,282,132	7,223,409	25,505,541	18,286,512	7,230,003	25,516,515
Buckwheat No. 2 (Rice)	3,399		3,399	11,592,639	5,121,891	16,714,530	11,596,038	5,121,891	16,717,929
Buckwheat No. 3 (Barley)	2,451		2,451	13,220,067	2,838,041	16,058,108	13,222,518	2,838,041	16,060,559
Buckwheat No. 4				4,556,139	300,506	4,856,645	4,556,139	300,506	4,856,645

Buckwheat No. 5				4,642,834	362,309	5,005,143	4,642,834	362,309	5,005,143
Other [2]	21,222	12,870	34,092	2,411,254	[3] 2,892,907	5,304,161	2,432,476	[3] 2,905,777	5,338,253
Total Buckwheat No. 1 and smaller	31,452	19,464	50,916	54,705,065	[3] 18,739,063	73,444,128	54,736,517	[3] 18,758,527	73,495,044
Grand total	51,581	37,074	88,655	144,253,870	[3] 40,998,147	185,252,017	144,305,451	[3] 41,035,221	185,340,672
AVERAGE VALUE PER TON									
Lump[1] and Broken				$13.35	$13.29	$13.35	$13.35	$13.29	$13.35
Egg				11.99	12.51	12.00	11.99	12.51	12.00
Stove	$12.07		$12.07	12.17	11.78	12.14	12.17	11.78	12.14
Chestnut	12.14	$10.00	10.79	12.28	12.76	12.36	12.28	12.76	12.36
Pea	10.01	9.00	9.46	9.87	11.43	10.48	9.87	11.43	10.48
Total Pea and larger	11.28	9.54	10.39	11.76	11.94	11.80	11.76	11.94	11.80
Buckwheat No. 1	9.65	7.00	7.86	9.05	10.01	9.30	9.05	10.01	9.30
Buckwheat No. 2 (Rice)	8.92		8.92	8.63	9.16	8.78	8.63	9.16	8.78
Buckwheat No. 3 (Barley)	6.79		6.79	6.69	6.60	6.68	6.69	6.60	6.68
Buckwheat No. 4				4.92	4.10	4.86	4.92	4.10	4.86
Buckwheat No. 5				4.54	3.37	4.43	4.54	3.37	4.43
Other [2]	4.73	3.30	4.07	4.08	[3] 2.82	3.28	4.08	[3] 2.82	3.29
Total Buckwheat No. 1 and smaller	5.54	4.02	4.84	6.94	[3] 6.43	6.80	6.94	[3] 6.42	6.80
Grand total	6.91	5.54	6.26	9.31	[3] 8.58	9.14	9.31	[3] 8.57	9.14

See footnotes at end of table.

TABLE 9.—Pennsylvania anthracite shipped in 1958, by regions and sizes—Con.

Size	From river dredging			Grand total		
	Outside region	Local sales	Total	Outside region	Local sales	Total
NET TONS						
Lump [1] and Broken				21,712	629	22,341
Egg				153,233	4,089	157,322
Stove				2,763,921	251,783	3,015,704
Chestnut				3,182,181	643,508	3,825,689
Pea	92	225	317	1,492,936	966,376	2,459,312
Total Pea and larger	92	225	317	7,613,983	1,866,385	9,480,368
Buckwheat No. 1		556	556	2,020,353	723,162	2,743,515
Buckwheat No. 2 (Rice)		300	300	1,344,310	559,362	1,903,672
Buckwheat No. 3 (Barley)	12,646	3,134	15,780	1,988,031	432,849	2,420,880
Buckwheat No. 4	46,041	3,853	49,894	971,755	77,186	1,048,941
Buckwheat No. 5	53,149	7,466	60,615	1,075,731	114,976	1,190,707
Other [2]	519,789	44,117	563,906	1,115,382	[3] 1,072,726	2,188,108
Total Buckwheat No. 1 and smaller	631,625	59,426	691,051	8,515,562	[3] 2,980,261	11,495,823
Grand total	631,717	59,651	691,368	16,129,545	[3] 4,846,646	20,976,191
VALUE						
Lump [1] and Broken				$289,907	$8,361	$298,268
Egg				1,837,412	51,144	1,888,556
Stove				33,647,873	2,966,165	36,614,038
Chestnut				39,062,563	8,211,166	47,273,729
Pea	$523	$1,225	$1,748	14,731,702	11,041,083	25,772,785
Total Pea and larger	523	1,225	1,748	89,569,457	22,277,919	111,847,376
Buckwheat No. 1		3,036	3,036	18,286,512	7,233,039	25,519,551
Buckwheat No. 2 (Rice)		1,500	1,500	11,596,038	5,123,391	16,719,429
Buckwheat No. 3 (Barley)	64,065	14,804	78,869	13,286,583	2,852,845	16,139,428
Buckwheat No. 4	161,139	18,023	179,162	4,717,278	318,529	5,035,807
Buckwheat No. 5	176,642	26,131	202,773	4,819,476	388,440	5,207,916
Other [2]	703,915	153,090	857,005	3,136,391	[3] 3,058,867	6,195,258
Total Buckwheat No. 1 and smaller	1,105,761	216,584	1,322,345	55,842,278	[3] 18,975,111	74,817,389
Grand total	1,106,284	217,809	1,324,093	145,411,735	[3] 41,253,030	186,664,765
AVERAGE VALUE PER TON						
Lump [1] and Broken				$13.35	$13.29	$13.35
Egg				11.99	12.46	12.00
Stove				12.17	11.78	12.14
Chestnut				12.28	12.76	12.36
Pea	$5.68	$5.44	$5.51	9.87	11.43	10.48
Total Pea and larger	5.68	5.44	5.51	11.76	11.94	11.80
Buckwheat No. 1		5.46	5.46	9.05	10.00	9.30
Buckwheat No. 2 (Rice)		5.00	5.00	8.63	9.16	8.78
Buckwheat No. 3 (Barley)	5.07	4.72	5.00	6.68	6.59	6.67
Buckwheat No. 4	3.50	4.68	3.59	4.85	4.13	4.80
Buckwheat No. 5	3.32	3.50	3.35	4.48	3.38	4.37
Other [2]	1.35	3.47	1.52	2.81	[3] 2.85	2.83
Total Buckwheat No. 1 and smaller	1.75	3.64	1.91	6.56	[3] 6.37	6.51
Grand total	1.75	3.65	1.92	9.02	[3] 8.51	8.90

[1] Quantity of Lump included is insignificant.
[2] Includes various mixtures of Buckwheat Nos. 2–5 and some fine coal of a relatively low value shipped direct from silt banks.
[3] An undetermined part of "Other" sizes included in "Local sales" in 1958 was reported as shipped "Outside region" in 1957.

TABLE 10.—Pennsylvania anthracite produced in 1958, by counties

County	Shipments outside producing regions		Sold to local trade		Colliery fuel		Total production	
	Net tons	Value [1]	Net tons	Value	Net tons	Value	Net tons	Value [1]
Carbon	117, 228	$1, 072, 072	54, 504	$447, 981	433	$3, 965	172, 165	$1, 524, 018
Columbia	712, 371	7, 081, 247	55, 839	567, 130	1, 833	11, 914	770, 043	7, 660, 291
Dauphin	92, 523	409, 818	48, 114	284, 209			140, 637	694, 027
Lackawanna	1, 493, 931	14, 059, 245	530, 568	5, 686, 797	48, 853	192, 017	2, 073, 352	19, 938, 059
Lancaster, Lebanon, Northampton, and Snyder [2]	558, 990	829, 721	27, 006	93, 115			585, 996	922, 836
Luzerne	4, 985, 558	50, 515, 181	1, 719, 631	16, 626, 334	106, 369	736, 997	6, 811, 558	67, 878, 512
Northumberland	1, 819, 727	15, 310, 818	803, 984	4, 974, 487	3, 865	30, 350	2, 627, 576	20, 315, 655
Schuylkill	6, 314, 780	55, 868, 820	1, 597, 921	12, 507, 230	33, 588	258, 208	7, 946, 289	68, 634, 258
Sullivan	7, 465	51, 581	6, 688	37, 074	10	100	14, 163	88, 755
Susquehanna and Wayne	26, 972	213, 232	2, 391	28, 673			29, 363	241, 905
Total	16, 129, 545	145, 411, 735	[3] 4, 846, 646	[3] 41, 253, 030	194, 951	1, 233, 551	21, 171, 142	187, 898, 316

[1] Value given is value at which coal left possession of producing company; does not include margins of separately incorporated sales companies.
[2] Counties producing dredge coal only.
[3] An undetermined part of "Other" sizes included in "Local sales" in 1958 was reported as shipped "Outside region" in 1957.

TABLE 11.—Sizes of Pennsylvania anthracite shipped to points outside producing region, 1954–58, by regions, in percent of total

(Excludes dredge coal)

Size	Percent of total shipments									
	Lehigh region					Schuylkill region				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Lump [1] and Broken	0.5	0.2	(2)	(2)	(2)	0.2	0.2	0.1	0.5	0.2
Egg	1.0	1.1	0.9	0.9	1.2	1.2	1.1	1.1	.7	.8
Stove	18.0	16.3	13.0	10.8	13.9	15.3	15.3	14.0	12.6	15.1
Chestnut	18.6	17.9	15.7	13.6	17.5	17.1	17.3	16.7	15.0	17.5
Pea	7.4	9.5	7.8	8.2	10.5	8.7	8.6	8.6	8.5	9.2
Total Pea and larger	45.5	45.0	37.4	33.5	43.1	42.5	42.5	40.5	37.3	42.8
Buckwheat No. 1	11.8	11.4	9.8	9.4	12.4	13.4	11.8	12.3	11.9	13.3
Buckwheat No. 2 (Rice)	7.7	7.3	6.0	6.1	8.6	8.4	8.7	8.4	8.5	9.3
Buckwheat No. 3 (Barley)	9.0	9.4	8.6	8.7	11.0	14.5	12.6	13.0	14.2	15.1
Buckwheat No. 4	12.2	8.3	9.7	9.0	9.2	8.3	9.3	7.5	7.7	7.4
Buckwheat No. 5	1.0	5.9	10.0	11.3	12.2	4.3	4.6	9.9	10.0	8.8
Other	12.8	12.7	18.5	22.0	3.5	8.6	10.5	8.4	10.4	3.3
Total Buckwheat No. 1 and smaller	54.5	55.0	62.6	66.5	56.9	57.5	57.5	59.5	62.7	57.2
Size	Wyoming region					Sullivan County				
Lump [1] and Broken	0.3	0.2	0.2	0.1	0.1	------	------	------	------	------
Egg	2.7	1.7	1.6	1.5	1.2	------	------	------	------	------
Stove	25.2	26.6	25.4	22.0	23.4	2.2	------	------	------	6.6
Chestnut	24.6	27.5	28.7	27.0	26.0	22.3	75.0	15.7	26.9	7.8
Pea	8.1	7.5	8.6	9.7	9.7	18.5	------	6.6	27.4	9.5
Total Pea and larger	60.9	63.5	64.5	60.3	60.4	43.0	75.0	22.3	54.3	23.9
Buckwheat No. 1	12.8	11.7	12.1	12.6	13.0	15.2	25.0	------	------	6.1
Buckwheat No. 2 (Rice)	8.9	7.3	7.7	7.9	7.9	------	------	50.7	45.7	5.1
Buckwheat No. 3 (Barley)	10.1	9.7	9.2	10.0	10.6	41.8	----	27.0	------	4.8
Buckwheat No. 4	3.8	3.6	3.0	2.6	2.5	------	------	------	------	------
Buckwheat No. 5	1.6	.9	.7	1.1	.9	------	------	------	------	------
Other	1.9	3.3	2.8	5.5	4.7	------	------	------	------	60.1
Total Buckwheat No. 1 and smaller	39.1	36.5	35.5	39.7	39.6	57.0	25.0	77.7	45.7	76.1
Size	Total									
	Excluding Sullivan County					Including Sullivan County				
Lump [1] and Broken	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.1	0.3	0.2
Egg	1.8	1.4	1.2	1.0	1.0	1.8	1.4	1.3	1.0	1.0
Stove	19.6	19.8	18.1	15.5	17.8	19.6	19.8	18.0	15.5	17.8
Chestnut	20.3	21.3	20.9	18.9	20.5	20.2	21.3	20.9	18.9	20.5
Pea	8.3	8.3	8.5	8.9	9.6	8.3	8.3	8.5	8.9	9.6
Total Pea and larger	50.2	51.0	48.8	44.6	49.1	50.1	51.0	48.8	44.6	49.1
Buckwheat No. 1	12.9	11.7	11.7	11.7	13.0	12.9	11.7	11.7	11.7	13.0
Buckwheat No. 2 (Rice)	8.5	7.9	7.7	7.8	8.7	8.5	7.9	7.7	7.8	8.7
Buckwheat No. 3 (Barley)	12.0	10.9	10.7	11.7	12.8	12.0	10.9	10.7	11.7	12.8
Buckwheat No. 4	7.1	6.9	6.3	6.1	6.0	7.1	6.9	6.3	6.1	6.0
Buckwheat No. 5	2.7	3.4	6.5	7.1	6.6	2.8	3.4	6.5	7.1	6.6
Other	6.6	8.2	8.3	11.0	3.8	6.6	8.2	8.3	11.0	3.8
Total Buckwheat No. 1 and smaller	49.8	49.0	51.2	55.4	50.9	49.9	49.0	51.2	55.4	50.9

[1] Quantity of Lump included is insignificant.
[2] Less than 0.05 percent.

TABLE 12.—Sizes of Pennsylvania anthracite shipped to points inside producing region, 1954–58, by regions, in percent of total

(Excludes dredge coal)

Size	Percent of total shipments									
	Lehigh region					Schuylkill region				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Lump [1] and Broken	(2)	------	------	------	------	(2)	(2)	0.1	(2)	(2)
Egg	0.1	(2)	0.1	0.4	0.3	0.1	0.1	.2	0.1	0.1
Stove	1.6	1.4	1.3	2.5	2.3	9.3	13.4	10.7	10.2	8.5
Chestnut	17.8	15.3	17.2	15.8	9.9	17.8	22.4	22.4	20.1	15.6
Pea	35.4	29.6	30.8	29.2	16.9	21.5	18.7	19.4	17.0	12.2
Total Pea and larger	54.9	46.3	49.4	47.9	29.4	48.7	54.6	52.8	47.4	36.4
Buckwheat No. 1	15.7	13.3	15.2	16.4	10.9	14.5	14.5	15.9	14.9	11.7
Buckwheat No. 2 (Rice)	23.1	20.9	25.0	27.2	17.3	11.5	11.2	13.6	12.9	10.1
Buckwheat No. 3 (Barley)	5.9	5.5	6.3	7.4	5.5	10.2	12.8	11.5	14.5	9.4
Buckwheat No. 4	.4	1.8	.4	.2	.3	8.2	5.7	1.8	3.9	3.1
Buckwheat No. 5	------	------	------	.9	1.7	.1	.7	.9	1.8	2.1
Other	------	12.2	3.7	------	[3] 34.9	6.8	.5	3.5	4.6	[3] 27.2
Total Buckwheat No. 1 and smaller	45.1	53.7	50.6	52.1	[3] 70.6	51.3	45.4	47.2	52.6	[3] 63.6

Size	Wyoming region					Sullivan County				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Lump [1] and Broken	1.5	1.9	1.9	1.0	------	------	------	------	------	------
Egg	.1	.3	.2	.1	0.1	------	------	------	------	------
Stove	2.0	2.5	1.9	2.3	2.5	2.7	------	------	------	------
Chestnut	11.7	13.0	12.1	12.0	12.0	25.2	14.3	43.2	38.1	14.9
Pea	32.5	32.9	31.0	31.1	30.1	23.9	17.0	27.5	25.2	12.7
Total Pea and larger	47.8	50.6	47.1	46.5	44.7	51.8	31.3	70.7	63.3	27.6
Buckwheat No. 1	16.9	18.2	18.1	19.3	20.2	16.0	20.1	------	------	14.1
Buckwheat No. 2 (Rice)	11.4	12.2	11.0	11.7	11.9	------	48.6	12.6	36.7	------
Buckwheat No. 3 (Barley)	11.9	10.6	11.0	9.6	9.5	32.2	------	16.7	------	------
Buckwheat No. 4	2.1	1.4	------	.3	.2	------	------	------	------	------
Buckwheat No. 5	4.5	------	5.6	5.4	2.5	------	------	------	------	------
Other	5.4	7.0	7.2	7.2	11.0	------	------	------	------	58.3
Total Buckwheat No. 1 and smaller	52.2	49.4	52.9	53.5	55.3	48.2	68.7	29.3	36.7	72.4

Size	Total									
	Excluding Sullivan County					Including Sullivan County				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Lump [1] and Broken	0.8	1.0	1.0	0.5	(2)	0.9	1.0	1.0	0.5	(2)
Egg	.1	.2	.1	.1	0.1	.1	.2	.2	.2	0.1
Stove	4.5	6.4	5.5	5.8	5.3	4.5	6.3	5.5	5.8	5.3
Chestnut	14.3	16.6	16.8	15.8	13.4	14.3	16.7	16.8	15.8	13.4
Pea	29.0	27.4	26.2	24.8	20.2	29.0	27.4	26.2	24.8	20.2
Total Pea and larger	48.7	51.6	49.6	47.0	39.0	48.8	51.6	49.7	47.1	39.0
Buckwheat No. 1	16.0	16.4	17.0	17.1	15.1	16.0	16.4	17.0	17.1	15.1
Buckwheat No. 2 (Rice)	12.4	12.7	13.1	13.5	11.7	12.4	12.8	13.1	13.6	11.7
Buckwheat No. 3 (Barley)	10.8	10.8	10.8	11.6	9.0	10.8	10.8	10.8	11.5	9.0
Buckwheat No. 4	4.1	3.0	.8	1.8	1.5	4.0	3.0	.8	1.8	1.5
Buckwheat No. 5	2.6	.3	3.3	3.5	2.3	2.6	.2	3.2	3.4	2.2
Other	5.4	5.2	5.4	5.5	[3] 21.4	5.4	5.2	5.4	5.5	[3] 21.5
Total Buckwheat No. 1 and smaller	51.3	48.4	50.4	53.0	[3] 61.0	51.2	48.4	50.3	52.9	[3] 61.0

[1] Quantity of Lump included is insignificant.
[2] Less than 0.05 percent.
[3] An undetermined part of "Other" sizes included in "Local sales" in 1958 was reported as shipped "Outside region" in 1957.

TABLE 13.—Sizes of Pennsylvania anthracite shipped to points outside and inside producing region in 1958, by regions, in percent of total

(Excludes dredge coal)

Size	Percent of total shipments								
	Lehigh region			Schuylkill region			Wyoming region		
	Shipped outside region	Local sales	Total	Shipped outside region	Local sales	Total	Shipped outside region	Local sales	Total
Lump [1] and Broken	(2)	-------	(2)	0.2	(2)	0.2	0.1	(2)	0.1
Egg	1.2	0.3	1.1	.8	0.1	.6	1.2	0.1	.9
Stove	13.9	2.3	11.9	15.1	8.5	13.5	23.4	2.5	17.9
Chestnut	17.5	9.9	16.2	17.5	15.6	17.0	26.0	12.0	22.3
Pea	10.5	16.9	11.6	9.2	12.2	10.0	9.7	30.1	15.0
Total Pea and larger	43.1	29.4	40.8	42.8	36.4	41.3	60.4	44.7	56.2
Buckwheat No. 1	12.4	10.9	12.1	13.3	11.7	12.9	13.0	20.2	14.9
Buckwheat No. 2 (Rice)	8.6	17.3	10.0	9.3	10.1	9.5	7.9	11.9	9.0
Buckwheat No. 3 (Barley)	11.0	5.5	10.1	15.1	9.4	13.8	10.6	9.5	10.3
Buckwheat No. 4	9.2	.3	7.8	7.4	3.1	6.3	2.5	.2	1.9
Buckwheat No. 5	12.2	1.7	10.5	8.8	2.1	7.2	.9	2.5	1.3
Other	3.5	[3] 34.9	8.7	3.3	[3] 27.2	9.0	4.7	11.0	6.4
Total Buckwheat No. 1 and smaller	56.9	[3] 70.6	59.2	57.2	[3] 63.6	58.7	39.6	55.3	43.8

Size	Sullivan County			Total					
				Excluding Sullivan County			Including Sullivan County		
Lump [1] and Broken	-------	-------	-------	0.2	(2)	0.1	0.2	(2)	0.1
Egg	-------	-------	-------	1.0	0.1	.8	1.0	0.1	.8
Stove	6.6	-------	3.5	17.8	5.3	14.9	17.8	5.3	14.9
Chestnut	7.8	14.9	11.2	20.5	13.4	18.8	20.5	13.4	18.8
Pea	9.5	12.7	11.0	9.6	20.2	12.1	9.6	20.2	12.1
Total Pea and larger	23.9	27.6	25.7	49.1	39.0	46.7	49.1	39.0	46.7
Buckwheat No. 1	6.1	14.1	9.9	13.0	15.1	13.5	13.0	15.1	13.5
Buckwheat No. 2 (Rice)	5.1	-------	2.7	8.7	11.7	9.4	8.7	11.7	9.4
Buckwheat No. 3 (Barley)	4.8	-------	2.5	12.8	9.0	11.9	12.8	9.0	11.9
Buckwheat No. 4	-------	-------	-------	6.0	1.5	4.9	6.0	1.5	4.9
Buckwheat No. 5	-------	-------	-------	6.6	2.3	5.6	6.6	2.2	5.6
Other	60.1	58.3	59.2	3.8	[3] 21.4	8.0	3.8	[3] 21.5	8.0
Total Buckwheat No. 1 and smaller	76.1	72.4	74.3	50.9	[3] 61.0	53.3	50.9	[3] 61.0	53.3

[1] Quantity of Lump included is insignificant.
[2] Less than 0.05 percent.
[3] An undetermined part of "Other" sizes included in "Local sales" in 1958 was reported as shipped "Outside region" in 1957.

Figure 2 shows trends in anthracite production, by sources.

Strip Pits.—Pennsylvania anthracite produced at stripping operations totaled 6.9 million tons, a decrease of 665,000 tons, or 9 percent, from 1957. However, because of the greater proportional declines in production at underground mines and from culm and silt banks, stripped coal represented 32 percent of the year's output compared with 30 percent in 1957. Of the total fresh-mined coal (underground and strip) produced in 1958, 59 percent of the Lehigh's was produced from strip pits (55 percent in 1957), 44 percent of the Schuylkill's (46 percent in 1957), and 26 percent of the Wyoming's (23 percent in 1957).

The Schuylkill region again led in strip production, accounting for 49 percent of the total, followed by the Wyoming with 27 percent and the Lehigh with 24 percent. Compared with 1957, strip output in the Lehigh region increased 3 percent, whereas in the Schuylkill and Wyoming regions it declined 13 and 9 percent, respectively. Figure 3 shows trends in anthracite stripping operations by regions, and table 14 presents relevant data on strip-pit production for selected years, 1915–58.

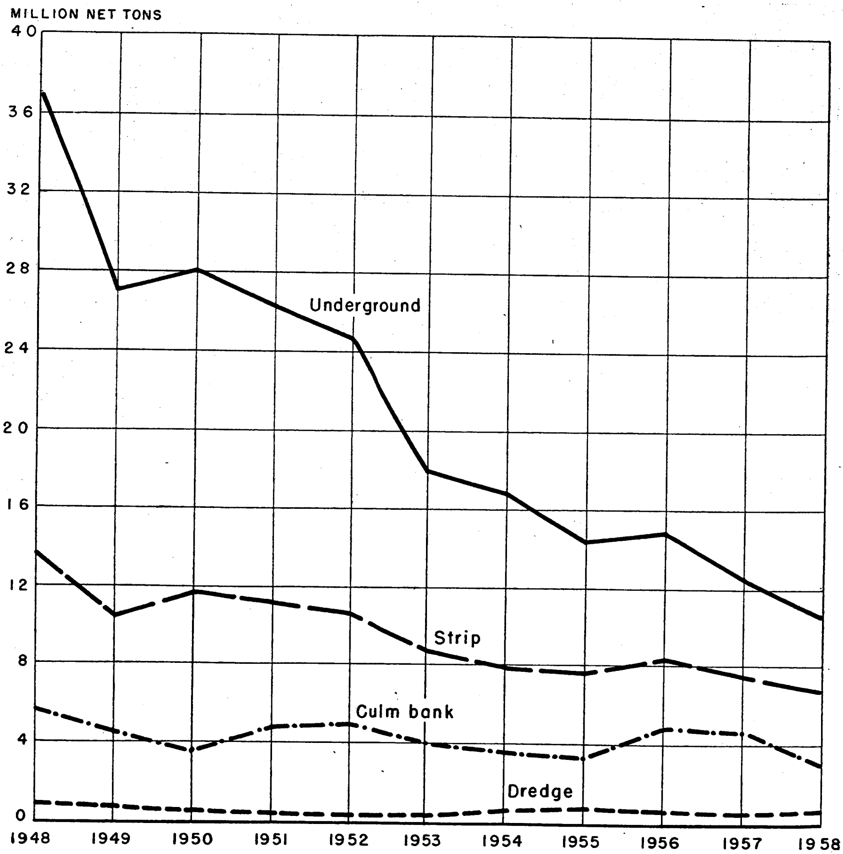

Figure 2.—Production of Pennsylvania anthracite, by sources, 1948–58.

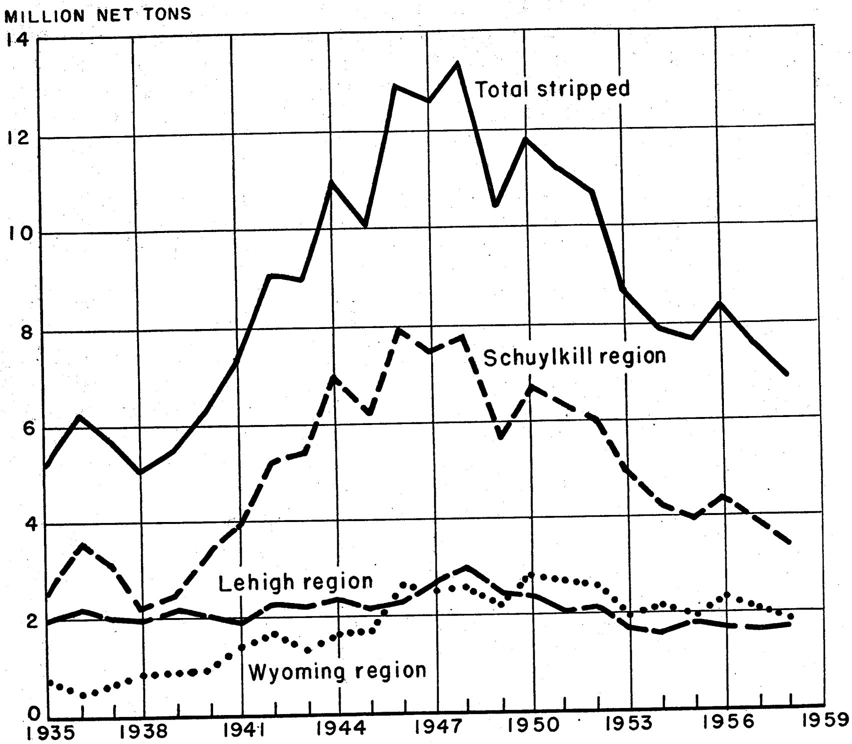

FIGURE 3.—Pennsylvania anthracite mined from strip pits by regions, 1935–58.

TABLE 14.—Production of Pennsylvania anthracite from strip pits, 1915, 1920, 1925, 1930, and 1951–58

	Mined by stripping (net tons)	Percent of fresh-mined total that was stripped	Number of men employed	Average number of days worked
1915	1,121,603	(1)	(1)	(1)
1920	2,054,441	2.5	(1)	(1)
1925	1,578,478	2.7	(1)	(1)
1930	2,536,288	3.8	(1)	(1)
1951	11,135,990	29.7	7,647	220
1952	10,696,705	30.2	7,100	212
1953	8,606,482	32.5	6,168	193
1954	7,939,680	32.0	4,837	202
1955	7,703,907	34.7	[2] 4,642	[2] 205
1956	8,354,230	35.7	4,840	216
1957	7,543,157	37.4	4,546	207
1958:				
Lehigh region	1,665,833	58.7	922	182
Schuylkill region	3,384,413	44.4	2,466	192
Wyoming region	1,820,340	25.6	1,025	217
Total, excluding Sullivan County	6,870,586	39.1	4,413	196
Sullivan County	7,175	69.9	5	201
Total	6,877,761	39.1	4,418	196

[1] Data not available.
[2] Estimated.

Culm-Bank Coal.—As the bulk of the coal recovered from culm and silt banks consists of the finer sizes, decreased demand for the small sizes in both domestic and foreign markets curtailed production from these sources in 1958. Output from banks totaled 2.9 million tons, a decrease of 36 percent from 1957, compared with declines of 15 and 9 percent, respectively, in production from underground mines and strip pits. Of the total, 60 percent was produced in the Schuylkill region, 21 percent in the Lehigh and 19 percent in the Wyoming. The sharpest decrease was in the Lehigh region, where bank production fell 58 percent below 1957, followed by the Schuylkill with a loss of 30 percent and the Wyoming with a decline of only 5 percent. Data on recovery of anthracite from culm and silt banks are shown, by fields and regions, in tables 7, 8, and 15.

TABLE 15.—Production of Pennsylvania anthracite from culm banks, by regions, 1935–58, in net tons

Year	Lehigh	Schuylkill	Wyoming	Sullivan County	Total
1935	192,790	1,748,960	760,718		2,702,468
1936	136,058	2,532,116	525,798		3,193,972
1937	101,239	2,178,482	442,878		2,722,599
1938	53,037	1,941,896	345,511		2,340,444
1939	64,180	2,159,548	360,086		2,583,814
1940	192,878	2,109,557	480,603		2,783,038
1941	326,755	2,881,049	449,062		3,656,866
1942	745,934	3,529,757	459,373		4,735,064
1943	1,944,047	4,577,917	1,041,841	19,893	7,583,698
1944	2,125,317	5,787,036	1,673,994	13,833	9,600,180
1945	2,086,864	4,936,907	1,728,440	34,448	8,786,659
1946	1,875,590	4,752,141	1,780,874	22,487	8,431,092
1947	1,044,501	3,947,016	1,409,217	2,912	6,403,646
1948	796,114	3,729,542	1,098,123		5,623,779
1949	694,763	2,778,131	956,250		4,429,144
1950	366,069	2,533,535	565,829	1,877	3,467,310
1951	566,613	3,578,795	484,792		4,630,200
1952	791,445	3,407,974	566,097		4,765,516
1953	714,646	2,792,323	504,031		4,011,000
1954	797,761	2,320,006	447,715		3,565,482
1955	862,539	1,934,492	416,015		3,213,046
1956	1,493,381	2,750,838	530,580		4,774,799
1957	1,457,869	2,479,241	584,300		4,521,410
1958	605,741	1,742,356	550,756	3,900	2,902,753

Dredge Coal.—River dredging was the only source of Pennsylvania anthracite to record a production increase, as the year's output reached 692,000 tons, or 5 percent above 1957. The Susquehanna River remained the principal source, contributing 651,000 tons to the total, whereas production from the Lehigh and Schuylkill Rivers remained the same as in 1957—31,000 and 10,000 tons, respectively. As the largest producer of dredge coal reports cost of production rather than market value, the average values shown for dredge production do not represent a fair market price. Tables 16 and 17 give data on the production and value of river, or dredge, coal.

Weekly and Monthly Data.—Estimates of weekly and monthly production are prepared by the Bureau of Mines and published in a series of Weekly Anthracite Reports. These estimates are based upon carloading data supplied by the Association of American Railroads, statistics on trucked coal compiled by the Pennsylvania Department of Mines and Mineral Industries, and factors established for dredge production and coal used as colliery fuel. After the yearly production canvass is completed, the weekly and monthly estimates are adjusted to the annual total. (See tables 18 and 19.)

In addition to the estimates of production, the Weekly Anthracite Report also includes salient statistics on monthly developments in the Pennsylvania anthracite trade. These data include monthly statistics on rail and truck shipments, Lake-dock activities, producer's stocks, consumption by railroads and public utilities, imports, exports, stocks in retail yards, retail deliveries, wholesale price indexes, working time, and average earnings.

TABLE 16.—Pennsylvania anthracite produced by dreges in 1958, by rivers (including tributaries)

River	Production (net tons)	Value	
		Total	Average
Lehigh	30,763	$116,832	$3.80
Schuylkill	10,230	43,575	4.26
Susquehanna	650,800	1,164,536	1.79
Total	691,793	1,324,943	1.92

TABLE 17.—Pennsylvania anthracite produced by dredges, 1935–58, by rivers (including tributaries)

Year	Net tons				Value	
	Lehigh River	Schuylkill River	Susquehanna River	Total	Total	Average per ton
1935	78,578	73,326	438,563	590,467	$517,304	$.88
1936	63,327	31,669	451,688	546,684	581,679	1.06
1937	[1] 95,065	(1)	665,409	760,474	842,052	1.11
1938	[1] 123,452	(1)	447,572	571,024	570,579	1.00
1939	62,134	67,539	574,187	703,860	746,000	1.06
1940	[1] 78,947	(1)	863,997	942,944	1,097,000	1.16
1941	47,838	396,522	1,073,203	1,517,563	1,839,784	1.21
1942	9,385	268,919	1,006,729	1,285,033	1,478,719	1.15
1943	37,452	342,815	954,470	1,334,737	1,972,777	1.48
1944	40,894	494,371	837,472	1,372,737	2,084,431	1.52
1945	41,409	366,161	797,656	1,205,226	1,924,148	1.60
1946	37,441	247,757	847,196	1,132,394	2,091,324	1.85
1947	46,478	158,102	1,015,126	1,219,706	2,480,068	2.03
1948	54,284	67,871	865,849	988,004	2,291,752	2.32
1949	22,131	52,012	790,979	865,122	2,131,096	2.46
1950	21,877	34,222	563,465	619,564	1,677,508	2.71
1951	25,344	27,454	508,770	561,568	1,576,576	2.81
1952	17,402	30,407	324,245	372,054	1,109,778	2.98
1953	31,391	20,643	386,147	438,181	1,449,149	3.31
1954	16,015	----------	709,892	725,907	1,810,026	2.49
1955	29,935	60,256	698,652	788,843	1,844,835	2.34
1956	44,262	5,540	666,485	716,287	1,273,415	1.78
1957	30,650	10,167	616,884	657,701	1,143,152	1.74
1958	30,763	10,230	650,800	691,793	1,324,943	1.92

[1] Schuylkill included with Lehigh in 1937, 1938, and 1940.

TABLE 18.—Estimated weekly production of Pennsylvania anthracite in 1958 [1]

Week ended—	Thousand net tons	Week ended—	Thousand net tons	Week ended—	Thousand net tons	Week ended—	Thousand net tons
Jan. 4	[2] 142	Apr. 12	352	July 19	458	Oct. 25	407
11	498	19	384	26	451	Nov. 1	380
18	547	26	349	Aug. 2	421	8	412
25	528	May 3	351	9	404	15	398
Feb. 1	453	10	389	16	397	22	378
8	406	17	379	23	426	29	365
15	373	24	388	30	448	Dec. 6	452
22	420	31	333	Sept. 6	394	13	423
Mar. 1	562	June 7	382	13	475	20	491
8	410	14	467	20	491	27	309
15	317	21	535	27	483	31	[2] 284
22	323	28	562	Oct. 4	478		
29	330	July 5	64	11	450	Total	21,171
Apr. 5	313	12	75	18	464		

[1] Estimated from weekly carloadings as reported by the Association of American Railroads; adjusted to annual production total from Bureau of Mines canvass.

[2] Figures represent output of working days in that part of week included in calendar year 1958. Preliminary production for week of Jan. 3, 1959, was 382,000 tons. Revised total for week of Jan. 4, 1958, was 296,000 tons.

TABLE 19.—Estimated monthly production of Pennsylvania anthracite, 1951–58, in thousand net tons [1]

Month	1951	1952	1953	1954	1955	1956	1957	1958
January	4,316	4,221	2,707	2,874	2,454	2,743	2,625	2,161
February	3,621	3,362	2,438	2,525	2,568	2,360	2,072	1,753
March	2,244	3,140	2,354	2,364	2,007	2,052	1,798	1,476
April	2,675	3,384	2,048	2,100	1,723	2,258	2,037	1,545
May	3,723	3,400	2,869	2,013	1,985	1,947	2,294	1,612
June	3,848	3,293	2,975	2,387	2,130	2,470	2,551	1,963
July	2,847	2,522	2,551	2,080	1,845	1,890	1,478	1,377
August	3,612	2,704	2,452	2,270	1,904	2,729	2,294	1,750
September	3,267	3,761	2,732	2,416	2,453	2,509	2,173	2,050
October	4,675	4,213	2,994	2,353	2,244	2,971	2,262	1,966
November	4,129	3,405	2,386	2,681	2,385	2,629	1,928	1,559
December	3,713	3,178	2,443	3,020	2,507	2,342	1,826	1,959
Total	42,670	40,583	30,949	29,083	26,205	28,900	25,338	21,171

[1] Production is estimated from weekly carloadings as reported by the Association of American Railroads and includes mine fuel, coal sold locally, and dredge coal.

Mechanical Loading.—The quantity of coal loaded mechanically underground in 1958 fell slightly below 50 percent of the total underground output. This decline marked a reversal of the upward trend in mechanical loading begun in 1954, when 41.4 percent of the tonnage produced underground was loaded mechanically. The change was due to the fact that several mines with considerable loading equipment were inactive in 1958. Mechanical loading underground decreased 20 percent and hand loading 10 percent. The sharp drop in mechanical loading was accompanied by a 12-percent decrease in the number of machines used.

Of the total coal loaded mechanically underground in 1958, 83 percent was mined in the Northern field where the coal seams are relatively flat, 8 percent in the Southern, 5 percent in the Western Middle, and 4 percent in the Eastern Middle field. As the Northern field had the greatest number of mechanized-mine closings, it suffered the largest decline in mechanical loading—1,200,000 tons, or 22 percent. However, the percentage decrease was sharpest in the Western

Middle where the total loaded mechanically fell 34 percent below 1957. In the Eastern Middle and Southern fields small gains were reported. Tables 20 to 22 present detailed statistics on mechanical loading and equipment, and figure 4 shows trends in mechanical loading, hand loading, and stripping, 1935–58.

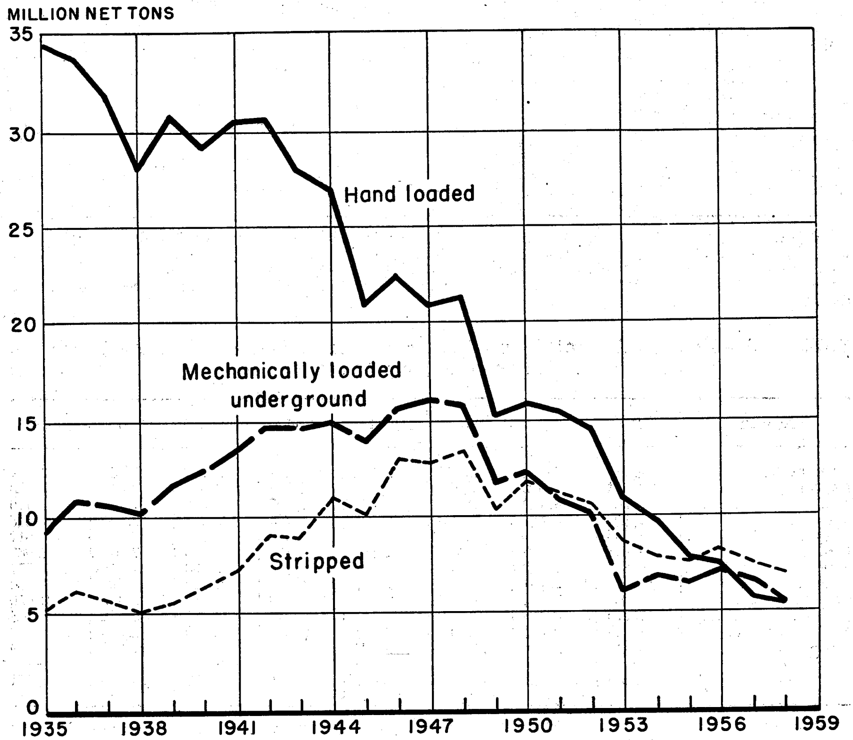

Figure 4.—Pennsylvania anthracite mechanically loaded, hand loaded, and stripped, 1935–58.

TABLE 20.—Pennsylvania anthracite loaded mechanically underground, 1957–58, by fields, in net tons

Field	Scraper loaders [1]		Pit-car loaders		Hand-loaded face conveyors, all types [2]		Total mechanically loaded	
	1957	1958	1957	1958	1957	1958	1957	1958
Northern	1, 688, 678	1, 249, 470	40, 842	40, 189	3, 941, 437	3, 144, 497	5, 670, 957	4, 434, 156
Eastern Middle	49, 998	59, 101			116, 218	137, 401	166, 216	196, 502
Western Middle	126, 019	113, 950			299, 810	168, 375	425, 829	282, 325
Southern	113, 897	167, 341		2, 972	280, 580	248, 747	394, 477	419, 060
Total	1, 978, 592	1, 589, 862	40, 842	43, 161	4, 638, 045	3, 699, 020	6, 657, 479	5, 332, 043

[1] Includes mobile loaders.
[2] Shaker chutes, including those equipped with duckbills.

TABLE 21.—Pennsylvania anthracite loaded mechanically underground, 1954–58

Year	Scraper loaders		Mobile loaders		Conveyors [1] and pit-car loaders		Total loaded mechanically	
	Number of units	Net tons loaded	Number of units	Net tons loaded	Number of units	Net tons loaded	Number of units	Net tons loaded
1954	359	959,532	68	445,721	2,277	5,572,782	2,704	6,978,035
1955	279	761,945	79	582,526	1,940	5,316,468	2,298	6,660,939
1956	303	1,080,339	80	1,077,412	1,593	5,150,359	1,976	7,308,110
1957	295	1,179,099	66	799,493	1,437	4,678,887	1,798	6,657,479
1958	290	931,313	51	658,549	1,234	3,742,181	1,575	5,332,043

[1] Includes duckbills and other self-loading conveyors.

TABLE 22.—Trends in mechanical loading, hand loading, and stripping of Pennsylvania anthracite, 1927–58

(Mechanical loading includes coal handled on pit-car loaders and hand-loaded face conveyors)

Year	Fresh mined coal							
	Underground					From strip pits		Total
	Mechanical loading (net tons)	Percent of total underground	Hand loading (net tons)	Percent of total underground	Total (net tons)	Net tons	Percent of total fresh mined	
1927	[1] 2,223,281	3.0	71,434,537	97.0	73,657,818	2,153,156	2.8	75,810,974
1928	[1] 2,351,074	3.4	67,373,788	96.6	69,724,862	2,422,924	3.4	72,147,786
1929	3,470,158	5.0	66,493,690	95.0	69,963,848	1,911,766	2.7	71,875,614
1930	4,467,750	6.9	60,458,344	93.1	64,926,094	2,536,288	3.8	67,462,382
1931	4,384,780	8.2	49,074,722	91.8	53,459,502	3,813,237	6.7	57,272,739
1932	5,433,340	12.4	38,400,820	87.6	43,834,160	3,980,973	8.3	47,815,133
1933	6,557,267	16.0	34,474,844	84.0	41,032,111	4,932,069	10.7	45,964,180
1934	9,284,486	19.1	39,290,255	80.9	48,574,741	5,798,138	10.7	54,372,879
1935	9,279,057	21.2	34,503,819	78.8	43,782,876	5,187,072	10.6	48,969,948
1936	10,827,946	24.2	33,898,560	75.8	44,726,506	6,203,267	12.2	50,929,773
1937	10,683,837	25.1	31,882,514	74.9	42,566,351	5,696,018	11.8	48,262,369
1938	10,151,669	26.6	27,990,628	73.4	38,142,297	5,095,341	11.8	43,237,638
1939	11,773,833	27.7	30,797,715	72.3	42,571,548	5,486,479	11.4	48,058,027
1940	12,326,000	29.7	29,190,837	70.3	41,516,837	6,352,700	13.3	47,869,537
1941	13,441,987	30.6	30,435,277	69.4	43,877,264	7,316,574	14.3	51,193,838
1942	14,741,459	32.6	30,495,240	67.4	45,236,699	9,070,933	16.7	54,307,632
1943	14,745,793	34.5	27,990,005	65.5	42,735,798	8,989,387	17.4	51,725,185
1944	14,975,146	35.8	26,800,270	64.2	41,775,416	10,953,030	20.8	52,728,446
1945	13,927,955	39.9	20,957,744	60.1	34,885,699	10,056,325	22.4	44,942,024
1946	15,619,162	41.0	22,465,295	59.0	38,084,457	12,858,930	25.2	50,943,387
1947	16,054,011	43.4	20,909,101	56.6	36,963,112	12,603,545	25.4	49,566,657
1948	15,742,368	42.3	21,432,923	57.7	37,175,291	13,352,874	26.4	50,528,165
1949	11,858,088	43.9	15,172,562	56.1	27,030,650	10,376,808	27.7	37,407,458
1950	12,335,650	43.8	15,820,245	56.2	28,155,895	11,833,934	29.6	39,989,829
1951	10,847,787	41.2	15,494,452	58.8	26,342,239	11,135,990	29.7	37,478,229
1952	10,034,464	40.5	14,713,819	59.5	24,748,283	10,696,705	30.2	35,444,988
1953	6,838,769	38.2	11,054,720	61.8	17,893,489	8,606,482	32.5	26,499,971
1954	6,978,035	41.4	9,874,373	58.6	16,852,408	7,939,680	32.0	24,792,088
1955	6,660,939	45.9	7,837,819	54.1	14,498,758	7,703,907	34.7	22,202,665
1956	7,308,110	48.5	7,746,794	51.5	15,054,904	8,354,230	35.7	23,409,134
1957	6,657,479	52.8	5,958,574	47.2	12,616,053	7,543,157	37.4	20,159,210
1958	5,332,043	49.8	5,366,792	50.2	10,698,835	6,877,761	39.1	17,576,596

[1] As reported by Commonwealth of Pennsylvania, Department of Mines.

Cutting Machines.—Most of the Pennsylvania anthracite produced at underground mines is shot from the solid face, because the physical and mechanical difficulties involved in cutting the steeply pitching seams precludes the wide use of cutting machines. Moreover, the relatively rapid decline in underground production in recent years and the closing of mines using cutting equipment have resulted not only in a substantial reduction in the tonnage undercut but also in the number of machines in use. For example, 96 machines were used in cutting 381,000 tons in 1954, whereas only 6 machines were used to undercut 184,000 tons of coal in 1958. As in 1956 and 1957, all of the machines reported were used in the Wyoming region.

Power Equipment.—The decline in production from strip pits and culm banks was accompanied by an overall decrease of 41 in the number of power shovels and draglines used in 1958. Of this decrease, 29 were shovels and 12 draglines. A total of 143 shovels and 213 draglines were reported used in stripping operations in 1958, a decline of 26 shovels and 12 draglines from 1957; 35 shovels and 30 draglines were used in recovering coal from banks, a decrease of 3 shovels but an increase of 4 draglines; and 1 shovel and 2 draglines were used at both types of operations. Table 23 presents data on power equipment used, 1956–58.

TABLE 23.—Power shovels and draglines used in recovering coal from culm banks and in stripping Pennsylvania anthracite, 1956–58, by type of power

Type of power	1956			1957			1958		
	Number of power shovels	Number of draglines	Total	Number of power shovels	Number of draglines	Total	Number of power shovels	Number of draglines	Total
Gasoline	24	17	41	22	11	33	23	8	31
Electric	52	42	94	52	50	102	47	48	95
Diesel	127	183	310	133	196	329	109	189	298
Steam	1		1	1		1			
Total	204	242	446	208	257	465	179	245	424

PRICES AND VALUE OF SALES

The price structure of Pennsylvania anthracite was disturbed in 1958 by the decline in the overall demand and the intense competition among producers. According to Saward's Journal, f.o.b. mine prices quoted on most sizes at the end of the year were considerably lower than those at the close of 1957. Yearend quotations on Broken coal ranged from \$14.75–\$15.25, \$0.70–\$0.95 less than December 1957 circular prices; on Egg. Stove, and Chestnut, \$13.75–\$15.25, \$0.95–\$1.45 less; on Pea, \$11.25–\$12.25, \$0.35–\$0.45 less; on Buckwheat No. 1, \$10.25–\$11.25, \$0.35–\$0.60 less; and on Buckwheat No. 2 (Rice), \$9.25–\$10.25, \$0.35–\$0.60 less. Prices of Buckwheat No. 3 (Barley) were about the same in December of both years, \$7.75 per net ton, f.o.b. mines. Prices on the smaller industrial sizes (Buckwheat No. 4 and finer) are seldom quoted in trade journals, as these sizes usually are sold at privately negotiated prices; nevertheless, from the mine realization data in table 26, it is apparent that the depressed business conditions of 1958 also caused declines in prices of these sizes, particularly Buckwheat No. 5 and smaller.

As usual, spring discount prices were released, effective April 1. The discounts were substantially greater than in any recent year, ranging from $1.85 to $2.20 per ton on Chestnut and larger. Pea coal was quoted at a discount of $0.70 to $1.65. Although some producers increased prices on the smaller coals while offering their spring-summer discounts in 1957 and again boosted prices of the fine sizes later in the year, discounts of $0.60 to $1.55 per ton on Buckwheat No. 1 and of $0.60 to $1.65 per ton on Buckwheat No. 2 (Rice) were announced in an effort to stimulate movement of these sizes. However, only one company offered Buckwheat No. 3 at a reduction. Although several companies for years had obtained a premium for coal from certain mines (usually $0.25 per ton for the larger sizes and proportionately less for the smaller sizes), no coal was being sold at a premium price at the close of 1958, either because of mine closings or to meet competition.

Despite the wide variations between 1957 and 1958 in the prices received for individual sizes, the average value f.o.b. mine dropped only from $8.99 to $8.88 per ton, primarily because shipments of the lower priced, smaller sizes declined more precipitately than those of the higher priced coals. As a group, Pea and larger sizes returned $0.67 less per ton than in 1957, whereas Buckwheat No. 1 and smaller sizes averaged about $0.18 per ton more. As the average value for Buckwheat No. 4 declined $0.03, that of Buckwheat No. 5 $0.25, and "Other" $0.51, the rise in the average price received for the entire range of small sizes was due to the higher prices of Buckwheat Nos. 2 and 3, which increased $0.32 per ton and $0.34, respectively.

The average received per ton is shown by regions in tables 9 and 24–27. Table 28 presents retail prices of selected fuels in certain cities. Figure 5 illustrates the trends in shipments and value for 1950, 1955, and 1958, by size groups, in percent of total. The prices attributed to Saward's Journal apply to sales of "standard" anthracite, specifications for which are shown in table 29.

TABLE 24.—Average sales realization per net ton of Pennsylvania anthracite, exclusive of dredge coal, shipped to points outside producing region, 1954–58, by regions and sizes

(Value does not include margins of separately incorporated sales companies)

Size	Lehigh region					Schuylkill region				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Lump [1] and Broken	$13.05	$11.80	$12.78	$14.12	$11.99	$12.24	$11.03	$12.19	$14.67	$13.76
Egg	12.80	11.14	11.61	13.12	12.03	12.09	11.05	11.93	13.28	12.10
Stove	13.03	11.70	11.94	13.54	12.85	12.08	11.14	11.95	12.81	11.92
Chestnut	12.74	11.81	12.02	13.56	13.02	11.70	11.02	11.87	12.82	11.93
Pea	9.74	8.13	8.50	10.39	9.97	8.87	7.90	8.77	10.36	9.69
Total Pea and larger	12.37	10.97	11.25	12.76	12.19	11.27	10.43	11.24	12.28	11.46
Buckwheat No. 1	8.45	6.61	7.25	9.53	9.30	7.84	6.34	6.95	9.13	8.82
Buckwheat No. 2 (Rice)	7.50	6.66	6.85	8.50	8.94	6.83	6.26	6.50	8.27	8.48
Buckwheat No. 3 (Barley)	5.79	5.29	5.38	6.48	6.88	5.28	5.11	5.35	6.38	6.62
Buckwheat No. 4	4.05	3.91	4.19	5.08	5.01	3.84	3.85	4.05	4.81	4.85
Buckwheat No. 5	3.54	3.18	3.80	4.82	4.77	3.47	3.04	3.65	4.75	4.44
Other	3.43	3.22	3.39	3.83	3.49	3.24	3.21	3.42	3.81	3.97
Total Buckwheat No. 1 and smaller	5.62	4.83	4.79	5.75	6.75	5.45	4.82	5.12	6.28	6.72
Total all sizes	8.69	7.59	7.21	8.10	9.10	7.93	7.20	7.60	8.52	8.75

Size	Wyoming region					Sullivan County				
Lump [1] and Broken	$12.06	$11.15	$13.15	$12.88	$12.40	-------	-------	-------	-------	-------
Egg	11.88	10.91	11.70	12.33	11.87	-------	-------	-------	-------	-------
Stove	12.30	11.46	12.06	12.97	12.17	$13.00	-------	-------	-------	$12.07
Chestnut	12.04	11.45	12.23	13.09	12.32	13.00	$10.00	$10.30	$11.00	12.14
Pea	9.37	8.38	9.38	10.42	10.03	11.00	-------	9.22	10.00	10.01
Total Pea and larger	11.79	11.08	11.77	12.60	11.89	12.14	10.00	9.98	10.49	11.28
Buckwheat No. 1	8.40	6.59	7.37	9.17	9.24	8.00	6.00	-------	-------	9.65
Buckwheat No. 2 (Rice)	7.32	6.61	7.00	8.42	8.68	-------	-------	6.49	7.00	8.92
Buckwheat No. 3 (Barley)	5.72	5.46	5.53	6.30	6.73	3.05	-------	5.07	-------	6.79
Buckwheat No. 4	4.11	3.88	4.04	4.97	5.03	-------	-------	-------	-------	-------
Buckwheat No. 5	3.33	3.24	3.63	3.99	4.23	-------	-------	-------	-------	-------
Other	3.43	3.03	3.42	4.19	4.40	-------	-------	-------	-------	4.73
Total Buckwheat No. 1 and smaller	6.59	5.62	6.14	7.19	7.50	4.37	6.00	6.00	7.00	5.54
Total all sizes	9.75	9.09	9.77	10.45	10.15	7.71	9.00	6.89	8.90	6.91

Size	Total									
	Excluding Sullivan County					Including Sullivan County				
Lump [1] and Broken	$12.39	$11.24	$12.81	$14.35	$13.35	$12.39	$11.24	$12.81	$14.35	$13.35
Egg	12.02	10.99	11.78	12.76	11.99	12.02	10.99	11.78	12.76	11.99
Stove	12.32	11.39	12.01	12.99	12.17	12.32	11.39	12.01	12.99	12.17
Chestnut	12.01	11.36	12.07	13.06	12.28	12.01	11.36	12.07	13.06	12.28
Pea	9.18	8.12	8.95	10.39	9.87	9.18	8.12	8.95	10.39	9.87
Total Pea and larger	11.67	10.83	11.50	12.50	11.76	11.67	10.83	11.50	12.50	11.76
Buckwheat No. 1	8.14	6.49	7.16	9.21	9.05	8.14	6.49	7.16	9.21	9.05
Buckwheat No. 2 (Rice)	7.12	6.46	6.74	8.36	8.63	7.12	6.46	6.74	8.36	8.63
Buckwheat No. 3 (Barley)	5.48	5.26	5.41	6.37	6.69	5.48	5.26	5.41	6.37	6.69
Buckwheat No. 4	3.95	3.87	4.09	4.91	4.92	3.95	3.87	4.09	4.91	4.92
Buckwheat No. 5	3.44	3.11	3.69	4.73	4.54	3.44	3.11	3.69	4.73	4.54
Other	3.32	3.18	3.41	3.89	4.08	3.32	3.18	3.41	3.89	4.08
Total Buckwheat No. 1 and smaller	5.83	5.05	5.31	6.38	6.94	5.83	5.05	5.31	6.38	6.94
Total all sizes	8.76	8.00	8.33	9.11	9.31	8.76	8.00	8.33	9.11	9.31

[1] Quantity of Lump included is insignificant.

TABLE 25.—Average sales realization per net ton of Pennsylvania anthracite, exclusive of dredge coal, shipped to points inside producing region, 1954–58, by regions and sizes

(Value does not include margins of separately incorporated sales companies)

Size	Lehigh region					Schuylkill region				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Lump [1] and Broken	$14.00	------	------	------	------	$12.51	$10.97	$11.97	$13.54	$13.29
Egg	15.37	$14.42	$13.34	$12.50	$11.77	12.43	11.04	12.29	13.11	12.34
Stove	13.61	13.27	13.87	13.45	12.84	11.22	10.94	11.86	12.52	11.28
Chestnut	14.48	14.31	13.65	15.10	14.62	11.34	10.85	11.94	12.50	11.62
Pea	11.43	11.39	11.20	12.72	12.58	9.06	8.60	9.20	10.47	9.71
Total Pea and larger	12.49	12.42	12.13	13.54	13.28	10.31	10.10	10.92	11.78	10.90
Buckwheat No. 1	10.26	10.10	9.81	11.20	11.00	7.47	6.42	6.93	8.95	8.62
Buckwheat No. 2 (Rice)	8.77	8.84	8.58	10.06	10.38	6.55	6.16	6.54	8.07	8.20
Buckwheat No. 3 (Barley)	6.63	6.78	6.87	7.60	7.60	4.99	4.76	5.04	5.92	6.12
Buckwheat No. 4	5.35	4.16	5.26	6.24	5.10	3.37	3.60	3.33	4.16	4.05
Buckwheat No. 5	------	------	------	3.83	3.65	2.72	2.61	2.68	3.48	2.83
Other	------	3.25	4.00	------	2.04	3.00	2.05	2.82	3.41	3.10
Total Buckwheat No. 1 and smaller	8.98	7.51	8.37	9.95	5.95	5.51	5.43	5.83	6.87	5.40
Total all sizes	10.90	9.78	10.23	11.67	8.11	7.85	7.98	8.52	9.20	7.40

Size	Wyoming region					Sullivan County				
Lump [1] and Broken	$12.23	$10.86	$11.30	$13.02	------	------	------	------	------	------
Egg	12.25	11.23	12.54	12.89	$13.65	------	------	------	------	------
Stove	13.55	12.56	13.38	14.19	13.40	$13.00	------	------	------	------
Chestnut	13.45	12.77	13.39	14.44	14.00	13.00	$10.00	$12.40	$10.93	$10.00
Pea	10.85	10.09	10.57	11.75	12.03	11.00	9.00	11.12	10.00	9.00
Total Pea and larger	11.64	10.94	11.45	12.59	12.64	12.07	9.46	11.91	10.56	9.54
Buckwheat No. 1	9.48	8.38	8.62	10.25	10.76	8.00	6.00	------	------	7.00
Buckwheat No. 2 (Rice)	7.75	7.17	7.45	8.93	9.57	------	4.50	7.21	7.00	------
Buckwheat No. 3 (Barley)	5.72	5.50	5.51	6.34	6.97	3.28	------	5.07	------	------
Buckwheat No. 4	4.13	3.92	------	4.34	4.63	------	------	------	------	------
Buckwheat No. 5	3.33	------	3.46	3.84	3.84	------	------	------	------	------
Other	2.58	3.04	2.80	2.33	2.76	------	------	------	------	3.30
Total Buckwheat No. 1 and smaller	6.78	6.58	6.39	7.52	7.92	4.85	4.94	5.99	7.00	4.02
Total all sizes	9.11	8.78	8.77	9.88	10.03	8.59	6.35	10.17	9.25	5.54

Size	Total									
	Excluding Sullivan County					Including Sullivan County				
Lump [1] and Broken	$12.23	$10.86	$11.32	$13.04	$13.29	$12.23	$10.86	$11.32	$13.04	$13.29
Egg	12.58	11.25	12.49	12.85	12.51	12.58	11.25	12.49	12.85	12.51
Stove	11.89	11.33	12.16	12.88	11.78	11.89	11.33	12.16	12.88	11.78
Chestnut	12.66	11.97	12.61	13.43	12.76	12.66	11.97	12.61	13.42	12.76
Pea	10.46	9.86	10.20	11.46	11.43	10.46	9.86	10.20	11.46	11.43
Total Pea and larger	11.27	10.75	11.26	12.32	11.94	11.27	10.75	11.26	12.32	11.94
Buckwheat No. 1	8.92	7.89	8.04	9.84	10.01	8.92	7.88	8.04	9.84	10.01
Buckwheat No. 2 (Rice)	7.53	7.12	7.21	8.76	9.16	7.53	7.10	7.21	8.76	9.16
Buckwheat No. 3 (Barley)	5.53	5.25	5.36	6.18	6.60	5.51	5.25	5.36	6.18	6.60
Buckwheat No. 4	3.62	3.72	3.41	4.19	4.10	3.62	3.72	3.41	4.19	4.10
Buckwheat No. 5	3.32	2.61	3.37	3.76	3.37	3.32	2.61	3.37	3.76	3.37
Other	2.76	3.05	2.86	2.73	2.82	2.76	3.05	2.86	2.73	2.82
Total Buckwheat No. 1 and smaller	6.51	6.29	6.32	7.44	6.43	6.51	6.28	6.32	7.44	6.42
Total all sizes	8.83	8.59	8.77	9.73	8.58	8.83	8.58	8.77	9.73	8.57

[1] Quantity of Lump included is insignificant.

TABLE 26.—Average sales realization per net ton of Pennsylvania anthracite, exclusive of dredge coal, shipped to points outside and inside producing region in 1958, by regions and sizes

(Value does not include margins of separately incorporated sales companies)

Size	Lehigh region			Schuylkill region			Wyoming region		
	Shipped outside region	Local sales	Total	Shipped outside region	Local sales	Total	Shipped outside region	Local sales	Total
Lump [1] and Broken	$11.99		$11.99	$13.76	$13.29	$13.74	$12.40		$12.40
Egg	12.03	$11.77	12.02	12.10	12.34	12.11	11.87	$13.65	11.91
Stove	12.85	12.84	12.85	11.92	11.28	11.83	12.17	13.40	12.22
Chestnut	13.02	14.62	13.18	11.93	11.62	11.86	12.32	14.00	12.56
Pea	9.97	12.58	10.60	9.69	9.71	9.69	10.03	12.03	11.08
Total Pea and larger	12.19	13.28	12.32	11.46	10.90	11.34	11.89	12.64	12.04
Buckwheat No. 1	9.30	11.00	9.56	8.82	8.62	8.77	9.24	10.76	9.78
Buckwheat No. 2 (Rice)	8.94	10.38	9.35	8.48	8.20	8.41	8.68	9.57	8.99
Buckwheat No. 3 (Barley)	6.88	7.60	6.95	6.62	6.12	6.54	6.73	6.97	6.79
Buckwheat No. 4	5.01	5.10	5.01	4.85	4.05	4.76	5.03	4.63	5.02
Buckwheat No. 5	4.77	3.65	4.74	4.44	2.83	4.32	4.23	3.84	4.04
Other	3.49	[2] 2.04	2.52	3.97	[2] 3.10	3.34	4.40	2.76	3.65
Total Buckwheat No. 1 and smaller	6.75	[2] 5.95	6.59	6.72	[2] 5.40	6.38	7.50	7.92	7.64
Total all sizes	9.10	[2] 8.11	8.93	8.75	[2] 7.40	8.43	10.15	10.03	10.12

Size	Sullivan County			Total					
				Excluding Sullivan County			Including Sullivan County		
Lump [1] and Broken				$13.35	$13.29	$13.35	$13.35	$13.29	$13.35
Egg				11.99	12.51	12.00	11.99	12.51	12.00
Stove	$12.07		$12.07	12.17	11.78	12.14	12.17	11.78	12.14
Chestnut	12.14	$10.00	10.79	12.28	12.76	12.36	12.28	12.76	12.36
Pea	10.01	9.00	9.46	9.87	11.43	10.48	9.87	11.43	10.48
Total Pea and larger	11.28	9.54	10.39	11.76	11.94	11.80	11.76	11.94	11.80
Buckwheat No. 1	9.65	7.00	7.86	9.05	10.01	9.30	9.05	10.01	9.30
Buckwheat No. 2 (Rice)	8.92		8.92	8.63	9.16	8.78	8.63	9.16	8.78
Buckwheat No. 3 (Barley)	6.79		6.79	6.69	6.60	6.68	6.69	6.60	6.68
Buckwheat No. 4				4.92	4.10	4.86	4.92	4.10	4.86
Buckwheat No. 5				4.54	3.37	4.43	4.54	3.37	4.43
Other	4.73	3.30	4.07	4.08	[2] 2.82	3.28	4.08	[2] 2.82	3.29
Total Buckwheat No. 1 and smaller	5.54	4.02	4.84	6.94	[2] 6.43	6.80	6.94	[2] 6.42	6.80
Total all sizes	6.91	5.54	6.26	9.31	[2] 8.58	9.14	9.31	[2] 8.57	9.14

[1] Quantity of Lump included is insignificant.
[2] An undetermined part of "Other" sizes included in "Local sales" in 1958 was reported as shipped "Outside region" in 1957.

TABLE 27.—Average value per net ton of Pennsylvania anthracite from all sources, 1957–58, by regions [1]

Region	1957				1958			
	Shipped outside region	Local sales	Colliery fuel	Total production	Shipped outside region	Local sales	Colliery fuel	Total production
Lehigh	$8.06	$11.67	$7.41	$8.33	$9.04	$8.11	$7.48	$8.87
Schuylkill	8.11	9.12	7.20	8.26	8.20	7.31	7.34	7.99
Wyoming	10.42	9.88	5.70	10.21	10.13	10.03	5.74	10.03
Total, excluding Sullivan County	8.89	9.69	6.18	8.99	9.02	8.52	6.33	8.88
Sullivan County	8.90	9.25	11.00	9.18	6.91	5.54	10.00	6.27
Total	8.89	9.69	6.18	8.99	9.02	8.51	6.33	8.88

[1] Value given for shipments is value at which coal left possession of producing company and does not include margins of separately incorporated sales companies.

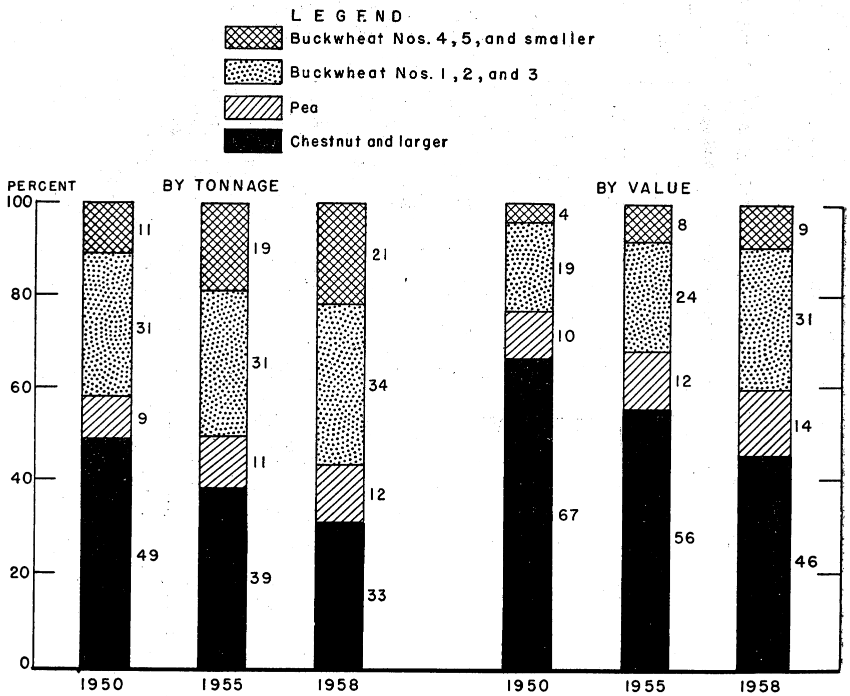

FIGURE 5.—Shipments of Pennsylvania anthracite, 1950, 1955, and 1958, by size groups, in percent of total tonnage and total value.

TABLE 28.—Retail prices of selected fuels in 1958, by months, for various cities [1]

(Coal, per net ton; heating oil, per 100 gallons)

City and fuel	January	February	March	April	May	June	July	August	September	October	November	December
Baltimore, Md.:												
Anthracite:												
Stove	$22.85	$22.85	$22.85	$22.85	$22.44	$21.93	(2)	(2)	(2)	[3] $22.27	[3] $22.61	[3] $22.78
Buckwheat No. 1	18.90	18.74	18.74	18.74	18.87	18.87	(2)	(2)	(2)	[3] 19.04	[3] 19.21	[3] 19.21
Heating oil: Fuel oil No. 2	14.79	14.38	13.87	13.57	13.57	13.57	$13.57	$14.09	$14.18	14.18	14.18	14.98
Boston, Mass.:												
Anthracite:												
Stove	31.50	31.50	31.50	31.50	31.06	30.92	31.58	31.58	31.58	31.50	31.50	31.50
Buckwheat No. 1	25.00	25.00	25.00	25.00	24.88	24.83	25.17	25.17	25.17	25.50	25.50	25.50
Heating oil: Fuel oil No. 2	15.03	14.70	14.48	13.90	13.90	13.90	13.90	14.38	14.50	14.50	14.50	15.08
New York, N.Y.:												
Anthracite:												
Stove	28.78	28.78	28.78	27.75	26.73	26.73	26.73	26.71	26.71	26.70	26.79	26.79
Pea	24.22	24.22	24.22	23.44	22.67	22.67	22.67	22.65	22.65	22.64	22.67	22.67
Buckwheat No. 1	22.47	22.47	22.47	20.94	20.63	20.63	20.63	20.61	20.60	20.59	20.63	20.63
Heating oil: Fuel oil No. 2	15.18	14.85	14.54	14.19	14.19	14.19	14.19	14.63	14.69	14.69	14.69	15.22
Philadelphia, Pa.:												
Anthracite:												
Chestnut	25.95	25.95	25.95	25.95	22.28	22.28	22.62	22.95	23.28	23.28	23.62	23.95
Buckwheat No. 1	20.95	20.95	20.95	20.95	18.62	18.62	18.95	19.28	19.45	19.45	19.78	20.28
Heating oil: Fuel oil No. 2	14.73	14.48	13.90	13.80	13.80	13.82	13.80	14.34	14.42	14.42	14.42	14.94
Washington, D.C.:												
Anthracite:												
Chestnut	27.89	27.89	27.97	27.97	25.04	25.66	26.68	27.04	27.99	27.99	27.99	27.99
Buckwheat No. 1	20.97	20.97	21.05	21.05	20.10	20.31	20.67	20.91	21.28	21.28	21.28	21.28
Heating oil: Fuel oil No. 2	15.04	14.94	14.43	14.12	14.12	14.12	14.12	14.67	14.73	14.73	14.73	15.30

[1] Compiled from reports of Bureau of Labor Statistics. Prices are as of the 15th of each month. Data are preliminary. Sales tax included where applicable.
[2] Insufficient data.
[3] Not comparable to previous data owing to change in sampling.

TABLE 29.—Standard anthracite specifications approved and adopted by the Anthracite Committee, effective July 28, 1947

Size	Round test mesh (inches)	Percent					
		Oversize, maximum	Undersize		Maximum impurities [1]		
			Maximum	Minimum	Slate	Bone	Ash [2]
Broken	Through 4⅜				1½	2	11
	Over 3¼ to 3		15	7½			
Egg	Through 3¼ to 3	5			1½	2	11
	Over 2 7/16		15	7½			
Stove	Through 2 7/16	7½			2	3	11
	Over 1⅝		15	7½			
Chestnut	Through 1⅝	7½			3	4	11
	Over 13/16		15	7½			
Pea	Through 13/16	10			4	5	12
	Over 9/16		15	7½			
Buckwheat No. 1	Through 9/16	10					13
	Over 5/16		15	7½			
Buckwheat No. 2 (Rice)	Through 5/16	10					13
	Over 3/16		17	7½			
Buckwheat No. 3 (Barley)	Through 3/16	10					15
	Over 3/32		20	10			
Buckwheat No. 4	Through 3/32	20					15
	Over 3/64		30	10			
Buckwheat No. 5	Through 3/64	30	No limit				16

[1] When slate content in the sizes from Broken to Chestnut, inclusive, is less than above standards, bone content may be increased by 1½ times the decrease in the slate content under the allowable limits, but slate content specified above shall not be exceeded in any event.
A tolerance of 1 percent is allowed on the maximum percentage of undersize and the maximum percentage of ash content.
The maximum percentage of undersize is applicable only to anthracite as it is produced at the preparation plant. Slate is defined as any material that has less than 40 percent fixed carbon.
Bone is defined as any material that has 40 percent or more, but less than 75 percent, fixed carbon.
[2] Ash determinations are on a dry basis.

EMPLOYMENT

Decreased production in 1958 resulted in a 14-percent decline in employment at anthracite operations. As measured by the average number of men working daily, employment totaled 26,540 in 1958 compared with 30,825 in 1957. The decline also was accelerated in 1958 by the closing of several large mines as producing companies continued to concentrate output at more efficient operations.

Of total industry employment, as shown in table 30, 44 percent was in the Wyoming region, 42 percent in the Schuylkill, and 14 percent in the Lehigh. Compared with 1957, the number of men working in 1958 declined 15 percent in the Wyoming region, 11 percent in the Schuylkill, and 20 percent in the Lehigh.

Luzerne and Schuylkill were the leading counties in number of men employed. As shown in table 31, employment in both counties was approximately the same and, together, represented 70 percent of the total for the industry. Of the major producing counties, Carbon showed the sharpest decline in employment from 1957 (80 percent), owing to the shutdown of a large mine and curtailed output at other mines.

TABLE 30.—Men employed and days worked at operations producing Pennsylvania anthracite in 1958

(Includes operations of strip contractors)

	Lehigh region	Schuylkill region	Wyoming region	Total excluding Sullivan County	Sullivan County	Grand Total
Average number of men working daily:						
Underground	1,502	4,853	7,485	13,840	10	13,850
In strip pits	922	2,466	1,025	4,413	5	4,418
At culm banks	254	444	167	865	2	867
At preparation plant	711	1,874	986	3,571	3	3,574
Other surface	347	1,367	1,968	3,682	3	3,685
Total excluding dredge operations	3,736	11,004	11,631	26,371	23	26,394
Dredge operations	14	127	5	146	---------	146
Total average number of men working daily	3,750	11,131	11,636	26,517	23	26,540
Average number of days active:						
All operations except dredges	184	189	177	183	135	183
Dredge operations	234	212	93	210	---------	210
Average days active, all operations	184	190	177	183	135	183
Man-days of labor:						
All operations except dredges	687,011	2,083,425	2,056,758	4,827,194	3,113	4,830,307
Dredge operations	3,278	26,964	465	30,707	---------	30,707
Total man-days, all operations	690,289	2,110,389	2,057,223	4,857,901	3,113	4,861,014
Average tons per man per day:						
All operations except dredges	5.02	4.49	3.72	4.24	4.55	4.24
Dredge operations	9.38	24.07	26.11	22.53	---------	22.53
Average tons per man day, all operations	5.04	4.74	3.73	4.36	4.55	4.36

Industry employment in 1958 was divided among the various types of work as follows: 52 percent in underground workings, 17 percent at strip mines, 14 percent in surface work at underground mines, 13 percent in preparation plants, 3 percent at culm banks, and 1 percent on dredges. Of the principal producing types of work, the number of men working underground declined 18 percent from 1957, whereas employment at strip mines decreased only 3 percent.

The reduced labor force worked an average of 183 days in 1958, or 13 less than in 1957. Consequently, actual worktime declined 20 percent from 1957 and totaled less than 5 million man-days. Activity was highest in 1958 in the Schuylkill region where operations averaged 190 days of work, slightly lower in the Lehigh region with 184 days, and lowest in the Wyoming region with 177 days.

The productivity rate of labor in the anthracite industry advanced to a record of 4.36 tons per man-day in 1958, slightly above the former record of 4.25 in 1956. The higher rate probably resulted from the continued concentration of operations in the more efficient units. The productivity rate was 5.04 tons per man-day in the Lehigh region, 4.74 in the Schuylkill, and 3.73 in the Wyoming. The variations reflect primarily the different proportions of deep, strip, culm-bank, and dredge coal produced in each region.

TABLE 31.—Men employed at operations producing Pennsylvania anthracite, 1957–58, by counties

(Includes operations of strip contractors)

County	1957	1958	County	1957	1958
Carbon	1,391	278	Luzerne	11,091	9,399
Columbia	1,090	965	Northumberland	3,075	2,912
Dauphin	165	176	Schuylkill	9,963	9,091
Lackawanna	3,949	3,592	Sullivan	7	23
Lancaster, Lebanon, Northampton, and Snyder [1]	94	87	Susquehanna and Wayne		17
			Total	30,825	26,540

[1] Counties producing dredge coal only.

DISTRIBUTION

Bureau of Mines data on the production of Pennsylvania anthracite are obtained by a direct mail canvass of companies operating mines, strip pits, culm banks, river dredges, and preparation plants. However, in obtaining distribution and marketing data, wholesalers, sales agents, dock operators, and exporting firms are contacted, as the coal producer frequently is unaware of the final destinations of shipments. Moreover, the Bureau's distribution data include coal moving to market from producers' stockpiles, whereas production data include only tonnages placed into storage. The coal year (Apr. 1–Mar. 31) is used in collecting and publishing distribution and marketing information, because it provides a more accurate measurement of the normal heating season than the calendar year. For these reasons, the reader should not attempt to correlate the calendar-year production data in this chapter with the statistics on final destinations given in table 32.

The distribution data collected by the Bureau of Mines are published in a series of Mineral Market Reports, free copies of which may be obtained by writing the Federal Bureau of Mines, Washington 25, D.C. These reports present data on rail shipments, by coal sizes, to more than 300 cities in 20 States and Canadian Provinces but provide only the State of destination for coal moving from the mines by truck. However, beginning with the 1958–59 coal year the report will be expanded to include data on truck shipments to approximately 175 cities in seven Eastern States. Copies of the 1958–59 coal-year report should be available about September 1959.

According to data reported to the Bureau of Mines, 24,044,000 net tons of Pennsylvania anthracite was shipped to various markets during the 1957–58 coal year, a decrease of 14 percent from the preceding coal year. (See table 32.) Of this total, 85 percent was marketed in the United States, 7 percent in Canada, and 8 percent in overseas countries. Compared with the 1956–57 coal-year totals, shipments within the United States declined 10 percent, to Canada 19 percent, and to all other countries 40 percent.

TABLE 32.—Distribution of Pennsylvania anthracite, April 1, 1957, to March 31, 1958, by States, Provinces, and countries of destination, in net tons

Destination	Pea and larger						Buckwheat No. 1 and smaller					Total all sizes	Percent of total
	Broken	Egg	Stove	Chestnut	Pea	Total	Buckwheat No. 1	Buckwheat No. 2 (Rice)	Buckwheat No. 3 (Barley)	All other sizes	Total		
United States:													
New England States:													
Connecticut	----	1,743	72,493	85,357	6,999	166,592	15,526	15,187	15,117	3,327	49,157	215,749	.90
Maine	----	2,368	44,609	39,705	1,178	87,860	11,405	9,965	----	1,275	22,645	110,505	.46
Massachusetts	672	31,980	305,011	139,844	13,567	491,074	61,802	48,833	20,745	24,781	156,161	647,235	2.69
New Hampshire	----	1,817	32,489	19,451	1,533	55,290	8,952	10,420	21,116	1,456	41,944	97,234	.40
Rhode Island	----	1,717	25,928	20,444	1,352	49,441	5,733	3,508	55	851	10,147	59,588	.25
Vermont	136	1,806	43,696	28,322	6,055	80,015	19,496	21,673	90	92	41,351	121,366	.51
Total	808	41,431	524,226	333,123	30,684	930,272	122,914	109,586	57,123	31,782	321,405	1,251,677	5.21
Middle Atlantic States:													
New Jersey	747	11,236	269,884	639,934	198,084	1,119,885	234,076	247,952	568,264	422,418	1,472,710	2,592,595	10.78
New York	849	75,944	917,331	821,177	704,420	2,519,721	1,074,553	438,923	510,748	621,654	2,645,878	5,165,599	21.49
Pennsylvania [1]	15,296	23,678	615,208	1,419,877	1,428,410	3,502,469	1,150,745	1,068,882	1,369,095	2,570,243	6,158,965	9,661,434	40.18
Total	16,892	110,858	1,802,423	2,880,988	2,330,914	7,142,075	2,459,374	1,755,757	2,448,107	3,614,315	10,277,553	17,419,628	72.45
South Atlantic States: [2]													
Delaware	3,153	1,142	22,973	72,591	3,257	103,116	2,518	3,150	19,486	5,570	30,724	133,840	.56
District of Columbia	----	1,404	19,338	24,780	1,789	47,311	11,760	1,135	820	21	13,736	61,047	.25
Maryland	----	2,057	75,636	85,213	9,920	172,826	35,558	6,731	184	195,262	237,735	410,561	1.71
Virginia	----	318	12,278	17,903	723	31,222	5,884	18	3	432	6,337	37,559	.16
Total	3,153	4,921	130,225	200,487	15,689	354,475	55,720	11,034	20,493	201,285	288,532	643,007	2.68
Lake States: [3]													
Illinois	56	445	5,764	10,271	15,871	32,407	59,345	12,667	697	16,758	89,467	121,874	.51
Michigan	----	1,112	16,092	10,258	499	27,961	14,569	6,345	----	26,963	47,877	75,838	.31
Minnesota	----	----	1,217	1,571	184	2,972	----	----	----	178,050	178,050	181,022	.75
Ohio	----	1,682	499	5,898	746	8,825	20,220	1,708	2,178	288,674	312,780	321,605	1.34

Wisconsin	--------	--------	33, 578	45, 702	4, 658	83, 938	3, 948	3, 740	--------	50, 069	57, 757	141, 695	. 59
Total	56	3, 239	57, 150	73, 700	21, 958	156, 103	98. 082	24, 460	2, 875	560, 514	685, 931	842, 034	3. 50
All other States	525	2, 851	2, 319	11, 121	738	17, 554	39, 309	4, 267	18, 224	126, 054	187, 854	205, 408	. 85
Total United States	21, 434	163, 300	2, 516, 343	3, 499, 419	2, 399, 983	8, 600, 479	2, 775, 399	1, 905, 104	2, 546, 822	4, 533, 950	11, 761, 275	20, 361, 754	84. 69
Canada:													
Ontario	--------	13, 018	603, 238	418, 570	59, 353	1, 094, 179	55, 682	32, 858	1, 013	4, 155	93, 708	1, 187, 887	4. 94
Quebec	--------	4, 321	108, 999	63, 534	4, 953	181, 807	81, 607	61, 443	103, 019	2, 736	248, 805	430, 612	1. 79
Other Provinces	--------	2, 379	23, 068	16, 039	5, 251	46, 737	8, 184	18, 814	10. 472	180	37, 650	84, 387	. 35
Total Canada	--------	19, 718	735, 305	498, 143	69, 557	1, 322, 723	145, 473	113, 115	114, 504	7, 071	380, 163	1, 702, 886	7. 08
Other countries	47, 166	4, 531	105. 240	218, 152	163, 923	539, 012	156, 868	145, 420	176, 844	961, 087	1, 440, 219	1, 979, 231	8. 23
Grand total	68, 600	187, 549	3, 356, 888	4, 215, 714	2, 633, 463	10, 462, 214	3, 077, 740	2, 163, 639	2, 838, 170	5, 502, 108	13, 581, 657	24, 043, 871	100. 00

[1] Includes "local sales."
[2] Shipments to other States generally referred to as being in the South Atlantic area are included in "All other States."
[3] Shipments to Indiana are included in "All other States."

Although the 10-percent decline in shipments to American markets was due largely to losses to competitive fuels, the decrease varied widely in individual areas. For example, shipments to the Middle Atlantic area declined 9 percent—with decreases of 15 and 16 percent, respectively, in New Jersey and New York—but Pennsylvania received only 3 percent less than in 1956–57. The Pennsylvania market gained 7 percent in the "local sales" area and 2 percent in truck shipments elsewhere in the State. Although the 14-percent decline in Pennsylvania rail terminations reflected decreases in shipments of all sizes, the overall increase in truck tonnage was caused entirely by a sharp rise in the amount of Buckwheat No. 1 and smaller sizes diverted to trucks. In the New England area, four States registered declines of more than 20 percent, ranging from a low of 21 percent in Connecticut to a high of 29 percent in Rhode Island. Maine and Vermont, the only New England States not served with natural gas, showed the smallest losses—14 and 12 percent, respectively. Owing to increased demand for the smaller industrial sizes, shipments to Maryland and Delaware gained 9 and 4 percent. In other South Atlantic States, losses ranged from 12 percent in Virginia to 17 percent in the District of Columbia. The Lake States received 15 percent less anthracite than in the 1956–57 coal year. Michigan and Wisconsin showed respective declines of 44 and 62 percent; shipments to Illinois remained steady; and Minnesota and Ohio gained 24 and 55 percent, respectively, as a result of increased receipts of the small industrial sizes.

In the 1957–58 coal year, the Province of Ontario imported 20 percent less Pennsylvania anthracite than in 1956–57 and Quebec 23 percent less; however, the Maritime Provinces stepped up imports by 24 percent because of reduced receipts of Welsh anthracite. The same factor that drove down total demand for anthracite in American markets—competition from other fuels—appeared to be the dominant reason for reduced shipments to Ontario and Quebec. In overseas markets, particularly Western Europe, the weather, large coal stocks (built up by a combination of large imports and increased production), and increased consumption of petroleum and natural gas reduced the need for imported anthracite.

Distribution data collected for the 1957–58 coal year again showed a gain for trucked coal. Of the total moved to market in 1957–58, 8,027,000 tons, or 33 percent, went by truck—a gain of 3 percent, in contrast to a decline of 20 percent in rail movements. The smaller size coals continued in relatively stronger demand than the larger space-heating sizes. Although Buckwheat No. 1 and smaller sizes showed a net loss of about 9 percent, Pea and larger dropped 20 percent. Shipments of Egg coal dropped most of all sizes produced (41 percent), whereas Buckwheat No. 4 and smaller declined the least (2 percent). This trend also was reflected in the overseas export market, as the larger sizes (Pea and larger) accounted for only 27 percent of the total compared with 45 percent in the 1956–57 coal year. (See table 33.)

The downward trend in rail shipments, mentioned in connection with the Bureau's 1957–58 coal-year distribution data, continued throughout the remaining three-quarters of calendar year 1958, according to shipment data published monthly by the Pennsylvania Department of Mines and Mineral Industries. Rail shipments of anthracite declined 31 percent in calendar year 1958, while truck shipments gained 8 percent over 1957. (See tables 34 and 35.) Al-

TABLE 33.—Exports of Pennsylvania anthracite to countries other than Canada, April 1, 1957, to March 31, 1958, in net tons

Country	Pea and larger					
	Broken	Egg	Stove	Chestnut	Pea	Total
North and Central America:						
Bermuda, Cuba, and Mexico	221			19	13,697	13,937
South America:						
Argentina, Brazil, and Venezuela				3,484	5,235	8,719
Europe:						
Belgium, Luxembourg, France, Germany, Greece, Italy, and Netherlands	46,945	4,531	104,901	213,775	135,917	506,069
Asia:						
Israel, Japan, and Viet-Nam				817	9,074	9,891
Unknown destination			339	57		396
Total [1]	47,166	4,531	105,240	218,152	163,923	539,012

Country	Buckwheat No. 1 and smaller					Total all sizes
	Buckwheat No. 1	Buckwheat No. 2 (Rice)	Buckwheat No. 3 (Barley)	All other sizes	Total	
North and Central America:						
Bermuda, Cuba, and Mexico	76,589			5,527	82,116	96,053
South America:						
Argentina, Brazil, and Venezuela	2,936		25	5	2,966	11,685
Europe:						
Belgium, Luxembourg, France, Germany, Greece, Italy, and Netherlands	49,676	136,453	176,819	918,953	1,281,901	1,787,970
Asia:						
Israel, Japan, and Viet-Nam	27,667	8,967		19,810	56,444	66,335
Unknown destination				16,792	16,792	17,188
Total [1]	156,868	145,420	176,844	961,087	1,440,219	1,979,231

[1] According to data released by the Bureau of the Census, U.S. Department of Commerce, exports of Pennsylvania anthracite to non-Canadian destinations totaled 2,009,034 net tons.

TABLE 34.—Rail shipments of Pennsylvania anthracite, 1955–58, by destinations, in net tons[1]

[Pennsylvania Department of Mines and Mineral Industries]

Destination	1955	1956	1957	1958
New England States	1,771,427	1,574,898	1,287,632	1,032,680
New York	5,411,825	4,793,285	3,723,217	2,995,230
New Jersey	2,849,526	2,529,223	1,927,658	1,534,953
Pennsylvania	4,381,062	4,735,222	4,622,699	2,814,258
Delaware	138,733	108,308	86,231	69,816
Maryland	257,795	277,378	293,316	268,054
District of Columbia	73,543	66,121	39,244	39,901
Virginia	59,094	37,992	28,207	32,378
Ohio	300,246	417,813	251,585	148,711
Indiana	41,660	51,692	24,427	35,540
Illinois	107,852	115,143	133,817	81,090
Wisconsin	145,939	128,753	103,155	83,921
Minnesota	22,024	21,965	89,023	10,011
Michigan	75,239	83,907	52,718	30,723
Other States	129,210	133,495	165,434	100,560
Total United States	15,765,175	15,075,195	12,828,363	9,277,826
Canada	2,203,474	2,091,718	1,588,304	1,304,214
Other foreign countries	388,621	1,567,842	1,663,819	459,129
Grand total	18,357,270	18,734,755	16,080,486	11,041,169

[1] Does not include dredge coal.

TABLE 35.—Truck shipments of Pennsylvania anthracite in 1958, by months and by States of destination, in net tons[1]

Destination	January	February	March	April	May	June	July
Pennsylvania:							
Within region	475,134	508,490	293,600	628,948	308,866	291,123	159,209
Outside region	234,689	231,535	177,697	188,058	197,284	206,993	161,177
New York	121,771	106,418	77,314	84,523	97,142	117,987	89,343
New Jersey	71,849	66,233	45,005	51,911	55,635	63,256	49,989
Delaware	5,421	5,363	3,026	2,712	2,228	3,686	1,546
Maryland	11,594	12,157	7,071	5,520	3,221	2,959	4,534
District of Columbia	106	120	241	243	128	171	253
Other States	1,081	1,014	956	1,302	609	778	1,040
Total: 1958	921,645	931,330	604,910	963,217	665,113	686,953	467,091
1957	1,063,288	813,619	641,159	774,924	691,198	640,681	420,997

Destination	August	September	October	November	December	Total	Percent of total trucked
Pennsylvania:							
Within region	216,865	276,684	294,389	296,663	556,044	4,306,015	47.6
Outside region	208,625	246,624	251,389	201,863	318,674	2,624,608	29.0
New York	102,629	109,985	116,013	82,072	134,021	1,239,218	13.7
New Jersey	51,354	69,396	65,307	42,105	82,020	714,060	7.9
Delaware	1,518	3,537	2,771	3,788	6,573	42,169	.5
Maryland	6,434	11,049	9,795	9,767	19,798	103,899	1.1
District of Columbia	267	282	533	460	1,370	4,174	(2)
Other States	1,816	1,514	2,293	942	1,771	15,116	.2
Total: 1958	589,508	719,071	742,490	637,660	1,120,271	9,049,259	100.0
1957	654,110	555,625	686,724	660,678	762,917	8,365,920	100.0

[1] Compiled from reports of Pennsylvania Department of Mines and Mineral Industries; does not include dredge coal.
[2] Less than 0.05 percent.

though each State within economic trucking distance of the mines increased receipts of trucked coal, States nearest the mining area (New York, New Jersey, and Pennsylvania) gained the least in percentage trucked over 1957; whereas Maryland, the District of Columbia, and the category "Other States" showed the greatest percentage increase. The District of Columbia, Indiana, and Virginia increased receipts of rail-shipped coal in 1958, but only by small amounts; however, these gains were completely overshadowed by declines in the rail movement of anthracite to major markets, which ranged from a low of about 9 percent in Maryland to a high of 39 percent in Pennsylvania. New Jersey, New York, and the New England States showed declines of approximately 20 percent each in rail receipts.

The 20-percent decline reported by the Commonwealth of Pennsylvania in shipments to the New England States in 1958 was corroborated by data released by the Massachusetts Division on the Necessaries of Life. According to the latter agency, New England rail receipts dropped from 1,262,000 tons in 1957 to 1,009,000 tons in 1958. Tidewater movement to the New England area remained at a low level, the year's total being only slightly more than 3 thousand tons as in 1957. (See tables 2 and 36.)

Loadings of anthracite over the Lake docks fell abruptly in 1958. According to the Ore and Coal Exchange, Cleveland, Ohio, 1958 loadings over Lake Erie docks totaled 260,000 tons (a decline of 43 percent), and receipts at Duluth-Superior dropped almost two-thirds (from 261,000 tons in 1957 to 93,000 tons in 1958). Reflecting these declines were decreases of 18 and 24 percent, respectively, in receipts at docks on Lakes Superior and Michigan. Likewise, reloadings for inland shipment from Lake Superior docks declined 6 percent and from Lake Michigan docks, 33 percent. Table 2 gives detailed data on the Lake movement of anthracite.

TABLE 36.—Receipts of anthracite in New England, 1917, 1920, 1923, 1927, and 1943–58, in thousand net tons

Year	Receipts by tidewater	Receipts by rail [1]	Imports [2]	Total receipts of Pennsylvania anthracite [3]	Year	Receipts by tidewater [4]	Receipts by rail [1]	Imports [2]	Total receipts of Pennsylvania anthracite [3]
1917	[1] 4,421	7,259	1	11,679	1949	110	3,336	--------	3,446
1920	[1] 3,521	7,804	1	11,324	1950	81	3,615	18	3,678
1923	[1] 4,082	8,102	145	12,039	1951	66	3,135	27	3,174
1927	[1] 2,421	6,725	106	9,040	1952	70	2,847	29	2,888
1943	[4] 575	5,310	164	5,721	1953	49	2,088	31	2,106
1944	[4] 398	5,836	12	6,222	1954	10	1,893	6	1,897
1945	[4] 331	4,750	(5)	5,081	1955	5	1,713	(5)	1,718
1946	[4] 399	5,244	--------	5,643	1956	10	1,610	(5)	1,620
1947	[4] 240	4,498	--------	4,738	1957	3	1,262	--------	1,265
1948	[4] 217	4,646	--------	4,863	1958	3	1,009	--------	1,012

[1] Commonwealth of Massachusetts, Division on the Necessaries of Life.
[2] U.S. Department of Commerce.
[3] Total receipts by rail and by tidewater less imports.
[4] Association of American Railroads.
[5] Less than 500 tons.

CONSUMPTION

The apparent consumption of Pennsylvania anthracite in the United States (production, plus imports, minus exports, plus or minus changes in producers' stocks) dropped to 19 million tons in 1958, or 9 percent below 1957. As total production declined 16 percent, the 2-million-ton decline in exports obviously played a major role in curtailing production. The fact that each industrial consumer on which data are available, except class I railroads, reduced coal inventories during the year also played a role in reducing output. Although no definitive data are available on the quantity of anthracite used for domestic space heating, the decline in exports and in industrial consumption, when related to the decline in total production, indicates that the space-heating market was fairly stable in 1958 because of colder weather.

Electric utilities reduced consumption of anthracite in 1958 by almost 600,000 tons, or 17 percent. Although economic conditions undoubtedly lowered the total demand for electricity, favorable water levels in eastern Pennsylvania streams enabled public utilities to step up production at hydroelectric plants. A large Pennsylvania public utility stated that generation at Susquehanna River hydroplants was 25 percent above 1957 and about 6 percent above the recent average. This decreased need for coal and the fact that utility stockpiles were reduced almost 600,000 tons during the year were largely responsible for the slow movement of the smaller sizes, particularly Buckwheat No. 5 and "Other."

As a result of decreased demand for coke by the iron and steel industries, the output of oven coke declined 28 percent in 1958, reducing the need of anthrafines for blending. Consequently, the amount of anthracite charged to coke ovens fell from 389,000 tons in 1957 to 255,000 in 1958, or about 35 percent. Consumption by class I railroads also declined, dropping about 7 percent from the 361,000 tons consumed in 1957. The downward trend in the production of fuel briquets continued in 1958, and the quantity of anthracite used in manufacturing fuel of this type fell to 120,000 tons, 23 percent below 1957. According to data released by the American Iron and Steel Institute, the amount of anthracite used in pelletizing and sintering iron ore declined from 868,484 tons in 1957 to 684,704 tons in 1958.

Table 37 shows the apparent consumption of anthracite, briquets, domestic coke, heating and range oils, and natural gas in the primary anthracite marketing areas. Consumption by public utilities and railroads, by months, is given in table 2. Table 38 gives retail-dealer deliveries and consumption by a selected group of industrial consumers 1954–58.

TABLE 37.—Apparent consumption of anthracite and selected competitive fuels in the principal anthracite markets, 1955–58

(Thousand net tons)

Fuel	New England	New York	New Jersey	Pennsylvania	Delaware	Maryland	District of Columbia	Total	Percent of total fuels
Anthracite (all users): [1]									
1955	1,771	[2] 6,359	[2] 3,602	10,618	157	328	81	22,916	19.9
1956	1,575	[2] 5,923	[2] 3,255	11,010	137	355	70	22,325	18.5
1957	1,288	[2] 4,893	[2] 2,610	11,025	120	358	42	20,336	17.3
1958	1,033	[2] 4,234	[2] 2,249	9,745	112	372	44	17,789	13.7
Imported: [3]									
1955	(4)	-------	-------	-------	-------	-------	-------	(4)	(5)
1956	(4)	-------	-------	-------	-------	-------	-------	(4)	(5)
1957	-------	-------	-------	-------	-------	-------	-------	-------	-------
1958	-------	-------	-------	-------	-------	-------	-------	-------	-------
Briquets (domestic use):									
1955	19	6	1	10	(4)	7	1	44	(5)
1956	17	6	1	9	(4)	6	1	40	(5)
1957	12	4	1	7	(4)	5	1	30	(5)
1958	9	3	1	7	(4)	5	1	26	(5)
Coke (domestic use):									
1955	384	122	235	96	(4)	-------	-------	837	.7
1956	334	70	202	87	(4)	-------	-------	693	.6
1957	221	58	162	57	(4)	(4)	-------	498	.4
1958	201	53	146	50	(4)	1	-------	451	.4
Imported: [3]									
1955	2	3	-------	-------	-------	-------	-------	5	(5)
1956	7	12	-------	-------	-------	-------	-------	19	(5)
1957	(4)	12	-------	-------	-------	-------	-------	12	(5)
1958	-------	13	-------	-------	-------	-------	-------	13	(5)
Oil (heating and range): [6]									
1955	24,564	19,903	9,808	8,810	812	4,234	1,284	69,415	60.2
1956	25,789	20,402	10,253	9,186	911	4,617	1,317	72,475	60.2
1957	24,807	19,820	10,112	9,090	903	4,559	1,287	70,578	60.0
1958	29,975	23,207	10,880	10,396	951	4,644	1,233	81,286	62.7
Natural gas: [7]									
1955	1,873	7,761	1,971	8,518	(8)	(8)	[8] 1,965	22,088	19.2
1956	2,252	8,633	2,366	9,382	(8)	(8)	[8] 2,243	24,876	20.7
1957	2,455	9,095	2,544	9,872	(8)	(8)	[8] 2,328	26,294	22.3
1958	3,096	10,227	3,103	10,939	(8)	(8)	[8] 2,649	30,014	23.2
Total:									
1955	28,613	34,154	15,617	28,052	[9] 969	[9] 4,569	[9] 3,331	115,305	100.0
1956	29,974	35,046	16,077	29,674	[9] 1,048	[9] 4,978	[9] 3,631	120,428	100.0
1957	28,783	33,882	15,429	30,051	[9] 1,023	[9] 4,922	[9] 3,658	117,748	100.0
1958	34,314	37,737	16,379	31,137	[9] 1,063	[9] 5,022	[9] 3,927	129,579	100.0

[1] Pennsylvania Department of Mines.
[2] An important but undetermined part of anthracite shown as shipped to New Jersey is reshipped to New York City.
[3] U.S. Department of Commerce.
[4] Less than 500 tons.
[5] Less than 0.05 percent.
[6] Converted to coal equivalent upon basis of 4 barrels of fuel oil equaling 1 ton of coal.
[7] Converted to coal equivalent upon basis of 24,190 cubic feet of natural gas equaling 1 ton of coal.
[8] Delaware and Maryland included with District of Columbia.
[9] Natural gas for Delaware and Maryland included with District of Columbia.

TABLE 38.—Retail-dealer deliveries and consumption of Pennsylvania anthracite in the United States, 1954–58, by selected consumer categories

(Thousand net tons)

Year	Retail dealer deliveries [1]	Used as colliery fuel	Used by railroads [2]	Used for generating electricity [3]	Used in the manufacture of briquets	Used at cement plants	Used in the iron and steel industry		
							For coke making	For sintering and pelletizing [4]	Other uses [5]
1954	13,627	608	446	3,166	261	200	229	(6)	437
1955	13,019	419	457	3,209	264	199	366	385	443
1956	13,018	342	409	3,296	228	244	377	564	625
1957	10,670	279	361	3,363	156	221	389	868	698
1958	9,386	195	335	2,782	120	183	255	685	686

[1] Estimated from reports submitted by a selected list of retail dealers. Does not include local sales.
[2] Association of American Railroads.
[3] Federal Power Commission.
[4] Annual Statistical Report, American Iron and Steel Institute.
[5] Annual Statistical Report, American Iron and Steel Institute. Contains a small but undetermined amount of anthracite used for sintering.
[6] Not available.

STOCKS

Anthracite producers increased stocks in ground storage from a low of 275,000 tons at the close of March to a peak of 580,000 tons in November. However, by the end of the year almost 175,000 tons of this stored coal had been moved to market to meet the demand caused by an extremely cold December. As a result, the year closed with only 406,000 tons in ground storage, 19 percent less than yearend stocks in 1957.

According to estimates by the Bureau of Mines, stocks of anthracite held at retail yards in the United States (excluding the producing or "local sales" area) totaled 1,240,000 tons at the end of 1958—5 percent less than the closing figure for 1957. The monthly stock data reveal no unusual development, as the low point for the year again occurred in March and the high in November. Like producers, retail dealers decreased inventories substantially in December because of the severe weather both in the New England and Middle Atlantic States.

In addition to cutting back sharply on purchases of anthracite, public utilities reduced stocks by more than one-half million tons during 1958, yearend stocks totaling 2,236,000 tons compared with 2,798,000 tons in 1957.

Reflecting the decreased Lake movement of anthracite were declines in stocks at docks on Lakes Michigan and Superior, each closing the year about 22 percent below 1957 levels. For the first time in several years, class I railroads ended the year with more coal inventory than in the preceding year; the 40,000 tons in stock was 24 percent over 1957. Stocks of anthracite also declined at coke plants, the amount on hand at the end of the year being 104,000 tons or 25 percent less than at the end of 1957.

FOREIGN TRADE [2]

No anthracite was imported into the eastern part of the United States in 1958, according to data released by the Bureau of the Census, U.S. Department of Commerce. The 4,363 tons reported as imported into the State of Washington from Canada is thought to have been either semianthracite or bituminous coal, like the 1,138 tons reported for the State in 1957.

According to the same source, total exports of Pennsylvania anthracite declined 47 percent in 1958, or slightly more than 2 million tons. (See table 2.) Besides the actual tonnage loss, declines in the export trade had other adverse effects on the anthracite industry. The price-stabilizing effect of a strong export market, in which substantial tonnages are shipped under contract at firm prices, was largely destroyed. Moreover, exports of the larger sizes, which command the highest prices, apparently declined proportionately more than exports of the smaller sizes. Although published data do not show the actual sizes of anthracite exported, Bureau of Mines' estimates based on special Census tabulations indicate that overseas shipments of the larger coals (Pea and larger) fell from almost 800,000 tons in 1957 to less than 100,000 in 1958. As exports to Canada consist principally of the larger sizes, the decline in shipments to that country undoubtedly represented a further loss of large-coal tonnage. The diminished demand for large-size anthracite in Canadian and overseas markets, caused some producers to crush the larger coals to meet commitments for the smaller sizes, thus reducing the average value received at the mines per ton of output.

Although weather conditions and other factors affect Canadian demand for American anthracite, the most important reason for the continued decline in Canadian imports over the past few years has been the competition of other fuels, particularly petroleum and natural gas. Completion in November 1958 of the trans-Canada natural-gas pipeline, linking the Alberta fields with markets as far east as Montreal, indicates that the Pennsylvania anthracite industry may find it difficult to maintain future exports to Canada at or near the 1958 level.

As previously stated, exports of the large sizes of anthracite dropped severely in 1958; however, the tonnage loss was greater in the smaller sizes, as overseas shipments of Buckwheat No. 1 and smaller declined from an estimated 1.8 million tons in 1957 to 0.7 million in 1958. For example, France, the largest buyer of small-size anthracite, cut imports of American anthracite from 1,036,000 tons in 1957 to 334,000 in 1958. Belgium-Luxembourg, Italy, and the Netherlands, all buyers of substantial amounts of the smaller Buckwheat sizes in recent years, either went out of the market entirely or drastically curtailed imports of these sizes. The factors that limited exports to Europe in 1957 (excessive stocks, increased oil imports, competition from Russian and other anthracites, and the rapid development of natural-gas fields in France and Italy) were responsible for the further drastic decline in 1958 and are expected to restrict exports to Europe in 1959 to the 1958 volume or less.

[2] Figures on imports and exports compiled by Mae B. Price and Elsie D. Jackson, Division of Foreign Activities, Bureau of Mines, from records of the Bureau of the Census.

According to data released by the Coal Trade Subcommittee of the Economic Commission for Europe, the U.S.S.R. exported 1,891,000 metric tons of anthracite in 1958, an increase of 7 percent over 1957. Among the Western European countries importing anthracite from Russia's Donetz basin, France showed the largest increase—stepping up imports from 605,000 metric tons in 1957 to 703,000 tons in 1958 while Italy increased imports from 211,000 tons to 253,000 and Belgium from 44,000 to 69,000. Western Germany took only 3,000 tons in both years and the Netherlands imported 39,000 tons in 1958 as compared with 40,000 in 1957. Among the satellite nations, East Germany was the largest buyer, importing 422,000 tons in 1958, a decline of 20,000 tons. Finland, however, materially increased imports of Russian anthracite by taking 264,000 tons, as opposed to 199,000 tons in 1957. Although several other European countries imported small quantities in 1958, no shipments were recorded for the Near or Far East, Oceania, Africa, South America, and North America.

Based on data published in the Accounts Relating to the Trade and Navigation of the United Kingdom, the British anthracite export trade suffered a severe setback in 1958, as the total dropped from 1,654,223 metric tons in 1957 to 1,135,480 tons in 1958. As exports to Canada declined only about 58,000 tons (from 118,153 tons in 1957 to 60,333 tons in 1958), the major part of the loss occurred in exports to Western Europe, Britain's major anthracite market.

Japan, traditionally the Far East's largest importer of solid fuels, sharply curtailed imports of anthracite in 1958, according to preliminary data released in the Monthly and Annual Returns of the Foreign Trade of Japan. Based on these data, Japan received 504,943 metric tons of foreign anthracite in 1958 compared with 736,379 tons in 1957. Among the major 1958 suppliers were North Vietnam with 354,459 tons, China (Communist) with 46,297 tons, Union of South Africa with 26,216 tons, and, India with 21,579 tons. According to the same source, no anthracite was imported from the United States during the year and only 14,728 metric tons in 1957. Table 39 gives detailed data on exports of Pennsylvania anthracite for 1957 and 1958, by countries of destination.

TABLE 39.—Anthracite exported from the United States, 1957–58, by countries and customs districts, in net tons

[Bureau of the Census]

Country	1957	1958
North America:		
Bermuda	17	
Canada	1,778,551	1,522,408
Cuba	101,456	34,257
Mexico	1,134	1,019
Total	1,881,158	1,557,684
South America:		
Argentina	3,773	
Brazil	7,270	19,640
Chile		25
Colombia		10
Peru	9	
Venezuela	10	46
Total	11,062	19,721
Europe:		
Belgium-Luxembourg	243,048	
France	1,035,628	333,792
Germany, West	15,042	
Greece	42,043	9,103
Italy	257,765	73,335
Netherlands	761,891	219,834
Norway		93
Trieste		4,100
Total	2,355,417	640,257
Asia:		
Indonesia	107	
Israel	33,305	10,769
Japan	25,547	348
Viet-Nam, Laos, and Cambodia	25,189	[2] 51,080
Total	84,148	62,197
Grand total	4,331,785	2,279,859

Customs district	1957	1958
North Atlantic:		
Connecticut		41
Maine and New Hampshire	18	22
Massachusetts		30
New York	2,567	1,552
Philadelphia	2,542,531	798,641
South Atlantic:		
Maryland	17	473
Virginia	610	1,491
Gulf coast: Mobile		51
Mexican border: Laredo	1,104	1,019
Pacific coast:		
Oregon	10,016	
Washington	11	
Northern border:		
Buffalo	1,080,238	968,688
Dakota	40	50
Duluth and Superior	3,349	1,591
Michigan	4,735	897
Ohio	9,127	8,140
Rochester	760	2,443
St. Lawrence	650,100	467,496
Vermont	21,922	20,791
Miscellaneous [1]	4,640	6,443
Total	4,331,785	2,279,859

[1] District breakdown not available.
[2] Viet-Nam.

TABLE 40.—World production of anthracite, 1954–58, by countries, in thousand short tons[1]

[Compiled by Pearl J. Thompson and Berenice B. Mitchell]

Country	1954	1955	1956	1957	1958
Belgium	7,781	7,947	7,675	9,827	7,541
Bulgaria	[2] 33	132	137	[2] 150	[2] 165
China [2]	5,000	5,000	5,500	5,700	11,000
France	11,894	12,031	12,033	10,860	12,235
Germany:					
East [2]	270	275	275	275	275
West	11,556	12,378	13,453	13,875	[2] 13,792
Ireland	170	154	182	180	186
Italy	71	53	60	61	49
Japan	1,376	1,495	1,561	1,852	1,811
Korea:					
North [2]	1,200	1,300	1,500	1,600	2,180
Republic of	982	1,442	2,001	2,691	2,944
Morocco: Southern Zone	536	515	531	574	562
New Zealand	2	2	2	2	[2] 3
Peru	86	18	18	19	62
Portugal	476	445	456	549	625
Rumania	[2] 55	22	12	[2] 17	[2] 17
Spain	2,165	2,159	2,507	3,129	3,441
Switzerland [2]	11	11	11	11	11
Union of South Africa [3]	428	413	[2] 465	[2] 485	546
U.S.S.R.	58,324	66,974	[2] 73,100	[2] 73,900	[2] 77,200
United Kingdom	5,013	4,894	4,662	4,476	4,363
United States (Pennsylvania)	29,083	26,205	28,900	25,338	21,171
Vietnam:					
North	1,099	1,213	1,213	[2] 1,200	[2] 1,200
South			2	13	22
World total (estimate) [1]	137,600	145,100	156,300	156,800	161,400

[1] This table incorporates a number of revisions of data published in previous Anthracite chapters. Data do not add to totals shown owing to rounding where estimated figures are included in the detail.
[2] Estimate.
[3] Reported as sales.

NOTE: An undetermined quantity of semianthracite is included in the figures for some countries.

WORLD PRODUCTION

According to estimates, world production of anthracite totaled 161.4 million tons in 1958, an increase of about 5 million tons. Among the major producing countries, the U.S.S.R. and China registered the largest increases, the former stepping up output from an estimated 73.9 million tons in 1957 to 77.2 million tons in 1958 and the latter from 5.7 million tons to almost double that amount (11 million) in 1958. After declining in 1957, French output gained, the 1958 total (12.2 million) slightly exceeding that in 1955 and 1956. Spain also increased production by a small amount, but production in all other Western European countries fell below 1957 levels. The long downward trend in British anthracite production continued, the 1958 output being about 3 percent under 1957. The largest relative and absolute decline was in the United States, where production fell 16 percent or approximately 4 million tons.

Table 40 presents detailed data on world production of anthracite, by countries, 1954–58.

TECHNOLOGY

Research to improve technologies and provide new uses and products is an elemental step in reinvigorating the anthracite industry. Advances in extracting and preparing anthracite lead to lower costs and an improved product. Utilization research leads to an expansion of current uses and the development of new ones.

Mining.—Mining research by the Bureau of Mines was devoted largely to adapting high-productivity coal-mining machinery to moderately and steeply pitching anthracite beds and to developing new methods of roof control to improve the safety of workers and to attain a greater recovery of coal from the deposits.

A full-scale longwall mining section was established in a mine of a cooperating anthracite producer by undercutting the coal with conventional cutting machines, drilling and blasting, and loading on a chain conveyor with a rigid-blade planer or coal plough. The plough loaded 75 to 90 tons per hour. The productivity rate was 5.1 tons per man-shift in mining and loading about 13,000 tons. One difficulty was that 20 feet of roof had to be supported the full length of the longwall after undercutting was completed. Four lines of yielding steel props, staggered in pairs of two props interconnected with roof bars perpendicular to the face, were used to support the roof. Steel cribs were alternated in the prop line farthest from the face to provide a firm roof-break line. Plans were underway at the close of the year to test a drum-cutter-loader machine purchased in Europe. As this machine is pulled along the longwall face it cuts and loads the coal on a conveyor in one operation. The maximum open-roof span to be supported will be reduced from 20 to 11 feet, and the number of props will be increased approximately one-third over that of the first roof-support system.

The Bureau of Mines, in cooperation with a producer, is developing the full capabilities of a company-owned borer-trimmer type of continuous miner, a 2-foot underground augur equipped with a 4-foot reamer, mobile loaders, conveyors, and related auxiliary equipment. This machinery will be tested in mining and loading coal from a bed 30 feet thick with a pitch of 20° to 45°. The borer is used to drive gangways 300 feet long with 35-foot pillars between roads. The 2-foot auger is used for drilling crosscuts between gangways for ventilation, and occasionally these holes are reamed to 4-foot diameter for use as manways. After this development work, the mobile loaders and conveying equipment are placed in the completed roads and the pillars mined. The roof in the 8- by 12-foot borer-driven roads is supported by four-piece, steel yielding arches made from heavy-duty mine-tie sections. Preliminary analysis of the information developed thus far indicates a productivity rate of about 30 tons per man-shift for the section.

In a study of the hydraulic hoisting of anthracite in a vertical pipeline, sinking velocity tests were made with anthracite and diverse materials of different gravities, shapes, and sizes as the first phase of the project. Results of these tests indicate that the shape of the specimen greatly influences the sinking velocity. A variable-speed centrifugal pump that can pass solids up to 1¾-inch will be used for planned pumping tests. A lock-chamber feed apparatus is being designed for later experiments on introducing large-size solids into a high-pressure line.

A summarization[3] of current stripping practices in the anthracite region estimated that about 80 percent of the total explosives used for primary blasting are ammonium nitrate prills or granules. The gradual transition from churn to rotary drills or to combination rotary and percussion types was stated to be virtually completed in stripping work. Average footages attained per drill for a 7-hour shift appear to be about 250 feet, with the tricone bit having an average life of about 3,000 feet.

To attain increased stripping and spoil ranges as cuts become deeper, anthracite operators have acquired larger draglines with longer booms. In 1958, a dragline[4] with a 32-cubic-yard bucket (the largest in the region) and a 200-foot boom was placed in operation. This machine can dig as much as 130 feet below the bottom of the cab and has moved a daily average of 18,000 cubic yards of overburden. It is used also to remove the exposed coal from the pit. A 6-cubic-yard, rubber-tired, front-end loader, used in conjunction with the dragline, has achieved a rate of 500 tons per hour in loading the coal from the pit into 32-cubic-yard trucks.

A report[5] on the use of self-propelled scrapers and bulldozers in overburden work at anthracite strippings claims that the low operating cost of these earth-moving units makes possible the recovery of coal at depths that formerly were beyond economic limits.

A "down-the-hole" percussion drill with 6½-inch carbide-tipped bits is said[6] to be more successful than rotary types in drilling hard rock at an anthracite stripping operation. A water-check valve between two of the drill rods prevents water from entering the lower part of the hole, thus eliminating hammer fouling. The water check also permits compressed air to flow toward the hammer but prevents backflow if the air supply is interrupted or shut off. The carbide inserts on used bits are dressed on the site by a grinder powered from the drill.

Two types of continuous mining machines are used in a Canadian mine to extract 45 inches of coal from a bed pitching 20°.[7] From nearly level headings along the pitch, a ripper-type continuous miner is used to drive 300-foot rooms directly up the pitch. The machine cuts 16 feet advancing up the pitch and, on the return, slabs a 12-foot cut from the solid side to make a total room width of 28 feet. The other continuous mining machine, an auger-head unit, cuts rooms 250 feet long along the pitch parallel to the heading. This machine cuts the full 28-foot width as it advances the length of the room, after which it is withdrawn and set up to drive the next room on the down-pitch side. Roof bolts and timber posts are placed as each machine advances.

Mine-Water Control.—Under the joint Federal-State program, initiated in 1955 for control of mine water in the anthracite region, 18 projects with an aggregate cost (contracted or estimated) of nearly

[3] Coddington, A. E., Current Practices in Anthracite Stripping: Min. Cong. Jour., vol. 44, No. 7, July 1958, pp. 26–29.
[4] Coal Age, Gilberton Coal Tools Up for Modern Stripping: vol. 63, No. 10, October 1958, pp. 100–106.
[5] Hughes, Harry H., Bulldozers and Scrapers in Anthracite Stripping: Min. Cong. Jour., vol. 44, No. 1, January 1958, pp. 35–37.
[6] Coal Age, Percussion Unit Drills Hard Rock: vol. 63, No. 5, May 1958, pp. 114–115.
[7] Coal Age, Flexible Continuous Mining: vol. 63, No. 11, November 1958, pp. 100–102.

$6.75 million were active or had been completed by the end of 1958. During 1958, five projects totaling nearly $2.5 million were approved for Federal participation. Equipment and installation costs of the continuing program are shared equally by the Federal and State governments. Producing companies provide operating and maintenance expenses.

Nine of the active or completed projects required large-capacity, vertical, turbine-type pumps to control the level of water pools in abandoned underground workings so as to prevent the flooding of anthracite reserves and protect adjacent mines. The 25 pumps needed for these projects have a total capacity of 119,000 gallons of water per minute. The remaining nine projects are concerned with improving surface drainage by such methods as back filling old strip pits and constructing ditches and flumes to prevent water from seeping into underlying mine workings.

Seven projects have been completed, one in 1957 and six in 1958. One completed installation included two pumps with a total capacity of 10,000 g.p.m., whereas the other six are surface-drainage improvements which, it is estimated, will prevent more than 1 billion gallons of water from entering the mines each year.

Preparation.—Laboratory facilities of the Bureau's Anthracite Experiment Station have been expanded. Studies are in progress on washability, heavy-media separation, cyclones, froth flotation, and fine grinding of anthracite.

A new heavy-media system,[8] installed at several anthracite operations, provides a middlings product that may be crushed and recirculated from a single separation vessel. By introducing the medium at the side of the vessel, the cross-tank current stratifies the coal, bone, and refuse at descending levels. The coal flows over the top, the bone collects opposite the inlet manifold, and the refuse settles on the inlet side—thereby providing three-way separation.

Tests[9] using a radically new type of screen and a coal slurry containing minus-1/8-inch solids indicated that maximum efficiencies are reached when the screen is operated with slurries containing 10 to 18 percent solids fed at 250 to 350 g.p.m. per foot of screen width. The "sieve bend," developed by the Dutch State Mines, is a wedge-bar screen bent to a 60° arc on a 30-inch radius. Its high capacity, ability to screen fine sizes, and the fact that it has no moving parts are advantages that should recommend it to American coal operators.

The use of cyclones[10] charged with heavy media to clean coal from 1/2-inch to 48-mesh has proved efficient in Europe. Capacity of installed equipment is about 1,600 tons per hour.

In 1958, new preparation equipment[11] with an aggregate capacity of 2,256 tons per hour was contracted for, or installed, at 21 anthracite operations. Much of the equipment was for cleaning and sizing the smaller coal.

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[8] Coal Age, Low-Cost Heavy-Media Cleaning: vol. 63, No. 7, July 1958, pp. 80–82.
[9] Geer, M. R., and Corp, Ernest L., Test Performance of the Sieve Bend: Mechanization, vol. 22, No. 4, April 1958, pp. 104–105.
[10] Yancey, H. F., Cyclone Washers for Fine Coal: Coal Age, vol. 63, No. 12, December 1958, pp. 118–121.
[11] Coal Age, Mining, Stripping, Preparation in 1958: vol. 64, No. 2, February 1959, p. 85.

Utilization.—Bureau investigations on the production of a thermally stable, calcined anthracite for use in metallurgical processes have demonstrated that the raw anthracite can be preheated successfully with a direct countercurrent flow of the preheating gases. Sensitivity to decrepitation appears to decrease as the volatile-matter content of the anthracite declines. The calcined anthracite produced in the Station's pilot calciner was used as fuel in two foundries of cooperating anthracite producers without difficulty. Metal temperatures and melting rates were considered satisfactory.

Additional Bureau research on producing anthracite briquets for metallurgical use showed that Buckwheat No. 5 (through 3/64-inch screen) was the most suitable size for the briquet mix. A pilot briquetting plant, including a coal drier with a capacity of 1½ tons per hour, was installed at the Bureau's Anthracite Experiment Station to prepare briquets for use in commercial equipment. Preliminary tests on calcining raw briquets in the Bureau's vertical calciner showed that modifications were required in the exhaust setup to remove the volatile products from the calcining system.

Standard code tests (American Society of Mechanical Engineers) were conducted by the Bureau of Mines on four small industrial anthracite stokers. The stokers (100 to 400 pounds per hour), which were equipped with reciprocating, water-cooled grates, gave efficiencies of 70 to 85 percent under continuous operation. These tests were conducted at various rated capacities ranging from 25 to 100 percent.

Research on the effects of radiation on anthracite was initiated by the Bureau with the exposure of 50-gram samples (60- by 40-mesh) of three different anthracites to gamma and neutron radiations. Gas evolved, porosity, grindability, ease of chemical oxidation, and electrical conductivity are some of the effects to be studied.

Results of the Bureau's commercial-scale gasification tests [12] of anthracite in a Lurgi gasifier have been published.

The results of these tests were the basis for a detailed engineering study, made for the Bureau by a private firm experienced in solid-fuel conversion on the cost and feasibility of using anthracite to produce pipeline gas and hydrogen.

[12] Morgan, R. E., Eckerd, J. W., Ratway, J., and Baker, A. F., Lurgi Gasifier Tests on Pennsylvania Anthracite: Bureau of Mines Report of Investigations 5420, 1958, 22 pp.

Coke and Coal Chemicals

By J. A. DeCarlo, T. W. Hunter, and Maxine M. Otero

Contents

GENERAL SUMMARY

PRODUCTION of coke and coal chemicals dropped about 27 percent in 1958 compared with 1957 and was the lowest in 18 years. Oven-coke plants operated at reduced rates throughout the year, averaging only 64 percent of capacity compared with 92 percent in 1957. Less than one-fifth of the beehive ovens in operating condition were active during the year, and the output of beehive coke was the lowest on record. Beehive ovens supplied only 1 percent of all high-temperature coke produced during the year.

As in many other branches of American industry, automation has increased productivity in the coke industry. For example, in the boom year 1929 only 1.017 tons of beehive coke and 1.021 tons of oven coke were produced for each man-hour worked. In 1958 the figures had risen to 1.260 for oven-coke plants and 1.273 for beehive plants. However, 1958 was a poor year for measuring productivity, because the low operating rates of the coke ovens reduced productivity. A better comparison would be to compare 1929 with 1957, when 1.409 tons of oven coke and 1.448 tons of beehive coke were produced for each man-hour worked.

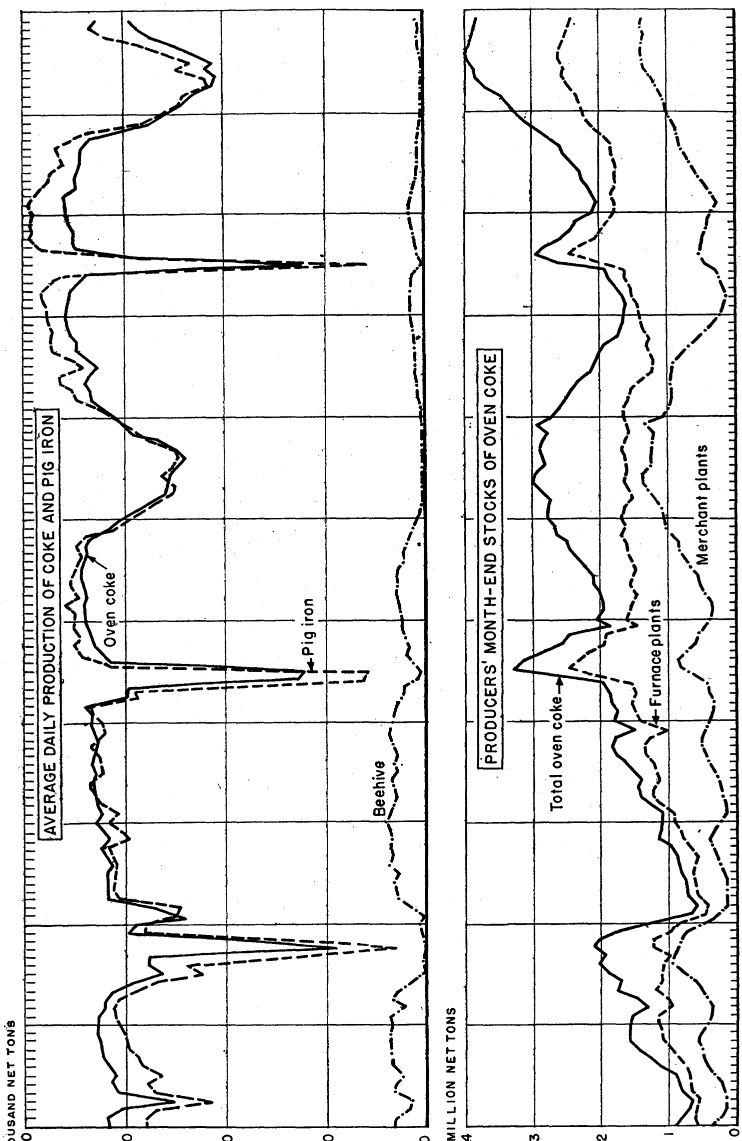

FIGURE 1.—Average daily production of oven and beehive coke and pig iron and producers' stocks of oven coke, 1948–58, by months.

Despite the decline in productivity in 1958 as compared with 1957, it was much greater than in 1929, when 19,124 men in the oven-coke division of the industry produced only 53,411,826 tons of oven coke, excluding breeze, compared with 15,654 men who produced 53,005,730 tons in 1958. The productivity of men employed at beehive- and at oven-coke plants is not strictly comparable, however, because at oven-coke plants men are engaged in various other activities connected with the coke plants that do not exist at beehive plants. For example, men work in coal handling and preparation plants, in coal-chemical recovery and processing plants, as millwrights, and as chemists.

Demand for all grades of coke declined in 1958, and producers' stocks reached the highest figure since 1932. A slight pickup in the last quarter of the year increased demand, and stocks of oven coke declined slightly, but at the year end were about one-half million tons higher than at the beginning of the year.

Coke consumption in 1958 in general followed the consuming channels established in preceding years, although all major consuming groups used less coke than in 1957. The total movement of blast-furnace coke from oven- and beehive-coke plants was 31 percent smaller. Although blast furnaces operated at only 64 percent of capacity and naturally required less coke than in 1957, when they operated at 91 percent of capacity, they needed less coke per ton of pig iron, including ferroalloys. One outstanding development of the iron and steel industry in 1958 was the substantial improvement in the fuel efficiency of blast furnaces. An average reduction of 90 pounds of coke for every ton of hot metal (pig iron and ferroalloys) poured from blast furnaces was achieved. This was the second largest reduction ever made in a single year, and continuation of this progress will no doubt affect future coke requirements. Foundry-coke shipments were 17 percent lower than in 1957, mainly because of the large reduction in automobile production, which reduced requirements for foundry castings.

The use of coke for manufacturing producer gas and water gas continued to decline, falling 15 percent from 1957; the total was only about one-fifth as much as was used for the same purposes in 1947–49. One main reason why the consumption of coke for making water gas dropped was that the Olin-Mathieson Chemical Corp. discontinued using coke as a starting raw material in making synthetic ammonia when it shut down its Morgantown, W. Va., ovens in June. This plant was one of the two, active at the beginning of 1958, that used coke as generator fuel for making water gas for chemical synthesis (ammonia). Coke shipments to other industrial plants that cover a wide variety of industrial applications decreased 18 percent from 1957, and shipments for residential heating dropped 9 percent. Exports were also lower than in 1957, dropping 54 percent. In 1958 shipments to blast-furnace plants amounted to 90 percent of all coke deliveries, 4 percent was destined to iron foundries, 1 percent to producer-gas and water-gas plants, 4 percent to other industrial plants, and 1 percent to the residential heating trade; and less than 1 percent was exported.

Although the construction of new slot-type ovens slowed in the latter part of the year and three batteries scheduled for completion in 1958 were not completed, 808 new ovens started producing coke. Only 149, the lowest number since 1946, were under construction at the end of the year. New peaks were attained during 1958 for slot-type coke ovens and coke capacity and, on December 31, 16,244 slot-type ovens were available for coke production, with an annual coke capacity of 82,497,900 net tons. The increased carbonizing capacity of slot-type coke ovens reduced requirements for beehive coke; it appeared that most idle beehives would not be needed in the foreseeable future and would remain closed permanently. The annual coke capacity of all beehive ovens for which the Bureau of Mines received reports in 1958, whether active or idle, only amounted to 5 million tons. This was less than half the capacity of the beehive industry in 1951, when beehive coke was in great demand.

The slower coking cycles in 1958 resulted in slightly higher yields of the basic coal-chemical materials. The large reduction in coal charged into coke ovens, however, caused output of the respective coal-chemical materials to decrease accordingly. Crude-tar production dropped 23 perecent; ammonia, 27 percent; and crude light oil and coke-oven gas, 28 percent each. Lower production of these raw materials made less available for processing, and ammonium sulfate decreased 30 percent; benzene, 34 percent; toluene, 26 percent; xylene, 22 percent; crude chemical oil (tar acid oil), 16 percent; and coal-tar pitch, 11 percent.

Probably the most significant development as regards coal chemicals was the substantial reduction in prices of the light-oil derivatives, particularly benzene. Competition from the petroleum industry and low-price imported benzene forced the coke industry to reduce its price 5 cents a gallon in July. Coke-oven operators also reduced their prices on toluene and xylene.

The total value of all coke-oven products used or sold by the producing companies totaled $1,300 million—a 28-percent decrease from 1957.

TABLE 1.—Salient statistics of the coke industry in the United States 1947–49 (average) and 1957–58

	1947–49 (average)	1957	1958
Coke produced:			
Oven .... net tons..	65,088,462	73,860,692	53,005,730
Beehive .... do....	5,559,940	2,090,029	598,372
Total .... do....	70,648,402	75,950,721	53,604,102
Producers' stocks of coke, Dec. 31 .... do....	[1] 1,769,456	3,148,776	3,823,364
Imports, all coke from coal .... do....	181,000	117,951	121,517
Exports, all coke from coal .... do....	696,502	822,244	392,817
Apparent consumption, all coke .... do....	69,852,671	74,432,093	52,658,214
Ovens:			
Slot-type, in existence, Dec. 31	[1] 15,104	[2] 15,897	16,244
Annual coke capacity, Dec. 31 .... net tons..	[1] 73,710,100	80,299,400	82,497,900
Beehive, in existence, Dec. 31	[1] 13,662	9,519	8,682
Annual coke capacity, Dec. 31 .... net tons..	[1] 8,672,200	5,503,200	5,020,400
Coal-chemical materials produced:			
Ammonium sulfate or equivalent [3] .... pounds..	1,793,206,950	2,027,449,979	1,478,479,516
Crude coal tar .... gallons..	715,778,985	873,474,352	669,316,299
Crude light oil .... do....	246,607,287	301,088,346	218,229,276
Coke-oven gas .... M cubic feet..	949,474,911	1,090,845,870	789,828,396
Value of coal-chemical materials used or sold	$254,681,622	$404,674,433	$299,878,695
Value of coke and breeze produced	867,047,809	1,413,098,802	999,880,954
Total value of all products	1,121,729,431	1,817,773,235	1,299,759,649

[1] 1949.
[2] Revised figure.
[3] Includes di- and mono-ammonium phosphate and ammonium thiocyanate.

TABLE 2.—Statistical summary of the coke industry in the United States in 1958

	Slot-type ovens	Beehive ovens	Total
Coke produced:			
At merchant plants:			
Net tons	6,543,218	(2)	(2)
Value	$131,629,646		
At furnace plants: [1]			
Net tons	46,462,512		
Value	$835,164,892		
Total:			
Net tons	53,005,730	598,372	53,604,102
Value	$966,794,538	$8,395,199	$975,189,737
Breeze produced:			
Net tons	3,656,198	58,508	3,714,706
Value	$24,570,733	$120,484	$24,691,217
Coal carbonized:			
Bituminous:			
Net tons	75,561,041	1,015,416	76,576,457
Value	$747,277,313	$5,799,905	$753,077,218
Average per ton	$9.89	$5.71	$9.83
Anthracite:			
Net tons	254,785	----------	254,785
Value	$2,619,258	----------	$2,619,258
Average per ton	$10.28	----------	$10.28
Total:			
Net tons	75,815,826	1,015,416	76,831,242
Value	$749,896,571	$5,799,905	$755,696,476
Average per ton	$9.89	$5.71	$9.84
Average yield in percent of total coal carbonized:			
Coke	69.91	58.93	69.77
Breeze (at plants actually recovering)	4.84	8.08	4.87
Coke used by producing companies—			
In blast-furnace plants:			
Net tons	44,927,950	----------	44,927,950
Value	$807,608,546	----------	$807,608,546
In foundries:			
Net tons	209,406	----------	209,406
Value	$6,369,191	----------	$6,369,191
For producer-gas manufacture:			
Net tons	132,919	----------	132,919
Value	$2,140,165	----------	$2,140,165

Footnotes at end of table.

TABLE 2.—Statistical summary of the coke industry in the United States in 1958—Continued

	Slot-type ovens	Beehive ovens	Total
Coke used by producing companies—Continued			
For water-gas manufacture:			
Net tons	395,446		395,446
Value	$5,206,620		$5,206,620
For other industrial purposes:			
Net tons	449,518		449,518
Value	$7,913,121		$7,913,121
Coke sold (commercial sales)—			
To blast-furnace plants:			
Net tons	2,359,053	310,822	2,669,875
Value	$36,249,665	$4,629,540	$40,879,205
To foundries:			
Net tons	1,915,785	19,827	1,935,612
Value	$55,417,734	$326,258	$55,743,992
To water-gas plants:			
Net tons	93,254	3,172	96,426
Value	$1,685,421	$44,408	$1,729,829
To other industrial plants:			
Net tons	1,253,443	263,601	1,517,044
Value	$19,977,113	$3,385,521	$23,362,634
For residential heating:			
Net tons	601,622	2,254	603,876
Value	$10,312,443	$25,309	$10,337,752
Disposal of breeze:			
Used by producing companies—			
For steam raising:			
Net tons	1,514,757		1,514,757
Value	$8,542,201		$8,542,201
For sintering iron ore:			
Net tons	768,415		768,415
Value	$4,927,140		$4,927,140
For other industrial purposes:			
Net tons	354,997		354,997
Value	$2,262,884		$2,262,884
Sold (commercial sales):			
Net tons	865,988	48,275	914,263
Value	$6,610,440	$107,648	$6,718,088
Average receipts per ton (commercial sales):			
Blast-furnace coke	$15.37	$14.89	$15.31
Foundry coke	$28.93	$16.46	$28.80
Water-gas coke	$18.07	$14.00	$17.94
Other industrial coke	$15.94	$12.84	$15.40
Residential heating coke	$17.14	$11.23	$17.12
Breeze	$7.63	$2.23	$7.35
Coal-chemical materials:			
Yield per ton of coal:			
Tar, crude ... gallons	8.83		8.83
Ammonium sulfate or equivalent [3] ... pounds	19.86		19.86
Gas ... M cubic feet	10.42		10.42
Crude light oil ... gallons	2.95		2.95
Commercial sales:			
Tar, crude ... gallons	347,420,362		347,420,362
Value	$46,231,212		$46,231,212
Ammonia (sulfate and liquor) [3] ... pounds	1,345,769,053		1,345,769,053
Value	$23,286,223		$23,286,223
Gas (surplus) ... M cubic feet	501,999,472		501,999,472
Value	$123,641,184		$123,641,184
Crude light oil and derivatives ... gallons	183,474,313		183,474,313
Value	$50,832,521		$50,832,521

[1] Plants associated with iron blast furnaces (refer to definition in Scope of Report).
[2] Not separately recorded.
[3] Includes di- and mono-ammonium phosphate and ammonium thiocyanate.

TABLE 3.—Summary of oven-coke operations in the United States in 1958, by States

State	In existence Dec. 31 [1]		Coal carbonized (net tons)	Yield of coke from coal (percent)	Coke produced (net tons)	Value of coke at ovens	
	Plants	Ovens				Total	Per ton
Alabama	7	1,488	5,856,776	72.68	4,256,616	$84,671,540	$19.89
California, Colorado, and Utah	4	779	4,040,969	63.81	2,578,585	63,802,180	24.74
Illinois	6	507	2,753,091	69.41	1,910,835	37,406,376	19.58
Indiana	5	2,191	10,959,547	71.15	7,797,352	157,112,578	20.15
Kentucky, Tennessee, and Texas	4	380	2,599,127	69.87	1,816,137	30,271,380	16.67
Maryland	1	758	4,015,835	72.12	2,896,268	(2)	(2)
Massachusetts	1	108	507,204	69.75	353,752	(2)	(2)
Michigan	4	769	3,395,884	74.39	2,526,202	43,527,893	17.23
Minnesota	3	241	922,665	69.65	642,618	14,834,820	23.08
New Jersey	2	341	1,050,603	70.95	745,362	(2)	(2)
New York	3	831	4,308,694	69.08	2,976,610	49,878,813	16.76
Ohio	15	2,515	9,266,673	69.87	6,474,405	110,275,760	17.03
Pennsylvania	14	4,168	20,349,408	68.65	13,968,893	236,364,683	16.92
West Virginia	5	813	4,737,488	69.44	3,289,537	53,007,575	16.11
Connecticut, Missouri, and Wisconsin	3	355	1,051,862	73.45	772,558	18,200,523	23.56
Undistributed						67,440,417	16.88
Total 1958	77	16,244	75,815,826	69.91	53,005,730	966,794,538	18.24
At merchant plants	22	2,420	9,175,407	71.31	6,543,218	131,629,646	20.12
At furnace plants	55	13,824	66,640,419	69.72	46,462,512	835,164,892	17.98
Total 1957	78	[3] 15,897	104,935,965	70.39	73,860,692	1,352,096,160	18.31

[1] Excludes plants retired permanently during year.
[2] Included with "Undistributed" to avoid disclosing individual company figures.
[3] Revised figure.

TABLE 4.—Summary of beehive-coke operations in the United States in 1958, by States

State	In existence Dec. 31 [1]		Coal carbonized (net tons)	Yield of coke from coal (percent)	Coke produced (net tons)	Value of coke at ovens	
	Plants	Ovens				Total	Per ton
Pennsylvania	43	7,316	581,357	61.14	355,458	$4,784,339	$13.46
Virginia	5	663	281,002	54.74	153,828	2,280,945	14.83
Kentucky, Utah, and West Virginia	5	703	153,057	58.20	89,086	1,329,915	14.93
Total 1958	53	8,682	1,015,416	58.93	598,372	8,395,199	14.03
Total 1957	58	9,519	3,473,138	60.18	2,090,029	31,191,475	14.92

[1] Excludes plants retired permanently during year.

SCOPE OF REPORT

This chapter on high-temperature oven and beehive coke and related products continues, through 1958, the annual statistical series of the coke industry begun by the Federal Geological Survey in 1882 and taken over by the Federal Bureau of Mines in 1925. All data in this chapter, except where otherwise noted, were voluntarily supplied to the Bureau of Mines by coke-producing companies operating within the continental limits of the United States. Only products made in high-temperature slot-type and beehive-coke ovens are included, and products made by other carbonization processes (coal-gas retorts, low-temperature carbonization of coal, and carbonization of residues from refining coal-tar and petroleum) are specifically excluded. In preceding years a table containing the salient statistics concerning low- and medium-temperature carbonization plants in the United States was included; but these data, while collected by the Bureau of Mines, cannot be published for 1958 because less than three companies were operating commercially. Production of petroleum coke (including catalyst coke) totaled 7.6 million tons in 1958, and production of coal-tar-pitch coke, as reported to the Bureau of Mines and United States Tariff Commission and published by the latter agency, totaled 22,000 tons.

Several new statistical tables are included in this chapter for the first time. The growing importance of coke breeze, because of increased requirements from expanded facilities for sintering iron ore and smelting phosphate rock, has stimulated interest in this coke-oven product, and table 11 was prepared to show trends in its major uses. A second table, relating to the average volatile content of the coking coals carbonized in slot-type coke ovens, was also added (table 30).

In 1958 the Bureau of Mines canvassed 79 oven-coke plants and 1 light-oil plant that refined light oil produced at affiliated coke plants. Of the oven-coke plants canvassed 72 were active all year, 2 were idle all year, and 5 were active part of the year and 1 of these shut down permanently on March 1. In the beehive branch of the coke industry questionnaires were mailed to 44 companies owning 58 plants. Returns showed that only 14 plants operated the entire year; 15 plants were active part of the year; and 28 were idle the entire year. One plant failed to answer the questionnaire and was presumed to be abandoned.

The terms "merchant" and "furnace" plants in this chapter apply only to oven-coke plants. Furnace plants are those that are owned by or financially affiliated with iron and steel companies whose main business is producing coke for use in their own blast furnaces. All other coke plants are classified as merchant. They include those that manufacture metallurgical, industrial, and residential-heating grades of coke for sale on the open market; coke plants associated with chemical companies or gas utilities; and those affiliated with local ironworks, where only a small part (less than 50 percent of their output) is used in affiliated blast furnaces.

As used in this chapter, coke refers only to large sizes (usually one-half inch plus), from which smaller sizes (known as breeze) have been screened. Metallurgical coke refers to grades used for smelting and casting ferrous metals in blast furnaces and foundries. The standard unit of measurement in the coke industry is the net or short ton of 2,000 pounds, which is used throughout this chapter.

OVEN AND BEEHIVE COKE AND BREEZE

MONTHLY PRODUCTION

TABLE 5.—Coke produced in the United States and average per day, 1947–49 (average) and 1956–58, by months, in net tons [1]

Month	1947–49 (average)		1956		1957		1958	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
Oven coke:								
January	5, 875, 300	189, 500	6, 665, 300	215, 000	6, 613, 200	213, 300	4, 721, 500	152, 300
February	5, 393, 400	192, 600	6, 238, 700	215, 100	5, 973, 300	213, 300	4, 046, 700	144, 500
March	5, 775, 800	186, 300	6, 629, 600	213, 900	6, 639, 700	214, 200	4, 309, 000	139, 000
April	5, 231, 600	174, 400	6, 384, 200	212, 800	6, 229, 200	207, 600	3, 809, 200	127, 000
May	5, 707, 400	184, 100	6, 471, 300	208, 700	6, 459, 600	208, 400	3, 870, 800	124, 900
June	5, 409, 700	180, 300	6, 023, 900	200, 800	6, 215, 100	207, 200	3, 897, 700	129, 900
July	5, 355, 900	172, 800	2, 258, 500	72, 900	6, 376, 400	205, 700	3, 935, 400	126, 900
August	5, 564, 400	179, 500	5, 504, 700	177, 600	6, 382, 600	205, 900	4, 283, 700	138, 200
September	5, 394, 700	179, 800	6, 303, 000	210, 100	6, 167, 600	205, 600	4, 458, 100	148, 600
October	4, 519, 000	145, 800	6, 561, 100	211, 600	6, 166, 000	198, 900	5, 053, 300	163, 000
November	5, 003, 500	166, 800	6, 332, 300	211, 100	5, 540, 500	184, 700	5, 183, 200	172, 800
December	5, 857, 800	189, 000	6, 619, 600	213, 500	5, 097, 500	164, 400	5, 437, 100	175, 400
Total	65, 088, 500	178, 300	71, 992, 200	196, 700	73, 860, 700	202, 400	53, 005, 700	145, 200
Beehive coke:								
January	623, 500	20, 100	266, 700	8, 600	266, 700	8, 600	49, 400	1, 600
February	574, 900	20, 600	254, 000	8, 800	254, 800	9, 100	38, 800	1, 400
March	461, 900	14, 900	279, 300	9, 000	270, 400	8, 700	41, 300	1, 300
April	445, 000	14, 800	256, 900	8, 600	221, 400	7, 400	35, 700	1, 200
May	582, 300	18, 800	266, 000	8, 600	182, 000	5, 800	37, 900	1, 200
June	432, 500	14, 400	220, 000	7, 300	157, 200	5, 200	46, 200	1, 600
July	304, 500	9, 800	53, 500	1, 700	143, 600	4, 600	30, 400	1, 000
August	425, 000	13, 700	116, 800	3, 700	157, 000	5, 100	40, 800	1, 300
September	413, 500	13, 800	153, 400	5, 100	142, 700	4, 700	56, 700	1, 900
October	428, 800	13, 800	186, 900	6, 100	123, 400	4, 000	64, 700	2, 100
November	411, 700	13, 700	208, 800	6, 900	90, 000	3, 000	72, 400	2, 400
December	456, 300	14, 700	228, 000	7, 400	80, 800	2, 600	84, 100	2, 700
Total	5, 559, 900	15, 300	2, 490, 300	6, 800	2, 090, 000	5, 700	598, 400	1, 700
Total:								
January	6, 498, 800	209, 600	6, 932, 000	223, 600	6, 879, 900	221, 900	4, 770, 900	153, 900
February	5, 968, 300	213, 200	6, 492, 700	223, 900	6, 228, 100	222, 400	4, 085, 500	145, 900
March	6, 237, 700	201, 200	6, 908, 900	222, 900	6, 910, 100	222, 900	4, 350, 300	140, 300
April	5, 676, 600	189, 200	6, 641, 100	221, 400	6, 450, 600	215, 000	3, 844, 900	128, 200
May	6, 289, 700	202, 900	6, 737, 300	217, 300	6, 641, 600	214, 200	3, 908, 700	126, 100
June	5, 842, 200	194, 700	6, 243, 900	208, 100	6, 372, 300	212, 400	3, 943, 900	131, 500
July	5, 660, 400	182, 600	2, 312, 000	74, 600	6, 520, 000	210, 300	3, 965, 800	127, 900
August	5, 989, 400	193, 200	5, 621, 500	181, 300	6, 539, 600	211, 000	4, 324, 500	139, 500
September	5, 808, 200	193, 600	6, 456, 400	215, 200	6, 310, 300	210, 300	4, 514, 800	150, 500
October	4, 947, 800	159, 600	6, 748, 000	217, 700	6, 289, 400	202, 900	5, 118, 000	165, 100
November	5, 415, 200	180, 500	6, 541, 100	218, 000	5, 630, 500	187, 700	5, 255, 600	175, 200
December	6, 314, 100	203, 700	6, 847, 600	220, 900	5, 178, 300	167, 000	5, 521, 200	178, 100
Grand total	**70, 648, 400**	**193, 600**	**74, 482, 500**	**203, 500**	**75, 950, 700**	**208, 100**	**53, 604, 100**	**146, 900**

[1] Daily average calculated by dividing monthly production by number of days in month.

PRODUCTION BY MERCHANT AND FURNACE PLANTS

Activity in the heavy industries dropped sharply in 1958, adversely affecting coke-oven operations, and output of oven coke from merchant plants and furnace plants decreased 25 and 29 percent, respectively, from 1957. Production by furnace plants was the lowest in 12 years and was 11 percent below the 1947–49 average. The proportion of oven coke supplied by furnace plants declined slightly from 1957 and varied very little in the 5-year period 1954–58. The number of active furnace plants was reduced to 55 in 1958, as the coke ovens of the Jones and Laughlin Steel Corp., Cleveland, Ohio, did not operate during the entire year, and the Canton, Ohio, ovens of the Republic Steel Corp., demolished for rebuilding in 1957, did not resume operations in 1958.

Production of coke at merchant plants continued to decline in 1958 and was only half of the 1947–49 average output. Production at merchant plants reached an alltime peak in 1942, during World War II, when more than 15.1 million tons was produced. Following World War II production from this group of plants began to decline because thousands of industrial and residential consumers of coke and coke-oven gas converted their facilities to use either fuel oil or natural gas. In addition, requirements of blast-furnace coke from merchant plants decreased steadily because of increased production at furnace plants (table 6). This loss in coke and gas markets caused nine merchant plants, all of which were owned by gas utilities, to discontinue their coke-oven operations. Consequently, production of "merchant" coke, which averaged 20 to 25 percent of the total national oven-coke output, averaged only about 12 percent since 1954. Production of coke from merchant plants probably will continue to decline, as several plants active in 1958 announced in the press that they would close their coke ovens during 1959. Table 7 shows the number and production of oven coke, by types of plants, for 1958 and a number of prior years.

TABLE 6.—Monthly and average daily production of oven coke in the United States, 1947–49 (average) and 1957–58, by types of plants, in net tons

Month	1947–49 (average)		1957		1958	
	Merchant plants	Furnace plants	Merchant plants	Furnace plants	Merchant plants	Furnace plants
Monthly production:						
January	1,174,700	4,700,600	794,800	5,818,400	651,500	4,070,000
February	1,070,100	4,323,300	725,400	5,247,900	581,400	3,465,300
March	1,157,800	4,618,000	806,400	5,833,300	589,300	3,719,700
April	1,043,000	4,188,600	725,400	5,503,800	518,200	3,291,000
May	1,129,300	4,578,100	754,100	5,705,500	483,000	3,387,800
June	1,080,700	4,329,000	717,400	5,497,700	447,300	3,450,400
July	1,082,100	4,273,800	735,500	5,640,900	437,100	3,498,300
August	1,097,700	4,466,700	735,000	5,647,600	465,200	3,818,500
September	1,072,800	4,321,900	696,900	5,470,700	529,200	3,928,900
October	1,047,400	3,471,600	708,800	5,457,200	583,400	4,469,900
November	1,026,000	3,977,500	631,800	4,908,700	593,000	4,590,200
December	1,132,800	4,725,000	654,300	4,443,200	664,600	4,772,500
Total	13,114,400	51,974,100	8,685,800	65,174,900	6,543,200	46,462,500
Average daily production:						
January	37,900	151,600	25,600	187,700	21,000	131,300
February	38,200	154,400	25,900	187,400	20,700	123,800
March	37,300	149,000	26,000	188,200	19,000	120,000
April	34,800	139,600	24,200	183,400	17,300	109,700
May	36,400	147,700	24,300	184,100	15,600	109,300
June	36,000	144,300	23,900	183,300	14,900	115,000
July	34,900	137,900	23,700	182,000	14,100	112,800
August	35,400	144,100	23,700	182,200	15,000	123,200
September	35,700	144,100	23,200	182,400	17,600	131,000
October	33,800	112,000	22,900	176,000	18,800	144,200
November	34,200	132,600	21,100	163,600	19,800	153,000
December	36,600	152,400	21,100	143,300	21,400	154,000
Average for year	35,900	142,400	23,800	178,600	17,900	127,300

TABLE 7.—Number and production of oven-coke plants in the United States, 1929, 1939, 1947–49 (average), and 1954–58, by types of plants

Year	Number of active plants [1]		Coke produced (net tons)		Percent of production	
	Merchant plants	Furnace plants	Merchant plants	Furnace plants	Merchant plants	Furnace plants
1929	41	46	12,187,439	41,224,387	22.8	77.2
1939	39	45	11,070,506	31,811,807	25.8	74.2
1947–49 (average)	[2] 31	[2] 55	13,114,373	51,974,089	20.1	79.9
1954	24	58	7,362,967	51,698,475	12.5	87.5
1955	23	58	9,094,527	64,489,687	12.4	87.6
1956	23	57	9,575,194	62,417,048	13.3	86.7
1957	22	57	8,685,795	65,174,897	11.8	88.2
1958	22	55	6,543,218	46,462,512	12.3	87.7

[1] Includes plants operating any part of year.
[2] On Dec. 31, 1949.

PRODUCTION BY STATES AND DISTRICTS

High-temperature carbonization in the United States is centralized in the leading coking-coal- and iron-producing States. For this reason, the number of States producing coke seldom changes, although production in the individual States fluctuates with changes in industrial developments and economic conditions. In the 10-year period 1949–58 only one change in producing States occurred when in 1953 the Providence Gas Co., Providence, R.I., permanently closed the only coke ovens in that State. During this same period, however, some definite trends in coke production developed. The most significant development was doubtless substitution of natural gas and fuel oil for "domestic" coke and coke-oven gas. This reduced coke requirements in Illinois, Massachusetts, New Jersey, and New York, and production dropped sharply in these States. On the other hand, expansion of iron-producing capacity in Alabama, California, Indiana, Maryland, Ohio, Pennsylvania, and West Virginia raised coke requirements, and production increased there. Another development that had been imminent for many years but did not materialize until around 1954 was the slump in beehive-coke production, particularly in Pennsylvania. From 1941 until 1953 beehive ovens in this State supplied about 9 percent of all coke produced. The steady expansion of coke capacity in the oven-coke industry, particularly since 1950, reduced requirements for beehive coke, causing many plants to discontinue operation, and output dropped drastically. In 1958 beehive ovens in Pennsylvania produced less than 1 percent of the United States total coke output. Notwithstanding the tremendous drop in beehive-coke output in Pennsylvania, this State produced 27 percent of the Nation's total oven and beehive coke. A 43-percent decrease in oven-coke output in Ohio raised Indiana to second place in 1958. The combined output of these two States was just slightly less than that of Pennsylvania. Alabama maintained its position as the fourth ranking State; but West Virginia forged ahead of New York into fifth place, and Maryland moved ahead of Michigan. The combined production of the latter four States again was slightly less than that of Pennsylvania, or 22 percent of the total oven coke.

As shown in table 8, production dropped in all States in 1958. The largest percentage decrease, as previously mentioned, occurred in Ohio, but the largest tonnage decrease was in Pennsylvania, where production fell 7.4 million tons—a decrease of 30 percent. Other States where production dropped lower than the industry average were Massachusetts, with 36 percent; Illinois, 35 percent; Michigan, 32 percent; and Minnesota, 30 percent. States where decreases were less than the national average were Alabama, New York, New Jersey, and Indiana.

A geographical breakdown of coke production according to major steel-producing districts is given in table 9. Approximately one-third of the national coke output was produced in the Pittsburgh-Youngstown district. The Eastern and Chicago districts together produced about two-fifths of the total. Although production in the Western district made the greatest gain since World War II, this district supplied less than 5 percent of the total oven-coke output in 1958.

TABLE 8.—Coke produced in the United States, 1947–49 (average) and 1955–58, by States, in net tons

State	1947–49 (average)	1955	1956	1957	1958
Oven coke:					
Alabama	5, 682, 198	6, 245, 253	5, 763, 749	5, 919, 434	4, 256, 616
California, Colorado, and Utah	2, 155, 788	2, 938, 005	3, 115, 791	3, 214, 807	2, 578, 585
Illinois	3, 558, 768	3, 040, 900	2, 802, 223	2, 918, 015	1, 910, 835
Indiana	8, 301, 067	9, 482, 233	8, 920, 369	9, 754, 559	7, 797, 352
Kentucky, Tennessee, and Texas	1, 374, 287	2, 013, 405	1, 926, 753	2, 040, 468	1, 816, 137
Maryland	2, 054, 315	3, 235, 527	3, 050, 420	3, 430, 863	2, 896, 268
Massachusetts	1, 048, 037	550, 868	608, 052	554, 398	353, 752
Michigan	2, 717, 650	3, 421, 141	3, 531, 031	3, 707, 430	2, 526, 202
Minnesota	841, 976	1, 029, 228	1, 012, 564	916, 713	642, 618
New Jersey	1, 396, 082	992, 566	1, 223, 050	967, 526	745, 362
New York	5, 507, 449	4, 035, 076	3, 825, 368	3, 995, 320	2, 976, 610
Ohio	9, 847, 621	11, 701, 266	11, 799, 045	11, 299, 353	6, 474, 405
Pennsylvania	15, 964, 464	19, 488, 993	19, 098, 406	20, 082, 883	13, 968, 893
West Virginia	3, 101, 109	4, 324, 863	4, 197, 403	3, 938, 002	3, 289, 537
Connecticut, Missouri, and Wisconsin	[1] 1, 537, 651	1, 084, 890	1, 118, 018	1, 120, 921	772, 558
Total	65, 088, 462	73, 584, 214	71, 992, 242	73, 860, 692	53, 005, 730
Beehive coke:					
Colorado	7, 163	-----------	-----------	-----------	-----------
Pennsylvania	4, 848, 550	1, 313, 694	2, 033, 852	1, 617, 466	355, 458
Virginia	190, 200	140, 555	165, 968	202, 958	153, 828
Kentucky, Utah, and West Virginia	514, 027	263, 363	290, 464	269, 605	89, 086
Total	5, 559, 940	1, 717, 612	2, 490, 284	2, 090, 029	598, 372
Grand total	70, 648, 402	75, 301, 826	74, 482, 526	75, 950, 721	53, 604, 102

[1] Includes Rhode Island.

COKE BREEZE

In carbonizing coal in high-temperature, slot-type coke ovens approximately 5 percent by weight of the coal charged into the ovens is recovered as small coke. This material is called breeze in the industry and is the part of the coke that remains after all large sizes (usually one-half inch and over) are removed by screening. At beehive plants breeze is the part that passes through the tines of the loading fork or the screens of the loading machine and its dimensions vary. All oven-coke plants are equipped to screen their coke and

TABLE 9.—Oven coke produced in the United States in 1958, by steel-producing districts [1]

District	In existence Dec. 31		Coal carbonized (net tons)	Market value at ovens		Yield of coke from coal (percent)	Coke produced	
	Plants	Ovens		Total	Per ton		Net tons	Percent of total
Eastern	16	3,532	16,375,041	$193,537,065	$11.82	71.10	11,642,242	22.0
Pittsburgh-Youngstown	21	5,024	25,820,784	202,862,787	7.86	68.20	17,609,389	33.2
Cleveland-Detroit	10	2,013	7,408,486	76,564,134	10.33	72.24	5,352,203	10.1
Chicago	16	3,224	15,207,236	169,330,251	11.13	70.89	10,779,827	20.3
Southern	10	1,672	6,963,310	60,246,889	8.65	72.43	5,043,484	9.5
Western	4	779	4,040,969	47,355,445	11.72	63.81	2,578,585	4.9
Total	77	16,244	75,815,826	749,896,571	9.89	69.91	53,005,730	100.0

[1] As defined by American Iron and Steel Institute.

recover breeze. Few beehive plants have screening facilities, and most of the resulting breeze is wasted. Breeze usually has a higher ash content and a lower calorific value than coke. This limits its uses, and long rail hauls can be justified only when it is employed for special purposes and no other substitute fuel is available.

Historically, breeze was used mainly for raising steam for generating power at or near the producing plants. Until the late 1940's roughly 65 to 75 percent of the breeze produced at oven-coke plants was used by the producing companies for steam raising. In the past several years this practice has changed, because requirements for breeze for sintering iron ore and smelting phosphate rock increased markedly. In 1958 the use of breeze for steam raising amounted to only 41 percent of the output, whereas its use in sintering iron ore between 1949 and 1958 more than doubled and amounted to about one-fifth of the total supply.

According to data collected by the Bureau of Mines from pig-iron producers and iron-ore agglomerating plants, over 1 million tons of breeze was used for sintering iron ore in 1958. Steel companies use breeze in other ways such as linings for soaking pits, and pig-casting ladles which required nearly 10 percent of the production in 1958. Most of the breeze sold in 1958 was used for producing elemental phosphorus and in phosphate furnaces in Florida, Tennessee, Montana, and Idaho. These plants were supplied with breeze from distant sources, such as Birmingham, Cleveland, Chicago, and other coke-producing centers.

The increase in uses for breeze has affected prices and average receipts per ton, f.o.b. plant, for commercial sales in 1958 were 7 percent higher than in 1957 and 94 percent higher than the 1947–49 average (table 11).

TABLE 10.—Coke breeze recovered at coke plants in the United States in 1958, by States

State	Yield per ton of coal [1] (percent)	Produced		Used by producers—						Sold		On hand Dec. 31 (net tons)
				For steam raising		For sintering ron ore		For other industrial uses				
		Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value	
Oven coke:												
Alabama	5.21	305,274	$3,022,091	103,780	$1,042,974	33,134	$364,237	41,871	$462,873	151,517	$1,386,353	11,413
California, Colorado, and Utah	7.48	302,447	2,254,536			191,329	1,182,313	26,125	166,266	85,754	910,828	20,802
Illinois	4.51	124,157	646,189	48,001	175,901	32,902	173,725	14,439	73,531	35,591	252,901	30,968
Indiana	5.55	608,416	5,827,619	103,082	866,668	95,785	930,364	37,867	302,321	141,698	908,592	912,873
Kentucky, Tennessee, and Texas	5.36	139,433	979,664	6,918	33,101	54,806	(2)	1,450	(2)	76,781	725,377	16,117
Maryland	3.90	156,469	(2)	151,002	(2)			21,848	(2)			30,507
Massachusetts	7.41	37,593	(2)	37,578	(2)					15	(2)	
Michigan	4.68	159,052	954,781	29,303	(2)	37,919	(2)	25,232	154,420	65,685	391,829	8,173
Minnesota	4.72	43,542	213,716	21,125	(2)			12,293	68,515	12,139	(2)	8,519
New Jersey	7.69	80,791	(2)	73,077	(2)					734	(2)	21,689
New York	4.71	202,784	1,387,319	186,477	1,357,003	42,803	(2)	25,265	142,369	208	(2)	57,411
Ohio	4.64	429,798	2,770,345	89,292	488,889	99,931	620,961	66,628	399,800	169,699	1,195,195	108,343
Pennsylvania	3.87	786,875	3,252,967	577,590	2,265,674	64,128	358,506	52,355	211,045	75,836	404,174	258,404
West Virginia	4.62	205,463	1,081,843	40,170	(2)	115,678	(2)	29,624	152,169	22,652	144,750	7,129
Connecticut, Missouri, and Wisconsin	7.05	74,104	524,122	47,362	342,427					27,679	188,191	6,543
Undistributed			1,655,541		1,969,564		1,297,034		129,575		102,250	
Total 1958	4.84	3,656,198	24,570,733	1,514,757	8,542,201	768,415	4,927,140	354,997	2,262,884	865,988	6,610,440	[3] 1,498,891
At merchant plants	5.84	519,154	4,206,257	302,615	2,209,543			27,778	274,852	201,361	1,826,214	67,874
At furnace plants	4.71	3,137,044	20,364,476	1,212,142	6,332,658	768,415	4,927,140	327,219	1,988,032	664,627	4,784,226	1,431,017
Total 1957	4.65	4,862,594	29,633,090	2,113,472	11,723,830	637,956	3,555,347	528,514	3,215,464	1,176,735	8,290,993	[3] 1,346,742
Beehive coke:												
Pennsylvania	9.90	37,213	65,059							27,110	52,616	11,783
Kentucky, Utah, Virginia, and West Virginia	6.11	21,295	55,425							21,165	55,032	230
Total 1958	8.08	58,508	120,484							48,275	107,648	12,013
Total 1957	3.27	50,529	178,077							50,463	177,901	210

[1] Computed by dividing production of breeze by coal carbonized at plants actually recovering breeze.
[2] Included with "Undistributed" to avoid disclosing individual company figures.
[3] Includes some breeze resulting from the screening of coke at blast furnaces.

TABLE 11.—Oven- and beehive-coke breeze used or sold in the United States, by uses, 1947–49 (average) and 1954–58, in net tons

Year	Used by producing companies				Commercial sales	Average value per ton
	For steam raising	For sintering iron ore	For making producer or water gas	For other purposes		
1947–49 (average)	3,450,905	1 300,000	77,795	411,260	1,142,589	$3.79
1954	2,480,581	1 430,000	33,716	546,849	898,579	5.45
1955	2,581,803	453,055		579,408	1,259,555	5.53
1956	2,423,147	591,686		443,549	1,196,939	6.19
1957	2,113,472	637,956		528,514	1,227,197	6.90
1958	1,514,757	768,415		354,997	914,263	7.35

1 Estimated figure.

NUMBER AND TYPE OF OVENS

Slot-Type Coke Ovens.—The number of new coke ovens constructed and placed in operation in 1958 was the highest since 1953 and, after allowance for the ovens abandoned during the year, enabled the oven-coke industry to finish the year with the largest number of serviceable ovens on record. Most of the new ovens (808) that started production were rebuilds or replacements of wornout ovens, and only 117 represented additional capacity. Of the 461 ovens abandoned, 3 were blanked off permanently in a battery that was still operating at the end of the year, 140 were permanently abandoned, and 318 were dismantled for future rebuilding. Only 149 new ovens were under construction at the end of the year—the smallest number in 3 years.

In recent years virtually all construction and modernization of ovens and auxiliary equipment was at furnace plants. As a result, the physical condition of ovens at furnace plants was the best in many years, and 72 percent of all active ovens were less than 20 years old on December 31, 1958. Also, the average age of coke ovens at furnace plants dropped from 19 years in 1950 (when the latest construction program began) to 13 years in 1958.

Coke ovens at merchant plants were getting progressively older, however, because little new construction was done in the same period and at the end of 1958, 32 percent of these ovens were under 20 years old. The average age of ovens at merchant plants increased from 24 years in 1950 to 31 years in 1958.

For many years the Koppers Co., Inc., and the Semet-Solvay Div., Allied Chemical Corp., have been the major builders of coke ovens and auxiliary equipment. Until 1922 all ovens built by the Koppers Co. were Koppers ovens. After that date (except for certain ovens which because of existing conditions had to be rebuilt along the old lines) all have been Koppers-Becker ovens. At the end of 1958, 70 percent of all operable slot-type ovens in the United States were designed and built by the Koppers Co. Semet-Solvay ovens were among the first slot-type coke ovens built in the United States. In the early 1940's the Semet-Solvay Div. of Allied Chemical Corp. took over the Wilputte Coke-Oven Corp., and all new ovens built by the Semet-

Solvay Div. since that time have been Wilputte ovens. Semet-Solvay and Wilputte ovens composed 29 percent of all ovens at the end of 1958. One battery of Otto ovens was built in 1958, and a battery of Simon-Carves ovens was built during the Korean War.

Beehive Ovens.—Beehive-coke ovens were disappearing rapidly from the coke picture in 1958; at the close of the year only 8,682 were left, of which only 64 percent were in operating condition. Over the years beehive-coke ovens have been an important factor in the industrial development of the United States. Until the close of World War I (1919), they were the main source of metallurgical coke for the rapidly expanding iron and steel industry. The maximum number of beehive ovens in this country was reached in 1910, when more than 100,000 were in existence. The decline of the beehive ovens started after World War I, when the iron and steel industry recognized slot-type coke ovens as a more efficient method of carbonizing coal. In subsequent years the number of beehive ovens dropped steadily, reaching a low of 10,816 in 1938. The increased demand for metallurgical coke and the shortage of slot-type-oven carbonizing capacity during World War II and again during the Korean conflict caused the number of ovens to fluctuate between 12 and 20 thousand during 1940–51. Recent expansions of carbonizing capacity by the oven-coke division

TABLE 12.—Slot-type coke ovens completed and abandoned in the United States in 1958 and number in existence at end of year, by States

State	Plants in existence Dec. 31	Ovens						
		In existence Dec. 31		New		Abandoned during year [1]	Under construction Dec. 31	
		Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)		Number	Annual coke capacity (net tons)
Alabama	7	1,488	6,921,900	200	1,033,700	73		
California	1	225	1,069,500				90	433,600
Colorado	1	246	1,011,000	31	169,000	3		
Connecticut	1	70	410,000					
Illinois	6	507	2,705,000			140		
Indiana	5	2,191	10,765,200	174	920,200	74		
Kentucky	1	196	1,185,200					
Maryland	1	758	4,174,000	126	734,000	120		
Massachusetts	1	108	665,000					
Michigan	4	769	4,405,700					
Minnesota	3	241	1,010,500					
Missouri	1	85	301,700					
New Jersey	2	341	1,500,000					
New York	3	831	4,583,100					
Ohio	15	2,515	13,034,900	178	998,600	51		
Pennsylvania	14	4,168	21,100,300	99	493,900		59	360,000
Tennessee	1	44	264,000					
Texas	2	140	832,000					
Utah	2	308	1,345,700					
West Virginia	5	813	4,643,100					
Wisconsin	1	200	570,100					
Total 1958	77	16,244	82,497,900	808	4,349,400	461	149	793,600
At merchant plants	22	2,420	11,030,800					
At furnace plants	55	13,824	71,467,100	808	4,349,400	461	149	793,600
Total 1957	78	[2] 15,897	80,299,400	560	2,910,200	[2] 586	611	3,332,700

[1] Includes ovens dismantled for rebuilding.
[2] Revised figure.

of the industry reduced the need for beehive coke, and the number of ovens began to drop rapidly after the surge of 1951. At the close of 1958 only 1,881 out of the 5,521 serviceable beehive ovens were active.

TABLE 13.—Age of slot-type coke ovens in the United States on Dec. 31, 1958 [1]

Age	Merchant plants		Furnace plants		Total			
	Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)	Number	Percent of total	Annual coke capacity (net tons)	Percent of total
Under 5 years	24	148, 900	2, 341	12, 453, 300	2, 365	14. 6	12, 602, 200	15. 3
From 5 to 10 years	257	1, 347, 400	3, 598	19, 650, 000	3, 855	23. 7	20, 997, 400	25. 4
From 10 to 15 years	170	706, 400	1, 805	9, 838, 500	1, 975	12. 2	10, 544, 900	12. 8
From 15 to 20 years	315	1, 850, 500	2, 242	12, 021, 100	2, 557	15. 7	13, 871, 600	16. 8
From 20 to 25 years	97	418, 200	1, 053	5, 973, 900	1, 150	7. 1	6, 392, 100	7. 7
From 25 to 30 years	46	240, 000	132	750, 600	178	1. 1	990, 600	1. 2
From 30 to 35 years	472	2, 384, 100	323	1, 590, 200	795	4. 9	3, 974, 300	4. 8
From 35 to 40 years	150	500, 100	719	3, 008, 800	869	5. 3	3, 508, 900	4. 3
40 years and over	889	3, 435, 200	1, 611	6, 180, 700	2, 500	15. 4	9, 615, 900	11. 7
Total	2, 420	11, 030, 800	13, 824	71, 467, 100	16, 244	100. 0	82, 497, 900	100. 0

[1] Age dates from first entry into operation or from last date of rebuilding.

TABLE 14.—Number of slot-type coke ovens in the United States on December 31, 1958, by States and kinds

State	Koppers	Koppers-Becker	Semet-Solvay	Wilputte	All others	Total
Alabama	338	842	180	65	[1] 63	1, 488
California		225				225
Colorado	100	146				246
Connecticut		70				70
Illinois		177		330		507
Indiana	340	1, 079	120	652		2, 191
Kentucky			120	76		196
Maryland		758				758
Massachusetts		108				108
Michigan		259	362	148		769
Minnesota	65	156		20		241
Missouri	45				[2] 40	85
New Jersey	165	176				341
New York	186	237	180	228		831
Ohio	694	787	276	758		2, 515
Pennsylvania	1, 191	2, 000	88	889		4, 168
Tennessee			24	20		44
Texas		140				140
Utah		308				308
West Virginia	154	514		145		813
Wisconsin	100		100			200
Total 1958	3, 378	7, 982	1, 450	3, 331	103	16, 244
At merchant plants	510	738	684	448	40	2, 420
At furnace plants	2, 868	7, 244	766	2, 883	63	13, 824
Total 1957	3, 632	7, 584	1, 450	3, 191	40	[3] 15, 897

[1] Otto.
[2] Simon-Carves.
[3] Revised figure.

TABLE 15.—Beehive-coke ovens reconstructed and abandoned in the United States in 1958 and number in existence at end of year, by States

State	Plants in existence Dec. 31	Ovens: In existence Dec. 31		In operating condition Dec. 31		Not in operating condition Dec. 31		Rebuilt or repaired	Abandoned or dismantled during year	In course of reconstruction Dec. 31
		Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)			
Kentucky	1	193	120,000	193	120,000					
Pennsylvania	43	7,316	4,284,600	4,527	2,770,700	2,789	1,513,900	2	722	
Utah									297	
Virginia	5	663	359,000	596	328,800	67	30,200	180		7
West Virginia	4	510	256,800	205	101,000	305	155,800			2
Total 1958	53	8,682	5,020,400	5,521	3,320,500	3,161	1,699,900	182	[1] 1,019	9
Total 1957	58	9,519	5,503,200	6,737	4,012,700	2,782	1,490,500	465	[1] 605	18

[1] Idle and not expected to resume production; removed from list of available ovens.

TABLE 16.—Average number of beehive-coke ovens active in the United States in 1958, by months

Month	Number	Month	Number	Month	Number
January	2,165	May	1,399	September	1,355
February	1,692	June	1,378	October	1,580
March	1,395	July	1,323	November	1,841
April	1,416	August	1,330	December	1,881

CAPACITY OF OVEN-COKE PLANTS

The potential maximum annual coke capacity of oven-coke plants increased about 2.2 million tons (3 percent) in 1958 and reached an alltime high of nearly 82.5 million tons. The gain was due entirely to expansion of carbonizing capacity at furnace plants, as the capacity of merchant plants decreased slightly. Since 1954 the capacity of merchant plants has remained relatively constant (around 11 million tons), whereas the capacity of furnace plants increased about 3.5 million tons. When compared with the benchmark year of 1949, however, the capacity of merchant plants decreased 22 percent, while furnace plants increased their coke capacity 20 percent, or at a rate slightly higher than 1 percent a year.

Oven-coke plants generally are big operations, particularly those connected with iron and steel works. The average annual capacity of all furnace plants was 1.3 million tons, whereas the average coke capacity of merchant plants averaged 500 thousand tons. The trend in the past two decades has been to build larger plants, because the unit cost of production declines as the size of the plant increases. Individual oven size has been rather uniform and the average size of ovens built since 1954 was 39 feet long, 12 feet high, and 18 inches wide, holding about 16 tons of coal per charge.

The potential annual coke capacity reported to the Bureau of Mines by coke producers is based on the minimum coking time necessary to produce coke with qualities suitable for its intended use. For this reason, the potential capacity of a plant may change from year to year, depending on the age and condition of ovens, the character and quality of coal carbonized, the grade of coke required, and other economic factors. Thus the capacity reported to the Bureau of Mines may differ from the designed or rated capacity estimated by the coke-oven builder at the time of construction. For example, if the generally accepted standard coking rate of 1 inch per hour were used to calculate the capacity of slot-type coke ovens on December 31, 1958, it would have been 85 million tons—3 percent higher than the potential capacity reported to the Bureau of Mines. However, because of the factors previously mentioned, the maximum annual coke capacity shown in table 17 is probably a reliable measure of the practical operating capacity for the years given.

The operating rate of the oven-coke industry was the lowest in 19 years, falling 27.7 points below the 1957 average figure. The decline in blast-furnace coke requirements caused the furnace plants to reduce their operating rate drastically, and for the year they operated at only 65 percent of capacity compared with 94 percent in 1957. Reduced requirements for coke by the heavy industries also affected merchant plants, and their production rate dropped from 79 percent in 1957 to 59 percent in 1958.

TABLE 17.—Potential maximum annual coke capacity of all oven-coke plants in existence in the United States, 1949 and 1954–58

Year	Merchant plants				Furnace plants				Total			
	In existence Dec. 31		Potential maximum annual coke capacity (net tons)	Change from 1949 (percent)	In existence Dec. 31		Potential maximum annual coke capacity (net tons)	Change from 1949 (percent)	In existence Dec. 31		Potential maximum annual coke capacity (net tons)	Change from 1949 (percent)
	Plants	Ovens			Plants	Ovens			Plants	Ovens		
1949	30	3,057	14,209,200	------	55	12,047	59,500,900	------	85	15,104	73,710,100	------
1954	23	2,458	10,686,300	−24.8	58	13,433	67,909,300	+14.1	81	15,891	78,595,600	+6.6
1955	23	2,482	11,220,200	−21.0	58	13,557	68,455,300	+15.0	81	16,039	79,675,500	+8.1
1956	22	2,424	11,009,600	−22.5	57	13,499	68,955,500	+15.9	79	15,923	79,965,100	+8.5
1957	22	2,420	11,061,400	−22.2	56	[1] 13,477	69,238,000	+16.4	78	[1] 15,897	80,299,400	+8.9
1958	22	2,420	11,030,800	−22.4	55	13,824	71,467,100	+20.1	77	16,244	82,497,900	+11.9

[1] Revised figure.

TABLE 18.—Relationship of production of potential maximum capacity [1] at oven-coke plants in the United States, 1954–58, by months, in percent

Month	1954	1955	1956	1957	1958	Month	1954	1955	1956	1957	1958
January	82.6	85.6	97.5	95.3	68.5	August	67.9	93.3	81.2	92.6	61.6
February	78.4	87.9	97.5	95.3	65.0	September	69.8	96.5	96.2	92.5	66.3
March	75.0	91.4	97.0	95.7	62.5	October	76.6	96.7	96.9	89.5	72.7
April	70.6	92.6	96.5	92.7	57.1	November	81.4	98.4	96.6	83.1	77.1
May	70.0	93.7	94.7	93.1	56.1	December	84.4	99.5	97.8	74.0	78.3
June	70.4	92.9	91.9	92.5	57.9						
July	69.6	90.5	33.3	92.5	56.6	Year	74.7	93.3	89.7	92.0	64.3

[1] Capacity of all ovens in existence, whether active or idle, based upon maximum daily capacity multiplied by days in month.

QUANTITY AND VALUE OF COAL CARBONIZED

The coke industry carbonized about one-fifth of the bituminous coal produced in the United States, ranking second to electric utilities in bituminous-coal utilization. Normally, daily and monthly consumption rates of coal in coke ovens are uniform and do not follow seasonal demand. Because of the depressed condition of business and industry already referred to in previous discussions, the total consumption for the year decreased 29 percent from 1957. Monthly consumption ranged from a low of 5.5 million tons in April to a high of 7.9 million tons in December. Ninety-nine percent of the bituminous coal carbonized was charged into slot-type coke ovens.

After rising for 2 successive years, the average value per ton of coal delivered to oven-coke plants declined slightly in 1958. Although the average cost of coal dropped $0.02 per ton, the average cost of coal required to make 1 ton of oven coke increased $0.07 because of a slight decrease in yield of coke. Coal represents the major portion of manufacturing costs in making coke and the average value (delivered costs) of coal is important to coke producers. In iron and steel plants where the coke produced is used in blast furnaces by the producing company, coal costs represent an important part of total steel manufacturing costs. At merchant plants, coal costs directly influence selling prices of coke and coal-chemical materials. Since 1947–49 the average value per ton of coal delivered to oven-coke plants increased 27 percent. Although mining costs have increased steadily in recent years, increased productivity in the coal industry through mechanization has kept mine prices relatively stable. Transportation costs, however, have been rising; and, where coal is transported long distances, the cost of coal delivered to the ovens has increased. Detailed data on the average value per ton of coal delivered at oven-coke plants, by States, for 1958 and several preceding years are shown in table 22.

Costs of coal at beehive plants decreased $0.54 per ton or 9 percent in 1958. Beehive coal costs have not increased as much as coal for slot-type ovens since 1947–49 rising only 17 percent.

TABLE 19.—Bituminous coal carbonized in coke ovens in the United States, 1947–49 (average) and 1957–58, by months, in net tons

Month	1947–49 (average)			1957			1958		
	Slot type	Beehive	Total	Slot type	Beehive	Total	Slot type	Beehive	Total
Jan	8,320,100	987,400	9,307,500	9,365,800	436,600	9,802,400	6,691,100	85,600	6,776,700
Feb	7,647,600	906,500	8,554,100	8,463,800	419,800	8,883,600	5,753,200	65,800	5,819,000
Mar	8,195,000	726,000	8,921,000	9,391,800	447,600	9,839,400	6,126,000	71,200	6,197,200
Apr	7,448,200	700,900	8,149,100	8,805,400	364,400	9,169,800	5,442,700	60,100	5,502,800
May	8,096,100	905,800	9,001,900	9,118,900	305,300	9,424,200	5,552,700	66,100	5,618,800
June	7,697,200	673,900	8,371,100	8,775,300	261,600	9,036,900	5,572,800	79,000	5,651,800
July	7,631,400	482,200	8,113,600	9,026,800	241,900	9,268,700	5,635,300	53,500	5,688,800
Aug	7,901,400	665,500	8,566,900	9,036,600	263,200	9,299,800	6,111,900	68,600	6,180,500
Sept	7,617,700	645,000	8,262,700	8,745,600	235,400	8,981,000	6,344,200	94,600	6,438,800
Oct	6,397,800	669,100	7,066,900	8,722,500	205,000	8,927,500	7,200,500	108,900	7,309,400
Nov	7,118,300	641,900	7,760,200	7,864,600	153,100	8,017,700	7,386,200	122,800	7,509,000
Dec	8,326,100	712,700	9,038,800	7,229,500	139,300	7,368,800	7,744,500	139,200	7,883,700
Total	92,396,900	8,716,900	101,113,800	104,546,600	3,473,200	108,019,800	75,561,100	1,015,400	76,576,500

TABLE 20.—Anthracite carbonized at oven-coke plants in the United States, 1947–49 (average) and 1955–58, by months, in net tons

Month	1947–49 (average)	1955	1956	1957	1958
January	17,600	20,000	33,400	31,800	29,000
February	16,600	21,300	32,300	30,700	25,700
March	19,300	28,900	36,500	33,100	24,700
April	21,500	31,700	33,100	37,600	20,700
May	18,800	33,700	33,600	38,500	18,900
June	19,800	31,200	29,700	32,100	15,000
July	18,200	27,600	24,900	30,000	15,100
August	18,900	29,100	31,700	30,000	17,300
September	20,100	36,700	30,400	31,400	19,200
October	22,000	38,700	30,700	33,600	22,000
November	20,900	32,900	30,400	31,700	21,900
December	16,700	34,400	30,600	28,800	25,300
Total	230,400	366,200	377,300	389,300	254,800

TABLE 21.—Quantity and value at ovens of coal carbonized in the United States in 1958, by States

State	Coal carbonized			Coal per ton of coke	
	Net tons	Value		Net tons	Value
		Total	Average		
Oven coke:					
Alabama	5,856,776	$48,058,349	$8.21	1.38	$11.29
California, Colorado, and Utah	4,040,969	47,355,445	11.72	1.57	18.36
Illinois	2,753,091	28,592,012	10.39	1.44	14.96
Indiana	10,959,547	123,973,521	11.31	1.41	15.90
Kentucky, Tennessee, and Texas	2,599,127	28,216,113	10.86	1.43	15.54
Maryland	4,015,835	(1)	(1)	1.39	(1)
Massachusetts	507,204	(1)	(1)	1.43	(1)
Michigan	3,395,884	34,551,830	10.17	1.34	13.68
Minnesota	922,665	10,796,514	11.70	1.44	16.80
New Jersey	1,050,603	(1)	(1)	1.41	(1)
New York	4,308,694	50,183,838	11.65	1.45	16.86
Ohio	9,266,673	90,803,237	9.80	1.43	14.02
Pennsylvania	20,349,408	169,611,385	8.33	1.46	12.14
West Virginia	4,737,488	36,903,644	7.79	1.44	11.22
Connecticut, Missouri, and Wisconsin	1,051,862	11,468,204	10.90	1.36	14.84
Undistributed	----------	69,382,479	12.45	----------	17.37
Total 1958	75,815,826	749,896,571	9.89	1.43	14.15
At merchant plants	9,175,407	98,456,116	10.73	1.40	15.05
At furnace plants	66,640,419	651,440,455	9.78	1.43	14.02
Total 1957	104,935,965	1,039,764,913	9.91	1.42	14.08
Beehive coke:					
Pennsylvania	581,357	3,318,720	5.71	1.64	9.34
Virginia	281,002	1,543,750	5.49	1.83	10.04
Kentucky, Utah, and West Virginia	153,057	937,435	6.12	1.72	10.52
Total 1958	1,015,416	5,799,905	5.71	1.70	9.69
Total 1957	3,473,138	21,690,083	6.25	1.66	10.38

[1] Included with "Undistributed" to avoid disclosing individual company figures.

TABLE 22.—Average value per net ton of coal carbonized at oven-coke plants in the United States, 1947–49 (average) and 1955–58, by States

State	1947–49 (average)	1955	1956	1957	1958
Alabama	$6.27	$7.48	$7.68	$7.72	$8.21
Illinois	9.00	9.73	10.44	10.89	10.39
Indiana	8.99	10.44	10.58	11.12	11.31
Michigan	7.98	8.71	9.76	10.28	10.17
Minnesota	9.40	10.49	10.16	11.61	11.70
New York	9.00	9.84	10.60	11.42	11.65
Ohio	7.75	8.58	9.35	9.95	9.80
Pennsylvania	6.88	7.84	8.36	8.77	8.33
West Virginia	5.79	6.80	6.97	7.57	7.79
Other States [1]	[2] 8.58	10.44	10.95	11.77	11.79
United States average	7.79	8.84	9.35	9.91	9.89
Value of coal per ton of coke	11.09	12.60	13.28	14.08	14.15

[1] California, Colorado, Connecticut, Kentucky, Maryland, Massachusetts, Missouri, New Jersey, Tennessee, Texas, Utah, and Wisconsin.
[2] Includes Rhode Island.

TABLE 23.—Value of coal and products per net ton of coal carbonized in the United States, 1947–49 (average) and 1954–58

Year	Oven coke					Beehive coke	
	Value of coal per ton	Value per ton of coal				Value of coal per ton	Value per ton of coal
		Coke produced	Breeze produced	Coal chemical materials used or sold [1]	Total		
1947–49 (average)	$7.79	$8.49	$0.19	$2.85	$11.53	$4.90	$7.22
1954	9.00	11.12	.23	3.83	15.18	6.44	8.69
1955	8.84	11.44	.24	3.70	15.38	5.59	7.75
1956	9.35	12.46	.26	3.75	16.47	5.99	8.62
1957	9.91	12.88	.28	3.86	17.02	6.25	8.98
1958	9.89	12.75	.32	3.96	17.03	5.71	8.27

[1] Includes value of surplus gas and of tar and pitch-of-tar burned.

PREPARATION AND SOURCE OF COAL

Washed and Unwashed Coal.—Seventy-six percent of the bituminous coal charged into coke ovens in 1958 was mechanically cleaned before it was carbonized. This was the highest proportion of cleaned coal ever charged into coke ovens and continued the upward trend in use of washed coal at coke ovens (table 25). All industrial consumers of bituminous coal strive constantly to obtain the highest quality of coal possible but the coke industry, no doubt, maintains the most rigid specifications of all consumers because coke quality depends to a much greater degree upon the character and quality of coal than upon oven design or carbonizing techniques. To meet these rigid specifications and maintain high standards, coal producers have installed facilities to clean the raw coal mechanically. The growth of mechanical cleaning of bituminous coal has been phenomenal in recent years, increasing from about one-fourth of the total production after World War II in 1946 to more than two-thirds in 1958. Most of the cleaned coal carbonized is cleaned at or near the mines, although three coke plants had washeries adjacent to the ovens in 1958. In addition, two coke plants obtained their washed coal from central cleaning plants about midway between the mines and coke ovens. All coal mined and used to make coke in Alabama and Colorado was washed. Maryland, Massachusetts, and Missouri were the only States where cleaned coal was not used in coke ovens. Table 24 shows the quantities of washed and unwashed coal used in the respective States in 1958.

Blending.—Mixing or blending coals before charging them into coke ovens is standard practice at oven-coke plants in the United States. Usually two types of coal (high- and low-volatile) are mixed or blended, although a few plants use a third coal (medium-volatile) or other blending material (anthracite, coke breeze, coal-tar pitch). Better coke usually can be obtained from a proper blend of two, three, or more different coals than from any one type alone. Blending also permits the use of coal that has good coking properties but is unsuitable as a 100-percent charge because of excessive ash, sulfur, or phosphorus content. Thus, in addition to providing a means of controlling the quality and strength of the coke and the yield of coproducts, blending permits flexibility in operating procedure at oven-coke plants and the use of a far wider selection of coal.

The blending or mixing of coals of different volatile content was practiced at 71 plants in 1958. Of these, 40 used high- and low-volatile coals (including 9 employing anthracite); 23, high-, medium-, and low- (including 9 employing anthracite); and 4, low- and medium- (including 3 employing anthracite). Of the plants that blended only one type of coal, two used straight high-, and four used straight medium-volatile coal.

The average volatile content of the different types of coal charged into coke ovens in 1958 and several preceding years was calculated and shown for the first time in table 30. In preceding years only the types of coal (high-, medium-, and low-volatile) obtained were shown. Usually the coking-coal admixtures of the respective coke plants are established after comprehensive testing and experimenting. Once established, however, the operators are reluctant to change them. This was confirmed in the calculations made for 1947–58. During this period the average volatile content of all bituminous coal carbonized in slot-type ovens ranged between 29.5 and 30.3 percent.

Sources.—Sources of high-grade coking coal are extremely important to coke-plant operators, because all coal will not fuse and form a coherent, strong, and porous structure when heated to high temperatures (above 900° C.) in the absence of air. The United States probable has the largest reserves of coking coal in the world, but they are distributed unevenly and concentrated in the Appalachian region, which includes Alabama, Tennessee, eastern Kentucky, Virginia, West Virginia, Ohio, and western Pennsylvania. Smaller, widely scattered deposits occur west of the Mississippi River in Arkansas, Colorado, New Mexico, Oklahoma, Utah, and Washington.

The Appalachian States supplied 92 percent of all coal carbonized in slot-type and beehive-coke ovens in 1958. In addition, about four-fifths of Canada's coking-coal requirements and an increasing proportion of Western Europe's needs are obtained from this region. The coking coals produced there range in rank from low-volatile (the strongest coking coal) to high-volatile. The quality of most low-volatile coals mined in this region is unsurpassed by that of any other coal in the world; they are in great demand by metallurgical-coke producers because of their strong coking or caking characteristics. Unfortunately, reserves of these coals are not as large as those of the lower rank coals, and estimates indicate that they represent only about 1 percent of the total of all coals in the United States.[1]

The origin and destination of bituminous coal delivered to oven-coke plants in 1958 are shown in table 28. Thirty-six percent of the bituminous coal shipped to oven-coke plants in 1958 was mined in West Virginia, and most of it (96 percent) was shipped outside the State. All States east of the Mississippi River used some West Virginia coking coal. Pennsylvania followed West Virginia in coking-coal shipments to oven-coke plants, with 31 percent of the total. However, over half of the Pennsylvania coal was carbonized within the State, and 90 percent of the total shipments from the State went to coke plants in three adjacent States—West Virginia, Ohio, and New York. Little Pennsylvania coal moved to the Midwest to such coking-coal consuming centers as Chicago. Eastern Kentucky coals, however, are extensively used in the Chicago district, as more than half of the coking coal shipped from that State in 1958 was destined to Illinois and Indiana.

Captive Coal.—Oven-coke plant operators purchase only about one-third of their coking-coal requirements and obtain the remainder from their own mines. This latter coal is known as "captive" coal and ordinarily does not move in commercial channels but is mined as needed by the coke-producing companies. In recent years both merchant and furnace oven-coke plant operators increased their captive coal receipts. Although furnace plants use a much higher proportion of captive coal than the merchant group, the use of captive coal at merchant plants has increased faster, as shown in table 29. Several factors contributed to the upward trend in use of captive coal at coke plants. First and probably most important is the fact that coke plants can maintain closer control of the quality of coal they carbonize; second, they can be sure of the supply of this coal during periods of heavy demand.

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[1] Averett, Paul, Berryhill, Louise R., and Taylor, Dorothy H., Coal Resources of the United States: Geol. Survey Circ. 293, 1953, p. 17.

TABLE 24.—Washed and unwashed coal carbonized in the United States in 1958, by States in which used, in net tons

State	Bituminous coal			Anthracite	Total
	Washed	Unwashed	Total		
Oven coke:					
Alabama	5,627,467	217,975	5,845,442	11,334	5,856,776
California, Colorado, and Utah	2,921,016	1,119,953	4,040,969		4,040,969
Illinois	1,552,663	1,195,693	2,748,356	4,735	2,753,091
Indiana	10,464,392	458,635	10,923,027	36,520	10,959,547
Kentucky, Tennessee, and Texas	2,035,016	553,692	2,588,708	10,419	2,599,127
Maryland		4,015,835	4,015,835		4,015,835
Massachusetts		499,528	499,528	7,676	507,204
Michigan	3,004,216	351,740	3,355,956	39,928	3,395,884
Minnesota	638,502	268,762	907,264	15,401	922,665
New Jersey	870,382	166,987	1,037,369	13,234	1,050,603
New York	3,810,749	489,319	4,300,068	8,626	4,308,694
Ohio	7,013,330	2,218,071	9,231,401	35,272	9,266,673
Pennsylvania	14,555,896	5,760,560	20,316,456	32,952	20,349,408
West Virginia	4,313,921	423,567	4,737,488		4,737,488
Connecticut, Missouri, and Wisconsin	801,274	211,900	1,013,174	38,688	1,051,862
Total 1958	57,608,824	17,952,217	75,561,041	254,785	75,815,826
At merchant plants	6,362,374	2,582,158	8,944,532	230,875	9,175,407
At furnace plants	51,246,450	15,370,059	66,616,509	23,910	66,640,419
Total 1957	76,364,204	28,182,427	104,546,631	389,334	104,935,965
Beehive coke:					
Pennsylvania	388,942	192,415	581,357		581,357
Virginia	205,387	75,615	281,002		281,002
Kentucky, Utah, and West Virginia	115,358	37,699	153,057		153,057
Total 1958	709,687	305,729	1,015,416		1,015,416
Total 1957	2,196,977	1,276,161	3,473,138		3,473,138

TABLE 25.—Washed and unwashed bituminous coal carbonized in the United States, 1947–49 (average) and 1954–58, in net tons

Year	Washed coal			Unwashed coal			Total coal carbonized	Percentage of total washed
	At coke ovens	At beehive ovens	Total	At coke ovens	At beehive ovens	Total		
1947–49 (average)	29,501,961	1,442,138	30,944,099	62,894,990	7,274,728	70,169,718	101,113,817	30.6
1954	57,318,895	386,443	57,705,338	27,091,705	593,203	27,684,908	85,390,246	67.6
1955	73.735,758	1,670,764	75,406,522	30,771,947	1,198,448	31,970,395	107,376,917	70.2
1956	72,090,891	2,462,335	74,553,226	29,780,531	1,626,880	31,407,411	105,960,637	70.4
1957	76,364,204	2,196,977	78,561,181	28,182,427	1,276,161	29,458,588	108,019,769	72.7
1958	57,608,824	709,687	58,318,511	17,952,217	305,729	18,257,946	76,576,457	76.2

TABLE 26.—Coal obtained by coke-oven operators in the United States in 1958, by consuming States and volatile content,[1] in net tons

Consuming State	High-volatile		Medium-volatile		Low-volatile		Total coal obtained
	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total	
Alabama	400,200	6.9	5,207,887	89.0	242,283	4.1	5,850,370
California, Colorado, and Utah	3,516,630	82.3	406,567	9.5	350,841	8.2	4,274,038
Illinois	2,072,732	75.4	44,684	1.6	631,624	23.0	2,749,040
Indiana	6,626,546	59.7	76,727	0.7	4,399,726	39.6	11,102,999
Kentucky, Tennessee, and Texas	1,890,953	70.5	192,953	7.2	596,640	22.3	2,680,546
Maryland	3,012,102	67.6	----------	------	1,442,723	32.4	4,454,825
Massachusetts	245,202	48.3	165,741	32.7	96,268	19.0	507,211
Michigan	2,112,097	67.0	223,759	7.1	815,439	25.9	3,151,295
Minnesota	506,296	63.2	98,299	12.3	196,609	24.5	801,204
New Jersey	505,843	51.1	263,413	26.6	221,309	22.3	990,565
New York	3,071,121	69.7	358,463	8.1	978,174	22.2	4,407,758
Ohio	6,882,905	73.9	240,840	2.6	2,188,706	23.5	9,312,451
Pennsylvania	15,578,848	77.6	2,082,926	10.4	2,407,999	12.0	20,069,773
West Virginia	3,877,685	85.5	24,165	0.5	631,908	14.0	4,533,758
Connecticut, Missouri, and Wisconsin	353,893	36.4	278,955	28.7	340,305	34.9	973,153
Total 1958	50,653,053	66.8	9,665,379	12.7	15,540,554	20.5	75,858,986
At merchant plants	4,645,600	51.7	1,680,787	18.7	2,658,979	29.6	8,985,366
At furnace plants	46,007,453	68.8	7,984,592	11.9	12,881,575	19.3	66,873,620
Total 1957	70,851,161	65.9	12,203,388	11.3	24,465,415	22.8	107,519,964

[1] High-volatile—dry volatile matter over 31 percent; medium-volatile—dry volatile matter 31 percent or less and over 22 percent; low-volatile—dry volatile matter 22 percent or less and over 14 percent.

TABLE 27.—**Origin of coal obtained by coke-oven operators in the United States in 1958, by producing fields and volatile content, in net tons**

State and field [1] where coal was produced	Volatile content [2]			Total
	High	Medium	Low	
Alabama	575,895	5,085,256		5,661,151
Arkansas			177,491	177,491
Colorado	1,052,529	264,599		1,317,128
Illinois	726,051			726,051
Indiana	1,571			1,571
Kentucky:				
Elkhorn	5,084,454			5,084,454
Harlan	4,463,042			4,463,042
Kenova-Thacker	234,160			234,160
New Mexico	8,713			8,713
Ohio		41,368		41,368
Oklahoma	515,058	223,970	340,124	1,079,152
Pennsylvania:				
Anthracite			227,492	227,492
Bituminous:				
Central Pennsylvania	3,451	257,402	2,627,667	2,888,520
Connellsville	6,254,641			6,254,641
Freeport	2,722,618			2,722,618
Pittsburgh	10,789,661	370,009		11,159,670
Somerset			173,340	173,340
Westmoreland	240,815			240,815
Tennessee		150,640		150,640
Utah	2,455,388			2,455,388
Virginia:				
Buchanan	159,863	220,838		380,701
Clinch Valley		89,671		89,671
Pocahontas		1,111,632	606,104	1,717,736
Southwestern	1,174,906	71,144		1,246,050
West Virginia:				
Coal River	289,293			289,293
Coal and coke	53,222			53,222
Fairmont	5,397,701			5,397,701
Kanawha	5,070,997	313,017		5,384,014
Kenova-Thacker	477,538			477,538
Logan	2,186,611	135,147		2,321,758
New River	268,914		427,729	696,643
Pocahontas		121,102	8,701,779	8,822,881
Randolph-Barbour	259,391	64,155		323,546
Tug River			52,574	52,574
Webster-Gauley	186,570	685,506		872,076
Winding Gulf		414,220	2,206,104	2,620,324
Canada		45,703	150	45,853
Total	50,653,053	9,665,379	15,540,554	75,858,986

[1] As defined by the U.S. Coal Commission of 1922.
[2] High-volatile—dry volatile matter, over 31 percent; medium-volatile—dry volatile matter, 31 percent or less and over 22 percent; low-volatile—dry volatile matter, 22 percent or less and over 14 percent.

TABLE 28.—Origin and destination of coal delivered to oven-coke plants in the United States in 1958, by States, in net tons

Consuming State	Coal produced in—							
	Alabama	Arkansas	Colorado	Illinois	Indiana	Kentucky	New Mexico	Ohio
Alabama	5,485,456							
California, Colorado, and Utah		177,491	1,317,128				8,713	
Illinois				521,398		1,298,506		
Indiana				204,602	1,571	5,179,960		
Kentucky, Tennessee, and Texas	175,695							
Maryland						812,260		
Massachusetts						339		
Michigan						794,827		
Minnesota						303,828		41,368
New Jersey								
New York						246,890		
Ohio						965,581		
Pennsylvania						166,504		
West Virginia								
Connecticut, Missouri, and Wisconsin				51		12,961		
Total 1958	5,661,151	177,491	1,317,128	726,051	1,571	9,781,656	8,713	41,368
At merchant plants	587,244			51	1,571	13,300		
At furnace plants	5,073,907	177,491	1,317,128	726,000		9,768,356	8,713	41,368
Total 1957	8,154,072	380,249	1,621,250	615,461	3,013	13,202,312	14,169	

Consuming State	Coal produced in—Continued							
	Oklahoma	Pennsylvania	Tennessee	Utah	Virginia	West Virginia	Canada	Total
Alabama		19,523	96,176			249,215		5,850,370
California, Colorado, and Utah	269,465			2,455,388			45,853	4,274,038
Illinois		3,043			24,958	901,135		2,749,040
Indiana		31,783			884,223	4,800,860		11,102,999
Kentucky, Tennessee, and Texas	809,687	10,671	54,464		74,342	1,555,687		2,680,546
Maryland		605,602				3,036,963		4,454,825
Massachusetts		7,683				499,189		507,211
Michigan		279,493			289,433	1,787,542		3,151,295
Minnesota		13,027				442,981		801,204
New Jersey		9,881				980,684		990,565
New York		2,811,960			488,520	860,388		4,407,758
Ohio		3,290,290			605,761	4,450,819		9,312,451
Pennsylvania		13,212,193			1,004,601	5,686,475		20,069,773
West Virginia		3,331,664			24,165	1,177,929		4,533,758
Connecticut, Missouri, and Wisconsin		40,283			38,155	881,703		973,153
Total 1958	1,079,152	23,667,096	150,640	2,455,388	3,434,158	27,311,570	45,853	75,858,986
At merchant plants		339,347			416,452	7,627,401		8,985,366
At furnace plants	1,079,152	23,327,749	150,640	2,455,388	3,017,706	19,684,169	45,853	66,873,620
Total 1957	1,362,380	34,761,847	209,994	2,924,229	3,768,065	40,445,776	57,147	107,519,964

TABLE 29.—Quantity and percentage of captive coal received by oven-coke plants in the United States, 1947–49 (average) and 1954–58, in net tons

Year	At merchant plants			At furnace plants			Total		
	Total coal received	Captive coal		Total coal received	Captive coal		Total coal received	Captive coal	
		Quantity	Percent		Quantity	Percent		Quantity	Percent
1947–49 (average)	18,321,004	5,286,361	28.9	76,138,301	48,371,093	63.5	94,459,305	53,657,454	56.8
1954	9,670,190	4,049,080	41.9	73,615,703	51,828,722	70.4	83,285,893	55,877,802	67.1
1955	12,801,963	5,467,619	42.7	93,865,894	63,205,881	67.3	106,667,857	68,673,500	64.4
1956	13,407,253	5,740,551	42.8	90,740,999	59,378,485	65.4	104,148,252	65,119,036	62.5
1957	12,092,303	5,250,574	43.4	95,427,661	61,543,355	64.5	107,519,964	66,793,929	62.1
1958	8,985,366	3,839,880	42.7	66,873,620	44,605,122	66.7	75,858,986	48,445,002	63.9

TABLE 30.—Average volatile content of high-, medium-, and low-volatile bituminous coal carbonized in the United States, 1947–49 (average) and 1954–58

Year	High		Medium		Low		Total	
	Net tons	Volatile content (percent)	Net tons	Volatile content (percent)	Net tons	Volatile content (percent)	Net tons	Volatile content (percent)
1947–49 (average)	60,454,142	34.0	11,484,978	27.9	20,457,830	17.2	92,396,950	29.5
1954	55,955,465	34.6	9,670,417	26.9	18,784,718	17.3	84,410,600	29.8
1955	70,441,632	34.5	11,358,431	26.8	22,707,642	17.5	104,507,705	29.9
1956	67,361,091	34.9	11,221,853	26.8	23,288,478	17.5	101,871,422	30.0
1957	68,788,430	34.6	12,052,871	26.3	23,705,330	17.5	104,546,631	29.7
1958	51,012,307	34.8	10,271,173	25.7	14,277,561	17.5	75,561,041	30.3

CONSUMPTION OF COKE

Coke is used mainly as an industrial fuel, and the sharp recession in industrial activity in 1958 caused consumption of coke to decrease 29 percent from 1957. The apparent consumption in the United States was determined by adding imports to production, subtracting exports, and adjusting for producers' stocks. Because most of the coke consumed in the United States for many years has been used as blast-furnace fuel, table 33 was prepared to show trends in this major use. The tremendous decrease in blast-furnace operations (63.5 percent of capacity in 1958) caused consumption of blast-furnace fuel to drop 31 percent from 1957 and 17 percent below the base period 1947–49. The decrease from 1957 in consumption of coke for other purposes was not as sharp as of blast-furnace coke but was less than half the 1947–49 average. The decline in use of coke for residential heating and for gas manufacture contributed in large part to the decrease in this category.

Probably one of the most significant developments in coke utilization in 1958 was the tremendous improvement in fuel efficiency of the blast furnaces (table 34). The reduction of 86 pounds of coke per ton of pig iron produced was the largest drop for any single year on record. Although a major factor in this improvement was due to sintering and other iron-ore preparation and beneficiation proc-

TABLE 31.—Oven coke produced, used by producers, and sold in the United States in 1958, by States

State	Produced		Used by producing companies—				Commercial sales	
			In blast furnaces		For other purposes [1]		To blast-furnace plants	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Alabama	4, 256, 616	$84, 671, 540	3, 235, 513	$61, 970, 184	52, 214	$1, 402, 777	95, 586	(2)
California, Colorado, and Utah	2, 578, 585	63, 802, 180	2, 523, 738	62, 637, 414	6, 135	127, 795		
Illinois	1, 910, 835	37, 406, 376	1, 749, 156	34, 074, 594	68, 117	2, 133, 492		
Indiana	7, 797, 352	157, 112, 578	7, 339, 135	145, 636, 906	18, 100	289, 963	9, 124	(2)
Kentucky, Tennessee, and Texas	1, 816, 137	30, 271, 380	716, 114	13, 794, 892	46, 006	915, 900	(2)	(2)
Maryland	2, 896, 268	(2)	2, 881, 536	(2)	7, 655	(2)		
Massachusetts	353, 752	(2)	90, 971	(2)	4, 186	(2)		
Michigan	2, 526, 202	43, 527, 893	1, 772, 154	(2)	231, 259	5, 069, 408	(2)	(2)
Minnesota	642, 618	14, 834, 820	454, 050	(2)	6, 092	121, 565		
New Jersey	745, 362	(2)			97, 817	(2)	653	(2)
New York	2, 976, 610	49, 878, 813	2, 251, 857	(2)	92, 955	1, 407, 128	(2)	(2)
Ohio	6, 474, 405	110, 275, 760	5, 815, 901	96, 823, 583	99, 921	2, 174, 190	294, 386	$4, 660, 408
Pennsylvania	13, 968, 893	236, 364, 683	13, 153, 192	222, 027, 076	86, 300	1, 228, 908	341, 551	5, 329, 660
West Virginia	3, 289, 537	53, 007, 575	2, 944, 633	48, 969, 037	311, 178	3, 765, 866	(2)	(2)
Connecticut, Missouri, and Wisconsin	772, 558	18, 200, 523			59, 354	1, 117, 009	103, 518	1, 798, 357
Undistributed		67, 440, 417		121, 674, 860		1, 875, 096	1, 514, 235	24, 461, 240
Total 1958	53, 005, 730	966, 794, 538	44, 927, 950	807, 608, 546	1, 187, 289	21, 629, 097	2, 359, 053	36, 249, 665
At merchant plants	6, 543, 218	131, 629, 646	90, 971	(3)	914, 100	14, 995, 718	1, 890, 203	28, 997, 801
At furnace plants	46, 462, 512	835, 164, 892	44, 836, 979	(3)	273, 189	6, 633, 379	468, 850	7, 251, 864
Total 1957	73, 860, 692	1, 352, 096, 160	63, 044, 738	1, 144, 340, 159	1, 345, 996	22, 985, 459	4, 041, 678	64, 989, 166

State	Commercial sales—Continued							
	To foundries		To other industrial plants [4]		For residential heating		Total	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Alabama	405, 377	$11, 281, 652	188, 757	$3, 069, 476	38, 789	(2)	728, 509	$16, 390, 347
California, Colorado, and Utah	442	(2)	40, 249	802, 247	120	(2)	40, 811	814, 582
Illinois	----------	----------	39, 009	428, 793	4, 567	$70, 640	43, 576	499, 433
Indiana	288, 092	(2)	74, 885	1, 356, 892	34, 943	500, 279	407, 044	10, 243, 930
Kentucky, Tennessee, and Texas	(2)	(2)	40, 933	725, 637	(2)	(2)	1, 052, 397	15, 488, 153
Maryland	----------	----------	----------	----------	----------	----------	----------	----------
Massachusetts	55, 106	(2)	60, 138	(2)	131, 584	(2)	246, 828	(2)
Michigan	(2)	(2)	169, 205	2, 731, 335	22, 928	357, 621	514, 157	10, 938, 990
Minnesota	95, 029	(2)	41, 301	733, 544	6, 586	(2)	142, 916	3, 653, 941
New Jersey	74, 226	(2)	160, 979	(2)	195, 514	(2)	431, 372	(2)
New York	(2)	(2)	50, 856	(2)	(2)	(2)	525, 280	(2)
Ohio	199, 919	5, 715, 710	128, 277	1, 817, 761	13, 146	187, 119	635, 728	12, 380, 998
Pennsylvania	152, 170	4, 387, 081	228, 250	3, 280, 639	52, 549	79[illegible], 144	774, 520	13, 789, 524
West Virginia	----------	----------	23, 942	225, 699	(2)	(2)	46, 125	439, 455
Connecticut, Missouri, and Wisconsin	338, 368	10, 443, 653	99, 916	1, 784, 804	92, 092	1, 616, 494	633, 894	15, 643, 308
Undistributed	307, 056	23, 589, 638	----------	4, 705, 707	8, 804	6, 788, 146	----------	23, 359, 715
Total 1958	1, 915, 785	55, 417, 734	1, 346, 697	21, 662, 534	601, 622	10, 312, 443	6, 223, 157	123, 642, 376
At merchant plants	1, 777, 758	51, 469, 602	846, 327	15, 366, 052	575, 344	9, 966, 625	5, 089, 632	105, 800, 080
At furnace plants	138, 027	3, 948, 132	500, 370	6, 296, 482	26, 278	345, 818	1, 133, 525	17, 842, 296
Total 1957	2, 333, 049	67, 113, 469	1, 622, 293	25, 528, 242	660, 426	11, 304, 260	8, 657, 446	168, 935, 137

[1] Comprises 209,406 tons valued at $6,369,191 used in foundries; 132,919 tons, $2,140,165 to make producer gas; 395, 446 tons, $5,206,620 to make water gas; and 449,518 tons, $7,913,121 for other purposes.
[2] Included with "Undistributed" to avoid disclosing individual company figures.
[3] Concealed to avoid disclosing individual company figures.
[4] Includes 93,254 tons valued at $1,685,421 to water-gas plants.

TABLE 32.—Beehive coke produced, used by producers, and sold in the United States in 1958, by States

State	Produced		Used by producing companies—				Commercial sales	
			In blast furnaces		For other purposes		To blast-furnace plants	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Pennsylvania	355,458	$4,784,339					223,531	$3,252,259
Virginia	153,828	2,280,945					63,041	1,004,981
Kentucky, Utah, and West Virginia	89,086	1,329,915					24,250	372,300
Total 1958	598,372	8,395,199					310,822	4,629,540
Total 1957	2,090,029	31,191,475	(1)	(1)			[2] 1,683,582	24,758,775

State	Commercial sales—Continued							
	To foundries		To other industrial plants		For residential heating		Total	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Pennsylvania	15,120	$255,580	116,175	$1,273,728	1,930	$20,483	356,756	$4,802,050
Virginia	4,167	61,201	85,575	1,198,264	324	4,826	153,107	2,269,272
Kentucky, Utah, and West Virginia	540	9,477	65,023	957,937			89,813	1,339,714
Total 1958	19,827	326,258	266,773	3,429,929	2,254	25,309	599,676	8,411,036
Total 1957	30,434	518,325	373,526	5,881,869	2,199	23,483	2,089,741	31,182,452

[1] Included with sales of blast-furnace coke to avoid disclosing individual company figures.
[2] Includes small quantity used by producers.

esses, coke plants were supplying better coke to the blast furnaces because of improved coal-preparation, blending, and coke-oven-operating techniques.

Tables 31 and 32 show the principal uses of oven and beehive coke used and/or sold by producing companies in 1958. Furnace-coke plants consumed 97 percent of their production mainly as blast-furnace fuel and sold only a small tonnage, most of which was small sizes that could not be used in blast furnaces. Merchant plants sold 78 percent of their coke, and this group of plants furnished most of the foundry, other industrial, and residential-heating trade with coke. Nearly all of the beehive coke produced was sold, and 52 percent of the sales was for blast-furnace use.

TABLE 33.—Apparent consumption of coke in the United States, 1947–49 (average) and 1954–58, in net tons

Year	Total production	Imports	Exports	Net change in stocks	Apparent United States consumption [1]	Consumption: Iron furnaces [2] Quantity	Iron furnaces [2] Percent	All other purposes Quantity	All other purposes Percent
1947–49 (average)	70,648,402	181,000	696,699	+280,230	69,852,473	55,877,463	80.0	13,975,010	20.0
1954	59,662,496	115,781	387,575	+269,132	59,121,570	51,741,260	87.5	7,380,310	12.5
1955	75,301,826	126,342	530,505	−1,248,069	76,145,732	68,506,721	90.0	7,639,011	10.0
1956	74,482,526	130,955	655,717	+633,670	73,324,094	65,289,270	89.0	8,034,824	11.0
1957	75,950,721	117,951	822,244	+814,335	74,432,093	67,580,507	90.8	6,851,586	9.2
1958	53,604,102	121,517	392,817	+674,588	52,658,214	46,598,980	88.5	6,059,234	11.5

[1] Production plus imports minus exports, plus or minus net change in stocks.
[2] American Iron and Steel Institute; figures include coke consumed in manufacturing ferroalloys.

TABLE 34.—Coke and coking coal consumed per net ton of pig iron produced in the United States, 1913, 1918, 1929, 1939, 1947–49 (average), and 1956–58

Year	Coke per net ton of pig iron and ferroalloys [1] (pounds)	Yield of coke from coal (percent)	Coking coal per net ton of pig iron and ferroalloys (pounds calculated)	Year	Coke per net ton of pig iron and ferroalloys [1] (pounds)	Yield of coke from coal (percent)	Coking coal per net ton of pig iron and ferroalloys (pounds calculated)
1913	2,172.6	66.9	3,247.5	1947–49 (average)	1,919.7	69.7	2,754.2
1918	2,120.7	66.4	3,193.8	1956	1,719.1	70.1	2,452.4
1929	1,838.0	69.0	2,663.8	1957	1,703.6	70.1	2,430.2
1939	1,778.0	69.8	2,547.3	1958	1,613.4	69.8	2,311.5

[1] American Iron and Steel Institute; consumption per ton of pig iron only, excluding furnaces making ferroalloys, was 2,172.6 pounds in 1913, 2,120.7 in 1918, 1,813.3 in 1929, 1,760.0 in 1939, 1,892.8 in 1947–49 (average), 1,699.7 in 1956, 1,684.1 in 1957, and 1,597.9 in 1958.

DISTRIBUTION OF OVEN AND BEEHIVE COKE

Table 35 summarizes the geographical distribution of coke, by major uses, and of breeze in 1958. Coke has become primarily an industrial fuel in the United States, as only 1 percent was used for residential heating in 1958. Coke is a special purpose fuel ideally suited for certain chemical and metallurgical processes for which other solid fuels cannot be easily substituted. For this reason, coke is distributed widely, and long rail hauls are necessary to supply some consumers. However, the bulk of the coke produced in the United States is used for smelting iron ore, and coke for this purpose in most instances is not transported long distances. Most iron and steel companies have integrated their coke ovens and blast furnaces to avoid unnecessary transportation problems. Some of the larger steel-producing centers of the United States, such as Chicago, Buffalo, Detroit, and Cleveland, were developed by bringing the coking coal and iron ore together rather than transporting coke and pig iron.

In the past decade the number of States consuming coke in iron blast furnaces has not changed. Daily requirements of coke for even the smallest blast furnace are large, and States with the highest blast-furnace capacities are the largest coke consumers. Consumption of coke in blast furnaces in Pennsylvania, Ohio, and Indiana together amounted to approximately half of the national consumption for all purposes.

One of the very important uses for coke is for melting iron and steel in foundry cupolas. Virtually every city of any size has an iron foundry, and shipments of foundry coke were destined to every State except Alaska, Nevada, and Wyoming in 1958. The largest foundry-coke-consuming State was Michigan. The automotive centers of Detroit, Flint, and other cities in the State used about one-fifth of the U.S. total. Other areas where large quantities of foundry coke were consumed were Chicago, Cleveland, Lorain, Birmingham, Pittsburgh, Buffalo, and Milwaukee. A use for coke that continued to decrease in 1958 was for gasmaking. The quantity of coke going into producer-gas and water-gas generators amounted to approximately 600 thousand tons, or only about one-fifth the total used in 1947–49. Coke shipments classified under "other industrial" embraced a wide variety of uses, such as nonferrous smelting, lime burning, beet-sugar refining, and manufacture of calcium carbide and rock wool. All States except Alaska and Arizona used varying quantities of coke for various industrial purposes. Coke used for residential heating continued to drop, and shipments for this purpose amounted to only 1 percent of the total.

TABLE 35.—Distribution of oven and beehive coke and breeze in 1958, in net tons

[Based upon reports from producers showing destination and principal end use of coke used or sold. Does not include imported coke, which totaled 121,517 tons in 1958]

Consuming State	Coke						Breeze
	To blast-furnace plants	To foundries	To producer-and water-gas plants	To other industrial plants	For residential heating	Total	
Alabama	3,231,964	155,943	----------	26,933	16,254	3,431,094	247,396
Arizona	----------	192	----------	----------	----------	192	173
Arkansas	----------	1,022	----------	2,709	----------	3,731	40
California	754,616	55,792	----------	34,461	33	844,902	57,287
Colorado	536,163	12,304	----------	25,675	43	574,185	71,057
Connecticut	----------	23,476	70,732	1,694	50,913	146,815	41,879
Delaware	----------	969	----------	712	134	1,815	2,314
Florida	----------	4,095	18,327	7,071	509	30,002	25,679
Georgia	----------	9,208	----------	1,532	5,786	16,526	2,409
Idaho	----------	1,325	----------	63,273	----------	64.598	67,497
Illinois	3,334,031	182,690	----------	38,191	19,876	3,574,788	132,315
Indiana	6,202,036	111,950	9,245	59,634	29,315	6,412,180	366,281
Iowa	----------	46,855	----------	6,297	2,201	55,353	4,221
Kansas	----------	11,009	----------	112	----------	11,121	142
Kentucky	511,127	31,182	----------	188,844	8,349	739,502	26,526
Louisiana	----------	2,665	----------	55,620	301	58,586	359
Maine	----------	1,847	16,302	76	6,130	24,355	----------
Maryland	2,881,674	17,875	----------	16,700	853	2,917,102	173,043
Massachusetts	90,971	34,333	32,628	7,001	128,723	293,656	37,593
Michigan	2,347,882	411,293	----------	219,053	17,096	2,995,324	121,762
Minnesota	454,050	19,320	5,134	20,133	5,545	504,182	46,814
Mississippi	----------	1,035	----------	39	----------	1,074	----------
Missouri	----------	39,219	----------	23,118	142	62,479	545
Montana	----------	841	----------	27,635	----------	28,476	17,787
Nebraska	----------	3,895	----------	7,374	----------	11,273	212
Nevada	----------	----------	----------	6,129	132	6,261	258
New Hampshire	----------	2,599	----------	45	5,556	8,196	----------
New Jersey	----------	63,124	96,451	60,707	146,135	366,417	88,028
New Mexico	----------	219	----------	82	393	694	----------
New York	2,670,251	91,922	----------	146,580	52,617	2,961,370	273,826
North Carolina	----------	16,429	1,545	9,665	2,755	30,394	17,791
North Dakota	----------	289	----------	115	140	544	34
Ohio	7,944,524	244,636	----------	213,618	13,260	8,416,038	404,273

TABLE 35.—Distribution of oven and beehive coke and breeze in 1958, in net tons—Continued

[Based upon reports from producers showing destination and principal end use of coke used or sold. Does not include imported coke, which totaled 121,517 tons in 1958]

Consuming State	Coke						Breeze
	To blast-furnace plants	To foundries	To producer-and water-gas plants	To other industrial plants	For residential heating	Total	
Oklahoma	----------	4,331	----------	98	----------	4,429	2,990
Oregon	----------	5,029	----------	19,081	32	24,142	2,694
Pennsylvania	12,814,868	146,064	63,659	310,370	50,249	13,385,210	745,632
Rhode Island	----------	7,871	----------	147	7,793	15,811	----------
South Carolina	----------	5,791	----------	16,731	597	23,119	9,620
South Dakota	----------	465	----------	253	56	774	----------
Tennessee	70,203	67,395	----------	75,206	1,962	214,766	160,624
Texas	680,570	60,955	----------	30,148	1,037	772,710	83,101
Utah	1,232,959	13,497	----------	15,638	111	1,262,205	105,442
Vermont	----------	2,382	----------	39	1,819	4,240	----------
Virginia	107,984	37,801	----------	30,251	148	176,184	2,466
Washington	----------	2,558	----------	3,937	----------	6,495	2,025
West Virginia	1,698,276	8,615	310,765	10,466	6	2,028,128	190,720
Wisconsin	----------	118,073	3	7,092	20,517	145,685	15,280
Wyoming	----------	----------	----------	3,474	----------	3,474	149
Total	47,564,149	2,080,380	624,791	1,793,759	597,518	52,660,597	3,548,284
Exported	33,676	64,638	----------	172,803	6,358	277,475	4,148
Grand total	47,597,825	2,145,018	624,791	1,966,562	603,876	52,938,072	3,552,432

STOCKS OF COKE AND COKING COAL

Coke.—Normally oven-coke plant operators gear coke production to demand, in order to keep stocks at a minimum. There are limits, however, to which production can be cut back without banking the ovens. Consequently, coke stocks usually increase when demand decreases. The drastic reduction in coke demand in 1958 caused stocks to increase 22 percent to the highest figure in 27 years. Oven-coke stocks increased at both merchant and furnace plants, with reserves at merchant plants rising 47 percent. Stocks at merchant plants exceeded 1.4 million tons on December 31, 1958, when they equaled 66 days' production at the prevailing rate of output, and over half of the stocks were blast-furnace grade. In addition to the blast-furnace coke, reserves at merchant plants consisted of 9 percent foundry coke and 39 percent of "domestic" and other industrial grades.

Although stocks of coke at furnace plants did not increase as much as at merchant plants, they rose 10 percent. Nearly all of the coke stocked at furnace plants was blast-furnace grade. Coke stocks at furnace plants reached an alltime peak in August and equaled 21 days' production. A slight pickup in blast-furnace operations, beginning in August, prompted a small rise in coke consumption, and coke stocks began to decrease slowly. Year-end stocks, however, still equaled 22 days' production at the prevailing production rate.

Beehive coke is seldom stocked, and reserves at the end of 1958 were small.

Coking Coal.—Coking-coal stocks at oven-coke plants dropped to the lowest level in 8 years in July, when they totaled only 10 million tons. This reserve was adequate for 55 days' requirements because of the low consumption rate. Coal stocks are far more important to oven-coke-plant operators than coke stocks, because slot-type coke ovens cannot be shut down and started up again by merely turning a valve and must be operated continuously. For this reason, coke-plant operators for years considered a 30-day supply the minimum reserve that should be available at the ovens at all times. Since April 1950, however, bituminous coal stocks have not dropped below a 30-day supply. Reserves of bituminous coal at oven-coke plants ranged between 14 million tons on January 1, 1958, and 10 million in July, with year-end stocks totaling 13 million tons. Days' supply was calculated on the prevailing rate of consumption and ranged from 65 days in April to 50 days in September.

TABLE 36.—Producers' stocks of coke and breeze in the United States on Dec. 31, 1958, by States, in net tons

State	Coke				Breeze
	Blast furnace	Foundry	Residential heating and other	Total	
Oven coke:					
Alabama	589,701	4,967	41,172	635,840	11,413
California, Colorado, and Utah	196,957			196,957	20,802
Illinois	90,468		1,838	92,306	30,968
Indiana	268,631	1,703	12,220	282,554	912,873
Kentucky, Tennessee, and Texas	36,912	1,349	3,917	42,178	16,117
Maryland	81,970			81,970	30,507
Massachusetts	65,251	453	76,238	141,942	
Michigan	44,334	3,213	19,496	67,043	8,173
Minnesota	40,941	10,873	28,389	80,203	8,519
New Jersey	221,268	1,517	262,420	485,205	21,689
New York	173,610		364	173,974	57,411
Ohio	352,859	25,616	20,143	398,618	108,343
Pennsylvania	800,058	5,717	7,684	813,459	258,404
West Virginia	16,307		2,377	18,684	7,129
Connecticut, Missouri, and Wisconsin	105,127	80,526	115,930	301,583	6,543
Total 1958	3,084,394	135,934	592,188	3,812,516	1,498,891
At merchant plants	728,212	126,765	546,749	1,401,726	67,874
At furnace plants	2,356,182	9,169	45,439	2,410,790	1,431,017
Total 1957	2,569,128	107,378	460,316	3,136,822	1,346,742
Beehive coke:					
Pennsylvania	7,449	502	160	8,111	11,783
Virginia	1,696	20	755	2,471	230
Kentucky, Utah, and West Virginia	266			266	
Total 1958	9,411	522	915	10,848	12,013
Total 1957	10,591		1,363	11,954	210

TABLE 37.—Producers' month-end stocks of oven coke in the United States, 1957–58, in net tons

[Includes blast-furnace, foundry, and residential heating coke]

Month	Merchant plants		Furnace plants		Total	
	1957	1958	1957	1958	1957	1958
January	303,490	1,026,721	1,792,883	2,273,117	2,096,373	3,299,838
February	249,672	1,034,856	1,765,432	2,312,189	2,015,104	3,347,045
March	307,878	1,132,936	1,800,269	2,345,529	2,108,147	3,478,465
April	396,207	1,242,655	1,757,733	2,478,674	2,153,940	3,721,329
May	493,525	1,306,058	1,766,189	2,580,104	2,259,714	3,886,162
June	553,193	1,345,563	1,742,738	2,531,074	2,295,931	3,876,637
July	641,527	1,397,766	1,781,067	2,584,758	2,422,594	3,982,524
August	715,929	1,419,208	1,828,977	2,587,970	2,544,906	4,007,178
September	783,086	1,415,982	1,815,599	2,577,462	2,598,685	3,993,444
October	817,433	1,389,492	1,946,524	2,506,768	2,763,957	3,896,260
November	868,042	1,400,028	2,095,020	2,481,522	2,963,062	3,881,550
December	954,043	1,401,726	2,182,779	2,410,790	3,136,822	3,812,516

TABLE 38.—Month-end stocks of bituminous coal at oven-coke plants in the United States, 1954–58, in net tons

Month	1954	1955	1956	1957	1958
January	14,885,244	11,506,274	12,561,742	12,796,209	13,217,378
February	14,729,885	11,065,243	12,341,898	12,801,976	12,096,279
March	13,886,998	10,776,055	12,839,544	13,254,278	11,906,462
April	12,856,055	10,693,689	12,865,107	13,285,465	11,781,534
May	12,595,826	11,515,962	13,605,645	13,895,620	11,585,237
June	12,659,445	12,745,576	14,004,567	13,978,054	11,787,762
July	11,125,064	12,342,332	13,060,538	11,717,007	10,039,582
August	11,571,296	13,665,828	13,366,033	12,503,701	10,118,979
September	11,869,082	13,993,102	13,521,835	13,006,022	10,523,274
October	12,192,655	13,892,194	14,005,637	13,935,303	11,666,111
November	12,484,403	13,603,970	14,093,446	14,002,603	12,335,715
December	12,356,618	13,342,972	13,893,561	14,092,205	12,939,358

TABLE 39.—Month-end stocks of anthracite at oven-coke plants in the United States, 1954–58, in net tons

Month	1954	1955	1956	1957	1958
January	72,594	46,725	57,683	129,330	118,859
February	63,369	37,982	41,748	127,418	101,751
March	54,288	26,745	29,469	119,472	89,855
April	48,211	31,861	30,301	114,369	82,121
May	37,244	40,726	40,024	110,412	81,514
June	45,822	53,248	52,716	125,664	82,716
July	44,525	55,974	59,886	111,649	73,007
August	47,788	55,529	95,156	134,686	91,358
September	44,858	59,886	85,754	147,258	97,399
October	50,736	63,243	113,610	145,879	112,265
November	56,856	73,281	138,879	145,051	113,980
December	54,130	80,464	146,581	138,085	103,599

ASSIGNED VALUE AND PRICE

Table 40 shows average values per ton of oven and beehive coke produced and average prices per ton (receipts) of coke sold on the commercial market. The average values at plants of oven and beehive coke produced (which include coke consumed by producing companies as well as coke sold) are based on reports from the producing companies that showed receipts, f.o.b. plant, for commercial sales of coke and the prevailing market value assigned by the producer for coke consumed by the producing companies. The average values of both oven and beehive coke produced declined slightly from 1957 but were 51 and 24 percent, respectively, higher than the average for 1947–49. Average receipts of oven coke, however, increased over 1957, but beehive decreased $0.87. Average prices or receipts from commercial sales of coke for recent years are shown in table 41. This table breaks down the average prices according to the grade of coke sold. Foundry coke (a premium coke) always is higher priced and increased $11.32 per ton or 64 percent between 1947–49 and 1958. However, foundry-coke prices did not change during the year, and prices in the principal foundry-coke markets are shown in table 42. The price of blast-furnace oven coke decreased slightly from 1957 and was only 18 percent higher than the 1947–49 average. Prices on oven coke sold for other industrial uses and residential heating continued to increase. Coke sold for other industrial purposes increased $0.35 per ton over 1957 and 27 percent over 1947–49. Prices of coke for

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residential heating advanced $0.02 per ton over 1957 but were 37 percent over 1947–49.

Prices of beehive coke are always lower than for oven coke because coal costs are lower. The pattern of prices for beehive coke was quite different from those for oven coke, as blast-furnace coke from beehives increased, whereas foundry coke decreased. Most beehive coke sold is of these two grades, and prices of other industrial and residential-heating coke from beehives is not significant, because only small tonnages are sold for these purposes.

TABLE 40.—Average value per net ton of coke produced and average receipts per net ton from coke sold (commercial sales) in the United States, 1947–49 (average) and 1954–58

Year	Value per ton produced [1]			Receipts per ton sold		
	Oven coke	Beehive coke	Total	Oven coke	Beehive coke	Total
1947-49 (average)	$12.08	$11.32	$12.02	$13.87	$11.95	$13.41
1954	15.93	14.16	15.91	17.19	13.46	16.98
1955	16.30	12.94	16.23	16.80	12.88	16.28
1956	17.70	14.16	17.58	18.39	14.11	17.64
1957	18.31	14.92	18.21	19.51	14.90	18.71
1958	18.24	14.03	18.19	19.87	14.03	19.35

[1] Beginning in 1954, figures are based on market values therefore are not comparable with values shown for preceding years.

TABLE 41.—Average receipts per net ton of coke sold (commercial sales) in the United States, 1947–49 (average) and 1954–58, by uses

Year	Oven coke				Beehive coke			
	To blast-furnace plants	To foundries	To other industrial plants [1]	For residential heating	To blast-furnace plants	To foundries	To other industrial plants [1]	For residential heating
1947-49 (average)	$13.02	$17.61	$12.70	$12.49	$11.59	$13.93	$12.46	$10.98
1954	13.83	23.40	12.70	14.83	14.38	15.35	12.81	12.79
1955	14.33	23.75	12.97	15.10	12.57	15.05	13.62	10.75
1956	15.70	26.50	14.35	16.30	14.02	16.58	14.31	12.41
1957	16.08	28.77	15.74	17.12	14.63	17.03	15.75	10.68
1958	15.37	28.93	16.09	17.14	14.89	16.46	12.86	11.23

[1] Includes water-gas plants.

TABLE 42.—Average monthly prices per net ton of furnace and foundry beehive coke and foundry oven coke in the United States in 1958 [1]

	January–December		January–December
Beehive coke, at ovens:		Oven foundry coke at ovens—Con.	
Connellsville furnace	$14.75–15.75	Kearny	29.75
Connellsville foundry	18.00–18.50	Milwaukee	30.50
Oven foundry coke, at ovens:		Painesville	30.50
Birmingham	28.85	Philadelphia	29.50
Detroit	30.50	St. Louis	31.50
Everett [2]	31.55	St. Paul	29.75
Indianapolis	29.75	Swedeland	29.50

[1] As quoted by Steel Magazine.
[2] New England delivered or within $4.85 freight zone from works January through August; $5.15 freight zone September through December.

FOREIGN TRADE [2]

Imports.—Imports of coal coke averaged about 130,000 tons annually between 1953 and 1957 and totaled 121,517 tons valued at $1,570,739 in 1958. Coke imports are small compared with United States output, amounting to less than 1 day's production in 1958; nevertheless, they were important to certain areas where no other coke was available. For many years a substantial part of the coke requirements of the electrometallurgical and nonferrous smelting industries of the Northwest has been supplied by Canadian producers. This relationship accounted for the large tonnages (61 percent) entering the United States through the Washington and Montana and Idaho customs districts. All but a very small tonnage of coke imported in 1958 was from Canada. A carload of Mexican coke entered the United States through the Laredo (Texas) customs district. Table 43 shows the quantity and value of coke imported in 1958, by customs districts.

Exports.—Exports of coke from the United States decreased 52 percent from 1957 and were the lowest in 3 years. Exports in the 5-year period 1953–57 averaged 583,000 tons annually, and the 1958 total was only 392,817 tons. Outside of Canada, markets for American coke are not large. Canada received about three-fourths of all coal coke exported from the United States in 1958, but the total quantity was less than half the 1957 tonnage. Most of the coke exported to Canada was for industrial use, as only about 10 percent was small coke for residential heating. Exports to South America declined 58 percent to less than 50,000 tons, mainly because Argentina did not obtain any American coke in 1958. Argentina imported nearly 100,000 tons of coke in 1958, mostly from Western Europe, particularly Germany, the Netherlands, and the United Kingdom. Although American coke might have been delivered to Argentina more cheaply than European coke, no doubt trade agreements between the respective countries made it advantageous for Argentina to obtain coke from Europe. Exports to Europe in 1958 were small, totaling only 1,464 tons. Coke production in some of the larger countries of Western Europe, such as West Germany, the Netherlands, and the United Kingdom, were larger than requirements, and these countries sought export markets and shipped coke to the European countries that had coke shortages. Table 44 shows coke exports, by customs districts and countries of destination, for 1958 and 2 preceding years.

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[2] Figures on imports and exports compiled by Mae B. Price and Elsie D. Jackson, Division of Foreign Activities, Bureau of Mines, from records of the Bureau of the Census.

TABLE 43.—Coke imported for consumption in the United States, 1956–58, by countries and customs districts

[Bureau of the Census]

	1956		1957		1958	
	Net tons	Value	Net tons	Value	Net tons	Value
COUNTRY						
North America:						
Canada	129,952	$1,450,273	117,641	$1,526,787	121,474	$1,570,121
Mexico					43	618
Total	129,952	1,450,273	117,641	1,526,787	121,517	1,570,739
Europe:						
Germany, West	1,003	20,403	302	16,312		
United Kingdom			8	420		
Total	1,003	20,403	310	16,732		
Grand total	130,955	[1] 1,470,676	117,951	[1] 1,543,519	121,517	1,570,739
CUSTOMS DISTRICT						
Buffalo	12,132	149,776	12,056	193,720	12,351	184,828
Chicago	29	345				
Dakota	4,319	44,287	4,167	42,911	1,652	20,394
Duluth and Superior	43	383	1,629	25,735	126	1,356
Galveston			45	739		
Hawaii	193	9,384	302	16,312		
Laredo					43	618
Maine and New Hampshire	6,787	36,404	177	3,063	66	1,152
Michigan	32,597	293,399	27,929	271,122	32,494	304,642
Montana and Idaho	71,155	898,907	71,341	985,158	58,611	841,217
New York			8	420		
Rochester					112	1,497
St. Lawrence			14	266		
Vermont	88	1,940	193	3,375	123	2,168
Washington	3,612	35,851	90	698	15,939	212,867
Total	130,955	[1] 1,470,676	117,951	[1] 1,543,519	121,517	1,570,739

[1] Not comparable with 1958.

TABLE 44.—Coke exported from the United States, 1956–58, by countries and customs districts

	1956		1957		1958	
	Net tons	Value	Net tons	Value	Net tons	Value
COUNTRY						
North America:						
Canada	465,558	$7,605,280	628,950	$10,230,477	302,301	$5,147,752
Mexico	9,924	203,919	11,846	206,895	4,005	140,934
Panama	96	6,597	100	7,272	203	10,470
West Indies:						
Cuba	33,353	647,091	14,465	384,418	22,501	512,944
Trinidad and Tobago	60	1,300	125	4,064	97	2,348
Other West Indies	50	9,418	238	11,031	197	9,420
Other North America	211	13,995	214	7,717	260	13,861
Total	509,252	8,487,600	655,938	10,851,874	329,564	5,837,729

TABLE 44.—Coke exported from the United States, 1956–58, by countries and customs districts—Continued

	1956		1957		1958	
	Net tons	Value	Net tons	Value	Net tons	Value
COUNTRY—continued						
South America:						
Argentina	35,817	$745,738	53,932	$1,156,174		
Bolivia	1,250	46,584			61	$3,018
Brazil	74	13,472	46,488	987,523	41,514	851,225
Chile	819	27,015	634	22,993	150	6,675
Ecuador	162	8,850	192	11,435	128	5,729
Peru	163	6,576	181	7,861	55	2,365
Venezuela	249	11,802	92	4,404	175	11,263
Other South America			344	7,877	290	6,172
Total	38,534	860,037	101,863	2,198,267	42,373	886,447
Europe:						
Belgium-Luxembourg	2,236	47,904				
Denmark	2,572	47,546				
Finland			99	3,183		
Germany, West	8,091	160,609	15	1,515	22	1,220
Greece			2,029	42,778	1,004	21,046
Norway	5,002	105,027				
Portugal					331	10,758
Spain					97	2,445
Sweden	31,265	601,048	7,383	152,920	10	1,288
Total	49,166	962,134	9,526	200,396	1,464	36,757
Asia:						
Israel	250	4,500				
Japan	1,026	10,901	27,326	480,543	5	779
Korea, Republic of			2,460	89,680		
Philippines	893	28,500	799	25,331	160	4,560
Other Asia					137	5,910
Total	2,169	43,901	30,585	595,554	302	11,249
Oceania:						
Australia					112	5,550
French Pacific Islands	56,596	1,114,592	24,332	510,403	19,002	348,976
Total	56,596	1,114,592	24,332	510,403	19,114	354,526
Grand total	655,717	11,468,264	822,244	14,356,494	392,817	7,126,708
CUSTOMS DISTRICT						
Buffalo	46,926	824,574	196,837	3,571,046	79,643	1,489,449
Dakota	8,489	222,393	13,830	367,046	20,138	492,418
Duluth and Superior	4,586	98,167	12,842	277,655	8,232	190,623
Florida	2,505	83,389	2,555	92,117	2,121	77,971
Laredo	3,892	121,927	3,222	112,013	3,218	112,275
Los Angeles	4,739	34,388	19,797	175,276		
Maryland	696	21,448	7,817	170,000	105	2,224
Massachusetts	60,880	1,200,148	69,393	1,445,938	8,028	167,000
Michigan	123,038	2,199,835	323,441	5,191,596	142,309	2,431,290
Mobile	11,135	282,392	3,810	118,059	395	18,256
New Orleans	12,788	296,475	2,096	87,581	3,273	109,149
New York	36,747	692,663	17,293	447,463	18,479	381,454
Ohio	46,637	296,972	44,000	301,400	21,544	169,290
Philadelphia	46,105	886,722	48,540	1,031,323	52,343	1,029,266
St. Lawrence	8,813	141,048	10,011	183,851	9,050	147,326
San Diego	448	15,598	625	20,815	465	15,168
San Francisco	1,271	28,474				
Virginia	9,207	184,844	2,682	57,963	1,311	28,080
Washington	2,122	65,861	2,971	88,880	2,083	63,768
Other districts	224,693	3,770,946	40,482	616,472	20,080	201,701
Total	655,717	11,468,264	822,244	14,356,494	392,817	7,126,708

TECHNOLOGY

Research on coal carbonization in 1958 was conducted on a broad scale, ranging from studies of new preparation and blending techniques to investigations aimed at developing new processes and products from the chemical raw materials. Studies of crushing and blending probably received more attention than any other phase because of the steadily diminishing reserves of premium quality coals in most of the principal coking-coal-producing areas of the world.

In Great Britain, a thorough investigation of British blending practice in a plant-by-plant survey was made by the British Coke Research Association. As a result of this survey the BCRA made the following recommendation:

> A plant for blending coal under optimum conditions must be capable of handling sufficient quantities of all the coals making up the blend, together with any inert materials which may be added. It must maintain a constant supply at all times of the blended materials to the service bunker and be capable of delivering the material consistent in mixing and sizing. Furthermore, the sizing of the mixture should cover as narrow a range as practicable to minimize the effects of segregation when the fuel is passed from one conveyor to another and dropped into the service bunker.

To cover these requirements, BCRA recommended that blending plants should be designed on the following basic sequence:

Railway-siding accommodation, car-emptying gear.
Receiving hopper with automatic belt feeder.
Preliminary breaker, blending bunkers, final crusher, mixer and service bunker distributor.

In addition to the British Coke Research Association, the National Coal Board and the Fuel Research Station worked on coal blending. A system that showed promise of utilizing the available coking coals more efficiently was one in which the petrographic constituents of these coals were selectively screened and crushed to uniform size, followed by reblending or mixing of these fractions in carefully chosen proportions.

Probably the greatest amount of work in selective crushing, screening, and reblending of the petrographic constituents of coal in recent years was done in France, where the main objective was to reduce the quantity of coking coals that had to be imported from other countries for blending with the poorly coking Lorraine coals. A patent based on this principle was granted to the Burstlein or Sovaco process, reported in the Technology Section of the 1957 Coke chapter. This system is now in commercial use in France, Germany, Italy, and North Africa.

Poland has poorly coking coals, and particular attention is given to pulverization and blending of coals. The Polish coals are crushed or pulverized much finer than in the United States, so that between 90 and 95 percent passes between a $\frac{5}{64}$- to $\frac{8}{64}$-inch screen. In the United States coke plants usually crush their coals to a point where between 75 to 90 percent passes through a $\frac{1}{8}$-inch screen. Another step in coke-plant practice in Poland that is not employed in the United States is stamping the coal charge. According to a report written by a coke-plant executive of an American coke and coal-chemical company (who was a member of a team of American engineers that visited the Polish coke plants in 1958),[3] approximately 90 percent of the coal carbonized in Poland is stamped before charging in specially designed equipment.

In Germany extensive research was done on cleaning, blending, and preheat treatment of coals before carbonization. Work continued on the petrographic preparation of coal for coking in the Soviet Union, with particular emphasis on the low-rank coking coals. The first plant of a modified Sovaco-Burstlein design was scheduled to go in operation early in 1959 at the Nizhni Taguil plant.

The Illinois State Geological Survey continued its carbonization research, aimed at increasing the utilization of Illinois coal for making metallurgical coke. The Survey found that coke suitable for ore reduction in electrometallurgical furnaces could be made from straight Illinois coal. It also conducted weathering tests of Illinois coal, which was later carbonized in a pilot-plant coke oven. Results of these tests indicated that Illinois coal could be stockpiled successfully over the summer months, provided it was subsequently blended with medium-volatile or medium- and high-volatile eastern coal.

Since it was established in 1910, the Federal Bureau of Mines has provided the coke industry with a considerable quantity of useful information relating to carbonization technology. One important phase of the Bureau's research in coal carbonization is its continuous survey of the carbonizing properties of American coals. The carbonizing properties are determined, using the BM–AGA testing apparatus; more than 600 individual coals and coal blends have been tested through 1958 and results published in bulletins, technical reports, report of investigations, and trade journals. The Bureau continued its studies on expansion properties of coal, preheat treatment, bulk density, and blending techniques, with emphasis on the effect of adding inerts to the coking-coal admixture.

The kinetics or mechanism of coke formation in coke ovens was studied by the British Coke Research Association in Great Britain, the French Coal Research Center (Chercher) in France, the Federal Bureau of Mines in the United States, and technical organizations in Germany, U.S.S.R., Poland, and other countries. The French Coal Research Center did some outstanding work on the fissuring of coke, in which it linked coke fissuring with resolidification of plastic coal and its subsequent rate of shrinkage. An excellent article by Prof. Nadziakiewicz of the Institute of Chemical Utilization of Coal in Poland on coke fissuring appeared in the February 1959 issue of Coke and Gas magazine. The author concluded that fissuring or splitting of coke during its formation is due to the changes of volume or shrinkages. The shrinkage occurs in two periods; the first is from the start of heating to the end of plasticity, or about 500° C., when the volume decreases about 18 to 22 percent; in the second period (between 500° and 1000° C.), the solid product of the reaction, a further decrease of about 22 percent occurs, reaching a maximum between 700° and 800° C.

In Bureau of Mines studies of the mechanism of coking, blends of a coking coal and small, closely sized coke were carbonized, and the

[3] Marshall, C. Taylor, Report on Poland: Eastern Regional meeting, American Coke and Coal-Chemicals Inst., Chicago, Ill., Feb. 5, 1959, 13 pp.

strength of the resulting coke was determined. It was found that the strength of the carbonized blend decreased as the size of the added inert (coke fines) was increased.

The Koppers Co., Inc., Pittsburgh, Pa., was issued U.S. Patent 2,839,453 covering coke-oven construction design. This patent stipulates that the walls of the ovens on the coke side of a coke-oven battery are made 1 to 1½ inches thinner than the walls on the pusher side to facilitate more rapid heat input into the thicker parts of the coal charges of the individual ovens and the wider ends of the oven chambers.

Although no outstanding new coal chemicals were reported to have been commercially produced in 1958, development work and research continued in an effort to discover new products, uses, processes, and improvements in purity of those in current production. In a project sponsored by U.S. Steel Corp., the Mellon Institute, at Pittsburgh, Pa., conducted basic investigations of the chemicals produced by coal carbonization and their conversion into new and more useful products. New uses were sought for such tar products as phenanthrene, methyl naphthalene, and acenaphthene.

Bureau of Mines research on low-temperature tar included separation and characterization of tar components and upgrading and utilization studies of tars. Work was continued on chromatographic and solvent separation of tar fractions, on infrared and spectrometric identification of compounds and homologs, and on chemical conversion to more useful substances.

To obtain fundamental data for use in developing a practical conversion process for high-boiling tar acids, a kinetic study of the dealkylation of alkyl phenols was initiated.

WORLD REVIEW [4]

World production of hard or metallurgical coke in 1958—estimated at 280 million tons—was 5 percent under the 1957 total. The decline in coke production was not general throughout the world, as production increased in some Communist countries. For the first time, the U.S.S.R. led the world in hard-coke production, as output in that country increased 2.5 million tons over 1957. The increase in Soviet coke output raised its total 3 million tons higher than that of the United States, where the coke industry operated at only about two-thirds of its capacity. Coke production in the U.S.S.R. is geared closely to iron and steel production and the rapid expansion in blast-furnace capacity resulted in a corresponding growth in the coke industry. In the 10-year period, 1949–58, coke capacity more than doubled in Russia, and the output of coke rose from 24 million tons in 1949 to 56 million tons in 1958. In 1958 the State Planning Commission (Gosplan) approved a program for raising the coke-production goal somewhere between 82.6 and 89.3 million tons by 1965. If attained, this new target would represent an increase of 147, or 159 percent over the 1958 output, and would require an average yearly growth of 4 to 4.6 million tons. To meet this coke-production goal,

[4] Figures on world production compiled by Pearl J. Thompson and Berenice B. Mitchell, Division of Foreign Activities, Bureau of Mines.

it was announced that 45 to 52 new coke-oven batteries would be constructed. Over half of the new capacity is earmarked for the eastern regions of the country, where production will be increased from 39 percent in 1958 to 46 percent in 1965.

Notwithstanding the impressive growth of the coke industry in the U.S.S.R., an even more amazing increase in output of hard coke in 1958 was achieved in Communist China. Although official Government data are lacking, information obtained from various sources indicated that the Chinese coke output zoomed from 7.4 million tons in 1957 to 19.8 million tons in 1958, making this country the fifth largest producer of metallurgical coke in the world. This increase of 12.4 million tons in a single year seemed incredible and, if true, could have been accomplished only by the construction of beehive-type coke ovens. It is known that thousands of these "native" or beehive-type ovens are producing coke, and the largest experimental beehive oven in the world was reported to have been completed and placed in operation in July 1958 at the Su-feng coke plant of the Chung-ho Industrial Co. of Han-tan City, Hopen Province.[5] This oven has an inside diameter of 25 meters (82 feet) and was designed to produce 1,000 metric tons of coke per cycle of approximately 1 month. The coke-production goal for 1959 was not announced, but the planned target of 19.8 million tons of pig iron would require an increase of 5 or 6 million tons in coke production for China.

Although production of coke in the United States decreased 29 percent in 1958 and caused our Nation to fall behind the U.S.S.R. in coke output, the carbonizing capacity in the United States was much higher than in the Soviet Union, and production could be increased rapidly if demand warranted it.

Production in Germany declined 4 percent and in the United Kingdom 10 percent. The drop in hard-coke production in West Germany was due to the recession in industrial activity, reduced requirements for residential heating, and a decrease in exports. In Germany most coke plants had to operate to meet gas requirements of the extensive network of gas grids, and coke stocks were increased nearly 4.5 million tons. Coke production in France was maintained at a high rate in 1958, and there was only a minor decrease in production.

Coal carbonization started about the middle of the 18th century in Europe, which has been the center of world coke production for centuries. In 1958 European countries produced 66 percent of the world total. Western Europe (the free countries) produced 58 percent of the European total and the Soviet bloc (Communist countries) the remaining 42 percent. The United States produced 91 percent of the total for the Western Hemisphere.

The largest increase for any continental group was in Asia, where output increased 68 percent, primarily because of the great surge in Chinese production. Table 45 shows the production of hard or metallurgical coke for the individual countries according to continental groups.

Coke produced in gas retorts by low- and medium-temperature carbonization processes or from lignite or brown coal is shown in table

[5] Office of Technical Services, U.S. Dept. of Commerce, Data on Coking Operations and Coal Production in China: 59-11462, JPRS 589-D, 3 pp.

46. Approximately one-fourth of the coke from these processes was made in coal-gas retorts in the United Kingdom, mostly for residential heating. Other leading producers were East and West Germany, Japan, and Czechoslovakia.

TABLE 45.—World production of oven and beehive coke (excluding breeze), 1954–58, by countries, in thousand net tons [1]

Country	1954	1955	1956	1957	1958
North America:					
Canada	3,082	3,714	4,006	3,803	3,314
Mexico	440	498	633	755	657
United States	59,662	75,302	74,483	75,951	53,604
Total	63,184	79,514	79,122	80,509	57,575
South America:					
Brazil	504	530	525	568	560
Chile	292	260	[2] 440	[2] 470	[2] 440
Colombia	[2] 22	276	276	192	331
Peru	26	[2] 30	26	34	33
Total	844	1,096	1,267	1,264	1,364
Europe:					
Austria	1,908	1,996	2,304	2,414	1,761
Belgium	6,776	7,275	8,014	7,888	7,613
Bulgaria	8	11	11	13	[2] 13
Czechoslovakia	7,484	7,716	8,077	8,251	[2] 8,200
France	10,210	11,861	13,545	13,849	13,742
Germany:					
East [3]	467	505	807	862	937
West [4]	38,494	44,667	47,879	50,367	48,036
Hungary	[2] 33	33	96	289	[2] 400
Italy	2,889	3,251	3,759	4,064	3,704
Netherlands	3,699	4,300	4,688	4,721	4,499
Poland	[5] 9,393	[5] 11,063	[5] 11,574	11,156	11,133
Rumania	344	342	282	480	621
Saar	4,041	4,342	4,636	4,766	4,603
Spain	1,362	1,601	1,818	2,077	2,220
Sweden	123	137	147	131	[2] 110
U.S.S.R.	44,400	48,100	51,400	53,600	56,100
United Kingdom	19,996	20,276	22,001	22,950	20,665
Yugoslavia	445	806	1,017	1,143	1,135
Total	152,072	168,282	182,055	189,021	185,492
Asia:					
China [2]	4,400	5,000	6,100	7,400	19,800
India	2,643	2,908	2,794	2,870	3,380
Iran [6]	7	8	10	10	8
Japan	4,840	5,198	5,997	6,910	6,510
Korea, North [2]	400	440	440	440	470
Taiwan	150	146	129	162	208
Turkey	561	603	554	603	591
Total	13,001	14,303	16,024	18,395	30,967
Africa:					
Rhodesia and Nyasaland, Federation of: Southern Rhodesia	160	209	240	255	[2] 240
Union of South Africa	1,526	1,544	1,626	1,770	1,949
Total	1,686	1,753	1,866	2,025	2,189
Oceania:					
Australia	2,295	2,240	2,500	2,549	2,574
New Caledonia [2]	77	80	78	78	78
New Zealand	7	7	7	7	7
Total	2,379	2,327	2,585	2,634	2,659
World total	233,166	267,275	282,919	293,848	280,246

[1] Includes revisions of data published previously.
[2] Estimated.
[3] "High-temperature coke" from lignite.
[4] Includes electrode coke.
[5] Includes gashouse and low-temperature coke.
Year ended March 20 of year following that stated.

TABLE 46.—World production of gashouse, low-, and medium-temperature coke (excluding breeze), 1954–58, by countries, in thousand net tons [1]

Country [2]	1954	1955	1956	1957	1958
North America:					
Canada	158	(3)	60	(3)	(3)
United States, retort, low- and medium-temperature	256	(3)	182	(3)	(3)
Total	525	310	355	280	285
South America:					
Argentina [4]	55	55	60	55	60
Chile	118	119	117	95	95
Peru, medium- temperature	7	4	—	—	—
Uruguay	39	34	33	32	33
Total	219	212	210	182	188
Europe:					
Austria	504	478	497	445	367
Belgium	20	10	1	4	3
Czechoslovakia: [4]					
Gashouse	815	840	855	855	865
Lignite	1,875	1,970	2,000	2,040	2,060
Denmark	459	445	435	422	[4] 360
Finland	117	96	107	118	143
France:					
Gashouse [5]	2,363	1,908	1,778	1,669	1,457
Low-temperature	316	333	335	311	304
Germany:					
East:					
Gashouse	2,845	2,982	3,081	[4] 3,080	[4] 3,080
Lignite	6,878	7,020	7,075	[4] 7,300	[4] 7,500
West:					
Gashouse	4,725	5,581	6,336	6,019	5,469
Lignite	764	685	645	643	660
Greece [4]	34	34	33	33	33
Hungary	[4] 500	499	466	498	[4] 500
Ireland (Eire)	214	212	213	205	[4] 200
Italy	1,160	1,095	1,103	1,025	894
Luxembourg	36	40	40	40	39
Netherlands	947	958	859	725	621
Norway [6]	68	64	66	[4] 65	62
Poland:					
Gashouse	[4] 1,020	[4] 1,050	[4] 1,070	1,065	[4] 990
Low-temperature [4]	110	110	110	110	110
Portugal	39	42	41	37	44
Saar, low-temperature	100	128	140	139	125
Spain	270	276	289	280	294
Sweden	751	771	801	736	[4] 680
Switzerland	496	524	564	561	[4] 560
United Kingdom:					
Great Britain	13,811	14,269	14,230	13,472	12,478
Northern Ireland	193	183	179	129	[4] 130
Yugoslavia	26	26	25	28	29
Total	43,700	44,900	45,900	44,600	43,400
Asia:					
Ceylon [4]	13	13	13	13	13
Hong Kong [6]	22	21	19	21	20
India:					
Gashouse	101	103	79	127	134
Low-temperature	1,735	1,846	1,801	1,929	2,027
Japan:					
Gashouse	2,429	2,616	2,961	3,328	3,182
Low-temperature	[4] 85	76	[4] 75	[4] 75	[4] 75
Malaya [4]	19	19	19	19	22
Taiwan:					
Gashouse	6	13	13	[4] 17	[4] 17
Low-temperature	44	46	51	68	[4] 70
Turkey, gashouse	122	181	114	111	121
Total	4,740	5,100	5,310	5,870	6,120

See footnotes at end of table.

TABLE 46.—World production of gashouse, low-, and medium-temperature coke (excluding breeze), 1954–58, by countries, in thousand net tons [1]—Continued

Country [2]	1954	1955	1956	1957	1958
Africa:					
Algeria	104	93	97	101	[4] 105
Egypt	24	25	[4] 25	[4] 25	[4] 25
Tunisia	12	1			
Union of South Africa	99	88	94	97	93
Total	239	207	216	223	223
Oceania:					
Australia [7]	940	1,232	1,121	963	[4] 990
New Zealand	84	78	83	78	77
Total	1,024	1,310	1,204	1,041	1,067
World total	50,447	52,039	53,195	52,196	51,283

[1] Gashouse coke unless otherwise specified. Includes revisions of data published previously. Data do not add to totals shown owing to rounding.
[2] Production data for China, Mexico, Rumania, and U.S.S.R. are not available; estimates included in total.
[3] Concealed to avoid disclosing individual country figures; production included in total.
[4] Estimated.
[5] Data reported previously represented commercially disposable production.
[6] Includes breeze.
[7] Year ended June 30 of year stated.

COAL-CHEMICAL MATERIALS

GENERAL SUMMARY

Valuable coal-chemical materials are recovered from the gases and vapors recovered from high-temperature carbonization of bituminous coal in slot-type coke ovens. The principal or basic chemical raw materials are gas, ammonia, crude light oil, and tar, which, on further processing, yield hydrogen, ammonium sulfate, di- and mono-ammonium phosphate, benzene, toluene, xylene, naphthalene, phenol, creosote oil, pitch, and other products.

Coal chemicals are made to precise specifications by intricate equipment and processes and, although of secondary importance to coke, certainly cannot be considered byproducts. Many of these chemicals have many and varied uses and pass from industry to industry in the preparation of a final product. For this reason, a direct relationship exists between the coke industry and countless others that depend entirely or partly upon coke ovens as a source of supply for essential chemical raw materials.

The spectacular growth of the American chemical industry in the last two decades increased the requirements of all chemicals, including those derived from coal, and naturally production at coke plants increased. Although the oven-coke industry currently puts more emphasis on producing a maximum quantity of premium coke, production and sale of coal chemicals are not ignored, because realization from these sales aids in reducing the cost of coke.

The value of coal-chemical materials sold, including surplus gas used by producing companies, decreased 25 percent from the 1957 figure. Major factors contributing to this decrease were: (1) Decreased sales of all coal chemicals resulting from the low operating rates of coke plants and (2) lower prices of light-oil products, particularly benzene. Although the total value of surplus gas used and/or sold amounted to about 46 percent of the value of all coal-chemical materials used or sold by producing companies, crude tar led in financial returns from commercial sales of coal-chemical materials. The total value of crude tar sales represented 17 percent of the value of all coal-chemical materials, while revenue from sales of all grades of benzene contributed 14 percent. Coke-oven gas sold for residential heating (distributed through city mains) was the leading revenue producer until 1951 but provided only 7 percent of the realization from commercial sales in 1958. Table 47 summarizes production, sales, and value of sales of coal-chemical materials in 1958.

Table 48 shows the average value, by product groups, of coal-chemical materials per ton of coal carbonized in recent years. Surplus gas continued to lead all product groups, but its margin in recent years has been steadily narrowed by gains made by tar and derived tar products. In 1947–49, surplus gas amounted to 45 percent and the tar products group only 26 percent of the $2.85 per ton credited to coal-chemical materials. In 1958 surplus gas contributed only 41 percent of the $3.96 credited to coal chemicals, while the tar products increased to 34 percent.

The average value for light oil and its derivatives in 1947–49 amounted to 16 percent of the coal chemicals; these commodities increased to nearly 22 percent in 1954 but dropped to 17 percent in 1958.

The value credited to ammonia and its compounds fluctuated from a low of $0.288 per ton of coal (equivalent to 7 percent of the value of all coal chemicals) in 1957 to a high of $0.422 (11 percent) in 1954. In 1958 sales of ammonia compounds amounted to $0.307, or 8 percent of the total value of coal chemicals. The decline in ammonium sulfate prices since 1954, which accounts for roughly 87 percent of the coke-oven ammonia, caused the shrinkage of revenue from ammonia products in 1957 and 1958.

The Bureau of Mines does not collect data on the total manufacturing costs for coke and coal chemicals; however, as coal costs represent a substantial part of such costs, relating product values to coal values provides some measure of the economic importance of these products in coal carbonization. The percentage of coal costs recovered by various coal-chemical materials is shown in table 49. These data show that the value credited to surplus gas (used and sold) amounted to 17 percent of the coal costs. As gas represents such a large part of coal costs, coke-plant operators must have an assured outlet for this product under favorable economic conditions. The steel companies (furnace plants) have such an outlet, because most coke plants are integrated with iron- and steel-melting furnaces and can use the gas advantageously. Merchant plants, however, do not have this advantage, and loss of revenue from gas makes it difficult to operate coke plants economically. For this reason, 13 merchant plants have closed since World War II. Three of them, however, were purchased by iron and steel companies, who continued to operate them primarily to produce metallurgical coke for their own blast furnaces.

Fourteen percent of coal costs was recovered from sales of tar and its derivatives, while light-oil products returned 7 percent. The decline of ammonia and its compounds as a revenue producer to coke-plant operators is clearly shown in this table. In 1958 only 3 percent of the coal costs was recovered from the sale of ammonia products.

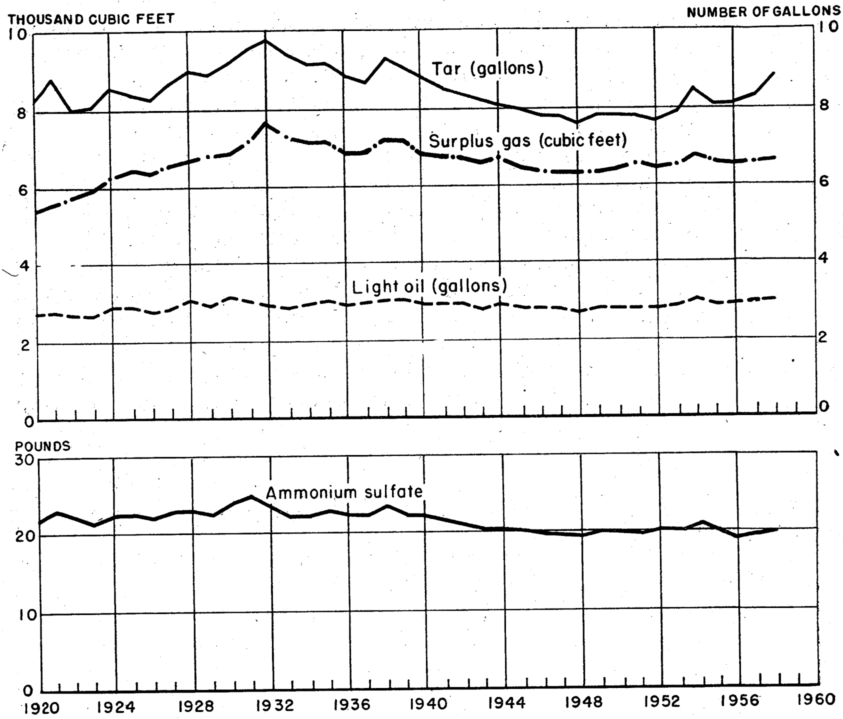

FIGURE 2.—Average yield of principal coal-chemical materials per net ton of coal carbonized in coke ovens, 1920–58. Yields of light oil and ammonium sulfate equivalent represent the average for plants recovering these products.

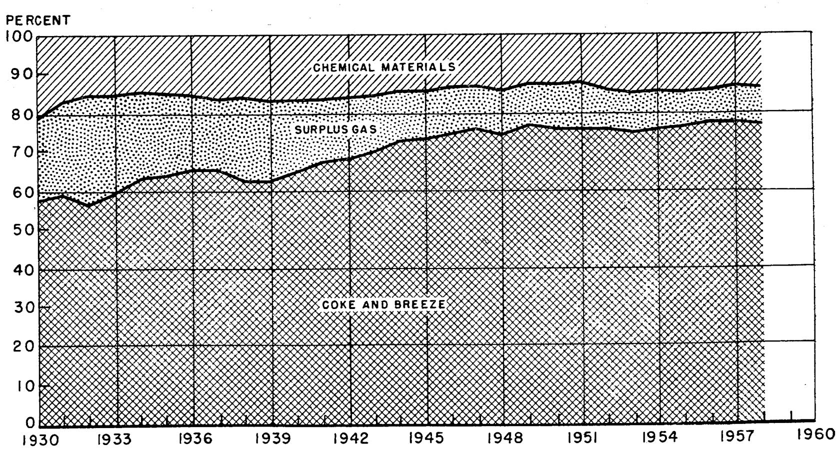

FIGURE 3.—Percentage of total value of coke-oven products from slot-type ovens supplied by coke and breeze, surplus gas, and chemical materials, 1930–58.

In spite of increased emphasis on production and sales of coal-chemical materials in the past 10 years, the ratio of the value of coal-chemical materials used or sold declined from 25 percent of all products in 1947–49 to 23 percent in 1958.

TABLE 47.—Coal-chemical materials, exclusive of breeze, produced at coke-oven installations in the United States in 1958 [1]

Product	Produced	Sold			On hand Dec. 31
		Quantity	Value		
			Total	Average	
Tar, crude gallons	669,316,299	[2] 347,420,362	$46,231,212	$0.133	30,913,068
Tar derivatives:					
Sodium phenolate do	3,947,204	3,836,008	530,268	.138	339,616
Crude chemical oil do	22,058,867	22,632,054	5,464,904	.241	644,177
Pitch of tar: [3]					
Soft net tons	495,822	48,939	1,178,271	24.076	12,399
Medium do	44,555	26,489	877,615	33.131	3,819
Hard do	284,093	64,237	1,948,285	30.330	1,977
Other tar derivatives [4]			12,685,178		
Ammonia:					
Sulfate [5] pounds	1,280,837,027	1,243,773,601	18,099,706	.015	285,008,776
Liquor (NH₃ content) do	29,804,937	26,464,252	881,873	.033	3,590,670
Di- and mono-ammonium phosphate do	82,029,138	75,531,200	4,304,644	.057	14,105,319
Total			23,286,223		
Sulfate equivalent of all forms pounds	1,478,479,516	1,421,959,635			
NH_3 equivalent of all forms do	381,151,834	366,581,030			
Gas:					
Used under boilers, etc M cubic feet	[6] 789,828,396	61,444,918	11,979,000	.195	
Used in steel or allied plants do		374,467,823	88,643,743	.237	
Distributed through city mains do		40,864,112	18,181,447	.445	
Sold for industrial use do		25,222,619	4,836,994	.192	
Total	789,828,396	501,999,472	123,641,184	.246	
Crude light oil gallons	[7] 218,229,276	16,708,004	2,809,804	.168	4,893,451
Light oil derivatives:					
Benzene:					
Specification grades (all grades except motor) gallons	118,279,684	118,739,548	36,985,209	.311	11,854,745
Motor grade do	1,389,844	1,251,139	194,032	.155	83,503
Toluene (all grades) do	28,072,423	28,568,935	6,310,470	.221	3,663,277
Xylene (all grades) do	8,408,431	8,266,490	2,403,150	.291	881,326
Solvent naphtha (crude and refined) do	4,419,272	4,263,431	1,149,352	.270	376,076
Other light oil products do	4,653,078	2,199,430	328,311	.149	572,387
Total	165,222,732	163,288,973	47,370,524	.290	17,431,314
Intermediate light oil gallons	3,419,833	3,477,336	652,193	.188	189,860
Sulfur pounds	2,581,780	3,053,780	37,908	.012	1,081,990
Value of all coal-chemical materials sold			266,713,569		

[1] Includes products of tar distillation conducted by coke-oven operators under same corporate name.
[2] Includes 30,788,462 gallons sold to affiliated companies for refining.
[3] Soft—water-softening point less than 110° F.; medium—from 110° to 160° F.; hard—over 160° F.
[4] Creosote oil, cresols, cresylic acid, naphthalene, phenol, pyridine, red oil, refined tar, road tar, and tar paint.
[5] Includes ammonium thiocyanate.
[6] Includes gas used for heating ovens and gas wasted.
[7] 203,318,636 gallons refined by coke-oven operators to make derived products shown.

TABLE 48.—Average value of coal-chemical materials used and sold and of coke and breeze produced per ton of coal carbonized in the United States, 1947–49 (average) and 1954–58

Product	1947–49 (average)	1954	1955	1956	1957	1958
Ammonia and its compounds	$0.356	$0.422	$0.352	$0.315	$0.288	$0.307
Light oil and its derivatives	[1] 1.451	.825	.754	.773	.749	.671
Surplus gas used or sold	1.291	1.519	1.489	1.481	1.570	1.631
Tar and its derivatives (including naphthalene):						
Tar burned by producers [2]	.228	.372	.382	.408	.447	.437
Sold	.501	.678	.717	.764	.792	.899
Other products	.020	.009	.010	.008	.010	.010
Total	2.847	3.825	3.704	3.749	3.856	3.955
Coke produced	8.488	11.115	11.439	12.462	12.885	12.752
Breeze produced	.191	.236	.237	.256	.283	.324
Grand total	11.526	15.176	15.380	16.467	17.024	17.031

[1] Includes naphthalene.
[2] Includes pitch-of-tar.

TABLE 49.—Percentage of value of coal recovered by coal-chemical materials in the United States, 1947–49 (average) and 1954–58

	1947–49 (average)	1954	1955	1956	1957	1958
Product:						
Ammonia and its compounds	4.6	4.7	4.0	3.4	2.9	3.1
Light oil and its derivatives	[1] 5.8	9.2	8.6	8.3	7.6	6.8
Surplus gas used or sold	16.6	16.9	16.8	15.8	15.8	16.5
Tar and its derivatives used or sold (including naphthalene)	9.3	11.6	12.4	12.5	12.5	13.5
Other products	.2	.1	.1	.1	.1	.1
Total	36.5	42.5	41.9	40.1	38.9	40.0
Value of coal per net ton	$7.79	$9.00	$8.84	$9.35	$9.91	$9.89

[1] Includes naphthalene.

TABLE 50.—Coal equivalent of the thermal materials, except coke, produced at oven-coke plants in the United States, 1913, 1918, 1929, 1939, 1947–49 (average), and 1954–58

Year	Materials produced				Estimated equivalent in heating value [1] (billion B. t. u.)					Coal equivalent (thousand net tons)
	Coke breeze (thousand net tons)	Surplus gas (billion cubic feet)	Tar (thousand gallons)	Light oil (thousand gallons)	Coke breeze	Surplus gas	Tar	Light oil	Total	
1913	735	64	115,145	3,000	14,700	35,200	17,272	390	67,562	2,600
1918	1,999	158	263,299	87,562	39,980	86,900	39,495	11,383	177,758	6,785
1929	4,853	508	680,864	200,594	97,060	279,400	102,130	26,077	504,667	19,262
1939	3,354	434	554,406	170,963	67,080	238,700	83,161	22,225	411,166	15,693
1947–49 (average)	5,390	582	715,779	246,607	107,800	320,100	107,367	32,059	567,326	21,654
1954	3,931	558	715,840	246,019	78,620	306,900	107,376	31,982	524,878	20,034
1955	4,862	689	852,923	297,498	97,240	378,950	127,938	38,675	642,803	24,534
1956	4,772	664	832,827	290,972	95,436	365,200	124,924	37,826	623,386	23,793
1957	4,863	687	873,474	301,088	97,252	377,850	131,021	39,141	645,264	24,628
1958	3,656	502	669,316	218,229	73,124	276,100	100,397	28,370	477,991	18,244

[1] Breeze, 10,000 B. t. u. per pound; gas, 550 B. t. u. per cubic foot; tar, 150,000 B. t. u. per gallon; and light oil, 130,000 B. t. u. per gallon.

COKE-OVEN GAS

Approximately 17 percent by weight of the coal charged into coke ovens is recovered in the form of a fuel gas. Production in 1958 decreased 28 percent from 1957; but average yield increased slightly, averaging 10,420 cubic feet per ton of coal carbonized. Thirty-five percent of the gas produced in 1958 was used to heat the coke ovens; 55 percent was used in steel and allied plants and under boilers by the producing companies; 8 percent was sold for residential, commercial, and industrial heating; and 2 percent was wasted or unaccounted for.

In 1958 coke-oven operators, in addition to using 275 million cubic feet of coke-oven gas for underfiring the ovens, used 66 million cubic feet of other types, largely blast-furnace gas. Probably one of the most significant developments in coke-oven heating in recent years has been the growing adoption of blast-furnace gas for underfiring. Until World War II only about 5 percent of the gas used for underfiring was blast-furnace gas. Many batteries constructed during and since World War II have been designed for using lean gases, such as blast-furnace gas; and in 1958, 16 percent of the gas used for underfiring came from the blast furnaces.

Details concerning the disposal of surplus gas in 1958 are shown in table 52. The largest use of surplus gas was for firing metallurgical furnaces (steel and allied plants) which accounted for more than half of the total surplus gas disposal. Sales of coke-oven gas for resi-

TABLE 51.—Production and disposal of coke-oven gas in the United States in 1958, by States, in thousand cubic feet

State	Produced		Used in heating ovens	Surplus used or sold			Wasted
	Total	Per ton of coal coked		Quantity	Value		
					Total	Average	
Alabama	57,964,560	9.90	28,550,048	28,761,045	$3,323,408	$0.116	653,467
California, Colorado, and Utah	46,559,901	11.52	12,969,563	32,867,709	7,608,002	.231	722,629
Illinois	28,677,039	10.43	7,481,396	20,517,326	3,783,063	.184	678,317
Indiana	112,595,482	10.27	37,084,894	74,709,592	20,226,279	.271	800,996
Kentucky, Tennessee, and Texas	24,930,813	9.59	10,936,638	10,575,791	1,468,756	.139	3,418,384
Maryland	44,918,295	11.19	10,016,780	34,353,512	(1)	(1)	548,003
Massachusetts	5,152,201	10.16	101,124	5,051,077	(1)	(1)	----------
Michigan	35,365,009	10.41	5,685,525	29,078,409	6,455,883	.222	601,075
Minnesota	10,680,874	11.58	3,799,295	6,473,704	1,912,974	.295	407,875
New Jersey	11,112,398	10.58	2,434,484	8,677,914	(1)	(1)	----------
New York	44,893,490	10.42	16,404,616	28,403,564	8,878,775	.313	85,310
Ohio	93,638,133	10.10	39,030,867	52,885,970	12,801,446	.242	1,721,296
Pennsylvania	209,139,989	10.28	82,259,541	124,326,059	27,607,643	.222	2,554,389
West Virginia	53,200,060	11.23	14,720,398	37,590,689	7,754,602	.206	888,973
Connecticut, Missouri, and Wisconsin	11,000,152	10.46	3,273,041	7,727,111	4,473,068	.579	----------
Undistributed	----------	------	----------	----------	17,347,285	.361	----------
Total 1958	789,828,396	10.42	274,748,210	501,999,472	123,641,184	.246	13,080,714
At merchant plants	89,851,369	9.79	30,918,271	58,165,093	20,080,539	.345	768,005
At furnace plants	699,977,027	10.50	243,829,939	443,834,379	103,560,645	.233	12,312,709
Total 1957	1,090,845,870	10.40	376,405,555	687,359,639	164,757,626	.240	27,080,676

[1] Included with "Undistributed" to avoid disclosing individual company figures.

TABLE 52.—Surplus coke-oven gas used by producers and sold in the United States in 1958, by States, in thousand cubic feet

State	Used by producers—					
	Under boilers			In steel or allied plants		
	Quantity	Value		Quantity	Value	
		Total	Average		Total	Average
Alabama	10,604,560	$1,212,958	$0.114	15,098,966	$1,776,419	$0.118
California, Colorado, and Utah				32,086,485	7,484,803	.233
Illinois	2,046,432	176,807	.086	18,289,876	3,577,164	.196
Indiana	7,409,015	2,098,913	.283	54,866,891	14,563,166	.265
Kentucky, Tennessee, and Texas	4,897,080	580,745	.119	35,517	5,800	.163
Maryland				34,353,512	(1)	(1)
Massachusetts	127,967	(1)	(1)	472	(1)	(1)
Michigan	2,641,061	(1)	(1)	24,986,799	5,390,801	.216
Minnesota	1,307,736	281,207	.215	2,011,784	(1)	(1)
New Jersey						
New York	3,092,571	(1)	(1)	19,964,064	5,988,534	.300
Ohio	12,371,823	3,104,321	.251	34,719,155	8,683,988	.250
Pennsylvania	14,685,940	2,538,619	.173	103,330,830	22,646,623	.219
West Virginia	1,548,733	(1)	(1)	34,723,472	7,452,280	.215
Connecticut, Missouri, and Wisconsin	712,000	133,144	.187			
Undistributed		1,852,286	.250		11,074,165	.305
Total 1958	61,444,918	11,979,000	.195	374,467,823	88,643,743	.237
At merchant plants	9,660,747	1,809,475	.187	5,680,848	1,239,378	.218
At furnace plants	51,784,171	10,169,525	.196	368,786,975	87,404,365	.237
Total 1957	70,672,947	12,912,269	.183	528,492,057	122,200,566	.231

State	Sold					
	Distributed through city mains			For industrial purposes		
	Quantity	Value		Quantity	Value	
		Total	Average		Total	Average
Alabama	905,667	(1)	(1)	2,151,852	(1)	(1)
California, Colorado, and Utah				781,224	$123,199	$0.158
Illinois				181,018	29,092	.161
Indiana	2,723,735	$1,337,542	$0.491	9,709,951	2,226,658	.229
Kentucky, Tennessee, and Texas				5,643,194	882,211	.156
Maryland						
Massachusetts	4,922,638	(1)	(1)			
Michigan				1,450,549	(1)	(1)
Minnesota	2,297,166	(1)	(1)	857,018	(1)	(1)
New Jersey	8,677,914	(1)	(1)			
New York	5,048,286	1,935,454	.383	298,643	(1)	(1)
Ohio	3,122,933	474,352	.152	2,672,059	538,785	.202
Pennsylvania	6,309,289	2,422,401	.384			
West Virginia	1,318,484	(1)	(1)			
Connecticut, Missouri, and Wisconsin	5,538,000	4,070,430	.735	1,477,111	269,494	.182
Undistributed		7,941,268	.438		767,555	.161
Total 1958	40,864,112	18,181,447	.445	25,222,619	4,836,994	.192
At merchant plants	28,506,355	14,530,335	.510	14,317,143	2,501,351	.175
At furnace plants	12,357,757	3,651,112	.295	10,905,476	2,335,643	.214
Total 1957	50,947,967	22,537,537	.442	37,246,668	7,107,254	.191

(1) Included with "Undistributed" to avoid disclosing individual company figures.

dential and commercial heating (distributed through city mains) continued to decline in 1958, and only 5 percent of the surplus gas used and/or sold was sent through city mains. In 1947 slightly more than 168 million cubic feet (28 percent of the surplus gas) was sold for residential and commercial heating. Gas for this purpose always returns a higher price than that for any other purpose and in early years influenced the total receipts of coal chemicals. However, as such a small quantity was sold for this purpose in 1958, revenue from sales did not influence the value of coal-chemical materials.

Prices of coke-oven gas sold for distribution through city mains increased only slightly during 1958, rising only $0.003 per thousand cubic feet over 1957. In the 10-year period between 1948 and 1958 the average price of coke-oven gas sold for this purpose increased only $0.101 (29 percent).

TABLE 53.—Coke-oven gas and other gases used in heating coke ovens in the United States in 1958, by States, in thousand cubic feet [1]

State	Coke-oven gas	Producer gas	Blue-water gas	Blast-furnace gas	Natural gas	Other gases [2]	Total coke-oven gas equivalent
Alabama	28,550,048						28,550,048
California, Colorado, and Utah	12,969,563			7,195,362			20,164,925
Illinois	7,481,396			4,524,892			12,006,288
Indiana	37,084,894			11,644,051	2,171,159	68,672	50,968,776
Kentucky, Tennessee, and Texas	10,936,638						10,936,638
Maryland	10,016,780			7,314,676			17,331,456
Massachusetts	101,124				2,074,142		2,175,266
Michigan	5,685,525			8,936,056	53,849		14,675,430
Minnesota	3,799,295	173,918	175,333			204,682	4,353,228
New Jersey	2,434,484	1,300,000			1,165,375		4,899,859
New York	16,404,616			2,870,401	478,215		19,753,232
Ohio	39,030,867			2,594,081	5,869		41,630,817
Pennsylvania	82,259,541	1,259,947	120,779	1,924,245	242,530	797	85,807,839
West Virginia	14,720,398			5,970,935		1,428,911	22,120,244
Connecticut, Missouri, and Wisconsin	3,273,041	1,662,029			472,000		5,407,070
Total 1958	274,748,210	4,395,894	296,112	52,974,699	6,663,139	1,703,062	340,781,116
At merchant plants	30,918,271	4,395,894			4,826,742	1,429,708	41,570,615
At furnace plants	243,829,939		296,112	52,974,699	1,836,397	273,354	299,210,501
Total 1957	376,405,555	3,459,826	870,798	75,331,210	5,153,057	1,668,811	462,889,257

[1] Adjusted to an equivalent of 550 B.t.u. per cubic foot.
[2] Liquefied petroleum, mixed, propane, and coke-oven gas stripped of hydrogen (spillage gas).

CRUDE COAL TAR AND DERIVATIVES

Crude-tar production declined less than that of any other coal-chemical material because of the 0.51-gallon increase in yield. The 8.83 gallons per ton of coal was the highest yield for tar since 1939 and was attributed largely to the longer coking cycles employed in 1958. The yield of tar varies widely among the various coke plants, depending on the rank and grade of coal carbonized, oven temperature, completeness of tar recovery, and other factors. Yield of tar among plants in 1958 ranged from 4 to 12 gallons per ton of coal. The high-volatile coals usually produce higher yields than medium- and low-volatile coals, which explains the high tar yields in West Virginia, California, Colorado, Utah, and Pennsylvania. The yield of tar was

TABLE 54.—Coke-oven tar produced, used by producers, and sold in the United States in 1958, by States, in gallons

State	Produced		Used by producers—		
	Total	Per ton of coal coked	For refining or topping [1]	As fuel	Otherwise
Alabama	47,272,113	8.07	11,944,622	1,106,434	104,592
California, Colorado, and Utah	42,143,209	10.43	7,382,079	17,542,379	27,026
Illinois	21,258,856	7.73			57,100
Indiana	74,547,777	6.80	33,033,250	2,041,833	
Kentucky, Tennessee, and Texas	18,250,348	7.02			52,175
Maryland	37,910,771	9.44		37,114,149	
Massachusetts	4,615,101	9.10			
Michigan	28,258,660	8.32			
Minnesota	7,606,923	8.24			7,300
New Jersey	8,956,798	8.53			
New York	37,909,723	8.80	24,325,533		67,755
Ohio	75,705,273	8.17	792,629	7,676,470	261,272
Pennsylvania	207,115,450	10.18	132,098,850	34,221,330	3,209,029
West Virginia	50,087,091	10.57	18,467,422		
Connecticut, Missouri, and Wisconsin	7,678,206	7.30			
Undistributed					
Total 1958	669,316,299	8.83	228,044,385	99,702,595	3,786,249
At merchant plants	69,332,125	7.56	858,046		
At furnace plants	599,984,174	9.00	227,186,339	99,702,595	3,786,249
Total 1957	873,474,352	8.32	258,365,106	172,892,974	3,280,592

State	Sold for refining into tar products [2]			On hand Dec. 31
	Quantity	Value		
		Total	Average	
Alabama	33,770,226	$4,509,782	$0.134	2,980,323
California, Colorado, and Utah	17,342,336	2,348,076	.135	1,744,231
Illinois	21,930,543	2,995,655	.137	463,465
Indiana	40,525,924	5,662,862	.140	2,775,842
Kentucky, Tennessee, and Texas	18,543,800	2,439,440	.132	76,657
Maryland	1,263,980	(3)	(3)	1,824,333
Massachusetts	4,646,024	(3)	(3)	149,849
Michigan	27,284,234	3,812,332	.140	2,739,469
Minnesota	7,025,204	970,322	.138	873,124
New Jersey	8,998,456	(3)	(3)	683,179
New York	14,480,012	1,910,274	.132	1,508,000
Ohio	67,354,283	8,207,421	.122	4,408,446
Pennsylvania	45,045,333	6,020,712	.134	8,842,067
West Virginia	31,392,889	4,447,215	.142	1,081,822
Connecticut, Missouri, and Wisconsin	7,817,118	1,041,961	.133	762,261
Undistributed		1,865,160	.125	
Total 1958	347,420,362	46,231,212	.133	30,913,068
At merchant plants	68,806,915	9,204,124	.134	3,013,161
At furnace plants	278,613,447	37,027,088	.133	27,899,907
Total 1957	441,988,878	57,508,917	.130	33,194,747

[1] Includes 6,734,423 gallons also shown under "Sold for refining into tar products."
[2] Comprises 30,788,462 gallons valued at $4,181,436 sold to affiliated companies and 316,631,900 gallons valued at $42,049,776 sold to other purchasers.
[3] Included with "Undistributed" to avoid disclosing individual company figures.

lowest in Indiana, where 40 percent of the coal carbonized was low-volatile.

Depending on economic conditions, crude tar may be utilized as fuel or processed to make various tar products. In processing tar it may be completely refined (that is, the distillation temperatures may go over 400° C. for the recovery of all commercial tar products, including various grades of pitches), or it may be mildly refined or "topped." Topping primarily strips the low-boiling fractions (usually under 300° C.) that are rich in tar acids, bases, and naphthalene from the crude tar. The residual tar or soft pitch is generally used by the producing companies as fuel. In this way steel companies can process their tar, sell the distillates, and burn the residue. Producers processed 34 percent of the output and sold more than half to commercial tar distillers. Sixty-seven percent of the tar processed by the producers was topped in 1958. Although the proportion of crude tar used as fuel was much lower in 1958 than before World War II, 15 percent was burned without any processing.

The principal tar derivatives made at coke plants are creosote oil, crude-chemical oil (tar-acid oil), naphthalene, and pitch. Data on creosote oil and naphthalene cannot be shown, because they would reveal individual company figures. Crude-chemical-oil production and sales were lower because of the large decrease in quantity of tar distilled. A tar product that has been increasing steadily in sales is coal-tar pitch. For years, coke-oven operators burned virtually all of their production and sold only insignificant quantities. In the past several years, however, some steel companies have made special pitches that they sell as roofing materials. Consequently, sales of pitch by coke-oven operators more than doubled in 1958 and amounted to 17 percent of the output; the value of sales exceeded $4 million.

The average value per gallon of crude tar increased $0.003 over 1957, but the average value of crude chemical oil (tar-acid oil) and pitch (all grades) decreased slightly.

COKE-OVEN AMMONIA

Ammonia is recovered at coke plants in two forms: (1) An aqueous solution known as ammonia liquor and (2) a crystalline solid, such as ammonium sulfate and di- and mono-ammonium phosphate. The proportion of ammonia recovered as ammonia liquor has declined steadily since World War II, when it amounted to about 15 percent of the total; it amounted to but 8 percent in 1958. The reason for this decline is that most plants that have closed since World War II made ammonia liquor, while coke plants that have increased their carbonizing capacity (furnace plants) make ammonium sulfate. Eighty-seven percent of the ammonia produced in 1958 was recovered as sulfate, and 5 percent was made into di- and mono-ammonium phosphate. Virtually all of the ammonium sulfate and phosphate sold by coke-oven operators went into commercial fertilizer for agricultural uses. Ammonia liquor was used for industrial purposes and in agriculture; but the quantities for each purpose were not known, as the producing companies were not requested to supply such information.

Prices for ammonium sulfate did not change in 1958.

TABLE 55.—Coke-oven ammonia produced and sold in the United States in 1958, by States, in pounds

State	Active plants[1]	Produced			
		Sulfate equivalent	Per ton of coal coked	As sulfate[2]	As liquor (NH_3 content)
Alabama	7	139,234,876	23.77	132,332,684	1,779,374
California, Colorado, and Utah[3]	4	92,517,432	22.89	92,517,432	
Illinois	6	57,582,636	21.63	57,582,636	
Indiana	5	172,974,239	15.78	148,655,388	6,269,361
Kentucky, Tennessee, and Texas	4	40,472,420	19.11	12,782,248	7,138,482
Maryland	1	77,827,714	19.38	77,827,714	
Massachusetts[4]	1	8,858,360	17.47	8,858,360	
Michigan[3]	4	66,553,115	19.60	51,389,514	3,909,152
Minnesota	2	14,665,057	20.01	14,665,057	
New Jersey[5]	2	22,234,663	21.16	22,234,663	
New York	3	102,093,616	23.69	85,888,000	4,177,782
Ohio	14	158,698,496	17.13	138,530,617	5,199,247
Pennsylvania	13	420,439,693	20.74	420,439,693	
West Virginia	4	89,945,779	20.21	89,945,779	
Connecticut, Missouri, and Wisconsin	3	14,381,420	17.57	9,216,380	1,331,539
Undistributed					
Total 1958	73	1,478,479,516	19.86	1,362,866,165	29,804,937
At merchant plants	18	167,385,343	20.18	86,259,968	20,913,992
At furnace plants	55	1,311,094,173	19.82	1,276,606,197	8,890,955
Total 1957	77	2,027,449,979	19.56	1,892,916,097	34,682,620

State	Sold				On hand Dec. 31	
	As sulfate[2]		As liquor (NH_3 content)		Sulfate[2]	Liquor (NH_3 content)
	Quantity	Value	Quantity	Value		
Alabama	126,841,260	$1,999,010	1,737,563	(6)	31,904,994	$54,129
California, Colorado, and Utah[3]	103,413,480	3,584,631			32,896,478	
Illinois	58,046,917	931,454			4,092,875	
Indiana	140,630,485	2,200,154	6,102,685	(6)	36,279,723	1,065,704
Kentucky, Tennessee, and Texas	14,709,710	222,431	6,903,102	(6)	694,629	584,745
Maryland	71,889,200	(6)			8,392,828	
Massachusetts[4]	10,566,240	(6)			540,600	
Michigan[3]	50,601,801	(6)	2,402,394	(6)	10,096,726	130,756
Minnesota	15,673,732	252,611			1,188,722	
New Jersey[5]	22,547,900	(6)			1,193,400	
New York	82,534,000	(6)	4,060,721	(6)	10,328,000	166,195
Ohio	136,405,650	2,061,063	3,955,821	(6)	25,028,904	1,403,886
Pennsylvania	383,705,131	4,887,258			128,553,811	
West Virginia	92,068,075	1,226,283			7,910,045	
Connecticut, Missouri, and Wisconsin	9,671,220	140,742	1,301,966	(6)	12,360	185,255
Undistributed		4,898,713		$881,873		
Total 1958	1,319,304,801	22,404,350	26,464,252	881,873	299,114,095	3,590,670
At merchant plants	88,884,040	1,835,614	17,895,467	664,356	5,467,542	2,581,341
At furnace plants	1,230,420,761	20,568,736	8,568,785	217,517	293,646,553	1,009,329
Total 1957	2,019,089,842	29,209,143	31,645,981	1,058,336	253,714,555	3,215,656

1 Number of plants that recovered ammonia.
2 Includes di- and mono-ammonium phosphate and ammonium thiocyanate.
3 Figures include diammonium phosphate.
4 Figures include ammonium thiocyanate.
5 Figures include mono-ammonium phosphate.
6 Included with "Undistributed" to avoid disclosing individual company figures.

CRUDE LIGHT OIL AND DERIVATIVES

In the coke industry all light oil, except an insignificant amount recovered from tar processing, is recovered from the gas stream. The yield of light oil ranged from 2 to 4 gallons per ton of coal carbonized and averaged 2.95—the highest yield in 5 years. In the older light-oil plants of the coke industry, the usual practice is to include as light oil all material distilling up to 200° C. In the newer and more modern plants, only material distilling up to 150° or 155° C. is recovered as crude light oil, and a secondary fraction distilling between 150° and 200° C. is separated. This secondary fraction—known as intermediate light oil—contains about 50 percent polymerizable materials, coumarone, indene, and dicyclopentadiene. The remainder is mainly polyalkylbenzene and naphthalene. Intermediate light oil is usually sold by coke-plant operators to tar distillers for processing into coumarone, indene, resins, solvents, and shingle stains. Since 1954 production of intermediate light oil averaged 2.6 million gallons annually and in 1958 was 3,419,833 gallons.

Roughly 90 to 95 percent of the crude light oil recovered at coke plants is refined on the premises by the producing companies. The total yield of salable products (derivatives) varied between 80 and 85 percent, and the 81 percent for 1958 was the lowest ever recorded, mainly because of lower yields of benzene (table 57). Benzene is the principal derivative obtained from light oil and is one of the most important organic chemicals, because of its many uses. Coal carbonization was the only source of benzene until the late 1940's. New catalytic cracking and reforming processes in the petroleum industry resulted in the economic production of petroleum-based benzene; and, in 1958, disregarding crude-benzene imports, for the first time more benzene was made from petroleum than from coal. To show the change in sources of benzene supply for the American chemical industry, table 60 was prepared to indicate trends. Production of petroleum benzene has advanced steadily; production at coke plants increased slightly, allowing for 1954 and 1958, when production was low because of reduced steel production, which forced the oven operating rate down. Production by tar distillers varied because more than half of the output from this group of plants is produced from imported crude benzene; hence, production of benzene at tar-distilling plants follows imports. However, all of the benzene imported does not require further processing or upgrading. Since 1955 increasing quantities of pure benzene have been imported and this pure material is not included in the U.S. Tariff Commission figures. In 1958, for example, benzene imports included approximately 30 million gallons of pure benzene.

Benzene is used to make a wide variety of products in the chemical industry, ranging from aspirin tablets to synthetic rubber and plastics for countless applications. Table 61 gives estimates by the American Coke and Coal-Chemicals Institute for 1957–59. Significant was the fact that consumption of benzene actually increased over 1957, whereas nearly every other commodity was down. Consumption exceeded production, owing to withdrawal of substantial quantities from stocks by the larger consuming companies.

Production data on coke-oven toluene are shown by States in table 58 and by grades in table 59. Coke ovens supplied only 14 percent of the national output of this aromatic chemical in 1958, as the bulk was derived from petroleum. Xylene, another aromatic chemical formerly made exclusively by coal carbonization, was obtained largely from petroleum processing, and only 4 percent was obtained from coal carbonization.

The reduction in prices of light-oil products during 1958 reduced the average values of all derivatives except solvent naphtha. The largest drop was for toluene, its average value per gallon dropped from $0.276 in 1957 to $0.221 (20 percent). Benzene dropped from $0.344 to $0.311; this amounted to a 10-percent decrease, whereas solvent naphtha went up $0.01 per gallon.

TABLE 56.—Coke-oven crude light oil produced in the United States and derived products produced and sold in 1958, by States, in gallons

State	Active plants [1]	Crude light oil				Derived products		
		Produced	Per ton of coal coked	Refined on premises [2]	On hand Dec. 31	Produced	Sold [3] Quantity	Sold [3] Value
Alabama	7	15,947,843	2.72	15,449,088	424,168	11,976,781	12,074,788	$3,624,710
California, Colorado, and Utah	4	14,357,358	3.55	14,323,002	161,494	12,087,611	10,305,264	2,903,028
Illinois	5	8,564,079	3.22	6,444,404	121,070	5,102,932	5,848,436	1,658,054
Indiana	4	26,942,811	2.57	26,542,522	157,351	20,871,759	20,899,105	5,846,597
Kentucky, Tennessee, and Texas	4	7,273,536	2.80	3,019,695	130,760	2,543,203	2,586,412	759,198
Maryland	1	13,689,524	3.41	13,690,438	152,257	11,480,870	12,405,174	(4)
Massachusetts	1	1,190,944	2.35	2,303,223	100,842	1,810,835	1,896,988	(4)
Michigan	4	9,548,741	2.81	4,804,444	348,395	3,907,308	3,749,497	(4)
New Jersey	1	2,019,917	2.76	------------	14,966	------------	------------	------------
New York	3	13,348,264	3.10	18,838,178	285,209	15,871,456	16,099,555	4,886,964
Ohio	14	25,651,788	2.77	23,440,153	597,585	19,246,438	18,298,434	5,162,875
Pennsylvania	14	63,055,349	3.10	59,648,293	2,237,096	47,673,351	46,383,579	13,642,873
West Virginia	5	14,189,685	3.00	13,549,633	45,763	11,532,574	11,597,410	3,261,946
Connecticut, Missouri, and Wisconsin	3	2,449,437	2.33	1,265,563	116,495	1,117,614	1,144,331	(4)
Undistributed	--------	------------	--------	------------	----------	------------	------------	5,624,279
Total 1958	70	218,229,276	2.95	203,318,636	4,893,451	165,222,732	163,288,973	47,370,524
At merchant plants	18	20,413,837	2.52	15,151,874	988,401	12,617,024	12,401,619	3,540,770
At furnace plants	52	197,815,439	3.00	188,166,762	3,905,050	152,605,708	150,887,354	43,829,754
Total 1957	73	301,088,346	2.94	289,437,715	3,972,983	244,258,357	231,898,325	75,223,000

[1] Number of plants that recovered crude light oil.
[2] Includes small quantity of material also reported in sales of crude light oil in table 47.
[3] Excludes 16,708,004 gallons of crude light oil valued at $2,809,804 sold as such.
[4] Included with "Undistributed" to avoid disclosing individual company figures.

TABLE 57.—Yield of light-oil products from refining crude light oil at oven-coke plants in the United States, 1929, 1939, 1947–49 (average), and 1954–58, in percent

Year	Benzene		Toluene (crude and refined)	Xylene (crude and refined)	Solvent naphtha	Other light-oil products
	Motor	All other grades				
1929	54.4	12.8	9.4	(1)	3.7	3.4
1939	48.6	15.4	12.1	2.5	2.9	3.8
1947-49 (average)	6.5	59.2	11.7	3.1	2.3	3.3
1954	1.4	59.6	14.3	4.3	2.0	1.7
1955	(2)	62.0	13.6	4.0	2.0	2.3
1956	(2)	63.0	13.5	3.7	2.1	2.3
1957	.6	61.9	13.1	3.7	2.2	2.8
1958	.7	58.2	13.8	4.1	2.2	2.3

[1] Included with solvent naphtha.
[2] Included with "Other light-oil products" to avoid disclosing individual company figures.

TABLE 58.—Light-oil derivatives produced and sold at coke plants in the United States in 1958, by States, in gallons

State	Benzene (all grades except motor)				Toluene (all grades)			
	Produced	Yield from crude light oil refined (percent)	Sold		Produced	Yield from crude light oil refined (percent)	Sold	
			Quantity	Value			Quantity	Value
Alabama	8,743,276	56.6	8,844,898	$2,887,964	2,339,556	15.1	2,447,463	$532,776
California, Colorado, and Utah	8,107,180	56.6	7,176,618	2,117,425	1,864,923	13.0	1,634,252	399,723
Illinois	3,955,318	61.4	4,587,717	1,349,951	814,315	12.6	894,968	220,132
Indiana	16,880,237	63.6	17,138,110	4,999,812	1,884,515	7.1	2,056,796	470,633
Maryland	8,405,150	61.4	9,144,896	(1)	2,325,586	17.0	2,519,403	(1)
Massachusetts	1,259,932	54.7	1,351,404	(1)	388,406	16.9	385,989	(1)
Michigan and Wisconsin	3,338,277	59.5	3,334,105	1,022,127	918,727	16.4	863,071	201,844
New York	11,629,195	61.7	11,870,723	3,843,217	2,877,291	15.3	2,857,146	665,298
Ohio	13,519,191	57.7	13,193,479	3,970,680	3,171,057	13.5	3,144,995	729,868
Pennsylvania	32,300,838	54.2	31,612,162	10,217,342	8,642,036	14.5	9,112,533	1,899,852
West Virginia	7,847,868	57.9	8,133,001	2,533,433	2,447,947	18.1	2,251,541	445,007
Missouri, Tennessee, and Texas	2,293,222	66.0	2,352,435	733,788	398,064	11.5	400,778	88,698
Undistributed				3,309,470				656,639
Total 1958	118,279,684	58.2	118,739,548	36,985,209	28,072,423	13.8	28,568,935	6,310,470
At merchant plants	8,573,705	56.6	8,694,671	2,705,586	2,410,585	15.9	2,203,009	516,785
At furnace plants	109,705,979	58.3	110,044,877	34,279,623	25,661,838	13.6	26,365,926	5,793,685
Total 1957	179,252,295	61.9	171,944,225	59,080,169	37,985,093	13.1	37,095,191	10,226,112

See footnote at end of table.

TABLE 58.—Light-oil derivatives produced and sold at coke plants in the United States in 1958, by States, in gallons—Continued

State	Xylene (all grades)				Solvent naphtha (crude and refined)			
	Produced	Yield from crude lightoil refined (percent)	Sold		Produced	Yield from crude light oil refined (percent)	Sold	
			Quantity	Value			Quantity	Value
Alabama	576,790	3.7	511,310	$152,965	169,155	1.1	121,034	$33,946
California, Colorado, and Utah	490,330	3.4	468,274	130,495	551,512	3.9	549,316	145,718
Illinois	182,805	2.8	207,155	63,977	64,497	1.0	72,599	19,264
Indiana	256,777	1.0	355,238	102,050	915,165	3.4	864,075	216,349
Maryland	750,134	5.5	740,875	(1)				
Massachusetts	95,368	4.1	100,712	(1)	67,129	2.9	58,883	(1)
Michigan and Wisconsin	222,577	4.0	223,888	64,035	520		330	(1)
New York	700,504	3.7	713,064	274,112	77,978	.4	70,945	(1)
Ohio	1,184,964	5.1	1,164,280	305,546	507,614	2.2	523,186	131,509
Pennsylvania	3,042,801	5.1	2,869,889	833,502	1,851,244	3.1	1,836,181	539,334
West Virginia	792,828	5.9	794,627	203,347	138,628	1.0	112,938	19,871
Missouri, Tennessee, and Texas	112,553	3.2	117,178	30,976	75,830	2.2	53,944	10,387
Undistributed				242,145				32,974
Total 1958	8,408,431	4.1	8,266,490	2,403,150	4,419,272	2.2	4,263,431	1,149,352
At merchant plants	620,628	4.1	569,821	186,651	140,435	.9	133,023	26,972
At furnace plants	7,787,803	4.1	7,696,669	2,216,499	4,278,837	2.3	4,130,408	1,122,380
Total 1957	10,793,389	3.7	10,358,165	3,204,248	6,278,251	2.2	6,260,240	1,624,598

[1] Included with "Undistributed" to avoid disclosing individual company figures.

TABLE 59.—Benzene and toluene produced at oven-coke plants in the United States, 1941, 1947–49 (average), and 1954–58, by grades, in gallons

Year	Benzene				Toluene		
	Motor	Nitration or 1° C.	Industrial pure or 2° C.	All other	Nitration or 1° C.	Industrial pure or 2° C.	All other
1941	106,372,000	15,414,500	18,286,400	4,182,600	14,689,800	13,268,500	1,378,900
1947–49 (average)	15,246,900	38,335,100	98,395,100	2,535,900	21,407,400	5,529,200	568,600
1954	3,327,100	44,383,000	92,336,600	2,718,200	24,718,800	7,775,600	888,600
1955	(1)	87,642,000	84,125,700	2,452,600	30,037,900	8,167,500	(2)
1956	(1)	74,312,800	97,393,000	2,720,200	29,673,600	7,564,500	(2)
1957	1,834,300	88,262,900	79,421,900	11,567,500	30,716,800	7,268,300	(2)
1958	1,389,800	77,427,100	38,679,200	2,173,400	22,554,600	5,517,800	(2)

[1] Withheld to avoid disclosing individual company figures.
[2] Combined with "Industrial pure or 2° C." to avoid disclosing individual company figures.

TABLE 60.—Production of benzene (excluding Motor grade) in the United States, 1947–49 (average) and 1954–58, in thousand gallons[1]

Year	From tar distilleries[2]					From coke-oven operations				
	Produced	Percent of total	Sold			Produced	Percent of total	Sold		
			Quantity	Value				Quantity	Value	
				Total	Average				Total	Average
1947–49 (average)	15,434	10.0	7,288	$1,505	$0.21	139,266	90.0	137,671	$25,413	$0.19
1954	25,460	9.9	18,344	7,413	.40	139,438	54.3	131,857	50,958	.39
1955	34,671	11.3	24,948	7,970	.32	174,220	56.6	168,750	58,663	.35
1956	50,551	15.0	34,698	10,377	.30	174,426	51.8	173,420	59,548	.34
1957	36,112	10.9	24,787	8,911	.36	179,252	54.1	171,944	59,080	.34
1958	[4] 26,782	9.2	(5)	(5)	(5)	118,280	40.7	118,740	36,985	.31

Year	From petroleum refineries					Total				
	Produced	Percent of total	Sold			Produced	Percent of total	Sold		
			Quantity	Value				Quantity	Value	
				Total	Average				Total	Average
1947–49 (average)	(3)	(3)	(3)	(3)	(3)	154,700	100.0	144,959	$26,918	$0.19
1954	91,912	35.8	51,714	$24,631	$0.48	256,810	100.0	201,915	83,002	.41
1955	98,588	32.1	71,110	30,901	.43	307,479	100.0	264,808	97,534	.37
1956	111,613	33.2	76,331	32,834	.43	336,590	100.0	284,449	102,759	.36
1957	116,184	35.0	79,773	29,991	.38	331,548	100.0	276,504	97,982	.35
1958	[4] 145,520	50.1	(5)	(5)	(5)	290,582	100.0	(5)	(5)	(5)

[1] U.S. Tariff Commission.
[2] Includes benzene made from imported crude light oil.
[3] Small quantity included in "From tar distilleries."
[4] Preliminary figure.
[5] Not available.

TABLE 61.—Estimated consumption of commercial benzene (excluding Motor grade) in the United States, 1957–59, by uses, in thousand gallons[1]

Use	1957	1958	1959
Styrene	142,000	147,000	159,000
Phenol (synthetic)	70,000	63,000	72,000
Detergents (Dodecyl benzene)	34,000	34,000	36,000
Synthetic fibers	30,000	30,000	30,000
Aniline	14,000	12,000	13,000
DDT	12,000	13,000	13,000
Di- and Mono-chlorobenzene	9,000	8,000	9,000
Maleic anhydride	7,000	7,500	8,000
Benzene hexachloride	3,500	2,500	2,500
Diphenyls	4,500	4,500	4,500
Nitrobenzene	2,000	2,000	2,000
Miscellaneous	20,000	20,000	25,000
Export	3,000	11,500	8,000
Total	351,000	355,000	382,000

[1] Estimated by the Coal-Chemicals Committee, American Coke and Coal-Chemicals Institute, Washington, D.C.

COKE OVENS OWNED BY CITY GAS COMPANIES

(PUBLIC UTILITIES)

Statistics comparing production of coke and coal chemicals by plants owned and operated by gas utilities with those that are not owned by city gas companies are shown in table 62. The use of coke ovens by gas utilities has decreased sharply in recent years, because the gas utilities have substituted natural gas for coke-oven gas wherever it is available. In the middle 1930's, when over 30 coke plants were operated by gas utilities, approximately 10 percent of the oven-coke, tar, and gas was produced by this group. In 1958, city gas plants produced less than 1 percent of the oven coke, crude tar, crude light oil, and ammonia and 1 percent of coke-oven gas. Only three plants were in operation at the end of 1958, and one of these was planning to shut down its ovens permanently in 1959.

TABLE 62.—Coke, breeze, and coal-chemical materials produced in the United States at oven-coke plants owned by city gas companies (public utilities) [1] compared with all other oven-coke plants, 1957–58

	1957			1958		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)	Total
Number of active plants	76	3	79	74	3	77
Coke:						
Produced ... net tons	72,934,528	926,164	73,860,692	52,394,502	611,228	53,005,730
Value	$1,332,049,959	$20,046,201	$1,352,096,160	$953,268,003	$13,526,535	$966,794,538
Average per ton	$18.26	$21.64	$18.31	$18.19	$22.13	$18.24
Breeze:						
Produced ... net tons	4,803,667	58,927	4,862,594	3,602,671	53,527	3,656,198
Sold ... do	1,175,425	1,309	1,176,734	865,035	953	865,988
Value of sales	$8,277,951	$13,042	$8,290,993	$6,601,664	$8,776	$6,610,440
Average per ton	$7.04	$9.96	$7.05	$7.63	$9.21	$7.63
Coal carbonized:						
Bituminous ... net tons	103,329,157	1,217,474	104,546,631	74,720,793	840,248	75,561,041
Anthracite ... do	339,855	49,479	389,334	225,158	29,627	254,785
Total ... do	103,669,012	1,266,953	104,935,965	74,945,951	869,875	75,815,826
Value	$1,025,505,093	$14,259,820	$1,039,764,913	$739,924,845	$9,971,726	$749,896,571
Average per ton	$9.89	$11.26	$9.91	$9.87	$11.46	$9.89
Coke—						
Used by producing companies:						
Net tons	64,317,728	73,006	64,390,734	46,039,705	75,534	46,115,239
Value	$1,166,091,138	$1,234,480	$1,167,325,618	$827,980,477	$1,257,166	$829,237,643
Commercial sales:						
Net tons	7,958,511	698,935	8,657,446	5,846,912	376,245	6,223,157
Value	$153,202,375	$15,732,762	$168,935,137	$114,525,301	$9,117,075	$123,642,376
Coal-chemical materials:						
Tar:						
Produced ... gallons	864,822,725	8,651,627	873,474,352	663,228,172	6,088,127	669,316,299
Sold ... do	433,452,572	8,536,306	441,988,878	341,448,209	5,972,153	347,420,362
Value of sales	$56,449,756	$1,059,161	$57,508,917	$45,474,039	$757,173	$46,231,212
Ammonia:						
Produced (NH_3 equivalent of all forms) ... pounds	517,046,895	5,626,469	522,673,364	377,715,435	3,436,399	381,151,834
Liquor (NH_3 content):						
Produced ... do	34,682,620		34,682,620	29,804,937		29,804,937
Sold ... do	31,588,045	57,936	31,645,981	26,464,252		26,464,252
Value of sales	$1,054,726	$3,610	$1,058,336	$881,873		$881,873

See footnotes at end of table.

TABLE 62.—Coke, breeze, and coal-chemical materials produced in the United States at oven-coke plants owned by city gas companies (public utilities) [1] compared with all other oven-coke plants, 1957–58—Continued

	1957			1958		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)	Total
Coal-chemical materials—Continued						
Ammonia—Continued						
Sulfate: [2]						
Produced ... pounds	1,871,091,030	21,825,067	1,892,916,097	1,349,536,456	13,329,709	1,362,866,165
Sold ... do	1,998,449,757	20,640,085	2,019,089,842	1,304,252,441	15,052,360	1,319,304,801
Value of sales	$28,885,767	$323,376	$29,209,143	$22,167,472	$236,878	$22,404,350
Gas:						
Produced ... M cubic feet	1,078,125,123	12,720,747	1,090,845,870	781,310,146	8,518,250	789,828,396
Disposal of surplus:						
Used under boilers:						
M cubic feet	70,672,947		70,672,947	61,335,328	109,590	61,444,918
Value	$12,912,269		$12,912,269	$11,927,274	$51,726	$11,979,000
Average per M cubic feet	$0.183		$0.183	$0.194	$0.472	$0.195
Used in steel or allied plants:						
M cubic feet	528,492,057		528,492,057	374,467,823		374,467,823
Value	$122,200,566		$122,200,566	$88,643,743		$88,643,743
Average per M cubic feet	$0.231		$0.231	$0.237		$0.237
Distributed through city mains:						
M cubic feet	42,462,102	8,485,865	50,947,967	34,809,923	6,054,189	40,864,112
Value	$17,854,538	$4,682,999	$22,537,537	$13,977,603	$4,203,844	$18,181,447
Average per M cubic feet	$0.420	$0.552	$0.442	$0.402	$0.694	$0.445
Sold for industrial use:						
M cubic feet	36,240,114	1,006,554	37,246,668	24,412,400	810,219	25,222,619
Value	$6,778,317	$328,937	$7,107,254	$4,579,847	$257,147	$4,836,994
Average per M cubic feet	$0.187	$0.327	$0.191	$0.188	$0.317	$0.192
Crude light oil:						
Produced ... gallons	300,696,929	391,417	301,088,346	218,042,217	187,059	218,229,276
Sold ... do	14,147,597	408,964	14,556,561	16,522,520	185,484	16,708,004
Value of sales	$3,023,972	$59,299	$3,083,271	$2,785,585	$24,219	$2,809,804
Light-oil derivatives:						
Produced ... gallons	244,258,357		244,258,357	165,222,732		165,222,732
Sold ... do	231,898,325		231,898,325	163,288,973		163,288,973
Value of sales	$75,223,000		$75,223,000	$47,370,524		$47,370,524
All other coal-chemical materials, value of sales	$26,923,067	$8,912	$26,931,979	$23,367,297	$7,325	$23,374,622

[1] Coke ovens built by city gas companies. Does not include independent oven-coke plants that may sell gas to public-utility companies for distribution.
[2] Includes di- and mono-ammonium phosphate and ammonium thiocyanate.

Fuel Briquets and Packaged Fuel

By Eugene T. Sheridan and Virginia C. Berté

Contents

GENERAL SUMMARY

Production of both fuel briquets and packaged fuel continued to decline in 1958, and output of each was 6 and 24 percent, respectively, less than in 1957. These fuels are used chiefly for residential heating in the United States; however, in recent years demand has been reduced because of the increased use of fuel oil and natural gas for heating.

Productive capacity of both industries declined slightly as one briquet plant and four packaged-fuel plants discontinued operations during 1958. The decline in packaged-fuel capacity was offset somewhat by the renewed output of two small producers, which were inactive in 1957. Another plant produced a small quantity of packaged fuel in 1958.

Eight States produced fuel briquets and seven States packaged fuel. Wisconsin led in briquet production and Michigan in packaged fuel. Both States are in the Central States region where the largest quantities of each fuel were also consumed.

Low-volatile bituminous coal was the principal fuel used for manufacturing both fuel briquets and packaged fuel in 1958 (about two-thirds of the briquets and virtually the entire quantity of packaged fuel was manufactured from this raw material). Binding materials were asphalt and starch; fuel-briquet plants used asphalt, exclusively, and all but one packaged-fuel plant used starch.

Prices of both fuels were stable during the year; the average sales value per ton, f.o.b. plant, of briquets was slightly lower than in 1957, but the average sales value per ton of packaged fuel increased 7 percent.

Foreign trade was insignificant; only 54,961 tons of fuel briquets was exported and 184 tons imported. No packaged fuel is exported or imported.

TABLE 1.—Salient statistics of the fuel-briquetting and packaged-fuel industries in the United States, 1947–49 (average) and 1955–58

	1947–49 (average)	1955	1956	1957	1958
FUEL BRIQUETS					
Production ....net tons..	2,901,348	1,629,542	1,518,540	1,104,781	1,035,261
Value of production	$31,805,000	$19,037,987	$18,221,686	$14,802,033	$13,697,169
Average per net ton, f.o.b. plant...	$10.96	$11.68	$12.00	$13.40	$13.23
Imports [1] ....net tons..	360	----------	318	850	184
Exports [1] ....do....	207,928	106,294	107,452	86,464	54,961
Apparent consumption [2] ....do....	2,693,780	1,523,248	1,411,406	1,019,167	980,484
World production ....do....	62,000,000	[3]114,650,000	[3]118,760,000	[3]120,830,000	116,760,000
PACKAGED FUEL					
Production ....net tons..	155,281	69,212	64,960	47,287	35,769
Value of production	$2,618,238	$1,194,045	$1,381,880	$1,022,262	$828,116
Average per net ton, f.o.b. plant...	$16.86	$17.25	$21.27	$21.62	$23.15

[1] Compiled from records of the U.S. Department of Commerce. Excludes exports of briquets made from petroleum coke and residual carbon from manufacturing oil gas.
[2] Production plus imports minus exports. Import and export data do not include briquets made from petroleum products.
[3] Revised figure.

SCOPE OF REPORT

This report covers processed fuels of mineral origin only and, specifically, does not include briquets made from charcoal. Briquets are usually produced in small pillow-shaped forms, 2 to 4 inches in length, weighing from 2 to 4 ounces. Packaged fuel consists of 3- to 4-inch cubes, 6 or 8 of which are wrapped in heavy kraft paper to form a package weighing 10 to 15 pounds. Fuel briquets generally are manufactured by large plants at mines or docks, where large quantities of fine-size fuels accumulate. Packaged-fuel plants are relatively small and are used by retail dealers to make fine coals into a product suitable for household heating. Briquets are durable and may be stored outdoors and shipped as bulk fuel. Packaged fuel deteriorates unless handled carefully, and special methods must be employed in storing and shipping.

Data on the fuel-briquet industry have been published annually since 1907, except in 1910, when no canvass was conducted. Packaged-fuel statistics have been published each year since 1935. All data, except as noted, were based upon the voluntary reports of producers.

Replies were received from the 19 fuel-briquet plants canvassed; 16 reported production, 2 were idle, and 1 was reported abandoned. One plant reported in 1957 that it was abandoning its operation in 1958 and was not canvassed. Of the 30 packaged-fuel plants canvassed, 23 reported production, 1 was idle, and 2 were reported abandoned. Four small packaged-fuel plants, former producers, did not reply and were assumed to be idle. Two plants that were idle in 1957 reported small production in 1958 and one plant that had not previously reported produced a small quantity of packaged fuel in 1958. Non-reporting plants were assumed to be idle. All production values were based upon the value of sales, f.o.b. plants, as reported by producers.

The average of the 3-year period, 1947-49, was used as a base for measuring production and consumption trends, and all quantities were reported in short tons.

In some instances, statistical data were shown by regions because of the small number of companies producing in each state. For fuel briquets, the Eastern States are Pennsylvania and West Virginia; Central States—Illinois, Indiana, Michigan, and Wisconsin; Western States—Arkansas and Missouri. For packaged fuel, the Eastern States are Ohio and Virginia; Central States—Illinois, Indiana, Michigan, and Wisconsin; Western States—Minnesota.

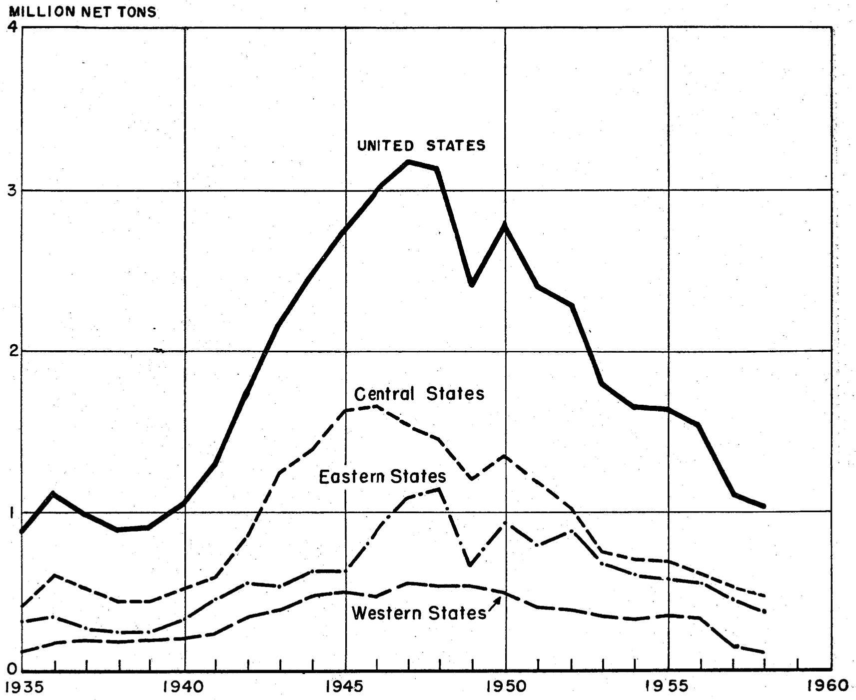

FIGURE 1.—Production of fuel briquets in the United States, 1935–58, by regions.

FUEL BRIQUETS

CAPACITY

Productive capacity of the fuel-briquet industry decreased slightly in 1958 as one plant discontinued operations. Within the past decade, capacity has decreased steadily, and this industry at the end of 1958 was only about two-thirds as large as during the base years. Since 1948, 20 plants have ceased operating, and annual capacity has declined from 4.7 million tons to 3 million tons. The rate of operation also has declined, but this trend is disappearing, and production in terms of capacity was only 1½ points lower than in 1957.

In 1958 only two plants were operating at an annual capacity of less than 50,000 tons.

TABLE 2.—Annual capacity and production of briquetting plants in the United States, 1954–58

	Active plants	Annual capacity (net tons)	Production	
			Net tons	Percent of capacity
1954	25	4,161,000	1,624,462	39.0
1955	23	3,841,000	1,629,542	42.4
1956	21	3,716,000	1,518,540	40.9
1957	17	3,088,000	1,104,781	35.8
1958:				
Plants with capacity of—				
Less than 25,000 tons	---	---	---	---
25,000 to less than 100,000 tons	6	308,000	123,542	40.1
100,000 to less than 200,000 tons	4	450,000	194,190	43.2
200,000 to less than 400,000 tons	3	760,000	209,745	27.6
400,000 or more tons	3	1,500,000	507,784	33.9
Total	16	3,018,000	1,035,261	34.3
Plants with production of—				
Less than 5,000 tons	2	(1)	(1)	(1)
5,000 to less than 10,000 tons	---	---	---	---
10,000 to less than 25,000 tons	3	296,000	69,205	23.4
25,000 to less than 100,000 tons	8	1,222,000	458,272	37.5
100,000 or more tons	3	1,500,000	507,784	33.9
Total	16	3,018,000	1,035,261	34.3

1 Combined with 10,000 to less than 25,000 tons to avoid disclosing individual company figures.

PRODUCTION

Output of fuel briquets decreased 6 percent in 1958 as one plant ceased operation and 11 of the 16 active plants reported less production than in 1957. Overall production in this industry has declined steadily since 1950, and output in 1958 was less than half that of the base years, 1947–49.

Sixteen plants in eight States reported production of briquets, but three-fourths of the total output came from Wisconsin and West Virginia. The six companies in Wisconsin again led in output with 392,255 net tons of briquets, but production decreased 12 percent. West Virginia with two companies, ranked second, as output increased 4 percent. All briquets produced in Wisconsin originated in the Lake Dock areas of northern and eastern Wisconsin. Briquets in West Virginia were produced in the southwest mining districts of McDowell and Wyoming counties. Other States in order of output were Missouri, Pennsylvania, Michigan, Illinois, and Indiana.

Because briquets are used principally for space heating during the winter months, production was seasonal and ranged from 171,623 tons in December to 32,159 tons in July.

Table 3 shows production by regions in 1957–58. Production by States cannot be shown because all States except Wisconsin had less than three producing companies.

Raw Fuels.—Seven different types of fuel were used for manufacturing fuel briquets in 1958, but about two-thirds of the total was low-volatile bituminous coal. Other fuels in order of quantities consumed were petroleum coke, Pennsylvania anthracite, high-volatile bituminous coal, semianthracite, other anthracite, and bituminous coke. Of the total, 65 percent was low-volatile bituminous coal; 16 percent,

TABLE 3.—Production and value of fuel briquets in the United States, 1957–58, by regions

Region	1957				1958			
	Active plants	Production (net tons)	Value		Active plants	Production (net tons)	Value	
			Total	Average			Total	Average
Eastern States	4	448,199	$4,982,259	$11.12	4	438,841	$4,780,311	$10.89
Central States	9	513,217	7,781,672	15.16	9	479,452	7,122,644	14.86
Western States	4	143,365	2,038,102	14.22	3	116,968	1,794,214	15.34
Total	17	1,104,781	14,802,033	13.40	16	1,035,261	13,697,169	13.23

TABLE 4.—Production of fuel briquets in the United States in 1958, by months

Month	Net tons	Month	Net tons	Month	Net tons
January	146,117	May	58,870	September	87,441
February	135,057	June	61,449	October	114,479
March	46,123	July	32,159	November	96,331
April	37,903	August	47,709	December	171,623

petroleum coke; and 12 percent, Pennsylvania anthracite. Only small quantities of other fuels were used. Although less low-volatile bituminous coal was consumed in 1958, the quantity in relation to total fuel was about 3 percent higher than in 1957. Slightly lower percentages of both petroleum coke and Pennsylvania anthracite were consumed.

Bituminous coal was used at 11 plants, 8 of which also used other fuels. Seven plants used petroleum coke with other fuels, and six plants used Pennsylvania anthracite with other fuels. Two plants used Pennsylvania anthracite exclusively. Fourteen percent of the raw fuels was yard screenings, but the major part consisted of screened fine coals from bituminous mines, petroleum coke from refineries, and Pennsylvania anthracite fines. No plants used yard screenings exclusively, but six plants used yard screenings with other fuels. Ten plants used only raw fuels other than yard screenings.

The average value per ton for all raw fuels was 4 percent less than in 1957. Average values per ton for low-volatile bituminous coal and Pennsylvania anthracite decreased 6 and 7 percent, respectively, but for petroleum coke increased 3 percent. The values placed on raw fuels, however, are inconclusive, for the quantities of each fuel consumed in each State were not comparable with the preceding year. As in 1957, raw fuels used by plants in the Eastern States region were considerably lower in value than those in other regions, because plants in the Eastern States are near the source of their raw fuels. In other regions particularly Wisconsin, some plants used fuels that were produced in other areas and had been transported long distances. The average value per ton for all raw fuel consumed in 1958 was $7.96. This was 4 percent less than the average value per ton in 1957.

Binders.—Petroleum asphalt was used exclusively as a binder for manufacturing fuel briquets in 1958. Other materials may be used as binders in briquetting, but asphalt is preferred in the United States because of its good cohesive properties, relatively low cost, insolubility

TABLE 5.—Raw fuels used in making fuel briquets in the United States in 1958

Type	Number of plants	Used		
		Net tons	Value	
			Total	Average
Anthracite:				
Pennsylvania	8	119,675	$783,486	$6.55
Other than Pennsylvania	1	(1)	(1)	(1)
Semianthracite	3	20,924	146,060	6.98
Bituminous coal:				
Low-volatile	10	645,039	5,149,417	7.98
High-volatile	1	(1)	(1)	(1)
Petroleum coke	7	158,000	1,573,340	9.96
Coke	1	(1)	(1)	(1)
Undistributed		43,024	204,840	4.76
Total	[2] 16	986,662	7,857,143	7.96

[1] Included with "Undistributed" to avoid dislosing individual company figures.
[2] Some plants used more than one type of raw fuel; hence, the number of plants exceeds the total shown.

in water, and low ash content. Binders generally constitute 6 to 8 percent of the total raw materials (exclusive of water), and in 1958 an average of 149 pounds of asphalt was used for each ton of raw fuel.

The average value per ton for all binder consumed was $28.28, including the cost of a small quantity of spray oil used by two plants for dust control. Average value for binder was 2 percent greater than in 1957 because of slightly higher prices of asphalt in the Eastern and Central States regions. The average price of asphalt consumed in manufacturing 1 ton of fuel briquets was $2.

TABLE 6.—Quantity and value of raw materials used in making fuel briquets in the United States and quantity and value of sales in 1958, by regions

Region	Raw materials used					
	Fuels			Binders [1]		
	Net tons	Value		Net tons	Value	
		Total	Average		Total	Average
Eastern States	415,716	$2,417,742	$5.82	30,534	$974,920	$31.93
Central States	462,735	4,538,968	9.81	34,791	916,110	26.33
Western States	108,211	900,433	8.32	8,757	204,042	23.30
Total	986,662	7,857,143	7.96	74,082	2,095,072	28.28

Region	Total raw materials			Fuel briquets sold		
	Net tons	Value		Net tons	Value	
		Total	Average		Total	Average
Eastern States	446,250	$3,392,662	$7.60	437,978	$4,769,775	$10.89
Central States	497,526	5,455,078	10.96	480,163	7,132,704	14.85
Western States	116,968	1,104,475	9.44	116,968	1,794,214	15.34
Total	1,060,744	9,952,215	9.38	1,035,109	13,696,693	13.23

[1] Includes 632 tons of spray oil used by two plants for dustproofing briquets.

SHIPMENTS

Although briquets have a wide distribution and were consumed in 33 States and the District of Columbia, briquets were consumed principally within the producing State or in nearby States. This statement does not apply, however, to West Virginia and Pennsylvania, which have long shipped most of their production to other States. The terms "distribution" and "consumption" are used synonymously in this report; assuming that briquets were consumed in States where shipments terminated.

Wisconsin, the leading producer and chief consumer of briquets, used 18 percent of the total quantity distributed—largely its own output—but receiving small quantities from Illinois, Missouri, Pennsylvania, and West Virginia. Wisconsin consumed nearly half of its production and shipped the remainder to seven neighboring States and Canada. Minnesota received 43 percent of the Wisconsin out-of-State shipments, and North Dakota and South Dakota received 13 and 15 percent, respectively.

Michigan ranked second in briquet consumption, followed by Missouri, Indiana, and Minnesota. Missouri produced most of its supply, but Michigan and Indiana received the greater part of their requirements from other States, and Minnesota depended entirely upon out-of-State production.

Because cheaper fuels are readily available in all sections of West Virginia, virtually all briquet production was shipped to 15 other States and Canada. Indiana, Michigan, Ohio, and Virginia, the chief consumers of briquets manufactured in West Virginia, received 25 percent, 22 percent, 16 percent, and 12 percent, respectively. Pennsylvania also shipped most of its production, mainly to the Atlantic coastal States and Canada.

Seventy-six percent of the total in 1958 was shipped by rail. The type of transportation varies somewhat in different regions, however. In the Eastern States region, 98 percent of the briquets was shipped by rail, mostly to distant States. In the Central States region many large producers in Wisconsin shipped briquets by rail to other States; however, several Central States (Michigan, Missouri, and Indiana) consumed most of their production and shipped principally by truck.

Shipments to foreign countries, only 55,000 tons, were small in 1958. Export data as shown by the Bureau of Mines (table 7) differ slightly from those compiled by the Bureau of the Census (table 9) because some briquets that producers reported as shipped to other States may eventually have been shipped to other countries by export firms in those States. Moreover, the Bureau of Mines included briquets made from petroleum products, whereas the Bureau of the Census excluded them.

Shipments of briquets by States of origin could not be shown because of the small number of producing companies in most States.

TABLE 7.—Destination of shipments of fuel briquets, 1957–58, in net tons

[Based upon reports from producers showing destination of briquets used or sold]

Destination	1957	1958	Destination	1957	1958
Arkansas	1,163	1,349	North Carolina	28,399	36,698
Connecticut	1,199	1,128	North Dakota	30,606	28,669
Delaware	38	58	Ohio	65,123	63,186
District of Columbia	340	546	Oklahoma	1,403	36
Florida	150	203	Pennsylvania	6,757	7,063
Illinois	73,993	64,989	Rhode Island	428	208
Indiana	98,558	102,274	South Carolina	2,537	2,563
Iowa	31,864	31,614	South Dakota	37,534	33,887
Kansas	6,062	6,153	Tennessee	1,518	1,352
Kentucky	4,135	4,665	Vermont	929	794
Maine	4,129	3,207	Virginia	36,122	45,664
Maryland	5,301	4,723	Washington	1,181	1,333
Massachusetts	3,748	3,243	West Virginia	845	1,284
Michigan	127,462	126,648	Wisconsin	206,652	188,686
Minnesota	109,335	92,973			
Missouri	132,690	125,640	Total	1,033,836	992,402
Nebraska	6,477	6,393	Exported	68,689	42,707
New Hampshire	1,500	996			
New Jersey	1,327	936	Grand total	1,102,525	1,035,109
New York	4,331	3,241			

TABLE 8.—Shipments of fuel briquets in the United States, 1957–58, by methods of transportation, in net tons [1]

Origin	1957			1958		
	Rail	Truck [2]	Total	Rail	Truck [2]	Total
Eastern States	436,877	8,795	445,672	428,763	9,215	437,978
Central States	374,066	136,294	510,360	338,262	139,581	477,843
Western States	34,149	109,740	143,889	22,574	94,394	116,968
Total	845,092	254,829	[3] 1,099,921	789,599	243,190	[3] 1,032,789

[1] Includes shipments destined for export as reported by producers directly to the Bureau of Mines.
[2] Includes small quantity shipped by barge.
[3] An additional 2,604 tons was used by 1 producer in 1957 as fuel and 2,320 tons by 1 producer in 1958.

VALUE AND PRICE

Briquet prices remained firm during 1958 and average sales values were comparable with 1957, although total sales value was somewhat lower because of the 6 percent decrease in production. Virtually all briquets manufactured in 1958 were sold and the value of production and sales was about equal. The value of production is calculated by multiplying total production by average receipts per ton, f.o.b. plant, of commercial sales. According to producer reports, the average value per ton for commercial sales in 1958 was $13.23, a decrease of 1 percent from 1957.

The average value per ton for briquets produced in the Eastern States was about one-third lower than those produced in other regions, owing to the aforementioned use of fuels that originated at or near the plants in contrast to the use of large quantities of more costly transported fuels in the Central and Western States regions.

The average value per ton for raw materials used in 1958 was $9.38, and the average value per ton for sales, f.o.b. plant, was $13.23. Raw-material costs were slightly lower than in 1957 because prices were lower for raw fuels in the Eastern and Central States. The cost of binders increased in these regions, raising the average value per ton for all binders 2 percent over the 1957 figure.

Virtually all briquets were sold in bulk, but a small quantity (1,366 tons) was marketed in bags and cartons. The average sales value, f.o.b. plant, of these packaged briquets was $25.50 a ton, compared with $13.22 a ton for bulk sales.

FOREIGN TRADE [1]

Foreign trade was relatively unimportant in 1958; imports were negligible; and only 4 percent of total shipments was exported. Exports declined substantially during the past decade, and in 1958 only about one-fourth as many briquets were shipped to foreign countries as during the base years, 1947–49.

Canada received 97 percent of the total quantity exported. These shipments came chiefly from Pennsylvania and Wisconsin. Brazil, Mexico, and Guatemala received the remaining 3 percent.

Only 184 tons of briquets valued at $2,174 was imported entirely from Canada.

Export data (table 9) on fuel briquets were compiled and published by the Bureau of the Census, but only briquets made from coal and coke were included.

TECHNOLOGY

Briquetting technology was advanced in 1958 with the issuance of several patents on new briquetting processes. A method for making briquets, in which coal is heated to its fusing temperature after admixture with less than 8 percent of a fluxing agent, is described in a United States patent (No. 2,824,790) issued in 1958. In this process the hot mixture is briquetted by applying pressure while the mixture is fused and at a temperature exceeding 250° C. but below the decomposition temperature of the fuel used. The fluxing agent may be coal tar, coal-tar byproducts, pitch, bitumen, petroleum distillation products, or tars and oils recovered from the distillation of wood.

A British patent (No. 790,024) issued in 1958 describes a process for briquetting coal, coal and coke, and coal and semicoke mixtures without a binder. In this method fine-grained raw fuel is preheated to a temperature just below its softening point and then further heated rapidly by compression to the temperature region of optimum moldability. This process fuses the fine grains of the briqueting material into homogeneous, shaped bodies.

A method for making briquets water- and weather-resistant is outlined in a German patent (No. 929,904). Briquets made from brown coal and similar fuels can be weatherproofed by treating the fuel before or after briquetting with organic silicon compounds such as alkyl silanes, their halogen derivatives, or hydrolysis products of these compounds. Silicones, siloxanes, and silicone oils and resins also may be used.

Briquetting coals without binders was investigated by the Central Fuel Research Institute, Jealgora, India. These investigations

[1] Figures on imports and exports compiled by Mae B. Price and Elsie D. Jackson, Division of Foreign Activities, Bureau of Mines, from records of the Bureau of the Census.

TABLE 9.—Fuel briquets (coal and coke) exported from the United States, 1956–58, by countries of destination and custom districts

[Bureau of the Census]

	1956		1957		1958	
	Net tons	Value	Net tons	Value	Net tons	Value
COUNTRY						
North America:						
Canada	107,122	$1,709,528	86,242	$1,376,904	53,311	$867,662
Guatemala					50	1,270
Mexico					62	3,042
Total	107,122	1,709,528	86,242	1,376,904	53,423	871,974
South America:						
Bolivia			222	5,678		
Brazil	130	3,245			1,538	26,915
Total	130	3,245	222	5,678	1,538	26,915
Africa: Liberia	200	3,467				
Grand total	107,452	1,716,240	86,464	1,382,582	54,961	898,889
CUSTOMS DISTRICT						
Arizona	(1)	(1)			36	360
Buffalo			34,219	588,243	22,408	395,409
Dakota			16,683	233,825	10,463	153,886
Duluth and Superior			12,148	176,250	9,738	142,864
Galveston					26	2,682
Massachusetts			30	705		
Michigan			4,651	52,762	2,872	35,444
Minnesota					50	575
New Orleans			222	5,678		
Ohio			90	1,053		
Philadelphia					1,538	26,915
St. Lawrence			15,308	285,219	7,350	134,604
Vermont			1,203	15,457		
Other [2]			1,910	23,390	480	6,150
Total	107,452	1,716,240	86,464	1,382,582	54,961	898,889

[1] Data not available.
[2] Estimated from sample data; district data not available.

showed that the strength of briquets obtained from coals of different rank was largely influenced by briquetting pressure, particle size, and moisture content; the extent of influence for each depended upon the rank of the coal.[2] Maximum strength was obtained when briquetting at a moisture content corresponding to that of the air-dried moisture (40° C. and 60 percent relative humidity), but the strength of the briquets decreased with the rank of coal as follows: Medium rank, high rank, and low rank. However, strong briquets were obtained from coal of all ranks by using minus-72-mesh British Standard Specification size coal, compressed at suitable pressures. The term "rank" is used to denote carbon content.

PACKAGED FUEL

CAPACITY

Annual productive capacity of the packaged-fuel industry decreased 6 percent in 1958 as four plants with a total capacity of more than

[2] Iyengar, M. S., Subramanian, T. A., Ghosal, A., and Lahiri, A., Binderless Briquetting of Coals: Jour. Inst. of Fuels, vol. 31, No. 206, March 1958, pp. 108–115.

10 thousand tons were either idle or abandoned. One of these small plants reported production in 1957 but did not reply in 1958 and was assumed to be idle. The decrease in capacity was offset slightly, however, by 1 new plant and by 3 plants, idle in 1957, that reported small production in 1958. This industry declined rapidly during the past decade; capacity at the end of 1958 was less than half that of the base years, 1947–49. Packaged-fuel plants are small and the rated annual capacity of 17 of the 23 active plants was less than 5,000 tons.

TABLE 10.—Annual capacity and production of packaged-fuel plants in the United States, 1954–58

	Active plants	Annual capacity (net tons)	Production	
			Net tons	Percent of capacity
1954	37	243,300	77,360	31.8
1955	31	198,400	69,212	34.9
1956	26	174,600	64,960	37.2
1957	23	150,200	47,287	31.5
1958:				
Plants with capacity of—				
Less than 5,000 tons	17	36,000	7,372	20.5
5,000 to less than 10,000 tons	2	[1] 105,800	[1] 28,397	[1] 26.8
10,000 to less than 15,000 tons	2			
15,000 to less than 25,000 tons	1			
25,000 or more tons	1			
Total	23	141,800	35,769	25.2
Plants with production of—				
Less than 1,000 tons	18	43,800	8,059	18.4
1,000 to less than 3,000 tons	2	[1] 98,000	[1] 27,710	[1] 28.3
3,000 to less than 5,000 tons	1			
5,000 to less than 10,000 tons	1			
10,000 or more tons	1			
Total	23	141,800	35,769	25.2

[1] Combined to avoid disclosing individual company figures.

PRODUCTION

Packaged-fuel production was 24 percent lower than in 1957, owing in part to the smaller number of operating plants; most of the active plants operated at lower rates and the production rate for the industry was 6.3 points lower than in 1957. Fifteen of the active plants reported less production in 1958 than in the preceding year.

Seven States produced packaged fuel in 1958; output decreased in all States except Minnesota and Virginia, where there were 2 producers in each State compared with only 1 each in 1957. Michigan was the leading producer (45 percent of the total) followed by Indiana, Ohio, and Wisconsin. These four States produced 93 percent of all packaged fuel manufactured in 1958. Like fuel briquets, packaged fuel is also used for space heating and demand is seasonal. Production varied directly with demand because packaged fuel deteriorates when stored; the monthly output ranged from 6,428 tons in January to 397 tons in July.

Raw Fuels.—Except for a small quantity of petroleum coke that was used by two producers, low-volatile bituminous coal was the only fuel used for manufacturing packaged fuel in 1958. About one-fourth of the raw fuel was yard screenings that had accumulated in coal yards; the other three-fourths came from other sources and consisted chiefly of coal fines that were screened at mines or accumulated at loading and unloading points. Twelve plants used yard screenings exclusively; five used only other fuels; and six plants used both yard screenings and other fuels.

The average value per ton for raw fuel was $10.21 compared to $10.47 in 1957. Raw fuel was the highest in value per ton in Minnesota and lowest in Virginia.

TABLE 11.—Production and value of packaged fuel in the United States, 1957–58, by States

State	1957				1958			
	Active plants	Production (net tons)	Value		Active plants	Production (net tons)	Value	
			Total	Average			Total	Average
Indiana	3	6,998	$139,960	$20.00	3	5,945	$119,941	$20.18
Michigan	5	24,159	542,437	22.45	5	16,069	369,438	22.99
Ohio	10	7,113	132,101	18.57	8	5,656	112,003	19.80
Other States [1]	5	9,017	207,764	23.04	7	8,099	226,734	28.00
Total	23	47,287	1,022,262	21.62	23	35,769	828,116	23.15

[1] Comprises 2 plants each in Illinois, Minnesota, and Virginia and 1 plant in Wisconsin.

TABLE 12.—Production of packaged fuel in the United States in 1958, by months

Month	Net tons	Month	Net tons	Month	Net tons
January	6,428	May	590	September	2,452
February	5,331	June	466	October	3,412
March	3,279	July	397	November	3,829
April	2,663	August	1,563	December	5,359

Binders.—Starch is the preferred binder for packaged fuel and was used by 22 of the 23 producing plants in 1958. Although starch has a relatively high value ($134.40 per ton in 1958), only small quantities are required, and in 1958, only 10 pounds of starch (value—$0.67) was used for manufacturing each ton of packaged fuel by the plants that employed starch as a binder. In comparison, 142 pounds of asphalt (value—$2) was used in manufacturing each ton of fuel briquets.

Table 13 lists, by regions, the number of tons and value of binders consumed in 1958. The total average value per ton for binders ($58.38) is considerably lower than the average value of starch binders because one plant in the Central States region produced packaged fuel, using asphalt as a binding material. This plant, however, used a much higher percentage of binder than the plants that used starch.

SHIPMENTS

All packaged fuel produced was sold and shipped entirely by truck. Shipments were about 3 percent greater than output because one producer shipped a small quantity of packaged fuel that had been produced earlier. Normally, packaged fuel is not stocked because it deteriorates rapidly unless properly stored indoors. Eighty-five percent of the shipments were delivered locally. The remainder was reported shipped to other than local destinations, but this packaged fuel was probably consumed within the producing State or in nearby States. No packaged fuel has been shipped by rail since 1953. A small quantity of packaged fuel is sold by vending machines.

TABLE 13.—Quantity and value of raw materials used in making packaged fuel in the United States and quantity and value of sales in 1958, by regions

Region	Raw materials used					
	Fuels			Binders		
	Net tons	Value		Net tons	Value	
		Total	Average		Total	Average
Eastern States	6,593	$58,862	$8.93	38	$4,802	$126.37
Central States	28,986	304,506	10.51	485	25,733	53.06
Western States	(1)	(1)	(1)	(1)	(1)	(1)
Total	35,579	363,368	10.21	523	30,535	58.38

Region	Total raw materials			Packaged fuel sold		
	Net tons	Value		Net tons	Value	
		Total	Average		Total	Average
Eastern States	6,631	$63,664	$9.60	6,602	$133,681	$20.25
Central States	29,471	330,239	11.21	30,260	720,150	23.80
Western States	(1)	(1)	(1)	(1)	(1)	(1)
Total	36,102	393,903	10.91	36,862	853,831	23.16

[1] Combined with "Central States" to avoid disclosing individual company figures.

TABLE 14.—Shipments of packaged fuel in the United States, 1954–58, by methods of transportation, in net tons

Year	Shipped by truck		
	Local sales	Other than local sales	Total
1954	78,464		78,464
1955	57,051	12,159	69,210
1956	51,933	11,482	63,415
1957	39,739	7,475	47,214
1958	36,862	(1)	36,862

[1] Combined with "Local sales" to avoid disclosing individual company figures.

VALUE AND PRICE

The total value, f.o.b. plant, of packaged fuel manufactured in 1958 declined 19 percent, chiefly because of the large decrease in production. Average prices, however, were higher than in 1957 and the average value per ton for commercial plant sales increased about 7 percent. The average value per ton for the raw ingredients was $10.91; and the average value per ton for sales of the packaged fuel, f.o.b. plant, was $23.16. The average value per ton for both raw fuels and binders was 4 percent lower than in 1957.

The value of packaged fuel was much higher than fuel briquets because manufacturing costs are higher and marketing methods are different. In 1958 the average sales value per ton, f.o.b. plant, for packaged fuel was $23.16 compared with $13.23 for fuel briquets. Most packaged-fuel plants are small, and packaged fuel usually is sold in small quantities directly to the consumer.

The average sales value, f.o.b. plant, of packaged fuel produced in Wisconsin was the highest and in Minnesota, the lowest. These values cannot be shown, however, because of the small number of producers in these States.

WORLD REVIEW [3]

Estimated world production of fuel briquets and packaged fuel in 1958 was 116.8 million tons, compared with 120.8 million tons in 1957. This 3-percent decrease from 1957 was due chiefly to declining production in France and West Germany. As in other years, production was greatest in Europe where large quantities of low-rank coals were converted into briquets. East Germany produced 51 percent of the world total; West Germany manufactured 21 percent. Briquets in both countries were made chiefly from lignite, of which each country has extensive reserves. Briquets add greatly to the fuel economy in both German countries where briquetting of low-rank coals has been practiced on a large scale for many years.

The Soviet Union and France produced 8 percent and 7 percent, respectively, of the world total; 18 other European countries produced smaller quantities. Japan and the United States were the only non-European nations that produced more than 1 million tons. Japan ranked fifth in world production (2 percent of the world total) and the United States (1 percent) ranked tenth.

Briquetting serves a different purpose in the United States than in most other countries. In the United States, briquetting is basically a salvage process that transforms valuable, but unmarketable, fine materials into a product that can be transported and utilized efficiently, but in other countries, particularly in Europe, the briquetting process is primarily a means of using low-rank coals and peat.

[3] Figures on world production compiled by Pearl J. Thompson and Berenice B. Mitchell, Division of Foreign Activities, Bureau of Mines.

TABLE 15.—World production of fuel briquets and packaged fuel in 1954–58, by countries, in thousand net tons [1]

Country	1954	1955	1956	1957	1958
North America:					
Canada	831	654	753	395	[2] 340
United States:					
Briquets	1,624	1,630	1,519	1,105	1,036
Packaged fuel	77	69	65	47	36
Total	2,532	2,353	2,337	1,547	1,412
South America: Peru	----------	4	[2] 4	[2] 9	9
Europe:					
Austria	9	12	8	13	2
Belgium	1,519	1,713	2,004	2,023	1,143
Bulgaria [2]	250	250	255	255	275
Czechoslovakia:					
Bituminous	173	384	324	365	[2] 370
Lignite	448	327	348	340	[2] 340
Denmark	97	91	94	[2] 165	[2] 165
Finland	----------	----------	11	11	13
France	7,422	7,392	8,673	9,100	7,813
Germany:					
East, lignite	51,698	56,218	56,879	58,863	[2] 59,300
West:					
Bituminous	6,647	7,621	8,498	8,624	6,521
Lignite	18,372	18,123	18,691	18,547	18,107
Hungary	538	755	725	806	[2] 990
Ireland	40	47	56	37	42
Italy, anthracite	23	28	28	18	[2] 11
Netherlands:					
Bituminous	1,012	1,076	1,139	1,259	1,197
Lignite	90	94	86	89	83
Poland:					
Bituminous	745	770	714	732	[2] 720
Lignite	158	202	206	257	[2] 260
Portugal	100	106	112	100	[2] 90
Rumania [2]	285	285	285	300	300
Spain	1,226	1,303	1,427	1,523	[2] 1,590
Sweden	60	77	71	[2] 77	[2] 77
Switzerland [2]	110	110	110	110	110
U.S.S.R. [2]	9,400	9,400	9,400	9,400	9,400
United Kingdom	1,884	1,883	1,990	2,359	[2] 2,480
Yugoslavia	[2] 28	28	----------	[2] 8	[2] 11
Total	102,300	108,300	112,100	115,400	111,400
Asia:					
Indonesia	37	37	25	37	[2] 39
Japan	2,724	2,905	[2] 2,980	2,567	[2] 2,540
Korea, Republic of	46	101	406	363	[2] 390
Pakistan [2]	13	13	13	13	13
Turkey	99	103	75	65	[2] 65
Vietnam	50	[2] 55	[2] 55	[2] 55	[2] 55
Total	2,969	3,214	3,554	3,100	3,102
Africa:					
Algeria	32	26	34	47	[2] 50
Morocco: Southern Zone	17	19	19	21	20
Tunisia	8	10	4	6	[2] 5
Total	57	55	57	74	75
Oceania:					
Australia	688	712	692	683	[2] 740
New Zealand	14	14	18	18	[2] 18
Total	702	726	710	701	758
World total [2]	108,560	114,650	118,760	120,830	116,760

[1] Includes briquets made from coal, lignite, and peat and revisions of data published previously. Data do not add to totals shown, owing to rounding.
[2] Estimated.

Peat

By Eugene T. Sheridan and Virginia C. Berté

Contents

GENERAL SUMMARY

PEAT PRODUCTION in the United States continued to increase in 1958 and established a new record of 327,813 tons valued at $3,445,767. This quantity was 4 percent more peat than was produced in 1957 and nearly 2½ times the average produced in 1947–49. Imports also increased and peat available for domestic consumption was about 6 percent greater than in 1957.

Seventy-nine commercial peat producers in 21 States reported production in 1958. Michigan led production with about one-third of the total followed by Florida and Washington. The combined production of these three States was more than half of the total output.

Eleven percent of the production was reported as moss peat, 38 percent as reed-sedge peat, and 51 percent as peat humus. Eighteen percent of the total output was raw peat with no preparation other than air-drying. The remainder was processed by shredding, pulverizing, and/or kiln-drying.

Most of the peat consumed in 1958 was used for general soil improvement although small quantities were used in mixed fertilizers and potting soils, for earthworm culture, for packing flowers, and for inoculating seed. The greater part of the total sales was bulk, but nearly one-third was packaged. Domestic peat was widely distributed for consumption in 44 States, the District of Columbia, and Canada.

Average unit values for peat were slightly lower than in 1957 as the average value per ton for all peat produced dropped from $10.94 to $10.51. Moss peat was the highest in value per ton; reed-sedge peat, second; and humus, third. These values are inconclusive, however, because the value of any type depends chiefly upon the amount

TABLE 1.—Salient statistics of the peat industry in the United States, 1947–49 (average) and 1955–58

	1947–49 (average)	1955	1956	1957	1958
Number of operations	45	82	75	76	81
Production net tons	131,782	273,669	272,972	316,217	327,813
Value of production	$939,518	$2,282,865	$2,319,957	$3,458,459	$3,445,767
Average per net ton	$7.13	$8.34	$8.50	$10.94	$10.51
Imports [1] net tons	88,462	229,310	247,689	246,759	269,096
Available for consumption [2] do	220,244	502,979	520,661	562,976	596,909
World production do	50,000,000	66,090,000	[3] 59,010,000	[3] 69,260,000	65,670,000

[1] Compiled from records of the U.S. Department of Commerce.
[2] Production plus imports.
[3] Revised figure.

of processing and whether it is sold in bulk or packaged. The average value per ton for peat sold in bulk was $6.68 compared with $18.96 per ton for packaged peat.

GOVERNMENT REGULATIONS

No national standards have been developed for the various types of peat because the chemical and physical properties of peat are so varied and the quantity consumed annually in the United States is relatively small. The peat industry is governed by trade-practice rules, however, that promote fair competitive practices, which protect both the industry and the public. Established by the Federal Trade Commission in 1950, these rules specified: the prevention of unfair or deceptive trade practices in marketing; the prohibition of certain misrepresentations; and the deceptive use of trade or corporate names. They also define the requirements for labeling a product "peat" and also state the manner in which the terms "peat moss" and "moss peat" may be used. Peat is defined as "any partly decomposed vegetable matter, which is accumulated under water or in a water-saturated environment through the decomposition of mosses, sedges, reeds, tule, trees, or other plants." A product labeled "peat" must be 75 percent (by weight, dry basis) peat, and the remainder must consist of normally associated soil materials. Peat labeled "moss peat" must be 75 percent derived from sphagnum, hypnum, mnium, and/or other moss and the remainder normally associated soil substances. The label "peat moss" may be used without these qualifications if the requirements for "peat" are fulfilled, and its composition is listed. Under this provision, peat formed predominantly from reeds and sedges may be labeled "peat moss—reed-sedge."

The trade-practice rules also prohibit certain discriminatory practices in prices, brokerage and commissions, advertising or promotional allowances, and allowances for services and facilities.

The Federal Supply Service, General Services Administration, has developed specifications to be used by all United States Government agencies that purchase peat. Federal Specification Q–P–166c (December 17, 1958) divides peat into types and classes and lists the requirements for each. It also supplies pertinent information on sampling, inspection and testing procedures, packaging and marking requirements, and other related facts.

SCOPE OF REPORT

Data on the peat industry have been published annually by the Bureau of Mines since 1934 when it resumed the survey, which was conducted by the Federal Geological Survey from 1908 to 1926. All data, except as noted, were based upon voluntary reports supplied by producers.

Complete coverage of the industry was attempted; questionnaires were mailed to 143 companies. Mailing lists are kept current by requesting producers to furnish names and addresses of other producers in their areas and by checking individual State mineral and commodity production reports. Of the 143 companies canvassed, 79 reported production at 81 operations; 16 were temporarily idle; 8 discontinued peat production; and 40 did not reply or stated that they were not peat producers. Because of the nature of the peat industry in the United States, a few producers probably were not canvassed, either because they operated intermittently in recent years or started commercial production late in the year and were not on the 1958 Bureau of Mines mailing list.

Peat in this report is classified into 3 general types—moss peat, reed-sedge peat, and peat humus. Moss peat consists of the slightly or moderately decomposed remains of several species of sphagnum, hypnum, and/or other mosses and is normally acid in reaction. Reed-sedge peat is formed principally from reeds, sedges, and/or other swamp or marsh plants and is slightly acid, neutral, or slightly alkaline in reaction. Humus is any peat so decomposed that its biological identity is lost.

Production for the different types is reported as raw peat and processed peat. Raw refers to any type that has received no processing other than air-drying. Processed peat was subjected to one or more of the following processes: (1) Shredding, (2) pulverizing, and (3) kiln-drying. Although not considered processed peat, 23 percent of the total production was cultivated—a preparation method in which the surface layer of a deposit is turned over at intervals for 1 or 2 years before excavation begins. Cultivation breaks up the peat and makes it more humified by exposing peat under the surface to air.

Data were collected on the location of operations, size of deposits, types of equipment, quantities produced, type of preparation, quantity and value of bulk and packaged sales, major uses, and destination of shipments. The quantities of peat sold according to use include only peat produced in the United States. Imported peat is classified only "Poultry and Stable grade" and "Fertilizer grade"; no information is available on its ultimate uses. Normally, peat is not stocked; however, there is a small difference between the quantities produced and sold as some producers excavate peat and allow it to cure outdoors until the following year, when it is sold. Peat available for consumption is considered equal to production plus imports as only a very small quantity of peat is exported. All values of domestically produced peat are based upon producers selling prices at the operation, exclusive of containers.

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The average of the 3-year period, 1947–49, was used as a base for measuring production and consumption trends. All quantities were reported in short tons of 2,000 pounds.

RESERVES

Field investigations conducted by the Federal Geological Survey in 1909 and 1922 determined that peatlands in the United States contained an estimated 13.8 billion tons of air-dried peat. These deposits remain virtually intact because, since 1922, only 3.7 million tons or 0.026 percent of the total has been recovered.

The major peat deposits are, roughly, in two general regions, the Northern and the Atlantic Coast, but large deposits are found also in a narrow belt of land adjoining the Gulf Coast, in California, and in the basins of several lakes and rivers in Oregon and Washington.

Peat occurs in 30 States, but about two-thirds of the total is in Minnesota and Wisconsin. These States are in the northern region, which also includes Michigan, New York, New Jersey, and New England, and northern parts of Ohio, Iowa, Illinois, Indiana, and Pennsylvania. The largest reserves, 6.8 billion tons, are in Minnesota, covering about one-tenth of the total land area of the State. The second largest deposits, approximately 1 million acres capable of yielding 2.5 billion tons, are in Wisconsin. Eighty percent of the total reserves are in the Northern region. In this region peat has generally formed in basins that resulted from glacial action; mosses, reeds, sedges, and grasses contributed heavily to its formation.

The Minnesota and Wisconsin deposits occur principally in wooded swamps and consist chiefly of a well-decomposed, black underlayer of fine-grained peat overlain with a slightly decomposed, fibrous, brown layer of built-up peat, mainly sphagnum mosses. Large quantities of sphagnum-moss peat are found in the muskeg and tamarack swamps of northern Minnesota and Wisconsin.

The northern peninsula of Michigan contains extensive deposits of peat, similar in most respects to those in Minnesota and Wisconsin. Many smaller peat deposits in the southern peninsula have formed largely in swamps and marshes from grasses and sedges.

Peat deposits in other States of the Northern region excluding New England were formed principally in marshes, lakes, and ponds from mosses, shrubs, reeds, sedges, and grasses. These peats generally are more decomposed than that of Minnesota and Wisconsin. Some sphagnum-moss peat is also found in the other northern region States; but, in general, sphagnum was not a substantial contributor to peat formation in this area.

Peat deposits occur in all New England States but four-fifths are in Maine. These deposits, chiefly the filled-basin type, contain soft, well-decomposed peat covered with brown, fibrous, moss peat. In eastern Maine extensive areas of sphagnum-moss peat occur. Most deposits of this type in the United States have accumulated on top of peat formed from other types of vegetation, but these deposits have resulted from a gradual buildup of the same plant materials on flat or gently sloping surfaces. Peat in these bogs is relatively homogeneous, mostly sphagnum mosses, heath shrubs, and associated conifers.

TABLE 2.—Known original reserves of peat in the United States, estimated on an air-dried basis, by regions and States, in thousand net tons [1]

Region and State	Reserves	Region and State	Reserves
Northern region:		Atlantic Coast region:	
Minnesota	6,835,000	Virginia and North Carolina	700,000
Wisconsin	2,500,000	Florida	2,000,000
Michigan	1,000,000	Other States [2]	2,000
Iowa	22,000		
Illinois	10,000	Total	2,702,000
Indiana	13,000		
Ohio	50,000	Other regions:	
Pennsylvania	1,000	Gulf Coast [3]	2,000
New York	480,000	California	72,000
New Jersey	15,000	Oregon and Washington	1,000
Maine	100,000		
New Hampshire	1,000	Total	75,000
Vermont	8,000		
Massachusetts	12,000		
Connecticut	2,000		
Rhode Island	1,000		
Total	11,050,000	Total all regions	13,827,000

[1] Geological Survey, Coal Resources of the United States (Progress Report): Circ. 293, Oct. 1, 1953, p. 38.
[2] Includes Delaware, Maryland, South Carolina, and Georgia.
[3] Excludes Florida.

The Atlantic Coast region includes southern Delaware; the eastern parts of Maryland, Virginia, North Carolina, South Carolina, and Georgia; and all of Florida. Peat in this area has formed largely in marshes and swamps from trees, reeds, sedges, and marsh grasses. The largest deposits in this region are in Virginia, North Carolina, and Florida. The Dismal Swamp area contains the largest deposits in Virginia and North Carolina; peat is found in almost all parts of Florida, which ranks third in total peat reserves.

PRODUCTION

Peat production in the United States continued to rise in 1958; nine States reported production increases, and 1 additional State produced peat. However, production decreased in 11 States and total output was only 4 percent greater than in 1957.

Michigan led with 33 percent of total production, one-third higher than in 1957; three plants were added during the year. Washington and Florida were second, each providing 11 percent of the total output. Production in Washington decreased 12 percent, and came from 11 plants; one was not active in 1958. Florida's production came from the same number of operations (9) as in the preceding year and was only slightly less than in 1957. Peat production in Ohio came from eight operations.

Fifty-one percent of the total production was reported as peat humus; 38 percent, reed-sedge peat; and 11 percent, moss peat. Eighteen percent was produced as raw peat with no preparation other than having been air-dried. Included, however, was a small percentage of cultivated peat, which was sold as excavated from bog without further preparation. The remainder was processed peat that was prepared by shredding, pulverizing, and/or kiln-drying. Of the total processed peat, 95 percent was shredded and 5 percent, kiln-dried.

Production methods varied greatly in 1958, but virtually the entire quantity was excavated by machinery. Draglines were used for excavating by 42 plants while power shovels, bucket loaders, clamshells, dredges, and backhoes were employed at the remaining plants. Bulldozers were used at 32 operations. The most popular type of equipment (excluding trucks) was the front-end loader, which was used at 53 operations. This all-purpose machine can be used for excavating as well as loading. Hammermills and various types of shredding machines were used by 72 operators for producing shredded peat. One plant employed a hydraulic baler for compressing hand-cut moss peat into bales.

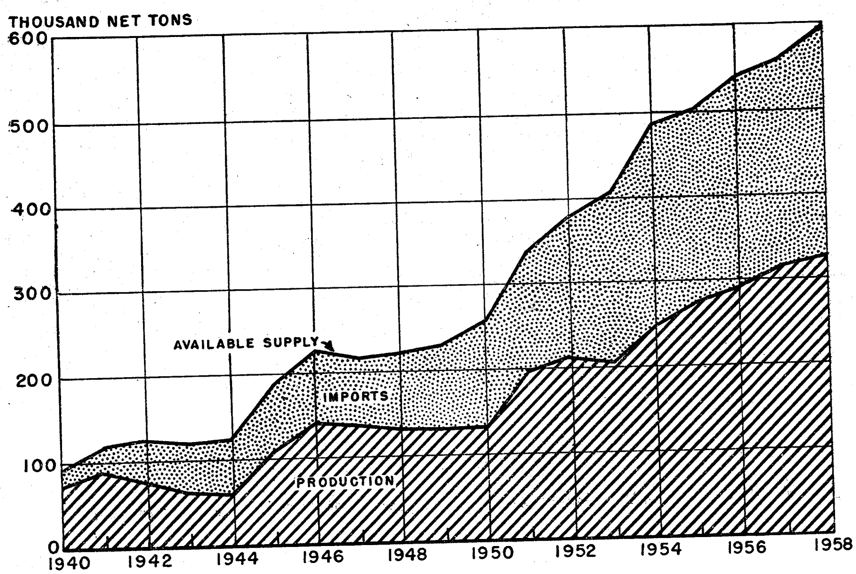

FIGURE 1.—Production, imports, and available supply of peat in the United States, 1940–58.

TABLE 3.—Peat produced in the United States, 1957–58, by States

State	1957			1958		
	Number of operations	Net tons	Value	Number of operations	Net tons	Value
California	5	35, 916	$424, 362	5	28, 617	$373, 743
Colorado	2	3, 559	(1)	3	7, 143	40, 600
Connecticut	3	2, 004	11, 268	4	1, 764	11, 255
Florida	9	37, 844	194, 937	9	36, 438	165, 123
Georgia	3	4, 690	44, 496	2	4, 491	(1)
Idaho	1	(1)	(1)	1	(1)	(1)
Illinois	4	11, 480	106, 321	4	11, 588	72, 495
Indiana	8	13, 805	129, 750	5	12, 106	144, 974
Iowa	2	(1)	(1)	3	(1)	(1)
Maine	2	3, 770	175, 173	1	(1)	(1)
Massachusetts	1	600	(1)	1	1, 014	(1)
Michigan	5	80, 271	1, 406, 195	8	107, 342	1, 683, 980
Minnesota	1	1, 300	(1)	2	(1)	(1)
New Hampshire	1	85	(1)	1	100	(1)
New Jersey	2	(1)	(1)	3	18. 397	184, 857
New York	1	(1)	(1)	3	13, 606	116, 836
Ohio	8	5, 478	102, 074	8	5, 660	103, 593
Pennsylvania	5	26, 086	235, 752	5	23, 623	202, 718
South Carolina	----------	----------	----------	1	4, 865	(1)
Washington	12	39, 364	153, 274	11	34, 642	115, 941
Wisconsin	1	400	(1)	1	(1)	(1)
Undistributed	----------	49, 565	474, 857	----------	16, 417	229, 652
Total	76	316, 217	3, 458, 459	81	327, 813	3, 445, 767

[1] Included with "Undistributed" to avoid disclosing individual company figures.

TABLE 4.—Peat produced in the United States in 1958, by kinds, in net tons

Kind	Total			Raw [1]		Processed		Type of processing	
	Quantity	Value		Quantity	Value	Quantity	Value	Shredded	Kiln-dried
		Total	Average						
Moss	36, 989	$521, 970	$14. 11	8, 997	$124, 328	27, 992	$397, 642	23, 416	[2] 4, 973
Reed-sedge	124, 697	1, 758, 657	14. 10	14, 365	101, 221	110, 332	1, 657, 436	110, 332	-------
Humus	166, 127	1, 165, 140	7. 01	36, 743	190, 496	129, 384	974, 644	121, 454	7, 930
Total	327, 813	3, 445, 767	10. 51	60, 105	416, 045	267, 708	3, 029, 722	255, 202	12, 903

[1] Includes 10,905 tons of cultivated peat that was not processed; does not include 65,977 tons of cultivated peat that was further processed.
[2] Includes 397 tons of shredded peat, further processed by kiln-drying.

CONSUMPTION, USES, AND SHIPMENTS

As production and imports of peat were in record quantities and exports were negligible, more peat was available for consumption in the United States in 1958 than in any previous year. Both production and imports have increased steadily during the past decade and the quantity of peat available in 1958 was more than 2½ times greater than in 1947–49.

Peat was distributed in 44 States, the District of Columbia, and Canada in 1958. About two-thirds of the total was sold in bulk and consumed chiefly within the producing State. Packaged sales were 24 percent higher than in 1957 and nearly three times greater than in 1955, the first year that these data were collected. Before 1955 virtually all peat was sold in bulk; no materials for economically packaging air-dried peat without deterioration were available, but development of synthetic films (notably polyethylene), has provided inexpensive materials for this purpose. Domestic peat is now nationally distributed. Most packaged peat is shipped in 25-, 50-, and 100-pound polyethylene-lined bags.

Peat was employed for various purposes, but 90 percent was sold for general soil improvement, of which 29 percent was packaged. Although data are not available on the specific end uses for this peat, the major part was used for constructing lawns and golf-course greens, improving garden soils, and mulching evergreens and shrubs. Greenhouse and nursery owners used peat to germinate seeds, start cuttings, and mulch soils.

Five percent of the peat was mixed with sand or loam and sold in small packages for potting soils, principally in retail stores. Only 21 percent was reported as sold in bulk, but virtually the entire quantity was packaged, as firms bought the bulk peat for mixing and packaging.

The remainder of the peat sold in 1958 was used for various other purposes. Five producers sold 3,825 tons for packing flowers and three producers sold 209 tons as an earthworm-culture medium. The remainder was used in mixed fertilizers, as seed inoculants, and for mushroom and tobacco-seed beds.

In other years substantial quantities of peat were kiln-dried and added to mixed fertilizers to prevent stickiness and caking. This practice now has been virtually discontinued because a process known as pelletizing eliminates the need for a conditioning agent in fertilizers. Virtually all kiln-dried peat sold in 1958 was used for seed inoculant.

Florida was the leading consumer of peat in 1958, followed closely by Washington and Michigan. These three States consumed nearly one-third of all peat sold. Florida and Washington consumed virtually all the peat they produced. Michigan, however, supplied not only her own needs but also shipped peat to 40 States, the District of Columbia, and Canada. Six States consumed their entire production, which was small; all but one received peat from other States. Peat produced in Indiana had a relatively wide distribution and was shipped to 10 other States and the District of Columbia.

Thirty-one percent of the peat distributed in 1958 was packaged. As shown in table 7, packaged sales increased substantially in Michigan and California, and five additional States reported sales of packaged peat in 1958. Michigan led with 75 percent of packaged sales, followed by California with 15 percent. The remainder was sold by 12 other States.

TABLE 5.—Peat sold in the United States in 1958, by uses

Use	In bulk			In packages			Total		
	Net tons	Value		Net tons	Value		Net tons	Value	
		Total	Average		Total	Average		Total	Average
Soil improvement	202, 110	$1, 331, 989	$6. 59	80, 762	$1, 545, 880	$19. 14	282, 872	$2, 877, 869	$10. 17
Potting soils	3, 400	22, 425	6. 60	12, 649	206, 980	16. 36	16, 049	229, 405	14. 29
Packing flowers	1, 663	18, 617	11. 19	2, 162	39, 911	18. 46	3, 825	58, 528	15. 30
Earthworm-culture medium	209	1, 043	4. 99				209	1, 043	4. 99
Other [1]	10, 703	82, 208	7. 68	386	27, 020	70. 00	11, 089	109, 228	9. 85
Total	218, 085	1, 456, 282	6. 68	95, 959	1, 819, 791	18. 96	314, 044	3, 276, 073	10. 43

[1] Includes peat used in mixed fertilizers, as seed inoculant, and for mushroom and tobacco-seed beds.

TABLE 6.—Peat sold in the United States in 1958, by kinds, in net tons

Kind	In bulk			In packages			Total		
	Quantity	Value		Quantity	Value		Quantity	Value	
		Total	Average		Total	Average		Total	Average
Moss	19, 353	$171, 575	$8. 87	12, 189	$234, 685	$19. 25	31, 542	$406, 260	$12. 88
Reed-sedge	70, 142	560, 632	7. 99	48. 561	1, 130, 173	23. 27	118, 703	1, 690, 805	14. 24
Humus	128, 590	724, 075	5. 63	35. 209	454, 933	12. 92	163, 799	1, 179, 008	7. 20
Total	218, 085	1, 456, 282	6. 68	95, 959	1, 819, 791	18. 96	314, 044	3, 276, 073	10. 43

TABLE 7.—Peat sold in the United States, 1957–58, by States

State	1957					
	In bulk		In packages		Total	
	Net tons	Value	Net tons	Value	Net tons	Value
California	22,011	$161,765	11,000	$231,000	33,011	$392,765
Colorado	3,559	(1)	----	----	3,559	(1)
Connecticut	2,004	11,268	----	----	2,004	11,268
Florida	37,869	195,087	----	----	37,869	195,087
Georgia	4,421	39,654	269	4,842	4,690	44,496
Idaho	(1)	(1)	----	----	(1)	(1)
Illinois	8,229	43,166	1,680	33,600	9,909	76,766
Indiana	12,318	72,995	1,700	34,500	14,018	107,495
Iowa	(1)	(1)	----	----	(1)	(1)
Maine	----	----	(1)	(1)	(1)	(1)
Massachusetts	600	(1)	----	----	600	(1)
Michigan	25,386	268,073	54,885	1,138,122	80,271	1,406,195
Minnesota	1,300	(1)	----	----	1,300	(1)
New Hampshire	85	(1)	----	----	85	(1)
New Jersey	(1)	(1)	(1)	(1)	(1)	(1)
New York	(1)	(1)	----	----	(1)	(1)
Ohio	4,162	47,277	1,316	54,797	5,478	102,074
Pennsylvania	23,593	189,883	2,493	45,869	26,086	235,752
South Carolina	----	----	----	----	----	----
Washington	37,864	144,274	----	----	37,864	144,274
Wisconsin	400	(1)	----	----	400	(1)
Undistributed	49,037	461,457	4,298	188,573	53,335	650,030
Total	232,838	1,634,899	77,641	1,731,303	310,479	3,366,202

State	1958					
	In bulk		In packages		Total	
	Net tons	Value	Net tons	Value	Net tons	Value
California	10,625	$68,473	14,315	$227,045	24,940	$295,518
Colorado	7,143	40,600	----	----	7,143	40,600
Connecticut	1,614	8,255	150	3,000	1,764	11,255
Florida	35,513	163,273	----	----	35,513	163,273
Georgia	3,857	(1)	634	(1)	4,491	(1)
Idaho	(1)	(1)	----	----	(1)	(1)
Illinois	10,817	57,076	771	15,425	11,588	72,501
Indiana	8,518	78,921	1,532	30,648	10,050	109,569
Iowa	(1)	(1)	----	----	(1)	(1)
Maine	----	----	(1)	(1)	(1)	(1)
Massachusetts	1,014	(1)	----	----	1,014	(1)
Michigan	35,797	328,093	71,545	1,355,887	107,342	1,683,980
Minnesota	(1)	(1)	(1)	(1)	(1)	(1)
New Hampshire	100	(1)	----	----	100	(1)
New Jersey	17,481	166,121	916	18,736	18,397	184,857
New York	7,106	54,736	400	12,000	7,506	66,736
Ohio	4,274	41,573	1,386	62,020	5,660	103,593
Pennsylvania	21,597	165,182	2,026	37,536	23,623	202,718
South Carolina	3,187	(1)	1,678	(1)	4,865	(1)
Washington	33,642	112,041	----	----	33,642	112,041
Wisconsin	(1)	(1)	(1)	(1)	(1)	(1)
Undistributed	15,800	171,938	606	57,494	16,406	229,432
Total	218,085	1,456,282	95,959	1,819,791	314,044	3,276,073

1 Included with "Undistributed" to avoid disclosing individual company figures.

TABLE 8.—Destination of peat shipments, 1957–58, in net tons

[Based upon reports from producers showing destination of peat used or sold]

State	1957	1958	State	1957	1958
Alabama	110	141	New Hampshire	383	169
Arizona	608	1,237	New Jersey	13,749	17,093
Arkansas	40	217	New Mexico	415	1,022
California	32,645	23,426	New York	20,528	29,084
Colorado	2,130	5,239	North Carolina	1,205	2,548
Connecticut	3,150	2,737	North Dakota	2	-------
Delaware	475	635	Ohio	18,179	17,130
District of Columbia	2,193	2,134	Oklahoma	708	875
Florida	38,078	35,776	Oregon	-------	200
Georgia	2,071	2,299	Pennsylvania	36,683	34,073
Idaho	248	1,000	Rhode Island	670	683
Illinois	9,202	15,578	South Carolina	943	4,073
Indiana	11,482	6,299	South Dakota	76	-------
Iowa	24,376	6,079	Tennessee	855	1,501
Kansas	353	547	Texas	1,907	7,554
Kentucky	1,907	1,448	Utah	119	142
Louisiana	41	61	Virginia	1,732	2,458
Maine	322	105	Washington	38,050	33,784
Maryland	3,215	8,379	West Virginia	292	349
Massachusetts	4,332	5,040	Wisconsin	439	7,321
Michigan	32,075	31,049	Wyoming	93	32
Minnesota	1,300	1,039			
Missouri	1,712	1,899	Total	310,260	313,926
Montana	311	49	Exported	219	118
Nebraska	100	151			
Nevada	756	1,271	Grand total	310,479	314,044

VALUE AND PRICE

The total value of all peat produced in the United States in 1958 was $3,445,767. Output increased 4 percent, but the total value of production was slightly less than in 1957 because of lower unit values for both bulk and packaged sales.

Table 4 shows the quantity and value of peat production, raw and processed. Moss peat had the highest average value per ton of total production, reed-sedge was second, and humus was third. The values assigned to any peat, however, are directly influenced by the amount of processing the peat has undergone, and whether it is sold in bulk or packaged. Processed peat of all types averaged substantially higher in value per ton than raw peat of the same type, and packaged peat was more than double the average value of the same types of peat sold in bulk.

The value per ton for all peat sold in 1958 averaged $10.43. Sixty-nine percent of the total sales were in bulk at an average value of $6.68 and the remainder was sold packaged at an average value per ton of $18.96. The average values per ton for both bulk and packaged sales, however, were lower than in 1957. Retail prices for peat were somewhat lower than in 1957; domestic peat could be purchased in the Washington, D.C., area in 1958 for less than $2.00 per 100-pound bag.

The total value of imported peat increased slightly, but the average value per ton decreased 2 percent because considerably more Fertilizer-grade peat, which has a lower unit value, was imported. The average value per ton for all peat imported in 1958 was $44.72. This value was more than four times the average for domestic peat, but the values are not comparable, chiefly because of differences in marketing levels at which the values were assigned. Whereas values on domestic peat are reported f.o.b. plant (primary producing level), values on imported peat are established at the port of embarkation and are equivalent to prices paid by importers, less transportation and miscellaneous other charges. Also, most imported peat is packaged or sold in bales, but most domestic peat is sold in bulk. Actually, retail prices on foreign and domestic peats of comparable quality are competitive.

TABLE 9.—Average value per ton of peat produced, by kinds, and sold, by uses, 1947–49 (average) and 1954–58

Year	Average value per ton produced			Average value per ton sold	
	Moss [1]	Reed-sedge	Humus	Soil improvement	Other uses
1947–49 (average)	$12.20	$7.64	$6.86	$6.33	$9.15
1954	10.22	13.38	7.23	8.69	12.24
1955	7.98	11.66	6.33	8.05	9.94
1956	12.55	11.32	5.46	8.32	9.67
1957	12.49	14.07	5.97	10.70	12.26
1958	14.11	14.10	7.01	10.17	12.76

[1] Includes value of "Other types" of peat.

FOREIGN TRADE [1]

Peat imports increased 9 percent over 1957 and were more than three times greater than average imports for the 1947–49 period. Canada was the principal source of peat imports into the United States and supplied 55 percent of the total. The remainder was imported from Europe, except for very small quantities that came from Mexico and Japan.

West Germany supplied 83 percent of the peat shipped to the United States from Europe; Netherlands and Denmark furnished 7 and 5 percent, respectively. Smaller quantities came from 6 other European countries. Imports from Europe decreased 6 percent from 1957, chiefly because of smaller shipments from West Germany. Imports from Canada, however, increased 25 percent.

All imported peat was of the "moss peat" type and was classified by the Bureau of the Census into two grades: "Poultry and Stable" and "Fertilizer." Ninety-six percent of the imported peat was Fertilizer grade and entered the United States duty free. A duty of $0.25 per long ton was levied on all imported peat classified as Poultry and Stable grade.

The greater part of Canada's peat production was exported to the United States as Fertilizer-grade peat. Most Canadian peat is pressed into bales, covered with burlap, and bound with wooden slats and wire. These bales generally measure 12 cubic feet and weigh from 100 to 150 pounds. Some peat is also packaged in heavy fiberboard containers that hold approximately 100 pounds. Canadian peat is generally produced in three grades: (1) Coarse, for use as stable litter, (2) medium, for poultry and small animal litter, and

[1] Figures on imports compiled by Mae B. Price and Elsie D. Jackson, Division of Foreign Activities, Bureau of Mines, from records of the Bureau of the Census, U.S. Department of Commerce.

(3) fine, for soil conditioning, packing, and insulation. The greater part of the peat imported from Canada was produced in British Columbia and entered the United States through the Washington customs district.

Peat imported from Germany usually is packaged in burlap-covered bales and is similar in quality to that shipped from Canada. Ninety-six percent of the imports from Germany in 1958 was Fertilizer grade, and most of this peat entered the United States through the Maryland, New York, and Philadelphia customs districts.

TABLE 10.—Peat moss imported for consumption in the United States, 1956–58, by kinds and by countries

[Bureau of the Census]

Country	Poultry and Stable grade		Fertilizer grade		Total	
	Net tons	Value	Net tons	Value	Net tons	Value
			1956			
North America:						
Canada	7,334	$513,525	111,761	$5,576,429	119,095	$6,089,954
Mexico	136	11,951			136	11,951
Total	7,470	525,476	111,761	5,576,429	119,231	6,101,905
Europe:						
Denmark			2,426	97,184	2,426	97,184
Finland			93	3,995	93	3,995
Germany, West	6,167	203,821	111,844	3,798,795	118,011	4,002,616
Netherlands	226	9,923	5,476	209,041	5,702	218,964
Poland and Danzig			530	14,504	530	14,504
Sweden	414	18,889	1,109	60,473	1,523	79,362
United Kingdom			155	4,023	155	4,023
Total	6,807	232,633	121,633	4,188,015	128,440	4,420,648
Asia: Japan	18	7,886			18	7,886
Grand total	14,295	[1] 765,995	233,394	[1] 9,764,444	247,689	[1] 10,530,439
			1957			
North America:						
Canada	6,060	432,749	111,927	6,242,104	117,987	6,674,853
Mexico	40	2,069			40	2,069
Total	6,100	434,818	111,927	6,242,104	118,027	6,676,922
Europe:						
Belgium-Luxembourg			60	1,956	60	1,956
Czechoslovakia			43	1,120	43	1,120
Denmark			5,120	239,277	5,120	239,277
Finland			74	3,420	74	3,420
France			327	19,843	327	19,843
Germany, West	4,227	149,912	107,322	3,752,576	111,549	3,902,488
Ireland			1,007	38,763	1,007	38,763
Netherlands	62	2,538	7,054	263,472	7,116	266,010
Poland and Danzig			1,869	60,500	1,869	60,500
Sweden			644	36,746	644	36,746
United Kingdom			865	38,526	865	38,526
Total	4,289	152,450	124,385	4,456,199	128,674	4,608,649
Asia: Japan			58	1,918	58	1,918
Grand total	10,389	[1] 587,268	236,370	[1] 10,700,221	246,759	[1] 11,287,489

See footnote at end of table.

TABLE 10.—Peat moss imported for consumption in the United States, 1956–58, by kinds and by countries—Continued

Country	Poultry and Stable grade		Fertilizer grade		Total	
	Net tons	Value	Net tons	Value	Net tons	Value
	1958					
North America:						
Canada	6,220	$460,597	141,651	$7,209,825	147,871	$7,670,422
Mexico	9	255			9	255
Total	6,229	460,852	141,651	7,209,825	147,880	7,670,677
Europe:						
Belgium-Luxembourg			30	1,500	30	1,500
Denmark			5,897	274,897	5,897	274,897
Germany, West	3,828	131,263	96,332	3,308,009	100,160	3,439,272
Ireland			1,334	46,270	1,334	46,270
Netherlands	196	7,551	8,447	346,584	8,643	354,135
Poland and Danzig			3,416	134,368	3,416	134,368
Portugal			54	2,400	54	2,400
Sweden			492	32,559	492	32,559
United Kingdom	12	416	1,048	66,459	1,060	66,875
Total	4,036	139,230	117,050	4,213,046	121,086	4,352,276
Asia: Japan	7	1,448	123	10,272	130	11,720
Grand total	10,272	601,530	258,824	11,433,143	269,096	12,034,673

[1] Data known to be not comparable with 1958.

TABLE 11.—Peat moss imported for consumption in the United States in 1958, by kinds and by customs districts

[Bureau of the Census]

Customs district	Poultry and Stable grade		Fertilizer grade		Total	
	Net tons	Value	Net tons	Value	Net tons	Value
Buffalo	91	$3,270	16,294	$659,527	16,385	$662,797
Connecticut			33	1,185	33	1,185
Dakota	2,754	221,285	9,894	467,296	12,648	688,581
Duluth and Superior	133	7,420	1,745	70,684	1,878	78,104
El Paso	52	4,109	188	5,694	240	9,803
Florida	88	2,784	6,427	220,571	6,515	223,355
Galveston	28	1,559	3,399	78,200	3,427	79,759
Georgia	28	912	1,609	47,798	1,637	48,710
Hawaii	7	1,448	5	259	12	1,707
Laredo	7	127	96	3,381	103	3,508
Los Angeles			4,683	155,058	4,683	155,058
Maine and New Hampshire	29	1,050	2,229	111,201	2,258	112,251
Maryland	517	15,858	11,182	431,110	11,699	446,968
Massachusetts	12	372	7,001	221,625	7,013	221,997
Michigan	802	35,824	18,194	793,125	18,996	828,949
Mobile	53	1,604	4,281	126,641	4,334	128,245
New Orleans	1,670	57,621	8,602	291,217	10,272	348,838
New York	900	32,195	43,539	1,767,670	44,439	1,799,865
North Carolina	4	245	941	47,699	945	47,944
Oregon			370	10,657	370	10,657
Philadelphia	389	13,973	15,856	497,411	16,245	511,384
Puerto Rico	53	3,328	71	4,945	124	8,273
Sabine			70	2,085	70	2,085
St. Lawrence	86	3,407	7,325	336,799	7,411	340,206
San Diego			22	1,240	22	1,240
San Francisco	17	531	1,199	44,329	1,216	44,860
South Carolina			1,164	39,763	1,164	39,763
Vermont	186	6,381	12,268	462,416	12,454	468,797
Virginia	279	8,376	5,549	190,267	5,828	198,643
Washington	2,087	177,851	74,588	4,343,290	76,675	4,521,141
Total	10,272	601,530	258,824	11,433,143	269,096	12,034,673

TECHNOLOGY

Most of the research work on peat in 1958 was conducted in European countries, where for many years peat has been used as a source of energy. The U.S.S.R. in particular, devoting much effort to developing its peat resources, has established several large stations for basic research and experimental development work on peat. A Soviet publication [2] described a two-zone peat gas generator that was developed to burn high-ash, high-moisture peat in electric-power stations. The fact that peat needs little processing when burned in such generators may be of considerable significance to the Soviet peat industry, which annually supplies an estimated 45 million tons of peat for electric power generation.

A method for manufacturing good quality charcoal from peat was described [3] by N. F. Ermolenko and Z. A. Krivchik of the U.S.S.R. In this process low-temperature peat coke was activated with steam at 800° C. and washed in a 4 normal solution of nitric acid. The activity of the charcoal obtained, as determined by its absorption of iodine and methylene blue, approximated that of birch charcoal, and it was recommended for clarifying industrial solutions, particularly lactic acid.

A method for determining the susceptibility of peats to ignite spontaneously was described in a Russian trade journal.[4] S. N. Ostanin determined that the rate of decomposition of hydrogen peroxide, when reacted with different peats, could be used to assess their liability to spontaneous combustion.

Canada has attempted to develop new uses for its vast peat resources and in 1957 K. O. P. Fischer developed a process (Canadian patent 548,897) for producing coke of metallurgical quality from peat and finely divided carbonaceous material such as brown coal, bituminous coke, or petroleum coke. Such mixtures are carbonized in a vertical retort at 1,200° for 16 hours; the yield of coke and other products was described as similar to that obtained from high-temperature carbonization.

In the United States, research work on peat was being conducted at the University of Minnesota under the sponsorship of the Iron Range Resources and Rehabilitation Commission, an agency of the State of Minnesota. In 1954 a project was established to develop basic knowledge of the vast peat resources in Minnesota and their potential economic use. These investigations are concerned with the use of peat as an agricultural product and as a chemical raw material. Several papers on various aspects of the work have been published by project personnel.

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[2] Yampol'skii, M. G., Two-Zone Peat Gas Generator, Moscow: Gostoptekhizdat, 1957, Gasification of Solid Fuel, pp. 351–357; Fuel Abs. 3988, May 1958.

[3] Ermolenko, N. F., and Krivchik, Z. A., Structure and Adsorption Activity of Peat Charcoal: Sborn. Nauch. Rabot Inst. Khim. Akad, Nauk, Belorussk, S.S.R. (Pap. Inst. Chem. Acad. Sci. White Russ. S.S.R., 1956, 5(1), pp. 204–212; Fuel Abs. May 1958, item 3952.

[4] Ostanin, S. N., Reaction of Peat With Hydrogen Peroxide: Torf. Prom. (Peat, Ind., Moscow), 1957, vol. 34, (6), pp. 25–28; Fuel Abs., February 1958, item 1190.

WORLD REVIEW [5]

The total world production of peat in 1958 was estimated at 66 million tons; 99 percent came from Europe. The remaining 1 percent was produced in Japan, Korea, Canada, and the United States.

The U.S.S.R. produced 89 percent of the total, followed by Ireland and West Germany with 4 and 2 percent, respectively. Eleven other European countries produced peat, but their production was relatively small when compared with the world total.

The highly mechanized peat industry of the Soviet Union produced 58.2 million tons in 1958. Soviet peat reserves are very large (estimated at 160 billion tons of air-dried peat, equal to about 60 percent of the world total) and in certain areas, peat has long been used as a source of energy particularly for generating electric power. For more than 30 years peat has been used in power stations in the U.S.S.R. and 30 peat-fired stations operated in 1956 producing 11 billion kilowatt hours of electricity or about 6 percent of the total electric power generated in the Soviet Union. It was reported in 1958 that one large station was generating electricity at the rate of 1 kilowatt hour for each 3¼ pounds (50 percent moisture) of peat. Peat is also used as fuel by many other industries and large quantities are consumed as domestic fuel, chiefly in the form of briquets. Although no data are available on quantities, considerable peat also is consumed for soil conditioning, stable litter, and certain industrial processes such as manufacturing wallboard.

Ireland ranked second in peat production with 2.5 million tons. Ireland has long used its peat resources because of shortages of other fuels, and peat has been the traditional fuel of the Irish people. In recent years peat has been used extensively for generating electric power and 7 peat-fired power stations are now in operation or under construction. In 1957 about 30 percent of the total electric power output was generated from peat and three stations operated at a combined productive capacity of nearly 300 million kilowatt hours. Large quantities of peat were also consumed in Ireland for domestic heating, and a small quantity was used in agriculture.

West Germany produced 1.5 million tons of peat in 1958 of which 44 percent was for fuel purposes and 56 percent for agricultural uses. Germany used some peat for generating electric power in 1958 and substantial quantities were also consumed for domestic heating. More than 800,000 tons of less-humified moss peat was produced for agricultural purposes, of which 13 percent was exported to the United States. As in most other European countries, the German peat industry is mechanized, and specialized equipment is used for excavating, windrowing, and loading.

Denmark, Poland, East Germany, and the Netherlands also produced substantial quantities of peat, but their combined output was only 3 percent of the total because of the tremendous quantity produced in the U.S.S.R. The United States produced 0.5 percent of all peat in 1958 and ranked eighth in world production.

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[5] Figures on world production compiled by Pearl J. Thompson, Division of Foreign Activities, Bureau of Mines.

TABLE 12.—World production of peat, 1954–58, by countries, in thousand net tons [1]

Country	1954	1955	1956	1957	1958
Austria, fuel [2]	55	45	45	45	45
Canada, agricultural use [3]	99	118	128	138	147
Denmark	601	785	778	809	424
Finland:					
Agricultural use	[2] 9	[2] 9	[2] 19	[2] 19	8
Fuel	165	176	158	208	150
France:					
Agricultural use	47	33	45	[2] 45	[2] 45
Fuel	4	2	6	[2] 6	[2] 6
Germany:					
East [2]	550	550	550	550	550
West:					
Agricultural use	480	492	659	780	819
Fuel	1,041	1,153	1,005	808	648
Hungary [2]	60	65	65	65	65
Ireland:					
Agricultural use	9	10	9	11	10
Fuel	3,025	3,937	4,006	3,945	2,491
Israel, agricultural use	29	43	42	22	[2] 28
Japan [2]	65	75	75	80	80
Korea, Republic of	[2] 275	448	[2] 450	269	[2] 275
Netherlands [2]	500	500	500	500	500
Norway:					
Agricultural use	23	31	29	28	[2] 33
Fuel	261	263	263	[2] 260	64
Poland	[2] 660	718	729	400	[2] 400
Sweden:					
Agricultural use	71	71	82	[2] 80	[2] 80
Fuel	231	287	275	[2] 275	[2] 275
U.S.S.R.	49,700	56,000	48,800	[2] 59,600	[2] 58,200
United States, agricultural use	244	274	292	316	328
World total [2] [4]	58,200	66,090	59,010	69,260	65,670

[1] Includes revisions of data published previously. Data do not add to totals shown because of rounding.
[2] Estimated.
[3] In addition, Canada produced a negligible quantity of peat fuel.
[4] Iceland, Italy, and Spain produced a negligible quantity of peat fuel.

B. Petroleum and Related Products

Carbon Black

By Ivan F. Avery and Lulie V. Harvey

Contents

GENERAL SUMMARY

CARBON-BLACK production in 1958 decreased 12 percent in Texas, 6 percent in Louisiana, and 2 percent in other States, resulting in an overall decline of 9 percent for the year. Furnace black comprised 80 percent of the total output in 1958, the same proportion as in 1957.

Domestic sales and exports decreased 6 percent and 4 percent, respectively, resulting in an overall decline of 5.6 percent in total sales. Sales to the rubber industry, which purchased 95 percent of the domestic output of carbon black, decreased 6 percent. Sales to all other major consumers also decreased.

Producers' stocks decreased 48.5 million pounds in 1958. The decline was nominal except for Semireinforcing Furnace (SRF), which decreased 35 million pounds.

TABLE 1.—Salient statistics of carbon black produced from natural gas and liquid hydrocarbons in the United States, in thousand pounds

	1954	1955	1956	1957	1958
Production:					
Channel process	378, 741	359, 487	363, 672	357, 557	324, 743
Furnace processes	1, 030, 806	1, 384, 025	1, 476, 296	1, 440, 868	1, 319, 862
Total	1, 409, 547	1, 743, 512	1, 839, 968	1, 798, 425	1, 644, 605
Shipments:					
Domestic sales	1, 095, 256	1, 373, 777	1, 303, 029	1, 331, 366	1, 250, 937
Exports	402, 777	454, 181	425, 328	459, 671	440, 542
Total	1, 498, 033	1, 827, 958	1, 728, 357	1, 791, 037	1, 691, 479
Losses	413	15	961	5, 563	1, 602
Stocks of producers Dec. 31	321, 385	236, 925	347, 574	349, 399	300, 923
VALUE					
Production .... thousand dollars	91, 375	117, 587	120, 252	127, 979	115, 042
Average per pound .... cents	6. 48	6. 74	6. 53	7. 12	7. 00

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SCOPE OF REPORT

Carbon black is a very pure grade of quasi-graphitic carbon, with particle diameters ranging from 50 to 5,000 angstrom units.

Annual reports were submitted to the Bureau of Mines by operators of all commercial plants in the United States.

Monthly figures are based on reports prepared by the National Gas Products Association and are adjusted to agree with the annual reports received by the Bureau of Mines.

Import and export data are compiled by the Bureau of the Census, U.S. Department of Commerce.

Statistics are obtained on both furnace and channel blacks. Furnace blacks are reported in eight grades: Semireinforcing Furnace (SRF), High-Modulus Furnace (HMF), General-Purpose Furnace (GPF), Fast-Extrusion Furnace (FEF), High-Abrasion Furnace (HAF), Superabrasion Furnace (SAF), Intermediate-Abrasion Furnace (ISAF), and Thermal. The production and uses of the various grades are described in Minerals Yearbook, 1948 and 1949.

PRODUCTION

Number and Capacity of Plants.—One plant in Texas was shut down in 1958. Increases in capacity at existing plants, however, resulted in operating capacity at yearend being 139,010 pounds per day larger than on December 31, 1957.

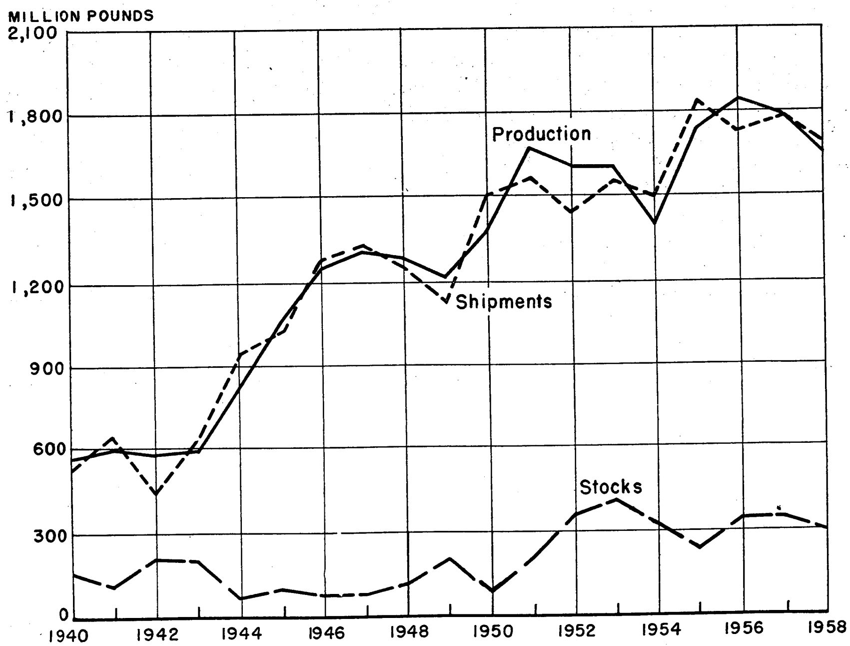

FIGURE 1.—Production, stocks, and shipments of carbon black, 1940–58.

Method and Yield.—The production of furnace black and channel black each decreased 9 percent in 1958. In 1958, 162,896 million cubic feet of natural gas was consumed as feed to produce 324,743 thousand pounds of channel black—a yield of 1.99 pounds per thousand cubic feet and comparable to the yield in 1957. Furnace-black plants consumed as feed 48,152 million cubic feet of natural gas, producing 375,949 thousand pounds of carbon black—a yield of 7.81 pounds per thousand cubic feet. This yield was 0.13 pound per thousand cubic feet less than in 1957. In addition, 231,057 thousand gallons of hydrocarbon liquids feed was consumed to produce 943,913 thousand pounds of furnace black—a yield of 4.09 pounds per gallon, compared with 4.18 pounds in 1957.

TABLE 2.—Carbon black produced from natural gas and liquid hydrocarbons in the United States, by States and districts, in thousand pounds

State and district	1954	1955	1956	1957	1958	Change from 1957 (percent)
Louisiana	368, 233	502, 793	537, 723	533, 847	502, 742	−5.83
Texas:						
Panhandle district	420, 798	545, 060	574, 234	544, 068	474, 564	−12.77
Rest of State	393, 622	406, 416	414, 795	415, 455	369, 831	−10.98
Total Texas	814, 420	951, 476	989, 029	959, 523	844, 395	−12.00
Other States	226, 894	289, 243	313, 216	305, 055	297, 468	−2.49
Grand total	1, 409, 547	1, 743, 512	1, 839, 968	1, 798, 425	1, 644, 605	−8.55

TABLE 3.—Carbon black produced in the United States, 1958, by States and districts, and natural gas and liquid hydrocarbons used in its manufacture

	Producers reporting[1]	Number of plants	Production					
			Furnace black			Channel black		
			Thousand pounds	Value at plant		Thousand pounds	Value at plant	
				Total (thousand dollars)	Cents per pound		Total (thousand dollars)	Cents per pound
Louisiana	5	9	502,469	31,848	6.34	273	57	20.88
Texas:								
Panhandle district	7	12	376,580	24,680	6.55	97,984	9,311	9.50
Rest of State	5	11	237,456	16,906	7.12	132,375	10,970	8.29
Total Texas	8	23	614,036	41,586	6.77	230,359	20,281	8.80
Arkansas	1	1						
Oklahoma	1	1	179,552	12,307	6.85	--------	--------	--------
California	1	1						
Kansas	2	2						
New Mexico	3	4	23,805	1,214	5.10	94,111	7,448	7.91
Grand total:								
1958	11	41	1,319,862	86,955	6.59	324,743	27,786	8.56
1957	12	42	1,440,868	94,326	6.55	357,557	33,653	9.41

	Natural gas used					Liquid hydrocarbons used			
	Million cubic feet	Average yield[2] (pounds per M cubic feet)		Value		Thousand gallons	Average yield (pounds per gallon)	Value	
		Furnace	Channel	Total (thousand dollars)	Average (cents per M cu. ft.)			Total (thousand dollars)	Average (cents per gallon)
Louisiana	25,653	8.14	0.50	2,427	9.46	69,002	4.32	5,554	8.05
Texas:									
Panhandle district	60,631	7.92	1.91	5,496	9.06	80,086	3.77	4,900	6.12
Rest of State	69,352	5.74	2.09	5,448	7.86	49,336	4.12	3,293	6.67
Total Texas	129,983	7.07	2.01	10,944	8.42	129,422	3.90	8,193	6.33
Arkansas	--------	--------	--------	--------	--------				
Oklahoma	--------	--------	--------	--------	--------	32,633	4.32	1,942	5.95
California	5,393	7.17	--------	814	15.09				
Kansas									
New Mexico	50,019	10.70	1.97	3,620	7.24	--------	--------	--------	--------
Grand total:									
1958	211,048	7.81	1.99	17,805	8.44	231,057	4.09	15,689	6.79
1957	233,788	7.94	2.00	19,319	8.26	240,413	4.18	17.706	7.36

[1] Detail will not add to totals, because some producers operate in more than 1 area.
[2] Partly estimated.

TABLE 4.—Production and shipments of carbon black in the United States, by months and grades, in thousand pounds

PRODUCTION [1]

Month	Furnace									Channel	Total
	SRF [2]	HMF [3]	GPF [4]	FEF [5]	HAF [6]	SAF [7]	ISAF [8]	Thermal	Total		
January	22,736	5,589	4,536	17,037	38,933	------	14,034	12,117	114,982	28,568	143,550
February	17,972	3,090	4,924	16,442	31,716	811	14,895	10,035	99,885	25,707	125,592
March	18,741	5,077	4,700	18,321	33,379	1,080	16,697	11,900	109,895	27,322	137,217
April	14,608	4,167	4,945	17,928	41,689	1,041	12,917	10,399	107,694	26,045	133,739
May	14,772	5,092	5,259	13,420	34,884	75	11,127	9,345	93,974	26,617	120,591
June	14,114	6,183	4,484	14,179	35,439	92	10,113	9,565	94,169	26,099	120,268
July	19,013	4,973	4,946	14,815	39,713	------	14,780	10,246	108,486	28,128	136,614
August	18,567	5,292	5,764	17,519	38,973	52	16,726	9,338	112,231	27,940	140,171
September	18,826	5,527	5,308	17,761	40,950	------	15,226	9,028	112,626	26,369	138,995
October	20,570	5,525	5,102	20,062	40,487	------	16,720	10,564	119,030	27,451	146,481
November	22,873	5,332	6,009	18,815	39,510	------	16,370	12,044	120,953	27,037	147,990
December	23,809	4,748	5,638	21,762	38,741	2,832	15,291	13,116	125,937	27,460	153,397
Total	226,601	60,595	61,615	208,061	454,414	5,983	174,896	127,697	1,319,862	324,743	1,644,605

SHIPMENTS (INCLUDING EXPORTS) [9]

Month	SRF	HMF	GPF	FEF	HAF	SAF	ISAF	Thermal	Total furnace	Channel	Total
January	21,730	5,242	5,030	17,244	35,185	350	14,522	12,986	112,289	25,562	137,851
February	18,380	4,955	4,314	16,927	32,600	255	12,733	9,178	99,342	23,263	122,605
March	19,891	4,291	3,349	16,432	34,079	369	14,495	9,298	102,204	23,607	125,811
April	23,226	5,650	3,840	17,615	37,006	236	14,473	10,649	112,695	25,853	138,548
May	19,620	4,613	3,550	15,493	36,420	210	13,404	8,624	101,934	26,081	128,015
June	18,633	5,976	4,396	14,599	36,243	533	13,331	9,236	102,947	23,097	126,044
July	19,818	6,215	4,632	18,221	38,031	506	15,665	9,827	112,915	23,636	136,551
August	22,086	5,011	4,452	19,039	38,652	363	17,244	10,741	117,588	25,048	142,636
September	23,367	5,479	4,522	19,551	40,593	613	16,103	13,317	123,545	24,742	148,287
October	26,607	5,856	4,769	21,008	44,715	726	17,078	13,959	134,718	30,232	164,950
November	23,214	5,332	5,376	19,567	41,552	594	16,412	11,834	123,881	28,712	152,593
December	24,920	6,328	6,150	20,974	46,573	424	18,862	13,042	137,273	31,917	169,190
Total	261,492	64,948	54,380	216,670	461,649	5,179	184,322	132,691	1,381,331	311,750	1,693,081

[1] Compiled from reports of the National Gas Products Association and of producing companies not included in association figures. Figures adjusted to agree with annual reports of individual producers.
[2] Semireinforcing Furnace. [3] High-Modulus Furnace. [4] General-Purpose Furnace.
[5] Fast-Extrusion Furnace. [6] High-Abrasion Furnace. [7] Superabrasion Furnace.
[8] Intermediate-Abrasion Furnace. [9] Includes losses.

TABLE 5.—Natural gas and liquid hydrocarbons used in manufacturing carbon black in the United States and average yield

	1954	1955	1956	1957	1958
Natural gas used ... million cubic feet	251,176	244,794	242,598	233,788	211,048
Average yield of carbon black per thousand cubic feet ... pounds	[1] 3.25	3.58	3.56	3.40	3.32
Average value of natural gas used per thousand cubic feet ... cents	6.89	7.92	7.68	8.26	8.44
Liquid hydrocarbons used ... thousand gallons	154,919	221,101	242,406	240,413	231,057
Average yield of carbon black per gallon ... pounds	3.83	3.92	4.03	4.18	4.09
Average value of liquid hydrocarbons used per gallon ... cents	6.66	6.19	6.79	7.36	6.79
Number of producers reporting	15	11	11	12	11
Number of plants	50	42	42	42	41

[1] Revised.

TABLE 6.—Number and capacity of carbon-black plants operated in the United States

State or district	County or parish	Number of plants				Total daily capacity (pounds)	
		1957		1958		1957	1958
		Channel	Furnace	Channel	Furnace		
Texas:	Carson	1	-	1	-		
	Gray	3	1	3	1		
Panhandle district	Hutchinson	1	4	1	4	1,559,790	1,639,000
	Moore	-	1	-	1		
	Wheeler	-	1	-	1		
Total Panhandle district		5	7	5	7		
Rest of State	Aransas	1	1	1	1		
	Brazoria	1	-	1	-		
	Brooks	1	-	1	-		
	Ector	1	-	1	-		
	Gaines	1	-	1	-		
	Harris	-	1	-	1	1,269,000	1,277,100
	Howard	-	1	-	1		
	Montgomery	-	1	-	1		
	Nueces	1	-	-	-		
	Terry	-	1	-	1		
	Winkler	1	-	1	-		
Total rest of State		7	5	6	5	1,269,000	1,277,100
Total Texas		12	12	11	12	2,828,790	2,916,100
Louisiana	Avoyelles	-	1	-	1		
	Calcasieu	-	1	-	1		
	Evangeline	-	1	-	1	1,592,100	1,650,800
	Ouachita	-	2	-	2		
	Richland	1	-	1	-		
	St. Mary	-	3	-	3		
Total Louisiana		1	8	1	8	1,592,100	1,650,800
Arkansas	Union	-	1	-	1		
California	Contra Costa	-	1	-	1	727,000	717,000
Kansas	Grant	-	2	-	2		
Oklahoma	Kay	-	1	-	1		
New Mexico	Lea	3	1	3	1	345,000	348,000
Total United States		16	26	15	26	5,492,890	5,631,900

CONSUMPTION AND USES

Domestic sales of carbon black decreased 6 percent in 1958. The rubber industry consumed 95 percent of the domestic sales in 1958. Average loading of carbon black in rubber increased from 847 pounds per long ton in 1957 to 853 pounds in 1958, in line with the continuing decline in the proportion of natural rubber used, which requires a lower loading than does synthetic rubber. The calculation is based on total consumption. In 1958 natural rubber comprised 36 percent of the total virgin-rubber consumption, compared with 37 percent in 1957.

The demand for carbon black for use in paint and ink decreased 6 and 8 percent, respectively, from 1957.

TABLE 7.—Sales of carbon black for domestic consumption in the United States, by uses, in thousand pounds

Use	1954	1955	1956	1957	1958	Change from 1957 (percent)
Rubber	1,023,626	1,286,861	1,244,651	1,271,562	1,192,162	−6.24
Ink	48,797	55,313	42,047	43,153	40,645	−5.81
Paint	7,681	13,661	13,231	11,951	10,997	−7.98
Miscellaneous	15,152	17,942	3,100	4,700	7,133	+51.77
Total	1,095,256	1,373,777	1,303,029	1,331,366	1,250,937	−6.04

STOCKS

Total stocks decreased 48.5 million pounds in 1958. Stocks of channel black increased 13 million pounds, whereas stocks of furnace black decreased 61.5 million pounds. Producers' stocks of Semireinforcing Furnace (SRF) decreased 35 million pounds during the year. The decline was nominal in most grades of furnace black.

TABLE 8.—Producers' stocks of channel- and furnace-type blacks in the United States, Dec. 31, 1954–58, in thousand pounds

Year	Furnace									Channel	Total
	SRF [1]	HMF [1]	GPF [1]	FEF [1]	HAF [1]	SAF [1]	ISAF [1]	Thermal	Total		
1954	18,113	22,949	--------	27,895	48,130	--------	--------	[2] 16,850	133,937	187,448	321,385
1955	19,680	17,554	--------	25,065	53,582	(3)	[3] 14,108	[2] 9,561	139,550	97,374	236,924
1956	78,552	16,500	--------	35,374	69,253	(3)	[3] 47,081	[2] 22,270	269,030	78,544	347,574
1957 [4]	75,282	12,336	(5)	35,135	60,242	(3)	[3] 56,118	[2] 28,270	267,383	82,016	349,399
1957 [6]	75,282	10,704	1,632	35,135	60,242	6,241	49,877	[2] 28,270	267,383	82,016	349,399
1958	40,391	6,351	8,867	26,526	53,007	7,045	40,451	23,276	205,914	95,009	300,923

[1] For explanation, see footnotes to table 4.
[2] Includes a small amount of other furnace grades before 1958.
[3] SAF included in ISAF.
[4] Old basis, for comparison with previous years.
[5] Included in HMF.
[6] New basis, for comparison with 1958.

VALUE

The open-market price of carbon black remained unchanged in 1958; however, most carbon black is sold under contract. The average value of channel black at plants dropped sharply in all producing areas. The overall decline was from an average of 9.41 cents per pound in 1957 to 8.56 cents in 1958. The average value of furance black remained about the same as in 1957. The average value of natural gas used as raw material increased moderately from 8.26 cents per thousand cubic feet to 8.44 cents. The average value of liquid-hydrocarbon feed decreased from 7.36 cents per gallon in 1957 to 6.79 cents in 1958.

TABLE 9.—Prices of carbon black in carlots, f.o.b. plant, in cents per pound

[Oil, Paint & Drug Reporter]

Date	Channel blacks: Ordinary rubber grades[1]		Furnace blacks: Semi-reinforcing grades (SRF)	Furnace blacks: High-Modulus grades (HMF)	Furnace blacks: Fast-Extrusion grades (FEF)	Furnace blacks: High-Abrasion grades (HAF)
	Bags	Bulk	Bags	Bags	Bags	Bags
Jan. 1, 1954	7.40	7.00	4.50	5.50	6.00	7.90
Jan. 1, 1955	7.40	7.00	4.50	5.50	6.00	7.90
Jan. 1, 1956	7.40	7.00	4.50	5.50	6.00	7.90
Jan. 1, 1957	7.40	7.00	4.50	5.50	6.00	7.90
Dec. 9, 1957	7.75	7.25	5.75	6.25	6.75	7.75
Dec. 29, 1958	7.75	7.25	5.75	6.25	6.75	7.75

[1] Chiefly Easy-Processing (EPC) and Medium-Processing (MPC), but also includes Hard-Processing (HPC) and Conductive (CC) channel blacks.

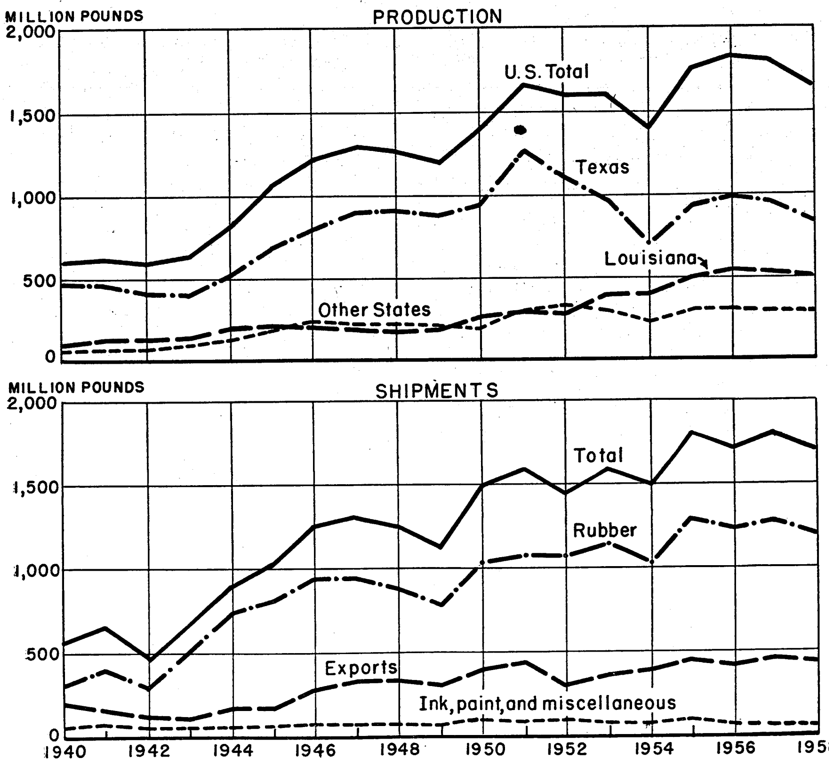

FIGURE 2.—Production and shipments of carbon black, 1940–58.

FOREIGN TRADE[1]

Imports.—Imports of acetylene black from Canada, our only source of supply, declined from 7.6 million pounds in 1957 to 7.2 million pounds in 1958. The average value increased from 17.7 cents per pound in 1957 to 18.0 cents in 1958. Imports of carbon black increased from 20 pounds in 1957 to 126,000 pounds in 1958—virtually all from Canada.

Exports.—Exports of carbon black declined 19 million pounds in 1958. The largest decline was reported for exports of channel black. Shipments to Canada decreased 6 million pounds; to France, 4 million pounds; and to the United Kingdom, 3.5 million pounds.

WORLD PRODUCTION

Plans were underway to build a carbon-black plant in Italy with an estimated capacity of 77,000 pounds per day; a furnace-type plant in Mexico with a capacity of 49,000 pounds per day; and a plant near Rotterdam, Netherlands, with a capacity of 82,000 pounds per day.

TABLE 10.—Carbon black exported from the United States in 1958, by months, in thousand pounds

[Bureau of the Census]

Month	Channel	Furnace	Total	Month	Channel	Furnace	Total
January	13,519	23,723	37,242	September	11,356	24,325	35,681
February	10,933	22,719	33,652	October	11,234	23,701	34,935
March	14,017	25,721	39,738	November	14,472	26,434	40,906
April	12,143	24,534	36,677	December	15,604	29,543	45,147
May	12,698	21,879	34,577				
June	13,369	22,418	35,787	Total:			
July	10,970	24,871	35,841	1958	149,268	291,274	440,542
August	8,953	21,406	30,359	1957	[1] 168,329	[1] 291,342	459,671

[1] Minerals Yearbook 1957, p. 303, should read thousand pounds: July, channel 10,760, furnace 19,642; August, channel 11,505, furnace 20,695; September, channel 12,839, furnace 22,459.

[1] Figures on imports and exports compiled by Mae B. Price and Elsie D. Jackson, of the Bureau of Mines, from records of the U.S. Department of Commerce.

TABLE 11.—Carbon black exported from the United States, by countries of destination

[Bureau of the Census]

Country	1956 Thousand pounds	1956 Thousand dollars	1957 Thousand pounds	1957 Thousand dollars	1958 Thousand pounds	1958 Thousand dollars
North America:						
Canada	42,856	3,081	37,706	2,952	31,266	2,603
Cuba	1,551	123	2,039	169	2,915	245
Mexico	15,019	1,128	15,779	1,289	19,041	1,605
Other North America	97	10	102	13	315	34
Total	59,523	4,342	55,626	4,423	53,537	4,487
South America:						
Argentina	13,404	1,161	19,128	1,816	16,828	1,505
Brazil	20,157	1,792	20,713	1,765	17,635	1,505
Chile	1,795	145	1,472	121	2,114	191
Colombia	6,674	546	7,203	625	5,663	499
Peru	2,163	181	3,305	282	2,135	187
Uruguay	1,419	112	1,321	111	2,355	191
Venezuela	5,474	441	6,906	599	8,557	758
Other South America	64	6	2	2	107	10
Total	51,150	4,384	60,050	5,321	55,394	4,846
Europe:						
Austria	356	41	1,484	112	1,119	85
Belgium-Luxembourg	13,610	1,148	13,368	1,149	12,872	1,168
Denmark	481	70	1,036	111	1,321	149
Finland	1,096	96	872	87	774	77
France	87,483	7,359	81,162	7,082	77,117	6,925
Germany, West	14,221	1,336	18,095	1,575	21,127	1,840
Greece	522	39	503	45	675	56
Ireland	485	44	102	15	310	35
Italy	42,211	3,545	43,404	3,701	44,920	3,942
Netherlands	6,852	628	7,202	692	5,706	534
Norway	1,679	137	1,889	164	1,574	140
Portugal	831	68	1,978	159	1,417	121
Spain	6,629	545	11,066	948	8,700	838
Sweden	10,335	874	11,433	1,037	13,213	1,213
Switzerland	5,146	560	5,926	566	4,394	455
Trieste	134	12	121	8	233	16
United Kingdom	26,816	2,837	27,333	3,033	23,846	2,750
Yugoslavia	1,414	134	1,523	138	2,323	221
Total	220,301	19,473	228,497	20,622	221,641	20,565
Asia:						
India	13,105	1,062	14,385	1,178	14,958	1,276
Indonesia	5,023	484	6,234	618	4,572	448
Israel	1,750	139	3,174	258	3,101	268
Japan	27,738	2,448	31,003	2,848	27,115	2,645
Korea, Republic of	396	32	1,041	99	1,784	168
Malaya, Federation of } Singapore	1,000	84	634	58		
Malaya, Federation of					300	27
Singapore					433	39
Pakistan	199	19	421	36	316	27
Philippines	1,969	165	6,016	535	6,844	611
Taiwan	120	12	258	25	343	35
Turkey	290	29	424	35	1,623	135
Vietnam, Laos, and Cambodia	36	7	83	8	[1] 84	[1] 14
Other Asia	782	78	923	82	1,274	117
Total	52,408	4,559	64,596	5,780	62,747	5,810
Africa:						
Egypt	256	21	1,602	136	1,774	144
Union of South Africa	18,735	1,566	24,174	2,169	20,994	1,882
Other Africa	135	10	181	18	412	33
Total	19,126	1,597	25,957	2,323	23,180	2,059
Oceania:						
Australia	18,125	1,371	19,984	1,575	20,313	1,660
New Zealand	4,695	379	4,961	424	3,730	321
Total	22,820	1,750	24,945	1,999	24,043	1,981
Grand total	425,328	36,105	459,671	40,468	440,542	39,748

[1] Vietnam.

TABLE 12.—World production of carbon black, by countries,[1] in thousand pounds

[Compiled by Pearl J. Thompson and Berenice B. Mitchell]

Country [1]	1954	1955	1956	1957	1958
Brazil [2]	3,086	3,086	3,086	3,086	3,086
France	8,818	8,818	9,259	8,818	[2] 9,259
Germany, West	105,847	122,624	127,122	149,670	141,429
Japan	15,926	16,667	25,159	30,611	(3)
United Kingdom	145,600	170,016	182,784	234,035	243,936
United States	1,409,547	1,743,512	1,839,968	1,798,425	1,644,605
Yugoslavia	1,958	2,837	3,602	4,242	4,934

[1] Canada became a producer of carbon black in 1953, with completion in June of an oil-black furnace having a capacity of 20 million pounds per year at Sarnia, Ontario. The capacity was increased to 60 million pounds in 1956. The actual production is not published to avoid disclosing individual company confidential data.

[2] Estimate.

[3] Not available.

Natural Gas

By Ivan F. Avery and Lulie V. Harvey

Contents

GENERAL SUMMARY

THE GROWTH of the natural gas industry continued in 1958. Marketed production of natural gas totaled 11,030 billion cubic feet—3 percent over 1957. The average value of natural gas at the wellhead increased from 11.3 cents per thousand cubic feet in 1957 to 11.9 cents in 1958. The average value of natural gas at the point of consumption in 1958 was 46.2 cents per thousand cubic feet, 3.1 cents above the 1957 average of 43.1. Residential and commercial sales increased 9 and 12 percent, respectively. The average number of residential and commercial customers increased from 31.1 million in 1957 to 31.8 in 1958.

TABLE 1.—Salient statistics of natural gas in the United States, 1954–58

	1954	1955	1956	1957	1958
(Million cubic feet)					
Supply:					
Marketed production [1]	8,742,546	9,405,357	10,081,923	10,680,258	[2] 11,030,298
Withdrawn from storage	330,177	437,251	452,762	480,981	621,091
Imports	6,847	10,888	10,380	37,941	135,797
Total	9,079,570	9,853,496	10,545,065	11,199,180	11,787,186
Disposition:					
Consumption	8,402,852	9,070,343	9,706,878	10,279,775	[2] 10,760,698
Exports	28,726	31,029	35,963	41,655	38,719
Stored	432,283	505,185	589,232	672,377	704,172
Lost in transmission, etc	215,709	246,933	212,992	205,373	283,597
Total	9,079,570	9,853,490	10,545,065	11,199,180	11,787,186
(Value)					
Value at wellhead:					
Total value — thousand dollars	882,501	978,357	1,083,812	1,201,759	[2] 1,317,492
Average value — cents per Mcf	10.1	10.4	10.8	11.3	11.9

[1] Comprises gas sold or consumed by producers, including losses in transmission, amounts added to storage, and increases in gas in pipelines.
[2] Includes 50 million cubic feet produced in Alaska with a value of $6,000.

SCOPE OF REPORT

Data on natural gas production, consumption, and value are collected by annual questionnaires sent to oil and gas producers, natural-gasoline-plant operators, gas-pipeline companies, and gas-utility companies. A separate report was filed by the respondent for each State in which he operated.

Volumes are reported at the pressure base selected by the reporting company; however, if the reported pressure base deviates more than 5 percent from 14.65 pounds per square inch absolute at 60° F., it is corrected to this base.

Reports are received covering approximately 75 percent of the gross natural gas production. The large number of respondents and the difficulty of contacting each small producer make direct compilation of total production impractical. The bulk of the output of nonreporting producers is furnished in the purchases of reporting companies. Marketed production for each State equals consumption in the State, plus gas placed in storage, plus shipments to other States, less gas withdrawn from storage, less receipts from other States.

RESERVES

The American Gas Association Committee on Natural Gas Reserves reported that estimated proved recoverable domestic reserves of natural gas totaled 254.1 trillion cubic feet at the end of 1958. This includes an increase of 7.5 trillion cubic feet during the year. Of the total reserves in 28 States, 67 percent is in Texas (45.3) and Louisiana (21.7).

GROSS WITHDRAWAL

Gross withdrawal equals marketed production, plus the quantity repressured, plus the partly estimated quantity vented and wasted. Gross withdrawal increased 2 percent over 1957. The quantity of gas vented and wasted is compiled from data given on the reporting forms, supplemented by estimated waste derived from figures published by Natural Gas Reserves Committee of the American Gas Association and State conservation bodies.

UNDERGROUND STORAGE OF NATURAL GAS

In recent years, due largely to the ever-increasing demand of natural gas for home heating, there has been a continuing trend towards transporting the gas to underground storage pools located in close proximity to major markets. This system permits pipeline deliveries during summer months to the point of storage and builds a backlog of gas for withdrawal to meet the increased demands for fuel during the winter peak consumption months. The American Gas Association reports that during 1958, 6 storage pools and 268 no-longer-producing wells were added to existing underground storage facilities, bringing the total of such facilities to 205 storage pools and 8,237 wells. The total capacity of underground natural gas storage facilities is now 2.7 trillion cubic feet.

TABLE 2.—Estimated proved recoverable reserves of natural gas in the United States, 1957–58, in million cubic feet

[Committee on Natural-Gas Reserves, American Gas Association]

State	Reserves as of Dec. 31, 1957 [1]	Changes in reserves during 1958: Extensions and revisions [1]	Discoveries of new fields and new pools in old fields [1]	Net change in underground storage [2]	Net production [3]
Arkansas	1,283,022	111,867	36,951	130	43,633
California [4]	8,952,893	378,066	57,047	15,381	436,865
Colorado	2,380,679	47,143	52,539	−4,676	126,445
Illinois	166,372	18,877	0	4,299	19,020
Indiana	30,952	4,910	0	−1,362	3,931
Kansas	19,295,978	1,497,136	27,027	−4,391	581,903
Kentucky	1,225,045	45,738	10,930	1,616	68,000
Louisiana [4]	51,435,954	4,122,570	1,911,124	0	2,357,786
Michigan	444,028	56,501	16,188	−6,290	12,314
Mississippi	2,297,740	408,115	74,627	1,290	183,395
Montana	670,450	297	38,477	2,261	29,472
Nebraska	189,339	−32,447	1,800	0	15,371
New Mexico	22,258,009	−528,926	175,465	100	724,628
New York	93,382	6,375	1,125	−1,344	3,099
North Dakota	743,432	399,699	0	0	18,661
Ohio	901,814	−78,420	13,620	14,913	33,875
Oklahoma	14,259,480	1,698,761	159,370	−7,545	903,297
Pennsylvania	853,595	97,266	22,135	1,992	104,974
Texas [4]	113,084,518	4,598,030	2,799,626	10,519	5,446,950
Utah	859,294	234,368	2,213	0	37,824
Virginia	37,521	2,975	525	0	2,600
West Virginia	1,560,930	139,247	30,720	11,136	184,400
Wyoming	3,457,433	153,864	176,170	1,511	139,160
Other States [5]	87,395	6,796	3,419	18,362	7,423
Total	246,569,255	13,388,808	5,611,098	57,902	11,485,026

State	Reserves as of December 31, 1958: Non-associated [6]	Associated [7]	Dissolved [8]	Underground storage [9]	Total
Arkansas	873,753	294,504	215,208	4,872	1,388,337
California [4]	2,289,218	2,094,070	4,489,429	93,805	8,966,522
Colorado	1,722,280	108,890	518,070	0	2,349,240
Illinois	15,700	0	120,800	34,028	170,528
Indiana	1,500	1,500	20,760	6,809	30,569
Kansas	19,406,764	455,822	318,454	52,807	20,233,847
Kentucky	1,125,729	0	69,116	20,484	1,215,329
Louisiana [4]	44,317,240	7,549,443	3,245,179	0	55,111,862
Michigan	121,669	51,752	52,875	271,817	498,113
Mississippi	1,849,256	464,568	280,586	3,967	2,598,377
Montana	511,630	40,660	92,357	37,366	682,013
Nebraska	108,394	12,408	22,519	0	143,321
New Mexico	15,875,296	3,792,300	1,462,480	49,944	21,180,020
New York	42,398	0	198	53,843	96,439
North Dakota	330,331	0	794,139	0	1,124,470
Ohio	390,000	0	108,000	320,052	818,052
Oklahoma	9,647,106	1,950,726	3,514,416	94,521	15,206,769
Pennsylvania	487,135	0	26,965	355,914	870,014
Texas [4]	73,818,891	26,014,719	15,172,873	39,260	115,045,743
Utah	628,085	17,368	412,598	0	1,058,051
Virginia	38,421	0	0	0	38,421
West Virginia	1,248,838	0	65,033	243,762	1,557,633
Wyoming	2,957,347	129,811	542,134	20,526	3,649,818
Other States [5]	53,549	0	18,907	36,093	108,549
Total	177,860,530	42,978,541	31,563,096	1,739,870	254,142,037

[1] Excludes gas loss due to natural gas liquids recovery.
[2] The net difference between gas stored in and gas withdrawn from underground storage reservoirs, including adjustments and native gas transferred from other reserve categories.
[3] Net production equals gross withdrawals less gas injected into producing reservoirs. Changes in underground storage and gas loss due to natural gas liquids recovery are excluded. Fourth quarter production estimated in some instances.
[4] Includes off-shore reserves.
[5] Includes Alabama, Florida, Iowa, Maryland, and Missouri.
[6] Nonassociated gas is free gas not in contact with crude oil in the reservoir; and free gas in contact with oil where the production of such gas is not significantly affected by the production of crude oil.
[7] Associated gas is free gas in contact with crude oil in the reservoir where the production of such gas is significantly affected by the production of crude oil.
[8] Dissolved gas is gas in solution with crude oil in the reservoirs.
[9] Gas held in underground reservoirs (including native and net injected gas) for storage purposes.

TABLE 3.—Gross withdrawals and disposition of natural gas in the United States,[1] 1957–58, by States, in million cubic feet

State	Gross withdrawals [2]			Disposition		
	From gas wells	From oil wells	Total	Marketed production [3]	Repressuring	Vented and wasted [4]
1957						
Arkansas	18,000	36,000	54,000	31,327	16,045	6,628
California	144,000	609,000	753,000	492,338	255,644	5,018
Colorado	46,000	122,000	168,000	95,259	35,486	37,255
Illinois	700	20,300	21,000	9,647	130	11,223
Indiana	100	4,000	4,100	671	------	3,429
Kansas	570,000	64,000	634,000	586,690	1,199	46,111
Kentucky	68,000	3,000	71,000	70,024	------	976
Louisiana	1,877,000	470,000	2,347,000	2,078,901	187,057	81,042
Maryland	4,649	------	4,649	4,649	------	------
Michigan	8,000	5,000	13,000	9,122	3,075	803
Mississippi	193,000	81,000	274,000	169,967	66,608	37,425
Montana	23,000	8,000	31,000	28,638	263	2,099
Nebraska	14,000	12,000	26,000	14,249	------	11,751
New Mexico	509,000	260,000	769,000	723,004	1,530	44,466
New York	2,800	300	3,100	2,869	------	231
North Dakota	1,000	18,000	19,000	15,450	3,550	------
Ohio	28,000	4,500	32,500	30,384	57	2,059
Oklahoma	550,000	540,000	1,090,000	719,794	109,888	260,318
Pennsylvania	101,000	3,000	104,000	101,801	112	2,087
Texas	4,251,000	1,850,000	6,101,000	5,156,215	724,615	220,170
Utah	16,000	5,500	21,500	16,824	370	4,306
Virginia	2,536	------	2,536	2,465	------	71
West Virginia	200,000	4,000	204,000	202,440	119	1,441
Wyoming	89,000	70,000	159,000	117,256	11,515	30,229
Other States [5]	50	234	284	274	------	10
Total	8,716,835	4,189,834	12,906,669	10,680,258	1,417,263	809,148
1958						
Arkansas	23,000	45,000	68,000	32,890	28,180	6,930
California	133,000	575,000	708,000	465,582	241,141	1,277
Colorado	44,000	124,000	168,000	82,464	45,145	40,391
Illinois	3,000	18,000	21,000	12,983	47	7,970
Indiana	300	3,600	3,900	378	------	3,522
Kansas	529,000	61,000	590,000	561,816	421	27,763
Kentucky	70,000	3,000	73,000	72,248	------	752
Louisiana	2,223,000	505,000	2,728,000	2,451,587	220,616	55,797
Maryland	4,266	------	4,266	4,266	------	------
Michigan	12,000	5,000	17,000	14,243	1,893	864
Mississippi	179,000	79,000	258,000	160,143	73,204	24,653
Montana	23,000	8,000	31,000	27,989	942	2,069
Nebraska	7,000	10,000	17,000	11,405	394	5,201
New Mexico	513,000	268,000	781,000	761,446	10,686	8,868
New York	2,900	200	3,100	2,808	------	292
North Dakota	2,000	18,000	20,000	17,325	------	2,675
Ohio	28,900	5,000	33,900	31,786	50	2,064
Oklahoma	530,000	510,000	1,040,000	696,504	99,546	243,950
Pennsylvania	101,000	3,000	104,000	95,869	162	7,969
Texas	4,417,000	1,666,000	6,083,000	5,178,073	743,409	161,518
Utah	17,000	11,400	28,400	19,247	1,036	8,117
Virginia	2,600	------	2,600	2,521	------	79
West Virginia	201,000	4,000	205,000	204,581	111	308
Wyoming	88,000	70,000	158,000	121,682	15,992	20,326
Other States [5]	85	384	469	412	------	57
Total	9,154,051	3,992,584	13,146,635	11,030,248	1,482,975	633,412

[1] The 1956 figures for "Gross Withdrawals" and "Disposition" shown in the Minerals Yearbook Chapter, Natural Gas 1957, are in error. Please refer to the 1956 Chapter for correct figures.
[2] Marketed production plus quantities used in repressuring, vented, and wasted.
[3] Comprises gas sold or consumed by producers, including losses in transmission, quantities added to storage, and increases in gas in pipelines.
[4] Partly estimated. Includes direct waste on producing properties and residue blown to the air.
[5] Alabama, Arizona, Florida, Missouri, and Tennessee.

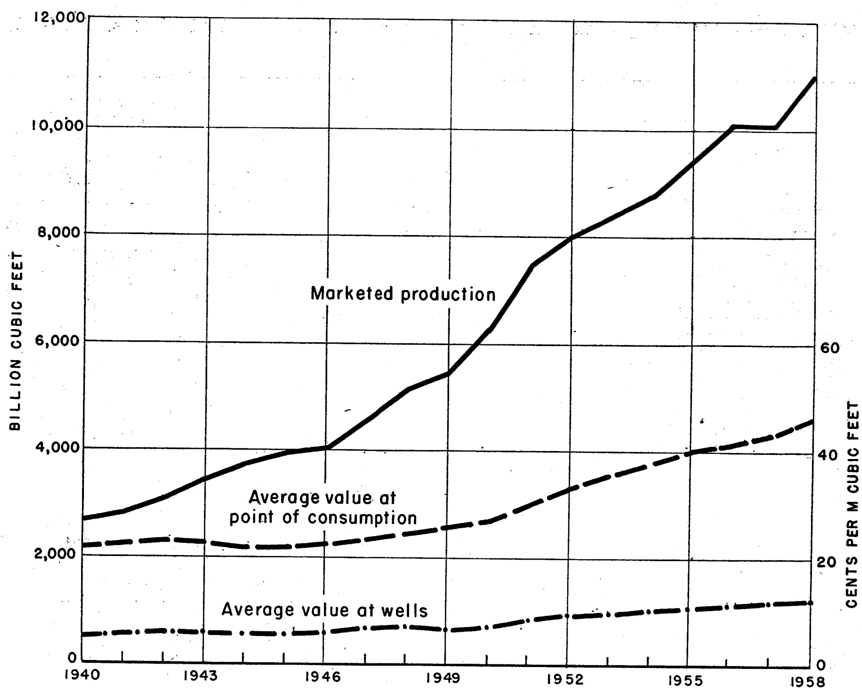

FIGURE 1.—Production and average value of natural gas in the United States, 1940–58.

TABLE 4.—Marked production of natural gas in the United States, 1954–58, by States[1]

State	Quantity (million cubic feet)					Change from 1957 (percent)	Estimated value at wells (thousand dollars)	
	1954	1955	1956	1957	1958		1957	1958
Alabama	87	282	42	190	323	70.0	12	30
Arizona	----------	15	21	----------	----------	----------	----------	----------
Arkansas	33,471	32,123	30,162	31,327	32,890	5.0	2,256	2,664
California	507,289	538,178	504,458	492,338	465,582	−5.4	116,684	108,481
Colorado	45,705	49,152	54,205	95,259	82,464	−13.4	9,526	8,659
Florida	35	36	35	34	35	2.9	4	5
Illinois	9,475	8,033	6,177	9,647	12,983	34.6	1,495	1,921
Indiana	735	1,226	791	671	378	−43.7	88	59
Kansas	412,369	471,041	526,091	586,690	561,816	−4.2	66,883	64,047
Kentucky	72,713	73,214	73,687	70,024	72,248	3.2	16,666	17,412
Louisiana	1,399,222	1,680,032	1,886,302	2,078,901	2,451,587	17.8	232,837	316,255
Maryland	1,394	3,116	4,619	4,649	4,266	−8.2	1,218	1,148
Michigan	6,962	8,300	10,911	9,122	14,243	56.1	1,715	2,649
Mississippi	140,448	163,167	185,137	169,967	160,143	−5.8	17,507	22,260
Missouri	16	15	12	12	----------	−100.0	2	----------
Montana	30,252	28,255	25,847	28,638	27,989	−2.3	2,062	1,903
Nebraska	6,801	12,515	13,541	14,249	11,405	−20.0	2,280	1,711
New Mexico	449,346	540,664	626,340	723,004	761,446	5.3	67,962	79,190
New York	2,598	3,637	4,098	2,869	2,808	−2.1	815	859
North Dakota	1,093	5,256	11,725	15,450	17,325	12.1	1,468	1,672
Ohio	28,824	33,756	25,368	30,384	31,786	4.6	7,201	6,802
Oklahoma	616,355	614,976	678,603	719,794	696,504	−3.2	59,743	70,347
Pennsylvania	145,934	99,172	104,508	101,801	95,869	−5.8	31,660	27,131
South Dakota	7	----------	----------	----------	----------	----------	----------	----------
Tennessee	89	39	45	38	54	42.1	6	9
Texas	4,551,232	4,730,798	4,999,889	5,156,215	5,178,073	0.4	500,153	517,807
Utah	16,024	17,163	17,268	16,824	19,247	14.4	2,473	2,829
Virginia	1,401	968	2,926	2,465	2,521	2.3	661	681
West Virginia	191,601	212,403	204,717	202,440	204,581	1.1	48,181	50,734
Wyoming	71,068	77,819	84,398	117,256	121,682	3.8	10,201	10,221
Total	8,742,546	9,405,351	10,081,923	10,680,258	11,030,248	3.3	1,201,759	1,317,486

[1] Comprises gas either sold or consumed by producers, including losses in transmission, quantities added to storage and increases of gas in pipelines.

TABLE 5.—Natural gas stored underground in and withdrawn from storage fields, 1957–58, by State of location, in million cubic feet

State	1957			1958		
	Total stored	Total withdrawn	Net stored	Total stored	Total withdrawn	Net stored
Arkansas	28	113	−85	1,139	73	1,066
California	36,725	23,487	13,238	47,108	30,138	16,970
Colorado	1,714		1,714			
Illinois	10,244	2,409	7,835	12,591	18,740	−6,149
Indiana	3,181	2,929	252	5,593	4,963	630
Iowa	10,823	3,073	7,750	19,602	2,925	16,677
Kansas	24,035	23,013	1,022	31,530	26,973	4,557
Kentucky	8,526	7,944	582	9,758	10,574	−816
Louisiana	78		78			
Maryland						
Michigan	104,891	69,032	35,859	96,798	108,512	−11,714
Mississippi	1,768	1,316	452	4,509	3,266	1,243
Missouri	3,483	2,376	1,107	3,363	1,199	2,164
Montana	6,796	2,510	4,286	5,666	3,426	2,240
Nebraska		127	−127		200	−200
New Mexico	5,101	8,093	−2,992	7,271	6,658	613
New York	26,633	15,968	10,665	32,097	22,424	9,673
North Dakota						
Ohio	90,442	73,957	16,485	99,218	84,088	15,130
Oklahoma	24,705	17,783	6,922	24,941	19,818	5,123
Pennsylvania	150,367	133,310	17,057	150,062	150,475	−413
Texas	53,083	7,262	45,821	24,787	11,850	12,937
Virginia						
West Virginia	104,761	82,639	22,122	123,324	111,526	11,798
Wisconsin	125		125	70		70
Wyoming	4,868	3,640	1,228	4,745	3,263	1,482
Total	672,377	480,981	191,396	704,172	621,091	83,081

TABLE 6.—Underground storage statistics, by States, December 31, 1958

[American Gas Association]

States	Number of pools	Number of active wells	Total gas in storage reservoirs (million cubic feet)	Total reservoir capacity (million cubic feet)
Arkansas	2	17	4,872	5,062
California	4	111	93,805	106,117
Illinois	4	71	35,797	159,302
Indiana	6	203	8,448	9,594
Iowa	2	33	28,882	140,771
Kansas	14	716	61,219	83,623
Kentucky	6	252	20,484	22,874
Michigan	18	1,084	271,817	383,671
Mississippi	2	12	3,967	4,051
Missouri	1	23	7,211	40,220
Montana	2	156	37,366	82,151
New Mexico	4	68	49,944	61,033
New York	13	573	53,843	65,257
Ohio	17	2,111	320,052	468,769
Oklahoma	7	76	106,689	179,988
Pennsylvania	58	1,802	355,914	455,885
Texas	5	74	39,260	52,535
West Virginia	38	847	243,762	333,728
Wyoming	2	8	20,526	62,972
Total	205	8,237	1,763,858	2,717,603

TABLE 7.—Gas wells in the United States, 1957–58, by States

State	Drilled during 1957 [1]	Producing Dec. 31, 1957	Drilled during 1958 [1]	Producing Dec. 31, 1958
Arkansas	21	260	37	300
California	53	500	39	535
Colorado	91	240	80	250
Illinois	19	40	49	35
Indiana	14	410	16	380
Kansas	333	5,650	228	6,000
Kentucky	164	4,300	139	4,330
Louisiana	380	4,300	214	4,500
Michigan	47	270	27	270
Mississippi	3	238	2	250
Missouri [2]				
Nebraska [2]	5	38	2	40
Montana	15	1,090	6	1,090
New Mexico	606	3,300	491	4,000
New York	5	1,150	15	980
Ohio	201	6,450	249	6,300
Oklahoma	234	4,450	340	5,000
Pennsylvania	292	16,300	281	16,300
Tennessee	7	30	4	30
Texas	881	13,400	855	15,340
West Virginia	466	14,200	512	14,000
Wyoming	46	280	66	300
Other States [3]	29	145	22	170
Total	3,912	77,041	3,674	80,400

[1] From Oil and Gas Journal.
[2] Missouri and Nebraska combined to avoid disclosing individual company operations.
[3] Alabama, Maryland, North Dakota, Utah, and Virginia.

INTERSTATE SHIPMENTS, IMPORTS, AND EXPORTS

Interstate shipments including exports increased 6 percent in 1958. Interstate shipments comprised 59 percent of marketed production in 1958 compared with 57 percent in 1957.

Exports to Canada amounted to 32,129 million cubic feet, an increase of 1,262 million cubic feet over 1957. There were 6,590 million cubic feet shipped to Mexico during 1958. Imports of natural gas increased from 37,941 million cubic feet in 1957 to 135,797 million cubic feet in 1958. Montana and Washington received a total of 89,586 million cubic feet from Canada, and 46,211 million cubic feet was imported from Mexico into Texas.

TABLE 8.—Marketed production, interstate shipments and total consumption of natural gas in 1958 in the United States, in million cubic feet

Census regions and States	Marketed production: Quantity	Marketed production: Average value at wellhead (cents per M c.f.)	Interstate movements: Quantity shipped	Interstate movements: Quantity received	Transmission loss and unaccounted for	Change in underground storage	Consumption
New England:							
Connecticut	----------	----------	----------	29,529	1,645	----------	27,884
Maine	----------	----------	----------	----------	----------	----------	----------
Massachusetts	----------	----------	----------	69,879	2,277	----------	67,602
New Hampshire	----------	----------	----------	2,560	139	----------	2,421
Rhode Island	----------	----------	----------	10,376	436	----------	9,940
Vermont	----------	----------	----------	----------	----------	----------	----------
Total: 1958	----------	----------	----------	112,344	4,497	----------	107,847
1957	----------	----------	----------	89,966	3,086	----------	86,880
Middle Atlantic:							
New Jersey	----------	----------	----------	127,784	7,838	----------	119,946
New York	2,808	30.6	2,416	364,424	11,817	9,673	343,326
Pennsylvania	95,869	28.3	83,770	481,284	28,064	−413	465,732
Total: 1958	98,677	28.4	86,186	973,492	47,719	9,260	929,004
1957	104,670	31.0	71,498	873,303	33,304	27,722	845,449
East North Central:							
Illinois	12,983	14.8	2,483	445,495	10,138	−6,149	452,006
Indiana	378	15.6	1,210	161,287	5,242	630	154,583
Michigan	14,243	18.6	----------	283,412	11,265	−11,714	298,104
Ohio	31,786	21.4	534	618,509	16,609	15,130	618,022
Wisconsin	----------	----------	----------	72,062	4,396	70	67,596
Total: 1958	59,390	19.2	4,227	1,580,765	47,650	−2,033	1,590,311
1957	49,824	21.1	1,372	1,531,214	35,393	60,556	1,483,717
West North Central:							
Iowa	----------	----------	----------	182,281	5,622	16,677	159,982
Kansas	561,816	11.4	424,547	237,707	8,139	4,557	362,280
Minnesota	----------	----------	----------	149,984	942	----------	149,042
Missouri	----------	----------	----------	248,470	5,067	2,164	241,239
Nebraska	11,405	15.0	324	104,553	1,173	−200	114,661
North Dakota	17,325	9.7	3,920	2,533	299	----------	15,639
South Dakota	----------	----------	----------	19,865	330	----------	19,535
Total: 1958	590,546	11.4	428,791	945,393	21,572	23,198	1,062,378
1957	616,401	11.5	478,085	901,284	11,461	9,752	1,018,387
South Atlantic:							
Delaware	----------	----------	----------	8,632	331	----------	8,301
District of Columbia	----------	----------	----------	18,442	848	----------	17,594
Florida	35	13.6	----------	43,568	−571	----------	44,174
Georgia	----------	----------	----------	166,304	2,190	----------	164,114
Maryland	4,266	26.9	1,892	56,795	1,841	----------	57,328
North Carolina	----------	----------	----------	25,056	1,537	----------	23,519
South Carolina	----------	----------	----------	40,897	1,219	----------	39,678
Virginia	2,521	27.0	2,495	59,755	3,729	----------	56,052
West Virginia	204,581	24.8	178,549	152,357	2,244	11,798	164,347
Total: 1958	211,403	24.9	182,936	571,806	13,368	11,798	575,107
1957	209,588	23.9	153,625	515,896	15,875	22,122	533,862
East South Central:							
Alabama	323	9.2	50	175,022	2,889	----------	172,406
Kentucky	72,248	24.1	56,268	123,026	2,832	−816	136,990
Mississippi	160,143	13.9	183,954	187,275	5,052	1,243	157,169
Tennessee	54	16.7	833	148,159	4,520	----------	142,860
Total: 1958	232,768	17.1	241,105	633,482	15,293	427	609,425
1957	240,219	14.2	194,292	538,977	6,782	1,034	577,088
West South Central:							
Arkansas	32,890	8.1	991	186,081	14,553	1,066	202,361
Louisiana	2,451,587	12.9	1,625,487	118,916	13,813	----------	931,203
Oklahoma	696,504	10.1	355,279	21,336	15,358	5,123	342,080
Texas	5,178,073	10.0	2,700,103	146,244	55,736	12,937	2,555,541
Total: 1958	8,359,054	10.9	4,681,860	472,577	99,460	19,126	4,031,185
1957	7,986,237	10.0	4,423,571	444,944	70,432	52,736	3,884,442

TABLE 8.—Marketed production, interstate shipments and total consumption of natural gas in 1958 in the United States, in million cubic feet—Continued

Census regions and Stats	Marketed production		Interstate movements		Transmission loss and unaccounted for	Change in underground storage	Consumption
	Quantity	Average value at wellhead (cents per M c.f.)	Quantity shipped	Quantity received			
Mountain:							
Arizona	-------	-------	-------	108,988	3,954	-------	105,034
Colorado	82,464	10.5	59,769	148,199	5,795	-------	165,099
Idaho	-------	-------	-------	15,630	−273	-------	15,903
Montana	27,989	6.8	3,574	31,197	1,547	2,240	51,825
Nevada	-------	-------	-------	8,788	−38	-------	8,826
New Mexico	761,446	10.4	572,586	68,857	5,586	613	251,518
Utah	19,247	14.7	2,866	39,811	486	-------	55,706
Wyoming	121,682	8.4	78,592	6,996	1,794	1,482	46,810
Total: 1958	1,012,828	10.1	717,387	428,466	18,851	4,335	700,721
1957	980,981	9.4	729,042	457,833	5,157	4,236	700,379
Pacific:							
California	465,582	23.3	-------	642,026	11,783	16,970	1,078,855
Oregon	-------	-------	-------	25,233	2,481	-------	22,752
Washington	-------	-------	-------	53,986	923	-------	53,063
Total: 1958	465,582	23.3	-------	721,245	15,187	16,970	1,154,670
1957	492,338	23.7	-------	694,354	23,883	13,238	1,149,571
Total United States:							
1958	11,030,248	11.9	6,342,492	6,439,570	283,597	83,081	10,760,648
1957	10,680,258	11.3	6,051,485	6,047,771	205,373	191,396	10,279,775

TABLE 9.—Natural gas moving interstate, imports and exports, 1958, in million cubic feet

Consuming regions and countries or States	Quantity received	Producing region							
		Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Foreign
New England:									
Connecticut	29,529	643	47	-------	-------	976	27,271	-------	592
Massachusetts	69,879	1,907	138	-------	-------	2,872	63,206	-------	1,756
New Hampshire	2,560	-------	-------	-------	-------	3	2,557	-------	-------
Rhode Island	10,376	373	26	-------	-------	556	9,078	-------	343
Total	112,344	2,923	211	-------	-------	4,407	102,112	-------	2,691
Middle Atlantic:									
New Jersey	127,784	2,732	189	-------	52	3,957	118,479	-------	2,375
New York	364,424	63,607	261	-------	6,430	5,650	285,461	-------	3,015
Pennsylvania	481,284	2,557	756	-------	42,353	23,930	400,030	-------	11,658
Total	973,492	68,896	1,206	-------	48,835	33,537	803,970	-------	17,048
East North Central:									
Illinois	445,495	-------	209	33,730	-------	26	411,069	13	448
Indiana	161,287	-------	1,588	27,108	-------	516	131,240	5	830
Michigan	283,412	-------	-------	51,419	-------	171	231,635	4	183
Ohio	618,509	13,711	949	29,407	92,787	37,432	435,881	3	8,339
Wisconsin	72,062	-------	21	1,625	-------	-------	70,416	-------	-------
Total	1,580,765	13,711	2,767	143,289	92,787	38,145	1,280,241	25	9,800
West North Central:									
Iowa	182,281	-------	33	46,862	-------	-------	132,307	3,079	-------
Kansas	237,707	-------	-------	1,315	-------	-------	233,960	2,432	-------
Minnestoa	149,984	-------	-------	51,659	-------	-------	95,005	3,320	-------
Missouri	248,470	-------	-------	75,842	-------	-------	171,924	56	648
Nebraska	104,553	-------	-------	43,123	-------	-------	50,233	11,197	-------
North Dakota	2,533	-------	-------	395	-------	-------	-------	2,138	-------
South Dakota	19,865	-------	-------	5,376	-------	-------	8,339	6,150	-------
Total	945,393	-------	33	224,572	-------	-------	691,768	28,372	648

TABLE 9.—Natural gas moving interstate, imports and exports, 1958, in million cubic feet—Continued

Consuming regions and countries or States	Quantity received	Producing region							
		Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Foreign
South Atlantic:									
Delaware	8,632	8				21	8,596		7
District of Columbia	18,442	91			5,985	1,523	10,837		6
Florida	43,568					12,568	30,971		29
Georgia	166,304					61,488	104,753		63
Maryland	56,795	402	3		16,344	4,776	35,247		23
North Carolina	25,056					34	25,022		
South Carolina	40,897					8,176	32,713		8
Virginia	59,755	51			16,932	4,793	37,975		4
West Virginia	152,357	8			732	13,410	138,157		50
Total	571,806	560	3		39,993	106,789	424,271		190
East South Central:									
Alabama	175,022					56,126	118,801		95
Kentucky	123,026				1,321	500	120,254		951
Mississippi	187,275						186,680		595
Tennessee	148,159					277	146,970		912
Total	633,482				1,321	56,903	572,705		2,553
West South Central:									
Arkansas	186,081						185,404		677
Louisiana	118,916					1,115	115,696		2,105
Oklahoma	21,336			1,618			19,653	65	
Texas	146,244					201	123,507	12,037	10,499
Total	472,577			1,618		1,316	444,260	12,102	13,281
Mountain:									
Arizona	108,988			26			49,029	59,933	
Colorado	148,199			50,085			42,561	55,553	
Idaho	15,630			15			20	15,595	
Montana	31,197			2,648				15,897	12,652
Nevada	8,788			31			1,110	7,647	
New Mexico	68,857			108			52,612	16,137	
Utah	39,811							39,811	
Wyoming	6,996			1,178			1,044	4,774	
Total	428,466			54,091			146,376	215,347	12,652
Pacific:									
California	642,026			1,221			183,682	457,123	
Oregon	25,233			15			22	2,248	22,948
Washington	53,986								53,986
Total	721,245			1,236			183,704	459,371	76,934
Total United States	6,439,570	86,090	4,220	424,806	182,936	241,097	4,649,407	715,217	135,797
Canada	32,129	96	7	3,985		8	27,969	64	
Mexico	6,590						4,484	2,106	
Total exports	38,719	96	7	3,985		8	32,453	2,170	
Total	6,478,289	86,186	4,227	428,791	182,936	241,105	4,681,860	717,387	135,797

TABLE 10.—Consumption of natural gas in the United States, 1954–58, by States [1]

State	Quantity (million cubic feet)					Change from 1957 (percent)	Estimated value at points of consumption (thousand dollars)	
	1954	1955	1956	1957	1958		1957	1958
Alabama	139,551	151,325	160,261	165,772	172,406	4.0	69,342	77,270
Arizona	75,568	88,983	105,860	105,536	105,034	−.5	39,664	42,192
Arkansas	192,378	197,374	196,297	201,306	202,361	.5	48,163	54,427
California	933,934	1,020,395	1,021,002	1,091,236	1,078,855	−1.1	491,385	561,741
Colorado	126,048	143,018	145,640	176,936	165,099	−6.7	71,984	53,468
Connecticut	11,415	14,187	18,109	20,328	27,884	37.2	27,298	47,978
Delaware	2,980	4,280	5,824	6,014	8,301	38.0	6,830	7,865
District of Columbia	14,261	15,042	15,833	15,701	17,594	12.1	21,626	24,561
Florida	23,159	26,402	35,322	38,871	44,174	13.6	11,489	13,999
Georgia	132,069	133,044	148,567	154,778	164,114	6.0	68,817	81,656
Idaho	----------	----------	765	10,733	15,903	48.2	4,814	7,061
Illinois	391,408	398,718	417,443	422,840	452,006	6.9	258,852	312,383
Indiana	116,308	126,897	140,135	145,179	154,583	6.5	93,769	105,052
Iowa	119,876	138,661	147,892	154,964	159,982	3.2	78,839	81,943
Kansas	293,784	309,028	324,335	343,833	362,280	5.4	93,068	106,688
Kentucky	110,039	117,496	126,580	132,436	136,990	3.4	63,097	73,080
Louisiana	636,704	774,320	839,393	840,331	931,203	10.8	150,340	176,716
Maryland	35,010	39,889	47,553	51,177	57,328	12.0	62,646	73,007
Massachusetts	35,486	43,932	50,691	56,626	67,602	19.4	98,201	110,402
Michigan	188,922	207,005	243,465	272,353	298,104	9.5	219,132	239,350
Minnesota	115,140	123,734	136,831	147,732	149,042	.9	84,763	88,399
Mississippi	136,797	138,186	145,353	148,279	157,169	6.0	43,363	51,263
Missouri	188,349	199,272	219,424	223,528	241,239	7.9	113,510	127,674
Montana	40,624	47,491	47,690	52,200	51,825	−.7	19,269	19,922
Nebraska	93,189	102,177	109,265	116,326	114,661	−1.4	52,637	52,803
Nevada	982	2,484	6,676	8,666	8,826	1.8	4,413	6,468
New Hampshire	1,065	1,206	1,445	1,787	2,421	35.5	3,499	3,825
New Jersey	65,718	74,601	90,092	100,483	119,946	19.4	146,352	180,535
New Mexico	177,221	215,281	229,821	243,800	251,518	3.2	38,705	40,607
New York	225,844	243,513	268,408	299,153	343,326	14.8	385,574	428,696
North Carolina	9,436	12,644	16,579	19,533	23,519	20.4	14,848	17,612
North Dakota	4,820	9,320	10,428	13,753	15,639	13.7	4,492	4,945
Ohio	442,523	500,865	561,557	583,753	618,022	5.9	372,545	404,664
Oklahoma	327,936	334,057	358,930	387,277	342,080	−11.7	88,645	83,768
Oregon	----------	----------	4,473	18,227	22,752	24.8	13,794	18,389
Pennsylvania	353,185	390,280	431,325	445,813	465,732	4.5	324,066	343,055
Rhode Island	4,423	5,375	6,242	8,139	9,940	22.1	15,530	16,499
South Carolina	16,573	23,043	44,467	39,741	39,678	−.2	19,630	26,244
South Dakota	15,564	16,107	18,002	18,251	19,535	7.0	10,147	10,704
Tennessee	114,869	118,052	126,815	130,601	142,860	9.4	58,626	71,423
Texas	2,198,175	2,236,540	2,323,847	2,455,528	2,555,541	4.1	403,127	448,143
Utah	41,073	48,903	54,669	57,004	55,706	−2.3	24,055	25,235
Virginia	35,604	38,884	43,362	48,527	56,052	15.5	48,902	56,304
Washington	----------	----------	5,224	40,108	53,063	32.3	22,603	29,207
West Virginia	138,846	158,006	161,246	159,520	164,347	3.0	69,236	79,962
Wisconsin	39,287	40,621	48,188	59,592	67,596	13.4	62,207	69,560
Wyoming	36,709	39,705	45,552	45,504	46,810	2.9	11,330	11,153
Total	8,402,852	9,070,343	9,706,878	10,279,775	10,760,648	4.7	4,435,224	4,967,898

[1] Includes natural gas mixed with manufactured gas.

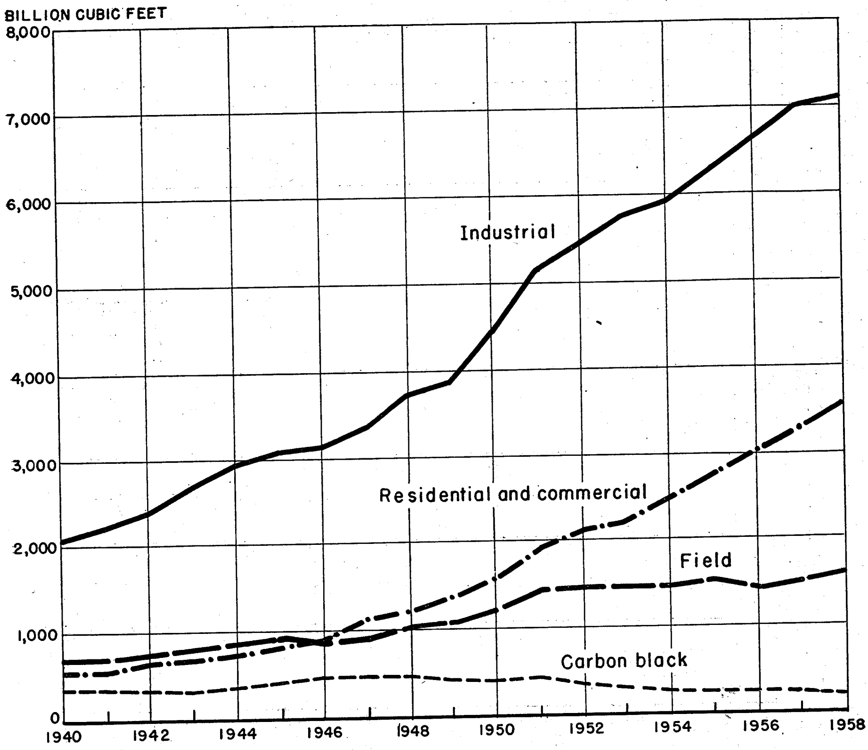

FIGURE 2.—Consumption of natural gas, by uses, in the United States, 1940–58.

PIPELINES

The total cost of the construction authorized by the Federal Power Commission in 1958 was $622,306,000, compared with $385,506,000 in 1957. Construction was authorized for 4,720 miles of line, which will require an estimated 939,513 net tons of steel pipe, and the installation of compressors aggregated 334,417 horsepower. When completed, these projects will add approximately 2.75 billion cubic feet daily of capacity to existing facilities and will provide new or additional natural gas service to some 139 cities.

CONSUMPTION

Consumption of natural gas in the United States in 1958 increased 5 percent over 1957. Increases in consumption in 1958, by various classes of consumers, were: Residential, 8.6 percent; commercial, 12.4 percent; industrial fuel, 1.3 percent; and total industrial, 2.4 percent. The portland-cement industry consumed 164 billion cubic feet in 1958, or 12.3 percent more than 1957.

TABLE 11.—Residential and commercial consumption of natural gas in the United States in 1958, by States [1]

State	Residential				Commercial				Total			
	Number of consumers (thousand)	Quantity (million cubic feet)	Value at point of consumption		Number of consumers (thousand)	Quantity (million cubic feet)	Value at point of consumption		Number of consumers (thousand)	Quantity (million cubic feet)	Value at point of consumption	
			Total (thousand dollars)	Average (cents per M c.f.)			Total (thousand dollars)	Average (cents per M c.f.)			Total (thousand dollars)	Average (cents per M c.f.)
Alabama	415	39,152	36,718	93.8	35	14,973	8,399	56.1	450	54,125	45,117	83.4
Arizona	236	22,621	16,764	74.1	28	17,393	7,880	45.3	264	40,014	24,644	61.6
Arkansas	248	27,958	17,203	61.5	38	14,935	6,754	45.2	286	42,893	23,957	55.9
California	3,923	288,922	266,346	92.2	319	104,656	63,761	60.9	4,242	393,578	330,107	83.9
Colorado	321	36,158	22,747	62.9	42	19,268	10,053	52.2	363	55,426	32,800	59.2
Connecticut	423	17,319	35,411	204.5	23	2,973	5,801	195.1	446	20,292	41,212	203.1
Delaware, District of Columbia, and Maryland	808	53,921	78,961	146.4	54	10,153	13,681	134.7	862	64,074	92,642	144.6
Florida	36	3,715	2,975	80.1	1	909	716	78.8	37	4,624	3,691	79.8
Georgia	477	50,949	43,325	85.0	43	18,412	10,551	57.3	520	69,361	53,876	77.7
Idaho	10	666	799	120.0	3	1,061	914	86.1	13	1,727	1,713	99.2
Illinois	2,045	181,600	201,079	110.7	114	35,981	27,649	76.8	2,159	217,581	228.728	105.1
Indiana	684	61,178	60,998	99.7	54	15,634	13,684	87.5	738	76,812	74,682	97.2
Iowa	395	49,565	41,546	83.8	42	21,095	12,637	59.9	437	70,660	54,183	76.7
Kansas	494	64,486	38,945	60.4	61	40,147	15,690	39.1	555	104,633	54,635	52.2
Kentucky	376	55,046	40,957	74.4	37	15,943	10,102	63.4	413	70,989	51,059	71.9
Louisiana	644	58,616	36,938	63.0	54	23,312	8,558	36.7	698	81,928	45,496	55.5
Massachusetts	939	37,709	81,059	215.0	55	7,700	14,166	184.0	994	45,409	95,225	210.0
Michigan	1,347	173,207	163,562	94.4	108	32,019	25,480	79.6	1,455	205,226	189,042	92.1
Minnesota	373	53,738	52,323	97.4	26	21,145	15,402	72.8	399	74,883	67,725	90.4
Mississippi	240	22,264	17,560	78.9	32	12,157	6,203	51.0	272	34,421	23,763	69.0
Missouri	740	99,321	81,066	81.6	53	28,300	16,486	58.3	793	127,621	97,552	76.4
Montana	102	15,052	9,736	64.7	11	9,599	4,250	44.3	113	24,651	13,986	56.7
Nebraska	247	33,989	26,779	78.8	31	17,680	9,710	54.9	278	51,669	36,489	70.6
Nevada	13	1,630	2,066	126.7	1	725	526	72.6	14	2,355	2,592	110.1
New Hampshire	26	1,403	2,438	173.8	1	371	567	152.8	27	1,774	3,005	169.4
New Jersey	1,355	66,740	142,892	214.1	93	8,312	15,700	188.9	1,448	75,052	158,592	211.3
New Mexico	139	14,382	10,595	73.7	15	7,395	3,002	40.6	154	21,777	13,597	62.4
New York	3,762	195,560	290,798	148.7	274	51,835	76,762	148.1	4,036	247,395	367,560	148.6
North Carolina	72	4,995	7,444	149.0	12	1,774	2,643	149.0	84	6,769	10,087	149.0
North Dakota	21	3,204	2,450	76.5	3	2,311	1,225	53.0	24	5,515	3,675	66.6
Ohio	1,965	339,341	248,145	73.1	160	91,944	62,870	68.4	2,125	431,285	311,015	72.1

Oklahoma	513	56, 207	37, 608	66. 9	56	26, 718	11, 476	43. 0	569	82, 925	49, 084	59. 2
Oregon	111	5, 877	8, 995	153. 1	13	2, 674	3, 859	144. 3	124	8, 551	12, 854	150. 3
Pennsylvania	1, 927	216, 880	218, 103	100. 6	123	47, 743	28, 085	58. 8	2, 050	264, 623	246, 188	93. 0
Rhode Island	148	5, 656	11, 985	211. 9	7	1, 773	2, 471	139. 4	155	7, 429	14, 456	194. 6
South Carolina	138	7, 385	11, 557	156. 5	17	3, 650	4, 324	118. 5	155	11, 035	15, 881	143. 9
South Dakota	51	6, 521	5, 645	86. 6	6	6, 209	3, 074	49. 5	57	12, 730	8, 719	68. 5
Tennessee	238	30, 376	26, 608	87. 6	36	21, 978	13, 647	62. 1	274	52, 354	40, 255	76. 9
Texas	2, 066	167, 663	119, 260	71. 1	195	62, 194	28, 359	45. 6	2, 261	229, 857	147, 619	64. 2
Utah	139	18, 801	13, 132	69. 8	17	8, 447	4, 334	51. 3	156	27, 248	17, 466	64. 1
Virginia	285	23, 962	36, 994	154. 4	25	9, 146	9, 525	104. 1	310	33, 108	46, 519	140. 5
Washington	71	4, 487	6, 822	152. 0	17	3, 958	5, 187	131. 1	88	8, 445	12, 009	142. 2
West Virginia	316	49, 963	35, 848	71. 7	31	14, 908	9, 314	62. 5	347	64, 871	45, 162	69. 6
Wisconsin	451	37, 876	47, 314	124. 9	30	7, 655	8, 426	110. 1	481	45, 531	55, 740	122. 4
Wyoming	52	8, 190	4, 889	59. 7	9	4, 609	1, 915	41. 5	61	12, 799	6, 804	53. 2
Total: 1958	29, 382	2, 714, 251	2, 665, 385	98. 2	2, 405	871, 774	605, 818	69. 5	31, 787	3, 586, 025	3, 271, 203	91. 2
1957	28, 792	2, 500, 269	2, 324, 790	93. 0	2, 344	775, 916	534, 485	68. 9	31, 136	3, 276, 185	2, 859, 275	87. 3

[1] Includes natural gas mixed with manufactured gas.

TABLE 12.—Industrial consumption of natural gas in the United States, 1958, by States and uses

State	Field (pumping, drilling, and other)			Carbon Black			Fuel						Total industrial			Fuel used at electric utility plants [1]
	Quantity (million cubic feet)	Value (thousand dollars)	Average value (cents per M c. f.)	Quantity (million cubic feet)	Value at point of consumption: Total (thousand dollars)	Value at point of consumption: Average (cents per M c. f.)	Refinery fuel (million cubic feet)	Natural gas pipeline (million cubic feet)	Other industrial fuel (million cubic feet)	Total fuel (million cubic feet)	Value (thousand dollars)	Average value (cents per M c. f.)	Quantity (million cubic feet)	Value at point of consumption: Total (thousand dollars)	Value at point of consumption: Average (cents per M c. f.)	
Alabama	232	29	12.5				766	7,680	109,603	118,049	32,124	27.2	118,281	32,153	27.1	14,579
Arizona	15	2	13.3					10,581	54,424	65,005	17,546	27.0	65,020	17,548	27.0	34,221
Arkansas	13,058	1,443	11.1				11,371	8,644	126,395	146,410	29,027	19.8	159,468	30,470	19.1	45,677
California	[2] 167,743	[2] 39,793	[2] 23.7	(2)	(2)	(2)	59,208	11,661	446,665	517,534	191,841	37.1	685,277	231,634	33.8	205,455
Colorado	17,311	1,838	10.6				1,129	1,956	89,277	92,362	18,830	20.4	109,673	20,668	18.8	39,765
Connecticut								89	7,503	7,592	6,766	89.1	7,592	6,766	89.1	2,067
Delaware, District of Columbia, and Maryland								878	18,271	19,149	12,791	66.8	19,149	12,791	66.8	3,981
Florida	35	6	17.1					12	39,503	39,515	10,302	26.1	39,550	10,308	26.1	10,214
Georgia							217	3,142	91,394	94,753	27,780	29.3	94,753	27,780	28.3	34,005
Idaho								99	14,077	14,176	5,348	37.7	14,176	5,348	37.7	
Illinois	21,398	3,002	14.0				9,982	10,050	192,995	213,027	80,653	37.9	234,425	83,655	35.7	45,420
Indiana	68	11	16.2				510	5,545	71,648	77,703	30,359	39.1	77,771	30,370	39.1	7,332
Iowa								8,279	81,043	89,322	27,760	31.1	89,322	27,760	31.1	42,567
Kansas	[2] 36,626	[2] 6,905	[2] 18.9	(2)	(2)	(2)	18,464	25,667	176,890	221,021	45,148	20.4	257,647	52,053	20.2	73,827
Kentucky	14,818	3,237	21.8				(3)	6,973	[3] 44,210	51,183	18,784	36.7	66,001	22,021	33.4	4,776
Louisiana	192,202	22,425	11.7	25,653	2,427	9.5	115,572	34,280	481,568	631,420	106,368	16.8	849,275	131,220	15.5	89,974
Massachusetts								106	22,087	22,193	15,177	68.4	22,193	15,177	68.4	10,503
Michigan	2,628	723	27.5				659	3,089	86,502	90,250	49,585	54.9	92,878	50,308	54.2	1,074
Minnesota							(3)	143	[3] 74,016	74,159	20,674	27.9	74,159	20,674	27.9	40,965
Mississippi	17,726	2,818	15.9				(3)	25,501	[3] 79,521	105,022	24,682	23.5	122,748	27,500	22.4	29,096
Missouri							(3)	7,045	[3] 106,573	113,618	30,122	26.5	113,618	30,122	26.5	31,456
Montana	4,579	455	9.9				2,956	330	19,309	22,595	5,481	24.3	27,174	5,936	21.8	3,201
Nebraska	3,633	385	10.6				(3)	6,176	[3] 53,183	59,359	15,929	26.8	62,992	16,314	25.9	23,710
Nevada									6,471	6,471	3,876	59.9	6,471	3,876	59.9	4,127
New Hampshire									647	647	820	126.7	647	820	126.7	
New Jersey								426	44,468	44,894	21,943	48.9	44,894	21,943	48.9	23,435
New Mexico	115,423	10,421	9.0	50,019	3,692	7.4	1,773	15,648	46,878	64,299	12,897	20.1	229,741	27,010	11.8	29,880
New York	509	213	41.8				29	1,828	93,565	95,422	60,923	63.8	95,931	61,136	63.7	49,787
North Carolina								1,982	14,768	16,750	7,525	44.9	16,750	7,525	44.9	
North Dakota	8,942	892	10.0				(3)	225	[3] 957	1,182	378	32.0	10,124	1,270	12.5	389

Ohio	1,121	360	32.1				5,551	7,015	173,050	185,616	93,289	50.3	186,737	93,649	50.2	2,454
Oklahoma	136,735	13,555	9.9	-----	-----	-----	42,916	8,202	71,302	122,420	21,129	17.3	259,155	34,684	13.4	71,654
Oregon	-----	-----	-----	-----	-----	-----	-----	5	14,196	14,201	5,535	39.0	14,201	5,535	39.0	867
Pennsylvania	2,362	1,143	48.4	-----	-----	-----	20,864	13,691	164,192	198,747	95,724	48.2	201,109	96,867	48.2	13,977
Rhode Island	-----	-----	-----	-----	-----	-----	-----	89	2,422	2,511	2,043	81.4	2,511	2,043	81.4	610
South Carolina	-----	-----	-----	-----	-----	-----	-----	1,002	27,641	28,643	10,363	36.2	28,643	10,363	36.2	17,363
South Dakota	-----	-----	-----	-----	-----	-----	-----	42	6,763	6,805	1,985	29.2	6,805	1,985	29.2	3,813
Tennessee	124	25	20.2	-----	-----	-----	(3)	14,944	[3] 75,438	90,382	31,143	34.5	90,506	31,168	34.4	1,574
Texas	803,338	66,721	8.3	129,983	10,944	8.4	375,810	56,346	960,207	1,392,363	222,859	16.0	2,325,684	300,524	12.9	351,319
Utah	1,427	199	13.9	-----	-----	-----	2,010	54	24,967	27,031	7,570	28.0	28,458	7,769	27.3	4,838
Virginia	9	3	33.3	-----	-----	-----	-----	3,377	19,558	22,935	9,782	42.7	22,944	9,785	42.6	1,428
Washington	-----	-----	-----	-----	-----	-----	-----	266	44,352	44,618	17,198	38.5	44,618	17,198	38.5	-----
West Virginia	28,131	7,017	24.9	-----	-----	-----	678	7,279	63,388	71,345	27,783	38.9	99,476	34,800	35.0	854
Wisconsin	-----	-----	-----	-----	-----	-----	(3)	374	[3] 21,691	22,065	13,820	62.6	22,065	13,820	62.6	159
Wyoming	19,304	1,802	9.3	-----	-----	-----	6,100	1,500	7,107	14,707	2,547	17.3	34,011	4,349	12.8	463
Total: 1958	1,604,104	184,609	11.5	211,048	17,877	8.5	681,912	312,221	4,365,338	5,359,471	1,494,209	27.8	7,174,623	1,696,695	23.6	1,372,853
1957	1,479,720	162,397	11.0	233,788	19,319	8.3	678,810	299,235	4,312,037	5,290,082	1,394,233	26.4	7,003,590	1,575,949	22.5	1,338,079

[1] Federal Power Commission. Preliminary; includes gas other than natural impossible to segregate and therefore shown separately.

[2] 5,393 million cubic feet and $814,000 in value included in field use to avoid disclosure; included in total carbon black.

[3] 5,347 million cubic feet included in other industrial to avoid disclosure; included in total refinery fuel.

TABLE 13.—Natural gas processed at natural gasoline and cycling plants in the United States, 1954–58, in million cubic feet

States	1954	1955	1956	1957	1958
Arkansas	64,561	56,092	48,233	43,696	42,538
California	571,702	570,806	572,749	564,675	612,389
Colorado [1]	36,169	43,911	49,052	57,759	61,251
Illinois [2]	[3] 159,225	165,739	175,618	192,821	200,397
Kansas	[4] 400,791	426,533	407,749	426,454	390,814
Kentucky	[3] 370,111	[3] 389,696	[3] 406,260	[3] 396,695	[3] 288,907
Louisiana	627,006	775,761	839,274	865,836	973,299
Michigan	(2)	(2)	(2)	(2)	(2)
Mississippi	120,533	140,040	144,227	157,249	171,008
Montana	(1)	(1)	(1)	(1)	(1)
Nebraska	(4)	[4] 18,397	[4] 21,211	[4] 25,159	[4] 35,205
New Mexico	439,556	467,505	578,468	617,726	563,227
Ohio	(2)	(2)	(2)	(2)	(2)
Oklahoma	540,822	562,749	620,901	618,715	651,077
Pennsylvania	20,201	17,316	13,949	10,974	5,358
Texas	3,843,718	4,187,003	[5] 4,318,004	4,354,756	4,233,619
Utah	(1)	(1)	(1)	(1)	(1)
West Virginia	205,151	225,307	181,772	181,390	156,653
Wyoming	60,372	139,098	67,542	64,656	66,802
Total	7,459,918	8,185,953	[5] 8,445,009	8,578,561	8,452,544

[1] Montana and Utah included in Colorado.
[2] Michigan and Ohio included in Illinois.
[3] Includes gas from transmission lines; previously treated in other States.
[4] Nebraska and North Dakota included in Kansas in 1954; North Dakota included in Nebraska in 1955–58.
[5] Revised.

TABLE 14.—Consumption of natural gas used with manufactured gas in the United States in 1958, by States [1]

State	Residential		Commercial		Industrial	Total	
	Number of consumers (thousand)	Quantity (million cubic feet)	Number of consumers (thousand)	Quantity (million cubic feet)	Quantity (million cubic feet)	Quantity (million cubic feet)	Value at point of consumption (thousand dollars)
Connecticut	198	5,649	13	1,042	3,025	9,716	17,609
Indiana	394	25,843	26	6,026	33,031	64,900	50,545
Massachusetts	290	7,000	21	2,150	5,130	14,280	26,340
New Jersey	654	15,666	72	5,340	17,200	38,206	52,038
New York	549	50,764	22	8,360	9,474	68,598	69,947
Pennsylvania	794	58,062	42	6,021	29,124	93,207	90,515
Total: 1958	2,879	162,984	196	28,939	96,984	288,907	306,994
1957	3,861	190,569	162	35,243	103,224	329,036	322,701

[1] Included in tables for consumption of natural gas (tables 10–12).

VALUE AND PRICE

The average value of natural gas at the wellhead in 1958 was 11.9 cents per thousand cubic feet, a 0.6-cent increase over 1957.

The average value at the point of consumption was 46.2 cents per thousand cubic feet, an increase of 3.1 cents over 1957. The increase was reflected by all classes of consumers.

TABLE 15.—Average value of natural gas in the United States, 1957–58, by States, in cents per thousand cubic feet

State	At wells (estimated)		At point of consumption	
	1957	1958	1957	1958
Alabama	6.4	9.2	41.8	44.8
Arizona	------	------	37.6	40.2
Arkansas	7.2	8.1	23.9	26.9
California	23.7	23.3	45.0	52.1
Colorado	10.0	10.5	40.7	32.4
Connecticut	------	------	134.3	172.1
Delaware	------	------	113.1	94.7
District of Columbia	------	------	137.7	139.6
Florida	13.0	13.6	29.6	31.7
Georgia	------	------	44.5	49.8
Idaho	------	------	44.9	44.4
Illinois	15.5	14.8	61.2	69.1
Indiana	13.1	15.6	64.6	68.0
Iowa	------	------	50.9	51.2
Kansas	11.4	11.4	27.1	29.4
Kentucky	23.8	24.1	47.6	53.3
Louisiana	11.2	12.9	17.9	19.0
Maryland	26.2	26.9	122.4	127.3
Massachusetts	------	------	173.4	163.3
Michigan	18.8	18.6	80.5	80.3
Minnesota	------	------	57.4	59.3
Mississippi	10.3	13.9	29.2	32.6
Missouri	16.7	------	50.8	52.9
Montana	7.2	6.8	36.9	38.4
Nebraska	16.0	15.0	45.2	46.1
Nevada	------	------	50.9	73.3
New Hampshire	------	------	195.8	158.0
New Jersey	------	------	145.6	150.5
New Mexico	9.4	10.4	15.9	16.1
New York	28.4	30.6	128.9	124.9
North Carolina	------	------	76.0	74.9
North Dakota	9.5	9.7	32.7	31.6
Ohio	23.7	21.4	63.8	65.5
Oklahoma	8.3	10.1	22.9	24.5
Oregon	------	------	75.5	80.8
Pennsylvania	31.1	28.3	72.7	73.7
Rhode Island	------	------	190.8	166.0
South Carolina	------	------	49.4	66.1
South Dakota	------	------	55.6	54.8
Tennessee	15.8	16.7	44.9	50.0
Texas	9.7	10.0	16.4	17.5
Utah	14.7	14.7	42.2	45.3
Virginia	26.8	27.0	100.8	100.4
Washington	------	------	56.4	55.0
West Virginia	23.8	24.8	43.4	48.7
Wisconsin	------	------	104.4	102.9
Wyoming	8.7	8.4	24.9	23.8
Total	11.3	11.9	43.1	46.2

TABLE 16.—Consumption of natural gas,[1] 1953–57 by countries, in million cubic meters

[United Nations Statistical Yearbook]

Country	1953	1954	1955	1956	1957
Western Hemisphere:					
Argentina	932	985	1,065	1,148	1,414
Barbados	4	3	3	2	1
Brazil [2]	27	63	62	84	159
Canada	2,860	3,419	4,269	4,790	5,839
Colombia [3]	484	545	539	621	(4)
Ecuador [4]	------	------	------	------	------
Mexico [2]	2,714	2,759	3,482	3,645	4,643
Trinidad	501	515	498	547	601
United States	237,775	247,563	266,331	284,983	302,433
Venezuela	2,172	2,448	2,748	2,994	3,624
Europe:					
Austria	[5] 56	[5] 75	749	745	759
Czechoslovakia	168	172	173	274	772
France	244	259	266	319	561
Germany [6]	58	88	240	367	357
Hungary [3]	549	558	545	452	413
Italy	2,280	2,967	3,627	4,465	4,994
Netherlands	25	100	145	169	(4)
Poland [7]	319	358	393	436	419
Rumania [2]	5,589	5,826	6,169	6,756	7,297
U.S.S.R.	6,868	7,511	8,981	12,069	18,579
Yugoslavia	26	28	34	39	42
Asia:					
Brunei [2]	1,173	1,098	1,177	1,428	1,606
China	20	27	26	27	29
Indonesia [2] [8]	1,366	1,582	1,908	2,045	2,168
Japan	111	141	156	177	244
Pakistan	------	------	[9] 39	296	435

[1] Data relate, as far as possible, to natural gas actually collected, and used as fuel or raw material. Thus they exclude gas used for repressuring, as well as gas flared, vented, or otherwise wasted, whether or not it has first been processed for extracting natural gasoline. Natural gas is produced also in Chile, Morocco, Peru, Tunisia, and other countries.
[2] Total production, including gas repressured and wasted.
[3] Includes gas repressured.
[4] Not available.
[5] Vienna only.
[6] Figures represent virtually total German production.
[7] April-December.
[8] Converted approximately from original data expressed in terms of weight.
[9] July–December.

Natural Gas Liquids

By I. F. Avery, W. G. Messner, B. D. Furgang, and E. R. Eliff

Contents

GENERAL SUMMARY

DOMESTIC production of natural gas liquids decreased slightly in 1958, whereas production of LP-gases (liquefied petroleum gases) increased 2 percent. Output of natural gasoline and finished gasoline and naphtha decreased 3 and 10 percent, respectively. Sales of LP-gases, including liquefied refinery gases (LR-gases) for all uses other than blending into gasoline, increased 6 percent in 1958.

SCOPE OF REPORT

Statistics on the production of natural gas liquids were collected by the Bureau of Mines on both monthly and annual questionnaires from all natural gasoline plants, cycling plants, and fractionators handling natural gas liquids. Reports were not received for the liquids recovered at pipeline compressor stations and at gas dehydration plants. Reports were received on the production of field condensate when this material was not commingled with the crude oil. Field condensate delivered to a plant and fractionated into finished products was reported as output of finished products.

Th monthly reports provided information on production, stocks, and distribution. The annual reports provided facts on type of plant, production, value of production, and gas processed. Data on sales of LP-gases for fuel and chemical uses included propane, propylene, butanes, butylenes, ethane, and ethane mixtures produced at natural gasoline plants and at petroleum refineries but did not include LP-gas blended into gasoline motor fuel. Information is collected on an annual questionnaire received from all producers and distributors and from most of the dealers selling over 100,000 gallons of LP-gases a year. Statistics on smaller or nonreporting dealers are indirectly

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included, as the sales figures of producers or distributors will reflect the operations of these dealers.

RESERVES

The American Gas Association Reserves Committee estimated the proved recoverable reserves of natural gas liquids on December 31, 1958, at 6.2 billion barrels, an increase of 0.52 billion barrels during the year. Reserves in Texas and Louisiana increased 0.12 billion barrels and 0.18 billion barrels, respectively, because of extensions and revisions. In Utah the reserves increased from 91,000 barrels to 14,899 thousand barrels in 1958 as the result of development following the extensions of natural gas and crude oil pipelines to this area.

TABLE 1.—Salient statistics of the natural gas-liquids industry in the United States, 1954–58, in thousand gallons

	1954	1955	1956	1957	1958
Production:					
Natural gasoline and isopentane	4, 104, 828	4, 457, 079	4, 438, 890	4, 499, 495	4, 355, 025
LP-gases	5, 204, 304	5, 972, 698	6, 487, 413	6, 655, 282	6, 783, 000
Finished gasoline and naphtha	733, 068	823, 103	832, 915	779, 807	701, 456
Other products	547, 386	564, 722	535, 295	455, 005	539, 977
Total	10, 589, 586	11, 817, 602	12, 294, 513	12, 389, 589	12, 379, 458
Shipments for use in gasoline [1]	6, 134, 777	7, 059, 737	6, 990, 389	7, 241, 831	6, 904, 179
Transfers to nongasoline uses:					
LP-gases [2]	4, 132, 536	4, 549, 681	4, 796, 743	4, 915, 211	5, 174, 140
Other products	200, 427	220, 107	207, 768	181, 011	191, 077
Stocks at plants, terminals, and refineries:					
Natural gasoline	171, 671	165, 799	194, 757	168, 244	197, 402
LP-gases	308, 528	300, 129	587, 094	[3] 568, 601	635, 595
Other products	109, 407	103, 775	81, 627	109, 727	93, 477
Total	589, 606	569, 703	863, 478	846, 572	926, 474
Value of natural gas liquids at plants thousand dollars	581, 412	619, 006	697, 143	679, 456	689, 710
Average value per gallon cents	5. 5	5. 2	5. 7	5. 5	5. 6
Natural gas processed million cubic feet	7, 458, 485	8, 185, 953	8, 590, 163	8, 578, 561	8, 452, 544
Average yield, all natural gas liquids gallons per M cubic feet	1. 42	1. 44	1. 43	1. 44	1. 46
Sales for fuel and chemical uses:					
Liquefied petroleum gas	3, 785, 781	4, 227, 711	4, 528, 356	4, 780, 141	5, 090, 128
Liquefied refinery gas	1, 339, 752	1, 768, 772	2, 107, 407	2, 158, 980	2, 371, 961
Total [3]	5, 125, 533	5, 996, 483	6, 635, 763	6, 939, 121	7, 462, 089
Exports of natural gasoline, LP-gases, and LR-gases	189, 216	183, 155	187, 882	192, 505	120, 017

[1] Includes exports of natural gasoline.
[2] Includes exports of LP-gases.
[3] Ethane is excluded from "Sales for fuel and chemical uses" before 1955.

TABLE 2.—Estimated proved recoverable reserves of natural gas liquids [1] in the United States, 1957–58, in thousand barrels

[Committee on Natural Gas Reserves, American Gas Association]

State	Reserves as of Dec. 31, 1957	Changes in reserves during 1958: Extensions and revisions	Changes in reserves during 1958: Discoveries of new fields and new pools in old fields	Changes in reserves during 1958: Net production	Reserves as of Dec. 31, 1958: Nonassociated with oil	Reserves as of Dec. 31, 1958: Associated with oil	Reserves as of Dec. 31, 1958: Dissolved in oil	Reserves as of Dec. 31, 1958: Total
Arkansas	37,140	−659	442	2,773	4,372	19,190	10,588	34,150
California [2]	305,729	24,222	525	28,157	0	91,267	211,052	302,319
Colorado	10,965	11,105	20	822	2,123	645	18,500	21,268
Illinois	11,793	759	0	1,602	78	0	10,872	10,950
Indiana	114	25	0	20	8	7	104	119
Kansas	189,155	15,996	265	5,864	188,116	8,569	2,867	199,552
Kentucky	5,707	33,002	1,501	2,738	[3] 37,472	0	0	37,472
Louisiana [2]	1,019,198	181,797	45,361	50,401	976,597	183,428	35,930	1,195,955
Michigan	1,237	287	81	103	608	259	635	1,502
Mississippi	54,401	2,951	890	3,060	28,032	21,258	5,892	55,182
Montana	7,805	6	40	354	40	0	7,457	7,497
Nebraska	7,135	−917	0	519	4,268	643	788	5,699
New Mexico	320,548	112,015	1,743	17,068	297,002	40,137	80,099	417,238
North Dakota	22,700	9,847	0	1,308	14,839	0	16,400	31,239
Ohio	1,810	−180	0	12	[3] 1,618	0	0	1,618
Oklahoma	342,643	41,007	3,442	29,585	140,492	49,186	167,829	357,507
Pennsylvania	3,460	199	99	73	[3] 3,685	0	0	3,685
Texas [2]	3,271,617	259,799	50,035	189,484	1,451,945	584,448	1,355,574	3,391,967
Utah	91	14,761	50	3	149	0	14,750	14,899
West Virginia	22,912	41,746	3,249	4,621	[3] 63,286	0	0	63,286
Wyoming	51,165	2,182	507	2,978	16,227	610	34,039	50,876
Alabama, Florida, and Missouri	35	6	0	3	18	0	20	38
Total	5,687,360	749,956	108,250	341,548	3,230,975	999,647	1,973,396	6,204,018

[1] Comprises natural gasoline, LP-gases, and condensate.
[2] Includes offshore reserves.
[3] Not allocated by types, but occurring principally in column shown.

PRODUCTION

The production of natural gas liquids decreased slightly in 1958. However, the production of LP-gases and other products (condensate, jet fuel, kerosine, distillate, and heavier products) increased 2 and 19 percent, respectively. Output of natural gasoline (including isopentane) declined 3 percent, and output of finished gasoline and naphtha declined 10 percent.

The production of liquefied refinery gases (LR-gases) is shown in table 9. LR-gases are included in the liquefied petroleum gas sales figures for fuel and chemical use.

TABLE 3.—Natural gas liquids produced and natural gas treated in the United States, 1958, by States

State	Number of operators [3]	Production												
		Natural gasoline [1]		LP-gases		Finished gasoline and naphtha		Other products [2]		Total		Natural gas processed		
												Million cubic feet	Average yield (gallons per M cubic feet)	
		Thousand gallons	Thousand dollars	Thousand gallons	Thousand dollars	thousand gallons	Thousand dollars	Thousand gallons	Thousand dollars	Thousand gallons	Thousand dollars		Natural gas liquids except LP-gases	All natural gas liquids
Arkansas	7	34,123	2,253	53,518	2,743	2,188	208	886	113	90,715	5,317	42,538	0.87	2.13
California	27	797,409	63,667	342,992	18,678	---	---	55,636	4,818	1,195,037	87,163	612,389	1.39	1.95
Colorado [4]	11	55,068	3,894	84,572	4,230	---	---	138	10	139,778	8,134	61,251	.90	2.28
Illinois [5]	7	21,938	1,540	355,883	20,978	1,336	174	---	---	379,157	22,692	[6] 200,397	.12	1.89
Kansas	12	110,293	6,229	115,175	5,193	---	---	---	---	225,468	11,422	390,814	.28	.58
Kentucky	5	37,696	2,130	150,655	8,491	---	---	230	35	188,581	10,656	[6] 288,907	.13	.65
Louisiana	34	325,928	21,305	410,869	21,435	212,074	11,392	245,097	17,674	1,193,968	71,806	973,299	.80	1.23
Mississippi	2	22,154	1,383	9,208	503	---	---	3,584	275	34,946	2,161	171,008	.15	.18
Nebraska [7]	4	21,005	1,576	66,878	3,728	---	---	---	---	87,883	5,304	35,205	.60	2.50
New Mexico	11	246,663	14,559	458,178	17,331	---	---	11,649	572	716,490	32,462	563,227	.46	1.27
Oklahoma	38	437,045	25,716	657,114	25,822	2,877	252	876	61	1,097,912	51,851	651,077	.68	1.69
Pennsylvania	6	1,608	107	1,363	123	---	---	---	---	2,971	230	5,358	.30	.55
Texas	104	2,167,867	147,674	3,786,575	151,896	482,941	41,370	220,781	15,457	6,658,164	356,397	4,233,619	.69	1.57
West Virginia	9	27,716	5,630	235,524	12,806	40	5	161	8	263,441	18,449	156,653	.18	1.68
Wyoming	8	48,512	3,003	54,496	2,614	---	---	939	49	103,947	5,666	66,802	.74	1.56
Total	199	4,355,025	300,666	6,783,000	296,571	701,456	53,401	539,977	39,072	12,379,458	689,710	8,452,544	.66	1.46

1 Includes isopentane.
2 Includes condensate, kerosine, distillate fuel, etc.
3 A producer operating in more than 1 State is counted but once in arriving at total for United States.
4 Montana (2 operators) and Utah (1 operator) included in Colorado.
5 Michigan (2 operators) and Ohio (1 operator) included in Illinois.
6 Includes gas from transmission lines, previously treated in another State.
7 North Dakota (1 operator) included in Nebraska.

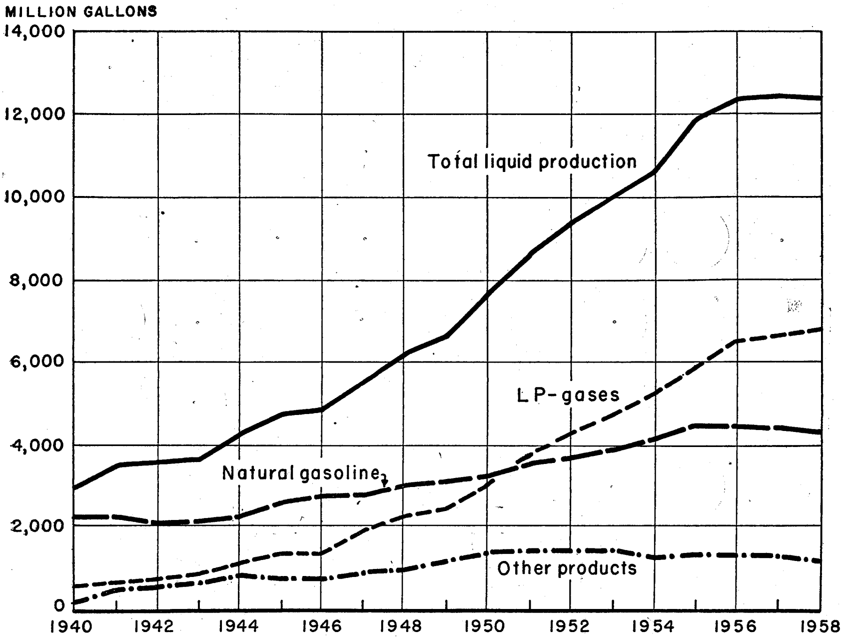

FIGURE 1.—Production of the natural gas-liquids industry, United States, 1940–58.

TABLE 4.—Monthly production of natural gas liquids in the United States, 1958, by States and district,[1] in thousand gallons

State and district	January	February	March	April	May	June	July	August	September	October	November	December	Total
West Pennsylvania	366	303	352	208	184	180	173	168	182	337	236	282	2, 971
West Virginia	23, 264	20, 939	21, 806	20, 241	21, 268	19, 086	21, 144	21, 913	21, 704	22, 370	23, 022	26, 684	263, 441
Illinois, Michigan, and Ohio	38, 546	32, 618	28, 993	30, 978	26, 688	34, 289	34, 666	32, 272	32, 942	32, 136	35, 297	19, 732	379, 157
Kentucky	15, 994	14, 677	17, 033	16, 430	16, 389	15, 487	16, 096	15, 719	15, 643	15, 629	14, 157	15, 322	188, 581
Kansas	23, 978	22, 453	24, 461	19, 091	16, 259	14, 559	13, 113	14, 290	15, 298	17, 182	21, 122	23, 662	225, 468
Nebraska and North Dakota	8, 951	7, 561	7, 852	5, 748	5, 879	6, 403	6, 861	7, 513	6, 417	6, 490	8, 620	9, 588	87, 883
Oklahoma	92, 560	84, 533	93, 077	91, 096	95, 012	89, 844	89, 950	90, 352	89, 332	92, 884	94, 335	94, 937	1, 097, 912
Texas:													
Gulf	129, 398	112, 185	129, 594	114, 848	116, 849	116, 850	119, 337	123, 116	119, 482	125, 026	126, 624	139, 383	1, 472, 695
East Texas	21, 075	19, 665	18, 015	17, 752	18, 647	18, 169	20, 045	23, 352	24, 447	22, 612	21, 200	21, 632	246, 611
Panhandle	93, 314	86, 522	94, 124	86, 311	70, 989	72, 488	81, 375	75, 513	73, 095	85, 416	88, 312	101, 689	1, 009, 148
West Texas	186, 194	171, 571	170, 533	157, 318	158, 440	144, 844	188, 617	214, 308	205, 387	204, 391	199, 381	217, 418	2, 218, 402
Rest of State	144, 661	131, 875	147, 820	139, 841	150, 833	138, 581	142, 954	136, 692	137, 699	142, 998	143, 152	154, 202	1, 711, 308
Total Texas	574, 642	521, 818	560, 086	516, 070	515, 758	490, 932	552, 328	572, 981	560, 110	580, 443	578, 669	634, 327	6, 658, 164
Arkansas	8, 104	7, 268	7, 359	6, 604	7, 348	7, 036	7, 419	7, 993	7, 722	8, 218	7, 788	7, 856	90, 715
Louisiana:													
Gulf	58, 230	52, 378	62, 291	56, 145	58, 788	56, 088	58, 564	58, 392	58, 729	60, 219	60, 893	64, 525	705, 242
Inland	39, 110	34, 982	37, 219	37, 460	44, 003	42, 132	36, 814	44, 249	39, 400	42, 672	43, 520	47, 165	488, 726
Total Louisiana	97, 340	87, 360	99, 510	93, 605	102, 791	98, 220	95, 378	102, 641	98, 129	102, 891	104, 413	111, 690	1, 193, 968
Mississippi	3, 204	2, 862	3, 164	2, 963	2, 926	2, 604	2, 650	3, 186	2, 294	2, 967	2, 977	3, 149	34, 946
New Mexico	57, 889	53, 240	63, 833	61, 464	59, 605	57, 271	60, 279	57, 810	54, 857	60, 797	63, 187	66, 258	716, 490
Colorado, Montana, and Utah	11, 853	10, 967	11, 849	11, 806	11, 224	10, 538	11, 372	11, 815	12, 109	12, 621	11, 685	11, 939	139, 778
Wyoming	9, 429	8, 094	8, 828	8, 106	7, 738	7, 489	8, 042	8, 820	8, 762	9, 614	9, 226	9, 799	103, 947
California	109, 689	93, 169	103, 035	98, 803	97, 548	95, 240	97, 334	97, 728	96, 203	102, 861	99, 768	104, 659	1, 196, 037
Total United States	1, 075, 809	967, 862	1, 051, 238	983, 213	986, 617	949, 178	1, 016, 805	1, 045, 201	1, 021, 709	1, 067, 440	1, 074, 502	1, 139, 884	12, 379, 458

[1] West Pennsylvania separated from eastern part of State to allow grouping either in a Bureau of Mines refinery district or Petroleum Administration for War district. Districts shown for Texas and Louisiana are Bureau of Mines production districts.

YIELD, PROCESSES, AND NUMBER OF PLANTS

The overall yield of natural gas liquids recovered in 1958 remained at about the same level as in recent years. The number of plants operating at the end of 1958 totaled 583. The number of compression and cycling plants operating decreased 3 each, whereas the number of absorption plants, which produce 81 percent of the natural gas liquids, increased by 30.

TABLE 5.—Natural gas liquids produced in the United States in 1958, by States and by methods of manufacture

State	Number of plants operating				Production (thousand gallons)			
	Compression [1]	Absorption [2]	Cycling [3]	Total	Compression	Absorption	Cycling	Total
Arkansas	----------	7	1	8	----------	(4)	(4)	90,715
California	2	66	3	71	3,510	1,062,471	130,056	1,196,037
Colorado [5]	3	9	1	13	(4)	(4)	(4)	139,778
Illinois [6]	2	6	----------	8	362	378,795	----------	379,157
Kansas	1	15	----------	16	(4)	(4)	----------	225,468
Kentucky	1	5	----------	6	(4)	(4)	----------	188,581
Louisiana	3	41	10	54	3,395	[7] 726,986	463,587	1,193,968
Mississippi	----------	1	2	3	----------	(4)	----------	34,946
Nebraska [8]	----------	5	----------	5	----------	87,883	----------	87,883
New Mexico	----------	20	----------	20	----------	716,490	----------	716,490
Oklahoma	8	63	2	73	7,468	986,487	103,957	1,097,912
Pennsylvania	4	4	----------	8	209	2,762	----------	2,971
Texas	19	205	29	253	246,664	[7] 5,308,928	1,102,572	6,658,164
West Virginia	26	8	----------	34	183,813	79,628	----------	263,441
Wyoming	1	10	----------	11	(4)	(4)	----------	103,947
Total: 1958	70	465	48	583	457,023	10,069,134	1,853,301	12,379,458
1957	73	435	51	559	526,293	9,740,581	2,122,715	12,389,589

[1] Includes 28 plants manufacturing LP-gases; 1 refrigeration-type plant each in California, Colorado, and Kansas; 2 refrigeration-type plants in New Mexico; and 6 refrigeration-type plants in Texas.
[2] Includes combination of absorption with compression process. Includes 307 plants manufacturing LP-gases.
[3] Includes 43 plants manufacturing LP-gases.
[4] Included in State total production and United States total production to avoid disclosing of individual company operations.
[5] Montana (2 absorption plants) and Utah (a small quantity of drip gasoline) included in Colorado.
[6] Michigan (2 compression plants) and Ohio (1 absorption plant) included in Illinois.
[7] Includes some drip gasoline.
[8] North Dakota (1 absorption plant) included in Nebraska.

SHIPMENTS OF NATURAL GAS LIQUIDS FROM PLANTS AND TERMINALS

Shipments of natural gas liquids in 1958 from plants and terminals remained at about the 1957 level.

For Motor-Fuel Use.—Total natural gas liquids shipped for blending into motor-fuel decreased 13 percent. The proportion of natural gas liquids in refinery gasoline increased from 10.6 percent in 1957 to 10.7 percent in 1958. The only outstanding change in proportion blended occurred in the Arkansas and Louisiana Inland District, where proportion blended increased from 4.6 percent in 1957 to 13.1 percent in 1958. However, the volume used was small.

For Non-Motor-Fuel Use.—Shipments of LP-gases for fuel and chemical uses continued upward and increased 5 percent in 1958. For discussion of sales of LP-gases for fuel and chemical use see page 338.

TABLE 6.—Supply and distribution at plants and terminals[1] of natural gas liquids in the United States, 1958, by months, in thousand gallons

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Production:													
Natural gasoline and isopentane	334, 660	302, 599	325, 932	309, 124	359, 959	355, 424	386, 931	390, 851	367, 501	349, 814	337, 338	340, 370	4, 160, 503
LP-gases:													
Propane	294, 381	273, 927	294, 854	262, 416	234, 135	227, 161	235, 619	246, 432	258, 896	294, 965	305, 893	335, 231	3, 263, 910
Butane, normal	155, 043	125, 622	160, 455	141, 103	129, 725	121, 782	127, 148	141, 035	144, 676	149, 177	153, 056	164, 086	1, 712, 908
Isobutane	49, 711	43, 359	55, 042	44, 324	42, 955	38, 647	41, 269	45, 029	44, 925	48, 648	49, 479	53, 477	556, 865
Butane-propane mixture	63, 576	72, 878	63, 189	58, 169	55, 267	52, 335	65, 339	68, 227	57, 063	58, 191	58, 827	70, 586	743, 647
Other LP-gas mixtures	50, 429	44, 182	33, 362	41, 517	41, 826	40, 450	43, 441	42, 596	40, 699	42, 714	46, 896	37, 558	505, 670
Isopentane	8, 235	4, 421	8, 135	26, 157	7, 831	10, 629	20, 751	13, 175	12, 760	27, 488	27, 298	27, 642	194, 522
Finished gasoline and naphtha	72, 608	50, 582	65, 501	51, 380	62, 980	57, 377	55, 613	57, 887	55, 461	55, 199	55, 154	61, 714	701, 456
Condensate, raw	31, 641	27, 247	27, 904	32, 695	35, 455	29, 150	28, 615	24, 153	25, 214	26, 176	25, 952	34, 015	348, 217
Other products	15, 525	23, 045	16, 864	16, 328	16, 484	16, 223	12, 079	15, 816	14, 514	15, 068	14, 609	15, 205	191, 760
Total	1, 075, 809	967, 862	1, 051, 238	983, 213	986, 617	949, 178	1, 016, 805	1, 045, 201	1, 021, 709	1, 067, 440	1, 074, 502	1, 139, 884	12, 379, 458
Stock change at plants and terminals	−131, 962	−130, 445	−7, 972	+75, 247	+155, 062	+126, 321	+71, 816	+83, 767	+48, 777	+24, 548	−28, 922	−176, 175	+110, 062
Shipments:													
For use in gasoline:													
Natural gasoline and isopentane	316, 679	291, 700	339, 533	306, 988	339, 618	352, 669	386, 187	395, 708	372, 586	346, 577	346, 460	336, 042	4, 130, 747
LP-gases:													
Propane	4, 620	12, 012	6, 300	6, 090	3, 948	3, 696	4, 578	5, 166	6, 300	5, 082	8, 358	7, 560	73, 710
Butane, normal	70, 650	65, 879	58, 210	57, 080	50, 760	50, 830	56, 394	71, 117	77, 015	105, 025	107, 851	90, 894	861, 705
Isobutane	44, 892	37, 567	52, 418	34, 480	34, 080	40, 478	41, 802	41, 989	45, 247	47, 435	45, 365	46, 782	512, 535
Butane-propane mixture	3, 234	546	546	504	546	546	2, 478	588	4, 452	924	1, 302	2, 226	17, 892
Other LP-gas mixtures	6, 552	6, 216	3, 822	4, 158	4, 242	3, 822	6, 468	4, 242	3, 402	2, 016	4, 326	4, 872	54, 138
Isopentane	5, 121	5, 995	2, 209	22, 049	14, 242	9, 429	13, 336	12, 716	18, 565	26, 590	27, 313	31, 339	188, 904
Finished gasoline and naphtha	68, 104	51, 836	71, 026	60, 606	62, 769	60, 876	58, 627	57, 393	49, 846	57, 442	54, 904	58, 377	711, 806
Condensate	28, 749	29, 017	29, 968	40, 633	30, 845	30, 526	30, 469	25, 842	25, 873	25, 389	25, 596	29, 835	352, 742
For other uses:													
LP-gases:[2]													
Propane	435, 439	404, 480	308, 119	197, 150	137, 675	133, 542	156, 340	159, 674	192, 392	231, 476	260, 950	479, 817	3, 097, 054
Butane, normal	89, 750	53, 072	79, 427	70, 819	50, 028	34, 249	76, 032	67, 324	70, 237	81, 009	105, 406	102, 352	879, 705
Isobutane[3]	2, 260	1, 891	2, 639	1, 736	1, 716	2, 038	2, 105	2, 114	2, 278	2, 388	2, 284	2, 356	25, 805
Butane-propane mixture	70, 674	81, 069	57, 067	53, 620	48, 743	48, 399	59, 543	63, 741	50, 231	56, 452	55, 973	74, 286	719, 798
Other LP-gas mixtures	43, 638	38, 303	29, 404	37, 403	37, 182	37, 117	36, 840	38, 051	37, 630	40, 529	42, 864	32, 817	451, 778
Other products	17, 409	18, 724	18, 522	14, 650	15, 161	14, 640	13, 790	15, 769	16, 878	14, 558	14, 472	16, 504	191, 077
Total demand at plants and terminals	1, 207, 771	1, 098, 307	1, 059, 210	907, 966	831, 555	822, 857	944, 989	961, 434	972, 932	1, 042, 892	1, 103, 424	1, 316, 059	12, 269, 396

[1] Terminals owned by producers.
[2] Includes LP-gas exports.
[3] Reported on LP-gas sales report for chemical and synthetic rubber use.

TABLE 7.—Natural gas liquids utilized at refineries in the United States, 1958, by Bureau of Mines refinery district and by months, in thousand gallons

District	January	February	March	April	May	June	July
East Coast	6,930	4,074	3,948	7,560	7,266	6,426	6,804
Appalachian	42	----	----	42	126	294	714
Indiana, Illinois, Kentucky, etc	49,434	41,160	32,172	28,854	41,580	37,338	36,372
Minnesota, Wisconsin, North Dakota, and South Dakota	756	714	126	1,344	756	1,050	1,386
Oklahoma, Kansas, Missouri	53,172	42,000	43,302	38,934	35,994	42,420	42,966
Texas:							
Gulf Coast	126,546	138,306	132,426	126,336	135,240	146,706	153,384
Inland	84,504	74,424	89,502	86,352	69,888	75,894	93,198
Total Texas	211,050	212,730	221,928	212,688	205,128	222,600	246,582
Louisiana-Arkansas:							
Louisiana Gulf Coast	91,266	78,666	75,348	89,964	82,026	78,246	82,698
Arkansas, Louisiana Inland	1,764	1,134	2,352	15,120	5,670	6,006	6,342
Total Louisiana-Arkansas	93,030	79,800	77,700	105,084	87,696	84,252	89,040
Rocky Mountain	9,828	8,946	3,360	10,794	9,198	9,996	9,114
West Coast	87,822	78,918	85,008	85,260	81,144	82,572	82,992
Total United States	512,064	468,342	467,544	490,560	468,888	486,948	515,970

District	August	September	October	November	December	Total
East Coast	6,300	5,964	8,862	10,752	18,186	93,072
Appalachian	1,092	840	252	----	----	3,402
Indiana, Illinois, Kentucky, etc	46,872	44,688	57,540	53,256	55,566	524,832
Minnesota, Wisconsin, North Dakota, and South Dakota	882	840	462	1,680	2,058	12,054
Oklahoma, Kansas, Missouri	44,562	55,230	49,854	57,708	56,868	563,010
Texas:						
Gulf Coast	180,768	165,858	174,468	187,824	172,872	1,840,734
Inland	98,574	99,750	93,198	91,518	95,340	1,052,142
Total Texas	279,342	265,608	267,666	279,342	268,212	2,892,876
Louisiana-Arkansas:						
Louisiana Gulf Coast	75,894	84,252	91,266	97,818	97,902	1,025,346
Arkansas, Louisiana Inland	7,602	6,678	9,618	10,542	12,474	85,302
Total Louisiana-Arkansas	83,496	90,930	100,884	108,360	110,376	1,110,648
Rocky Mountain	9,324	12,012	12,978	10,836	12,894	119,280
West Coast	81,648	83,454	85,806	80,976	89,544	1,005,144
Total United States	553,518	559,566	584,304	602,910	613,704	6,324,318

TABLE 8.—Percentage of natural gas liquids in refinery gasoline[1] in the United States, 1954–58, by Bureau of Mines refinery districts

Year	East Coast	Appalachian	Indiana, Illinois, Kentucky, etc.	Minnesota, Wisconsin, North Dakota, and South Dakota	Oklahoma, Kansas, Missouri	Texas Inland	Texas Gulf Coast	Louisiana Gulf Coast	Arkansas, Louisiana Inland	Rocky Mountain	West Coast	Total
1954	2.8	0.7	5.2	(2)	9.4	31.1	10.2	6.5	7.0	5.8	18.2	9.5
1955	1.9	.8	5.8	(2)	9.7	33.8	10.2	5.9	5.4	5.5	16.6	9.5
1956	1.4	.3	5.8	1.5	10.1	[3]34.2	10.9	9.4	4.7	5.1	15.1	[3]9.7
1957	1.3	(4)	5.6	1.5	9.7	34.3	12.7	17.6	4.6	5.8	14.0	10.6
1958	1.2	(4)	4.8	1.7	9.3	35.8	13.7	18.7	13.1	5.6	13.5	10.7

1 Refinery gasoline excludes jet fuel.
2 Minnesota, Wisconsin, North Dakota, and South Dakota district not shown separately before 1956.
3 Revised.
4 Less than 0.05 percent.

TABLE 9.—Liquefied petroleum gas (LR-gases) produced at refineries in 1958, in thousand gallons

	Propane	Butane-propane mix	Butane	Other LP-gas	Total
East Coast	296, 562	----------	37, 842	----------	334, 404
Western New York	2, 562	----------	----------	----------	2, 562
Western Pennsylvania	7, 686	----------	----------	----------	7, 686
West Virginia	----------	----------	----------	1, 764	1, 764
Illinois	[1] 128, 100	----------	13, 860	[1] −210	[1] 141, 750
Indiana	(1)	----------	(1)	----------	(1)
Kansas	41, 076	5, 586	40, 488	----------	87, 150
Kentucky	(1)	----------	(1)	----------	(1)
Michigan	(1)	----------	(1)	----------	(1)
Ohio	90, 342	----------	2, 310	420	93, 072
Oklahoma	72, 366	15, 456	14, 742	47, 040	149, 604
Arkansas	19, 068	4, 200	5, 502	294	29, 064
Louisiana:	208, 194	19, 824	65, 310	259, 728	553, 056
Gulf	208, 194	19, 824	65, 310	259, 728	553, 056
Inland	----------	----------	----------	----------	----------
Mississippi	----------	----------	----------	----------	----------
New Mexico	2, 184	84	546	----------	2, 814
Texas:	333, 564	9, 072	294, 336	98, 574	735, 546
Gulf	272, 076	5, 208	245, 994	84, 756	608, 034
West Texas	21, 546	1, 596	19, 152	----------	42, 294
East Texas	----------	----------	----------	----------	----------
Panhandle	29, 022	----------	30, 912	----------	59, 934
Other	10, 920	2, 268	−1, 722	13, 818	25, 284
Colorado	(2)	----------	(2)	----------	(2)
Montana	(2)	----------	(2)	----------	(2)
Nebraska	[3] 12, 768	----------	----------	----------	[3] 12, 768
Utah	(2)	----------	----------	----------	(2)
Wyoming	[2] 27, 930	----------	[2] 4, 998	----------	[2] 32, 928
California	187, 110	7, 308	37, 422	4, 158	235, 998
Total	1, 429, 512	61, 530	517, 356	411, 768	2, 420, 166

[1] Kentucky, Michigan, Indiana, Minnesota, and Tennessee, included with Illinois.
[2] Colorado, Montana, and Utah, included with Wyoming.
[3] Missouri and North Dakota included with Nebraska.

SALES OF LIQUEFIED PETROLEUM GASES [1]

Domestic sales of liquefied petroleum gases (excluding liquefied petroleum gases used in gasoline) increased 8 percent in 1958 compared with a 5-percent increase in 1957. All sales categories showed increases, except synthetic rubber manufacture. This use showed an

[1] LP-gases, as used in this section, include LR-(liquid refinery) gases.
The survey covering sales of LP-gases in the West coast marketing area (P.A.W. district 5), was made by J. B. Mull, Branch of Petroleum Economics, Region II, Bureau of Mines, San Francisco, Calif.

11-percent decrease. Increases from 1957 in the various sales categories were as follows:

	Percent
Domestic and commercial	12
Internal combustion	6
Industrial	12
Refinery fuel	46
Gas manufacture	3
Chemical manufacture	10
Secondary recovery	1
All other uses	2

The unusually large increase indicated for petroleum refinery fuel use was the result of more complete reporting in 1958.

TABLE 10.—Sales of LP-gases[1] in the United States, 1954–58

(Thousand gallons)

Year	Propane	Percent of total	Butane	Percent of total	Isobutane	Percent of total	Butane-propane mixtures	Percent of total	All other mixtures	Percent of total	Total LP-gas	Total percent
1954	2,968,312	57.9	765,826	14.9	(2)	------	1,391,395	27.2	(3)	------	5,125,533	100.0
1955	3,260,571	53.3	724,334	11.8	(2)	------	1,428,938	23.3	708,875	11.6	6,122,718	100.0
1956	3,626,189	54.6	888,545	13.4	36,088	0.5	1,160,017	17.5	924,924	14.0	6,635,763	100.0
1957	4,009,144	57.8	1,117,748	16.1	26,721	.4	934,183	13.5	851,325	12.2	6,939,121	100.0
1958	4,247,373	56.9	1,119,544	15.0	25,805	.3	1,050,086	14.1	1,019,281	13.7	7,462,089	100.0

[1] Data include LR-gases.
[2] Not reported separately before 1956.
[3] Not reported separately before 1955.

TABLE 11.—Sales of LP-gases[1] in the United States, 1954–58, by uses

(Thousand gallons)

Year	Domestic and commercial	Internal combustion	Industrial	Refinery fuel	Gas manufacturing	Chemical	Synthetic rubber	Used in the secondary recovery of petroleum	All other	Total
1954	2,626,808	547,204	375,121	(2)	191,932	1,050,239	307,735	(3)	26,494	5,125,533
1955	2,801,379	651,821	423,431	101,033	213,760	1,493,177	406,210	(3)	31,907	6,122,718
1956	3,001,021	773,471	438,916	142,590	212,293	1,600,604	418,101	(3)	48,767	6,635,763
1957	3,067,070	805,056	441,474	122,405	231,155	1,732,338	418,189	68,557	52,877	6,939,121
1958	3,293,677	852,387	492,862	179,231	238,911	1,898,862	371,961	68,981	65,217	7,462,089

[1] Data include LR-gases.
[2] Not reported separately before 1955.
[3] Not reported separately before 1957.

TABLE 12.—Sales of LP-gases[1] in the United States, 1957–58, by districts and States and uses

(Thousand gallons)

District[2] and State	Domestic and commercial		Internal combustion		Industrial		Refinery fuel use		Gas manufacturing	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
District 1:										
Connecticut	25, 649	26, 245	565	357	13, 301	10, 690			491	378
Delaware	9, 474	10, 574	85	159	4, 691	1, 483			1, 019	2, 161
Florida	107, 681	130, 968	9, 591	13, 205	6, 303	8, 968			28, 641	41, 748
Georgia	69, 422	60, 893	5, 540	3, 750	6, 123	11, 066			13, 317	31, 182
Maine	18, 672	19, 100	73	340	1, 221	1, 005			1, 085	611
Maryland and District of Columbia	30, 702	29, 327	690	381	2, 956	2, 971			6, 562	6, 977
Massachusetts	33, 287	35, 725	276	475	3, 459	3, 595			2, 615	2, 620
New Hampshire	13, 045	13, 595	-------	244	1, 103	577	(3)	(3)	1, 864	2, 149
New Jersey	35, 384	37, 766	709	2, 022	22, 099	17, 694			4, 757	2, 592
New York	80, 696	91, 087	2, 569	3, 489	10, 166	11, 965			5, 817	2, 979
North Carolina	64, 173	57, 320	1, 743	2, 287	3, 445	7, 588			12, 592	9, 745
Pennsylvania	50, 525	54, 080	1, 096	2, 756	41, 046	30, 542			9, 782	6, 586
Rhode Island	6, 775	6, 674	9	307	613	555			139	302
South Carolina	43, 348	41, 820	1, 574	1, 402	6, 195	7, 736			3, 762	6, 783
Vermont	10, 972	9, 054	-------	93	921	1, 220			2, 341	2, 451
Virginia	39, 125	33, 038	499	1, 349	4, 322	2, 449			1, 334	699
West Virginia	6, 241	6, 733	579	340	5, 156	504			102	130
Total	645, 171	663, 999	25, 598	32, 956	133, 120	120, 608	41, 476	43, 774	96, 220	120, 093
District 2:										
Illinois	158, 091	217, 448	48, 177	50, 258	34, 639	40, 691			16, 445	19, 535
Indiana	88, 728	123, 051	14, 312	10, 081	25, 284	18, 512			10, 177	19, 286
Iowa	87, 741	85, 206	4, 786	4, 158	9, 740	7, 198			6, 314	4, 742
Kansas	138, 711	127, 291	38, 924	31, 174	3, 640	7, 527			16	404
Kenrucky	50, 722	52, 933	5, 209	3, 626	2, 694	3, 527			------	205
Michigan	62, 892	72, 142	4, 851	3, 256	20, 841	14, 516			4, 342	2, 318
Minnesota	94, 623	116, 305	9, 174	7, 314	12, 137	20, 737			7, 254	8, 033
Missouri	136, 088	171, 325	9, 879	12, 580	7, 550	9, 994	(3)	(3)	6, 702	4, 072
Nebraska	69, 038	63, 822	11, 693	12, 298	4, 422	2, 924			1, 653	818
North Dakota	33, 431	26, 150	8, 241	6, 008	1, 617	1, 535			2, 612	1, 659
Ohio	46, 818	73, 412	3, 800	6, 076	12, 157	11, 039			3, 437	2, 714
Oklahoma	155, 376	189, 049	47, 708	64, 679	13, 864	14, 154			------	933
South Dakota	43, 041	34, 880	3, 544	5, 176	2, 177	2, 297			8, 317	2, 367
Tennessee	33, 541	32, 025	4, 007	5, 159	2, 338	5, 523			2, 040	1, 556
Wisconsin	61, 095	80, 113	5, 731	5, 654	39, 841	32, 391			10, 660	8, 023
Total	1, 259, 936	1, 465, 152	220, 036	227, 497	192, 941	192, 565	37, 478	73, 878	79, 969	76, 665
District 3:										
Alabama	65, 158	90, 350	6, 231	7, 420	4, 660	2, 976			1, 794	5, 381
Arkansas	100, 124	112, 037	31, 327	38, 646	2, 972	9, 046			1, 405	10
Louisiana	68, 916	48, 612	27, 095	17, 119	14, 619	14, 933	(3)	(3)	------	-------
Mississippi	82, 971	73, 001	20, 455	21, 905	1, 729	4, 413			------	107
New Mexico	50, 364	53, 411	36, 990	30, 961	8, 119	7, 163			2, 914	1, 758
Texas	421, 885	429, 201	344, 042	378, 786	55, 976	109, 757			3, 506	3, 850
Total	789, 418	806, 612	466, 140	494, 837	88, 075	148, 288	27, 833	23, 898	9, 619	11, 106
District 4:										
Colorado	70, 380	75, 506	12, 508	14, 859	5, 646	3, 968			761	456
Idaho	12, 977	8, 233	264	472	1, 576	1, 408			880	-------
Montana	23, 143	10, 152	3, 090	1, 802	1, 469	465	(3)	(3)	------	-------
Utah	12, 266	8, 513	2, 322	2, 435	1, 123	841			1, 488	-------
Wyoming	28, 644	18, 225	7, 479	9, 415	1, 020	1, 395			250	-------
Total	147, 410	120, 629	25, 663	28, 983	10, 834	8, 077	944	8, 988	3, 379	456
District 5:										
Arizona	16, 204	21, 792	8, 082	10, 255	1, 489	2, 883			------	93
California	150, 108	157, 281	58, 044	56, 032	9, 041	14, 035			9, 127	6, 329
Nevada	7, 405	7, 589	130	134	79	467	(3)	(3)	14, 411	14, 700
Oregon	33, 417	32, 215	992	1, 240	3, 869	3, 046			11, 866	8, 883
Washington	18, 001	18, 408	371	453	2, 026	2, 893			6, 564	586
Total	225, 135	237, 285	67, 619	68, 114	16, 504	23, 324	14, 674	28, 693	41, 968	30, 591
Total U.S. sales	3, 067, 070	3, 293, 677	805, 056	852, 387	441, 472	492, 862	122, 405	179, 231	231, 155	238, 911

[1] Data include LR-gases.
[2] States are grouped according to petroleum-marketing districts rather than geographic areas.
[3] Individual States not shown to avoid disclosure of individual company data.

TABLE 12.—Sales of LP-gases[1] in the United States, 1957–58, by districts and States and uses—Continued

(Thousand gallons)

District[2] and State	Chemical		Synthetic rubber		Used in the secondary recovery of petroleum		All other		Total	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
District 1:										
Connecticut	------	------					2,047	1,575	42,053	39,245
Delaware	27	48					215	272	15,511	14,697
Florida	------	3					1,275	3,754	153,491	198,646
Georgia	411	214					2,040	2,001	96,853	109,106
Maine	------	------					1,015	94	22,066	21,150
Maryland and District of Columbia	------	------					155	5	41,065	39,661
Massachusetts	------	298					733	771	40,370	43,484
New Hampshire	------	------					16	------	16,028	16,565
New Jersey	27,507	40,954	(3)	(3)	(4)	(4)	384	54	90,840	101,082
New York	2,242	162					184	434	101,674	110,116
North Carolina	41	94					2,773	5,005	84,767	82,039
Pennsylvania	16,578	13,526					110	51	119,137	107,541
Rhode Island	40	------					10	10	7,586	7,848
South Carolina	50	69					621	790	55,550	58,600
Vermont	------	------					50	------	14,284	12,818
Virginia	91	------					315	660	45,686	38,195
West Virginia	208,307	207,789					30	180	220,415	215,676
Total	255,294	263,157	------	------	------	------	11,973	15,656	[5]1,208,852	[5]1,260,243
District 2:										
Illinois	137,033	129,753					952	1,828	395,337	459,513
Indiana	1,387	17,425					1,881	427	141,769	188,782
Iowa	------	------					1,096	1,375	109,677	102,679
Kansas	------	13					1,835	1,826	183,126	168,235
Kentucky	96,948	67,407					99	232	155,672	127,930
Michigan	2,665	2,754					2,306	851	97,897	95,837
Minnesota	------	812					1,990	1,062	125,178	154,263
Missouri	11	------	(3)	(3)	(4)	(4)	564	326	160,794	198,297
Nebraska	------	------					1,070	2,027	87,876	81,889
North Dakota	------	------					562	------	46,463	35,352
Ohio	10	573					501	426	66,723	94,240
Oklahoma	5,422	8,833					1,752	1,973	224,122	279,621
South Dakota	10	------					455	190	57,544	44,910
Tennessee	854	10					249	360	43,029	44,633
Wisconsin	------	75					585	424	117,912	126,680
Total	244,340	227,655	------	------	3,753	9,958	15,897	13,327	[5]2.054,350	[5]2,286,697
District 3:										
Alabama	------	------	------	------			134	537	77,977	106,664
Arkansas	------	------	------	------			1,997	1,759	137,825	161,498
Louisiana	144,798	189,454	37,005	37,124			224	653	292,657	307,895
Mississippi	------	577	------	------	(4)	(4)	2,255	968	107,410	100,971
New Mexico	------	------	------	------			978	2,722	99,365	96,015
Texas	1,008,486	1,121,062	342,460	317,902			8,885	15,302	2,185,240	2,375,860
Total	1,153,284	1,311,093	379,465	355,026	48,388	50,718	14,473	21,941	[5]2,976,695	[5]3,223,519
District 4:										
Colorado	18	7					508	1,080	89,821	95,876
Idaho	------	------					12	295	15,709	10,408
Montana	------	------	(3)	(3)	(4)	(4)	57	20	27,759	12,439
Utah	------	------					161	211	17,360	12,000
Wyoming	------	------					41	189	37,434	29,224
Total	18	7	------	------	4,937	1,265	779	1,795	[5]193,964	[5]170,200
District 5:										
Arizona	------	------	------	------			1,170	754	26,945	35,777
California	79,402	96,950	38,724	16,935			4,824	7,829	349,270	355,391
Nevada	------	------	------	------	(4)	(4)	------	2	22,025	22,892
Oregon	------	------	------	------			2,566	3,358	[6]52,710	48,742
Washington	------	------	------	------			1,195	555	28,157	22,895
Total	79,402	96,950	38,724	16,935	11,479	7,040	9,755	12,498	[5]505,260	[5]521,430
Total U.S. sales	1,732,338	1,898,862	418,189	371,961	68,557	68,981	52,877	65,217	6,939,121	7,462,089

[1] Data include LR-gases.
[2] States are grouped according to petroleum-marketing districts rather than geographic areas.
[3] No sales for synthetic rubber reported in this district.
[4] Individual States not shown to avoid disclosure of individual company data.
[5] Refinery fuel and use for secondary recovery included in district totals only.
[6] Revised.

TABLE 13.—Sales of LP-gases [1] in the United States, 1957–58, by districts and States

(Thousand gallons)

District [2] and State	Propane		Butane		Isobutane		Butane-propane mixtures		All other mixtures		Total LP-gases		Percent change
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	
District 1:													
Connecticut	41,418	38,494	570	719			65	32			42,053	39,245	−6.7
Delaware	15,499	14,603	12					94			15,511	14,697	−5.3
Florida	127,887	143,235	9,512	13,195			16,092	42,216			153,491	198,646	29.4
Georgia	85,942	93,484	3,958	4,686			6,953	10,936			96,853	109,106	12.7
Maine	22,046	21,147	18	2			2	1			22,066	21,150	−4.2
Maryland and District of Columbia	41,027	39,447	36				2	214			41,065	39,661	−3.4
Massachusetts	40,106	43,231	220	133			44	120			40,370	43,484	7.7
New Hampshire	15,210	15,188	745	1,356			73	21			16,028	16,565	3.4
New Jersey	62,691	64,336	27,917	19,694	10	21	222	268		16,763	90,840	101,082	11.3
New York	99,740	105,933	294	151			1,640	4,032			101,674	110,116	8.3
North Carolina	82,944	78,767	213	345			1,610	2,927			84,767	82,039	−3.2
Pennsylvania	114,057	97,706	4,025	1,566			1,055	8,269			119,137	107,541	−9.7
Rhode Island	7,586	7,848									7,586	7,848	3.5
South Carolina	44,518	46,633	6,979	286			4,053	11,681			55,550	58,600	5.5
Vermont	14,199	12,609					85	209			14,284	12,818	−10.3
Virginia	44,678	37,961	1,008	234							45,686	38,195	−16.4
West Virginia	7,121	6,716	17,050	16,284			346	225	195,898	192,451	220,415	215,676	−2.2
Total	[3] 875,113	[3] 885,598	[3] 105,589	[3] 84,165	10	21	32,242	81,245	195,898	209,214	[3] 1,208,852	[3] 1,260,243	4.3
District 2:													
Illinois	232,663	306,090	23,295	20,176			3,461	4,652	135,918	128,595	395,337	459,513	16.2
Indiana	126,311	178,332	15,066	8,432			392	2,018			141,769	188,782	33.2
Iowa	106,441	100,653	2,772	1,303			464	723			109,677	102,679	−6.4
Kansas	134,852	131,027	33,214	14,665			15,060	22,543			183,126	168,235	−8.1
Kentucky	52,431	55,319	6,391	3,922			1,336	2,851	95,514	65,838	155,672	127,930	−17.8
Michigan	90,405	91,560	4,801	1,442			26	81	2,665	2,754	97,897	95,837	−2.1
Minnesota	114,417	142,689	10,121	10,392			640	1,182			125,178	154,263	23.2
Missouri	147,528	184,363	9,157	3,696			4,109	10,238			160,794	198,297	23.3
Nebraska	78,706	75,968	6,481	3,710			2,689	2,211			87,876	81,889	−6.8
North Dakota	43,660	29,700	1,425	3,703			1,378	1,949			46,463	35,352	−23.9
Ohio	64,622	86,443	2,088	2,557			13	5,240			66,723	94,240	41.2
Oklahoma	131,019	160,774	49,658	48,210	2,864	8,690	40,581	61,947			224,122	279,621	24.8
South Dakota	55,356	42,513	1,860	1,586			328	811			57,544	44,910	−22.0
Tennessee	39,441	38,212	1,161	1,577			2,427	4,844			43,029	44,633	3.7
Wisconsin	95,899	104,581	20,110	17,129			1,903	4,970			117,912	126,680	7.4
Total	[4] 1,525,318	[4] 1,741,466	[4] 212,644	[4] 204,316	2,864	8,690	[3] 79,427	[3] 135,038	234,097	197,187	[4] 2,054,350	[4] 2,286,697	11.3

District 3:													
Alabama	47,021	57,053	7,606	3,637	--------	--------	23,350	45,974	--------	--------	77,977	106,664	36.8
Arkansas	72,807	77,287	23,753	11,012	--------	--------	41,265	73,199	--------	--------	137,825	161,498	17.2
Louisiana	38,350	71,131	54,890	34,247	--------	10,620	57,419	46,677	141,998	145,220	292,657	307,895	5.2
Mississippi	54,794	44,675	11,873	10,518	--------	--------	40,743	45,778	--------	--------	107,410	100,971	−6.0
New Mexico	59,814	54,914	19,460	19,920	--------	--------	20,091	21,181	--------	--------	99,365	96,015	−3.4
Texas	788,039	738,731	567,679	687,139	23,847	6,474	558,549	503,820	247,126	439,696	2,185,240	2,375,860	8.7
Total	[4]1,115,962	[4]1,108,082	[4]703,504	[4]774,078	23,847	17,094	[4]744,258	[4]739,349	389,124	584,916	[4]2,976,695	[4]3,223,519	8.3
District 4:													
Colorado	76,963	87,139	9,038	3,516	--------	--------	3,820	5,221	--------	--------	89,821	95,876	6.7
Idaho	15,113	10,400	596	4	--------	--------	--------	4	--------	--------	15,709	10,408	−33.8
Montana	25,197	10,132	2,556	1,006	--------	--------	6	1,301	--------	--------	27,759	12,439	−55.2
Utah	16,286	9,885	1,066	678	--------	--------	8	1,437	--------	--------	17,360	12,000	−30.9
Wyoming	29,143	17,163	6,701	2,911	--------	--------	1,590	9,150	--------	--------	37,434	29,224	−21.9
Total	[5]164,890	[4]135,647	[4]23,650	[4]17,440	--------	--------	5,424	17,113	--------	--------	[4]193,964	[4]170,200	−12.3
District 5:													
Arizona	22,577	29,637	--------	--------	--------	--------	4,368	6,140	--------	--------	26,945	35,777	32.8
California	192,212	221,123	59,651	36,080	--------	--------	65,201	70,224	32,206	27,964	349,270	355,391	1.8
Nevada	22,025	22,744	--------	--------	--------	--------	--------	148	--------	--------	22,025	22,892	3.9
Oregon	[6]50,451	48,180	--------	--------	--------	--------	2,259	562	--------	--------	[6]52,710	48,742	−7.5
Washington	27,153	22,628	--------	--------	--------	--------	1,004	267	--------	--------	28,157	22,895	−18.7
Total	[4]327,861	[4]376,580	[4]72,361	[4]39,545	--------	--------	72,832	77,341	32,206	27,964	[4]505,260	[4]521,430	3.2
Total United States sales	4,009,144	4,247,373	1,117,748	1,119,544	26,721	25,805	934,183	1,050,086	851,325	1,019,281	6,939,121	7,462,089	7.5

[1] Data include LR-gases.
[2] States are grouped according to petroleum-marketing districts rather than geographic areas.
[3] Consumption of refinery fuel shown in district totals only.
[4] Refinery fuel and use for secondary recovery included in district totals only.
[5] Consumption of gases used in the secondary recovery of petroleum shown in district totals only.
[6] Revised.

STOCKS

Stocks of natural gas liquids at plants and terminals increased 109 million gallons in 1958. Stocks of LP-gases accounted for 89 million

TABLE 14.—Stocks of natural gas liquids in the United States, 1954–57, and 1958, by months, in thousand gallons

Date	Natural gasoline		LP-gases		Other products		Total		
	At plants and terminals	At refineries	At plants and terminals	At refineries	At plants and terminals	At refineries	At plants and terminals	At refineries	Grand total
Dec. 31:									
1954	95,021	76,650	286,352	22,176	100,545	8,862	481,918	107,688	589,606
1955	92,047	73,752	281,649	18,480	96,299	7,476	469,995	99,708	569,703
1956	136,335	58,422	560,928	26,166	72,345	9,282	769,608	93,870	863,478
1957	121,414	46,830	605,249	22,596	94,481	15,246	821,144	84,672	905,816
1957 [1]	121,414	46,830	[1] 546,005	22,596	94,481	15,246	[1] 761,900	84,672	[1] 846,572
1958									
Jan. 31	142,509	46,872	387,436	26,208	99,993	10,836	629,938	83,916	713,854
Feb. 28	151,834	50,568	246,369	24,822	101,290	5,964	499,493	81,354	580,847
Mar. 31	144,159	50,400	255,319	30,324	92,043	14,406	491,521	95,130	586,651
Apr. 30	150,403	45,612	339,808	25,578	76,557	16,506	566,768	87,696	654,464
May 31	164,333	48,468	474,796	29,022	82,701	13,020	721,830	90,510	812,340
June 30	168,288	43,638	600,454	35,784	79,409	15,120	848,151	94,542	942,693
July 31	176,447	46,704	670,690	36,540	72,830	13,608	919,967	96,852	1,016,819
Aug. 31	172,049	46,788	760,003	37,128	71,682	12,012	1,003,734	95,928	1,099,662
Sept. 30	161,159	43,470	817,078	43,093	74,274	13,272	1,052,511	99,835	1,152,346
Oct. 31	165,294	43,386	838,437	37,254	73,328	13,860	1,077,059	94,500	1,171,559
Nov. 30	156,157	45,780	817,909	35,868	74,071	18,858	1,048,137	100,506	1,148,643
Dec. 31	156,788	41,496	634,885	29,820	80,289	12,306	871,962	83,622	955,584

[1] New basis: To eliminate nonrecoverable stock of LPG in underground storage.

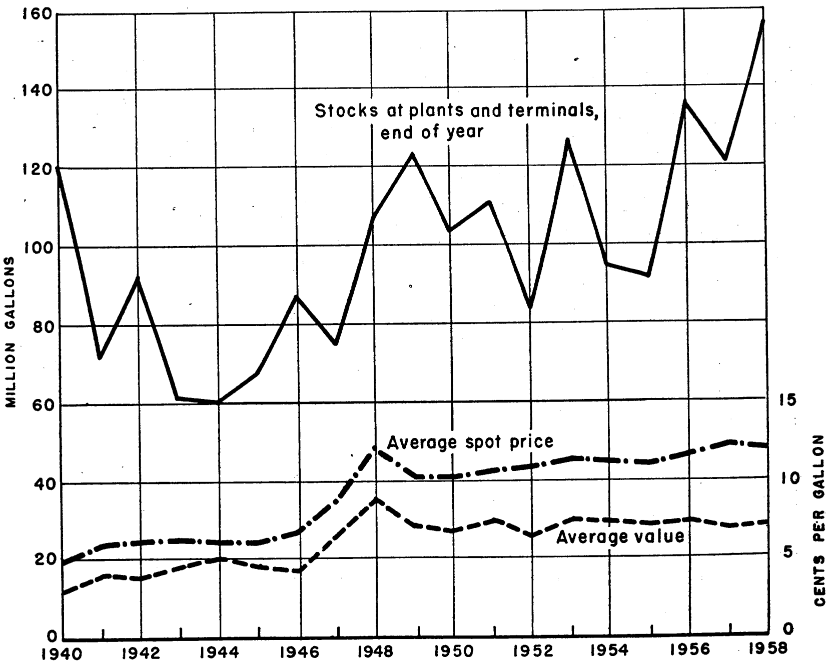

FIGURE 2.—Average value of natural gasoline, average spot price of U.S. Motor Fuel (Oklahoma), and stocks of natural gasoline, 1940–58.

gallons of the increase. Underground stocks of liquefied gases totaled 515 million gallons on December 31, 1958, compared with 434 million gallons (revised figure) in the preceding year. This figure was revised to eliminate nonrecoverable stocks of LPG in underground storage.

PRICES

The average posted price of grade 26–70 natural gasoline to blenders f.o.b. group 3 basis was 4.50 cents per gallon in 1958, an increase of 0.15 cent per gallon over 1957. The posted price of 4.50 cents on January 1 held throughout the year. The average value received by producers for all grades of natural gasoline was 6.9 cents per gallon in 1958.

The average posted price of propane f.o.b. Houston, Tex., was 4.77 cents per gallon compared with 4.38 cents in 1957.

Producers received an average of 4.37 cents per gallon for LP-gases in 1958, compared with 3.96 cents in 1957.

FOREIGN TRADE [3]

Exports of LP-gas decreased 37 percent in 1958. Quantities shipped to Canada and Mexico, the principal importers of LP-gases from the United States, decreased 72 and 8 percent, respectively.

TABLE 15.—Natural gasoline exported from the United States, 1949–53 (average) and 1954–58, by countries, in thousands of gallons

[Bureau of the Census]

Country	1949–53 (average)	1954	1955	1956	1957	1958
North America:						
Bahamas	1					7
Canada	37,129	24,854	5,447	8,362	1,821	133
Honduras	1					
Jamaica		38				
Mexico	6	16		14	81	8
Netherlands Antilles	14,967					
Trinidad and Tobago	2,723					
Total	54,827	24,908	5,447	8,376	1,902	148
Europe:						
Italy	251					
United Kingdom	9,454					
Other Europe	1,155					
Total	10,860					
Asia	1,141					
Africa	4					
Oceania:						
Australia	12,494					
New Zealand	1,282					
Total	13,776					
Grand total	80,608	24,908	5,447	8,376	1,902	148

[3] Figures on exports compiled by Mae B. Price and Elsie D. Jackson, of the Bureau of Mines, from records of the U.S. Department of Commerce.

TABLE 16.—LP-gases [1] exported from the United States, 1949–53 (average) and 1954–58, by countries, in thousands of gallons [2]

[Bureau of the Census]

Country	1949–53 (average)	1954	1955	1956	1957	1958 [3]
North America:						
Canada	41,525	58,330	56,826	55,275	56,274	15,497
Cuba	2,425	5,865	6,416	8,382	10,158	4,032
Mexico	32,617	72,994	95,398	88,779	97,161	88,996
Netherlands Antilles					6,728	
Other North America:						
Bermuda and Caribbean	712	1,185	1,645	3,015	3,332	1,280
Central America	183	423	1,558	2,981	2,809	1,063
Greenland				31		
Total	77,462	138,797	161,843	158,463	176,462	110,868
South America:						
Argentina	120	1	7	1,033	107	
Brazil	7,604	24,657	13,668	18,554	11,386	8,756
Other South America	9	144	485	348	368	25
Total	7,733	24,802	14,160	19,935	11,861	8,781
Europe:						
Denmark	(4)				638	
France	384	7	93	31	41	(4)
Germany [5]	(4)	1	333	6	4	(4)
Italy	(4)	2	24	125	845	
Sweden	(4)		[6] 12	12	125	
Other Europe	12	28	110	121	105	11
Total	396	38	572	295	1,758	11
Asia:						
Israel	[7] 24	(4)	(4)	37	36	
Japan	52	250	461	313	195	12
Philippines	640	269	399	21	38	
Other Asia	7	24	2	67	15	4
Total	723	543	862	438	284	16
Africa	116	87	149	307	129	10
Oceania	57	41	122	68	109	183
Grand total	86,487	164,308	177,708	179,506	190,603	119,869

[1] Data include LR-gases.
[2] 4.5. pounds=1 gallon.
[3] Owing to changes in classification, data not strictly comparable to earlier years.
[4] Less than 500 gallons.
[5] Beginning Jan. 1, 1952, classified as West Germany.
[6] Revised figure.
[7] Includes Palestine.

Crude Petroleum and Petroleum Products

By James G. Kirby, Walter G. Messner, and Gladys Hilton

Contents

GENERAL SUMMARY

TOTAL domestic demand[1] for petroleum and petroleum products declined 0.5 percent in 1958 for the first time since 1953. Exports were 51.4 percent below 1957, when they were exceptionally high because of emergency shipments to Europe during the Suez crisis.

Domestic demand increased 2.8 percent in 1958, compared with 0.2 percent in 1957. In addition to the general business recession, the petroleum industry was plagued with a problem of oversupply at the beginning of 1958. Stocks of all oils on January 1, 1958, totaled 841.3 million barrels, 60.9 million higher than on January 1, 1957.

[1] Certain terms, as used in this chapter, are more or less unique to the petroleum industry. Principal terms, and their meanings, are as follows:

Total demand.—A derived figure representing total new supply plus decreases or minus increases in reported stocks. Because there are substantial secondary and consumers' stocks that are not reported to the Bureau of Mines, this figure varies considerably from consumption.

Domestic demand.—Total demand less exports.

New supply of all oils.—The sum of crude-oil production, production of natural-gas liquids, benzol (coke-oven) used for motor fuel, and imports of crude oil and other petroleum products.

Transfers.—Crude oil conveyed to fuel-oil stocks without processing, or reclassification of products from one product category to another.

All oils.—Crude petroleum, natural-gas liquids, and their derivatives.

Principal product.—Gasoline, kerosene, distillate fuel oil, and residual fuel oil.

Exports.—Total shipments from continental United States, including shipments to United States Territories and possession.

Barrels.—42 gallons per barrel.

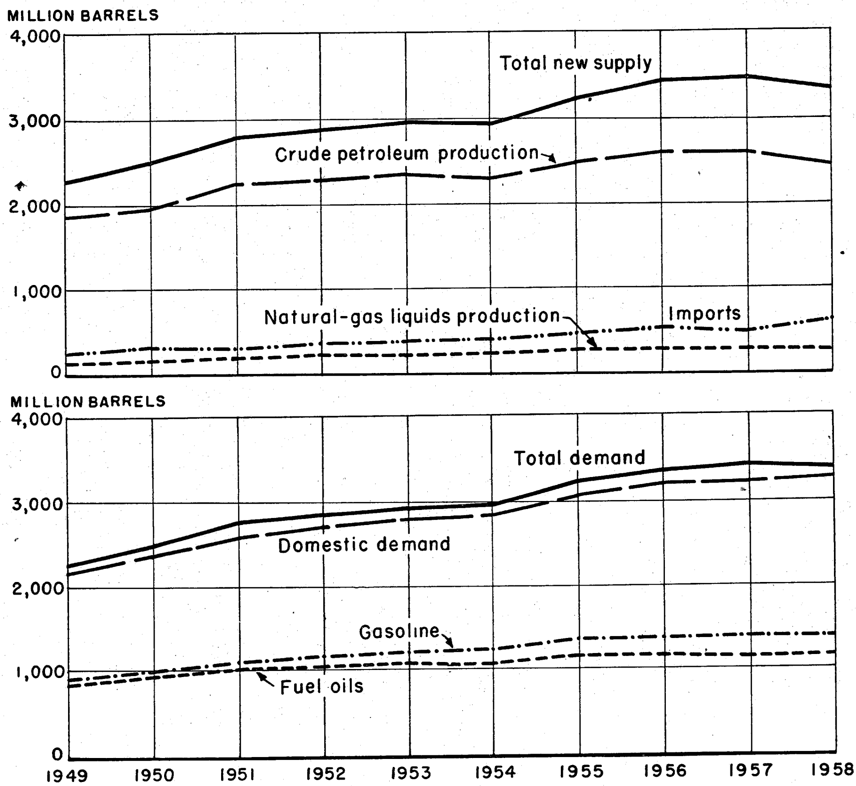

FIGURE 1.—Supply and demand of all oils in the United States, 1948–58.

By curtailing crude-oil production and runs to stills, the industry reduced stocks 51.1 million barrels during the year. Crude-oil production was reduced from 7,170,000 barrels daily in 1957 to 6,709,000 barrels in 1958, and crude-oil runs to stills were reduced almost 1 million barrels. The voluntary oil-imports restrictions, established by the President's Cabinet committee in July 1957, helped maintain imports of crude oil 6.8 percent below 1957.

The total new supply of all oils in 1958 was 3,358 million barrels, compared with 3,487 million in 1957. Crude-oil and natural gas-liquids production decreased 173 million barrels. Imports represented 18.4 percent of supply in 1958 compared with 16.5 percent in 1957. Crude-oil imports were 25 million barrels lower in 1958, but imports of refined products increased 69 million barrels.

DEMAND BY PRODUCTS

As most of the indicated consumption of crude oil in the continental United States is converted into products at refineries before sale to ultimate consumers, the analysis of demand trends involves consideration of each major product. The fuel oils (residual, distillate, and kerosine) compete directly with natural gas or coal in heating, cooking, and industrial uses. Gasoline and diesel fuel are the

TABLE 1.—Salient statistics of crude petroleum, refined products, and natural-gas liquids in the United States, 1954–58 [1]

	1954	1955	1956	1957	1958 [2]
Crude petroleum:					
Domestic production..thousand barrels [3]..	2,314,988	2,484,428	2,617,283	2,616,901	[4] 2,448,866
World production...do....	5,016,591	5,625,659	6,124,565	6,450,666	6,617,656
United States proportion...percent..	46	44	43	41	37
Imports [5]...thousand barrels [3]..	239,479	285,421	341,833	373,255	348,007
Exports [6]...do....	13,599	11,571	28,624	50,243	4,329
Stocks, end of year...do....	258,385	265,610	266,014	281,813	262,730
Runs to stills...do....	2,539,564	2,730,218	2,905,106	2,890,436	2,776,094
Value of domestic production at wells:					
Total...thousand dollars..	6,424,930	6,870,380	7,296,760	8,079,259	[4] 7,379,071
Average per barrel...	$2.78	$2.77	$2.79	$3.09	$3.01
Total producing oil wells Dec. 31...	511,200	524,010	551,170	569,273	574,905
Total oil wells completed during year (successful wells)...	29,773	31,567	31,158	28,164	25,262
Refined products:					
Imports [5]...thousand barrels [3]..	144,476	170,143	183,758	201,334	270,658
Exports [6]...do....	116,134	122,617	128,762	156,944	96,384
Stocks, end of year...do....	442,510	435,685	493,818	537,937	503,314
Output of gasoline...do....	1,261,304	1,373,950	1,428,807	1,438,140	1,422,835
Yield of gasoline...percent..	43.8	44.0	43.4	43.8	44.9
Average dealers' net price (excluding tax) of gasoline in 50 United States cities cents per gallon [7]..	16.19	16.18	16.34	16.69	16.22
Completed refineries, end of year...	326	318	319	318	315
Daily crude-oil capacity thousand barrels [3]..	8,421	8,632	9,124	9,408	9,820
Natural-gas liquids:					
Production...thousand barrels [3]..	252,133	281,371	292,727	294,990	290,301
Stocks, end of year...do....	14,038	13,564	20,559	[8] 20,156	22,752

[1] Data, including imports and exports, are for continental United States.
[2] Preliminary figures.
[3] 42 gallons per barrel.
[4] Includes Alaska.
[5] Bureau of Mines data.
[6] U.S. Department of Commerce, except Alaska and Hawaii, which are Bureau of Mines data. Exports include shipments to Territories.
[7] Platt's Oilgram Price Service.
[8] New basis eliminates 1,411,000 barrels of nonrecoverable stocks in underground storage.

major fuels in the transportation field. The other products serve a wide variety of uses in competition with other oil products as fuel and in special uses outside the fuels field. The use of jet fuel (a blend of low-grade gasoline, kerosine, and distillate) has advanced rapidly in the last few years. To date jet fuel has been limited mostly to the military use.

Gasoline.—Gasoline represented 42.4 percent of the total demand for all oils in 1958. Compared with 1957, the total demand for gasoline increased 1.0 percent, exports declined 28.9 percent, and domestic demand increased 1.8 percent. A breakdown of domestic demand by uses indicates that civilian highway use accounted for 86.6 percent and aviation gasoline 5.7 percent, leaving a balance of 7.7 percent for nonhighway vehicles, stationary engines, and losses. The total gasoline demand includes aviation gasoline and naphthas.

Residual Fuel Oil.—The demand for residual fuel oil in 1958 continued to decline but at a greater rate than in the preceding few years. Total demand was 5.2 percent less, domestic demand was 3.2 percent lower, and exports were 33.8 percent less than in 1957. According to data issued by the U.S. Department of Commerce, residual fuel oil used for bunkering vessels engaged in foreign trade totaled 69.4 million barrels in 1958 compared with 78.7 million in 1957.

TABLE 2.—Supply and demand of all oils [1] in continental United States, 1956 total and 1957–58, by months

(Thousand barrels)

	1957													1956 total
	January	February	March	April	May	June	July	August	September	October	November	December	Total	
New supply:														
Domestic production:														
Crude petroleum	231,631	214,967	238,490	226,392	230,466	213,302	212,781	210,150	206,777	212,055	205,249	214,641	2,616,901	2,617,283
Natural gas liquids	25,710	23,711	25,595	24,665	25,152	23,336	22,861	24,465	23,905	25,014	25,047	25,529	294,990	292,727
Benzol, etc	24	34	33	20	25	24	21	13	21	17	16	4	252	504
Total production	257,365	238,712	264,118	251,077	255,643	236,662	235,663	234,628	230,703	237,086	230,312	240,174	2,912,143	2,910,514
Imports:														
Crude petroleum [2]	25,255	22,119	26,320	27,716	33,159	35,045	37,736	40,275	32,161	32,718	28,225	32,526	373,255	341,833
Refined products [3]	19,588	18,196	19,860	18,904	16,483	13,764	12,965	13,584	12,694	16,095	17,574	21,627	201,334	183,758
Total new supply	302,208	279,027	310,298	297,697	305,285	285,471	286,364	288,487	275,558	285,899	276,111	294,327	3,486,732	3,436,105
Increase (+) or decrease (−) in stocks	−51,834	−12,528	−484	14,699	39,402	32,738	16,862	16,697	23,051	4,411	−5,501	−16,587	60,926	65,532
Demand:														
Total demand	354,042	291,555	310,782	282,998	265,883	252,733	269,502	271,790	252,507	281,488	281,612	310,914	3,425,806	3,370,573
Exports:														
Crude petroleum	7,566	7,909	14,100	9,232	3,698	1,745	1,197	1,036	739	1,007	926	1,088	50,243	28,624
Refined products	19,060	19,010	19,009	15,148	12,870	11,695	10,825	11,687	9,282	9,972	10,060	8,326	156,944	128,762
Domestic demand:														
Gasoline	109,199	96,772	112,959	115,882	124,174	121,475	130,344	128,746	113,539	119,408	107,701	112,754	1,392,953	1,373,079
Kerosine	17,916	12,169	10,272	6,780	4,295	3,857	4,962	4,813	6,471	10,122	11,451	14,593	107,701	117,324
Distillate fuel oil	92,508	65,364	60,553	46,203	32,862	31,926	31,064	33,767	38,378	48,689	60,037	74,739	616,090	615,856
Residual fuel oil	61,120	50,377	50,437	47,497	42,708	38,430	39,069	40,242	36,079	43,102	45,974	53,766	548,801	562,813
Jet fuel	6,861	6,893	8,244	6,609	6,383	4,333	7,122	5,832	4,264	5,775	5,932	4,713	72,961	72,155
Lubricants	3,752	3,382	3,363	3,651	3,869	3,039	3,897	3,713	3,177	3,621	2,880	2,871	41,215	43,933
Miscellaneous	36,060	29,679	31,845	31,996	35,024	36,233	41,022	41,954	40,578	39,792	36,651	38,064	438,898	428,027
Total domestic demand	327,416	264,636	277,673	258,618	249,315	239,293	257,480	259,067	242,486	270,509	270,626	301,500	3,218,619	3,213,187
Stocks:														
Crude petroleum	256,244	256,344	254,911	265,796	275,963	284,312	288,241	283,388	280,469	284,517	281,769	281,813	281,813	266,014
Natural gas liquids	17,638	17,661	19,063	20,742	24,818	27,259	28,448	29,092	29,271	27,838	25,575	21,567	[4] 21,567	20,559
Refined products	454,675	442,024	441,571	443,706	468,865	490,813	502,557	523,463	549,254	551,050	550,560	537,937	537,937	493,818
Total stocks	728,557	716,029	715,545	730,244	769,646	802,384	819,246	835,943	858,994	863,405	857,904	841,317	[4] 841,317	780,391

	1958 [5]													1957 total
	January	February	March	April	May	June	July	August	September	October	November	December	Total	
New supply:														
Domestic production:														
Crude petroleum	212, 810	190, 651	194, 472	188, 631	193, 215	190, 240	203, 700	215, 114	212, 972	216, 304	209, 518	221, 210	2, 448, 837	2, 616, 901
Natural gas liquids	25, 227	22, 697	24, 652	23, 053	23, 125	22, 258	23, 822	24, 519	23, 955	25, 039	25, 199	26, 755	290, 301	294, 990
Benzol, etc	15	24	22	30	26	60	43	45	34	35	47	35	416	252
Total production	238, 052	213, 372	219, 146	211, 714	216, 366	212, 558	227, 565	239, 678	236, 961	241, 378	234, 764	248, 000	2, 739, 554	2, 912, 143
Imports:														
Crude petroleum [2]	31, 747	23, 232	31, 366	25, 835	28, 972	28, 802	26, 916	29, 865	29, 927	28, 885	29, 026	33, 434	348, 007	373, 255
Refined products [3]	24, 578	21, 924	19, 186	22, 811	17, 699	20, 956	23, 008	18, 587	19, 467	25, 549	23, 722	33, 955	270, 658	201, 334
Total new supply	294, 377	258, 528	269, 698	260, 360	263, 037	262, 316	277, 489	288, 130	286, 355	295, 812	287, 512	315, 389	3, 358, 219	3, 486, 732
Increase (+) or decrease (−) in stocks	−25, 019	−37, 066	−11, 748	−5, 341	5, 679	7, 058	2, 510	18, 554	22, 135	6, 173	8, 464	−42, 509	−51, 110	60, 926
Demand:														
Total demand	319, 396	295, 594	281, 446	265, 701	257, 358	255, 258	274, 979	269, 576	264, 220	289, 639	279, 048	357, 898	3, 409, 329	3, 425, 806
Exports: [3]														
Crude petroleum	425	213	838	643	503	216	308	334	170	330	275	74	4, 329	50, 243
Refined products	7, 000	7, 584	7, 648	7, 423	8, 157	7, 269	9, 418	9, 078	8, 656	8, 426	8, 888	6, 837	96, 384	156, 944
Domestic demand:														
Gasoline	107, 281	95, 516	108, 914	118, 477	125, 137	125, 444	130, 903	129, 925	120, 389	125, 097	110, 587	120, 305	1, 417, 975	1, 392, 953
Kerosine	17, 459	16, 524	11, 020	6, 091	4, 379	4, 278	5, 538	5, 272	6, 031	9, 008	10, 114	17, 616	113, 330	107, 701
Distillate fuel oil	83, 604	82, 169	62, 298	46, 221	37, 290	32, 135	36, 864	31, 915	38, 056	47, 319	57, 010	97, 574	652, 455	616, 090
Residual fuel oil	56, 365	50, 847	46, 620	41, 491	35, 816	34, 064	38, 118	39, 019	37, 070	45, 049	44, 642	62, 799	531, 116	548, 801
Jet fuel	6, 484	6, 859	7, 603	8, 839	6, 780	8, 890	8, 278	7, 260	8, 684	9, 678	7, 100	8, 121	94, 576	72, 961
Lubricants	2, 959	2, 749	3, 191	2, 997	3, 183	3, 708	3, 303	3, 520	3, 362	3, 529	3, 498	3, 440	39, 439	41, 215
Miscellaneous	37, 819	33, 133	33, 314	33, 519	36, 113	39, 254	42, 249	43, 253	41, 802	41, 203	36, 934	41, 132	459, 725	438, 898
Total domestic demand	311, 971	287, 797	272, 960	257, 635	248, 698	247, 773	265, 253	260, 164	255, 394	280, 883	269, 885	350, 987	3, 308, 616	3, 218, 619
Stocks:														
Crude petroleum	284, 539	285, 048	278, 534	273, 959	263, 105	253, 550	246, 556	244, 810	251, 701	255, 345	257, 546	262, 730	262, 730	281, 813
Natural gas liquids	16, 996	13, 829	13, 967	15, 582	19, 341	22, 445	24, 210	26, 182	27, 437	27, 894	27, 349	22, 752	22, 752	[6] 20, 156
Refined products	513, 352	478, 944	473, 572	471, 191	483, 965	497, 474	505, 213	523, 541	537, 530	539, 602	546, 410	503, 314	503, 314	537, 937
Total stocks	814, 887	777, 821	766, 073	760, 732	766, 411	773, 469	775, 979	794, 533	816, 668	822, 841	831, 305	788, 796	788, 796	[6] 839, 906

[1] For definition of this and other terms used in the petroleum industry, see text footnote 1 at the beginning of this chapter.
[2] Bureau of Mines data.
[3] U.S. Department of Commerce, except for exports to Alaska and Hawaii, which are Bureau of Mines data.
[4] Old basis.
[5] Preliminary figures.
[6] Revised per new basis which excludes nonrecoverable liquefied petroleum gases (L.P.G.) in underground stocks.

TABLE 3.—Demand for all oils [1] in continental United States, 1949–58

(Million barrels)

Year	Domestic demand	Exports	Total demand	Year	Domestic demand	Exports	Total demand
1949	2,118.2	119.4	2,237.6	1954	2,832.4	129.7	2,962.1
1950	2,375.1	111.3	2,486.4	1955	3,087.8	134.2	3,222.0
1951	2,569.8	154.1	2,723.9	1956	3,213.2	157.4	3,370.6
1952	2,664.4	158.2	2,822.6	1957	3,218.6	207.2	3,425.8
1953	2,775.3	146.6	2,921.9	1958 [2]	3,308.6	100.7	3,409.3

[1] See text footnote 1 at beginning of this chapter.
[2] Preliminary figures.

Production of residual fuel oil in 1958 was 52.3 million barrels less than in 1957, owing to a cutback in refinery yield from crude oil and a reduction in crude runs to stills. The yield of residual fuel from crude oil in 1958 was 12.9 percent compared with 14.4 percent in 1957. Stocks of residual fuel for the entire United States changed little during the year; however, stocks east of California droped 5.9 million barrels, whereas stocks on the west coast increased 5.5 million barrels. Imports were 8.6 million barrels higher in 1958. Crude oil used directly as residual fuel totaled 11.0 million barrels—21.0 percent less than in 1957.

Distillate Fuel Oil.—Although the total demand for distillate fuel oil gained only 1.2 percent in 1958, the increase in domestic demand (5.9 percent) was about the same as in 1957. The large decline was in exports (60.0 percent), which were highly inflated in 1957 owing to emergency shipments to Europe during the Middle East crisis.

Kerosine.—The total demand for kerosine increased 1.4 percent in 1958. Domestic demand rose 5.2 percent, whereas exports dropped 76.9 percent. An increasing amount of kerosine is being sold to commercial airlines as fuel for turboprop jet aircraft.

TABLE 4.—Imports of petroleum products into United States Territories and possessions, 1957–58 [1]

(Thousand barrels)

	1957			1958 [2]		
	From continental United States	Foreign	Total	From continental United States	Foreign	Total
Gasoline	8,041	230	8,271	7,229	63	7,292
Kerosine	390	95	485	154		154
Distillate fuel oil	3,099	585	3,684	2,726	886	3,612
Residual fuel oil	7,046	3,250	10,296	5,828	2,470	8,298
Jet fuel	15	609	624	35	474	509
Lubricants:						
Grease	3		3	3		3
Oil	210		210	186	5	191
Wax				6		6
Coke	50		50			
Asphalt	244	19	263	271	7	278
Unfinished oils		588	588		1,530	1,530
Miscellaneous				29		29
Total	19,098	5,376	24,474	16,467	5,435	21,902

[1] Source: U.S. Department of Commerce, except for imports to Alaska and Hawaii from continental United States, which are Bureau of Mines data.
[2] Preliminary figures.

Other Products.—The total demand for all other products includes crude-oil exports and losses and refinery shortage and overage. Domestic demand for other products increased 7.4 percent in 1958. Products included in this group showed gains in domestic demand ranging from 6.7 percent for liquefied gases to 29.6 percent for jet fuels. Domestic demand for lubricating oil, wax, and road oil decreased in 1958.

Shipments to United States Territories and Possessions.—Domestic demand, as defined in this chapter, refers to demand in the continental United States only. Shipments from the United States to Territories and possessions are included with exports. Any foreign receipts into these areas are not included in the total imports shown.

Shipments from Territories and possessions to foreign countries are excluded from total exports. Shipments from Territories to the United States are included in total continental imports.

SCOPE OF REPORT

This report deals primarily with statistics on production, refining, distribution, and indicated consumption of crude petroleum and refined products in the continental United States. Data are limited to the continental United States to permit a breakdown and balancing of supply and demand of operations by States and districts. The composition of the districts used by the Bureau of Mines is explained in the next section.

The increasing volume of natural gas liquids recovered from natural gas has made it necessary to include data on these liquids with the crude-oil data, as they are either blended with refinery products or are identical with materials recovered from refinery gases. These natural gas liquids are recovered at special plants away from the oil refineries.

Most of the data were compiled by the Bureau of Mines from detailed reports, submitted on a voluntary basis by the various companies. These data are published monthly for release about 6 weeks after the end of the month concerned. Complete coverage, with only minor estimates, is procured for production, stocks, and refinery operations. The Bureau of Mines used the import data as reported by the refineries for crude oil and unfinished oils. Other product imports and all export data were taken from records of the U.S. Department of Commerce.

The impossibility of contacting many small producers to obtain current monthly data for crude-oil production makes it necessary to use pipeline company reports. These companies report by States of origin, stocks on leases, oil taken from the leases, pipeline and tank farm stocks, and crude deliveries. The data are cross-checked against reports from refineries showing crude receipts by States of origin and method of transportation. These reports include information covering final receipts by water, tank cars, and trucks and cover stocks of crude oil, held at refineries, by States of origin. The data are checked further against available current and annual production figures collected by State agencies and supplemented by estimates of unreported lease stocks. The Bureau of Mines crude-production figure includes some field condensate dumped in crude lines that cannot be identified when received at refineries and included with the crude runs reported.

Individual refineries reported monthly receipts, input, stocks at the beginning and end of the month, refinery production, and deliveries. Data on product stocks at refineries and pipeline and bulk terminal stocks are collected.

Annual canvasses provide supplemental information on the value of crude petroleum at wells; the number of producing oil wells; sales of fuel oils, asphalt, and road oils by uses; and refinery capacity. The table showing world production of crude oil by countries is based on monthly reports that also included data on crude movements and refinery operations. Data on crude reserves, wells drilled, and current prices were taken from the sources indicated in the footnotes.

The tables showing relative rates of growth of coal, crude petroleum, natural gas, and waterpower, which appeared in the Bituminous Coal and Lignite chapter of the Minerals Yearbook before 1955, will be found for 1955, 1956, 1957, and 1958 in the Review of the Mineral-Fuel Industries chapter of volume II.

Districts

The Bureau of Mines reported production of crude petroleum and natural-gas liquids and the number of wells drilled by States. Louisiana, New Mexico, and Texas were also reported by districts.

Louisiana is divided into a Northern Louisiana district and a Louisiana Gulf Coast district. The Gulf Coast district includes Vernon, Rapides, Avoyelles, Pointe Coupee, West Feliciana, East Feliciana, Tangipahoa, St. Helena, and Washington Parishes and all parishes in Louisiana south of these. Parishes not included in the Gulf Coast district are in the Northern Louisiana district.

New Mexico has two widely separated producing areas. The Southeastern district comprises mainly Lea, Eddy, Chaves, and Roosevelt Counties. The Northwestern district comprises mainly San Juan, Rio Arriba, Sandoval, and McKinley Counties.

The Bureau of Mines producing districts in Texas correspond, with one exception, to groupings of the Texas Railroad Commission districts.

Bureau of Mines district:	*Railroad Commission district*
Gulf Coast	Nos. 2 and 3.
West Texas	Nos. 7C and 8.
East Proper	Part of No. 6 (East Texas field in Cherokee, Smith, Upshur, Rush, and Gregg Counties).
Panhandle	No. 10.
Rest of State:	
North	Nos. 7B and 9.
Central	No. 1.
South	No. 4.
Other East Texas	Nos. 5 and 6 (exclusive of East Proper).

The Bureau of Mines groups refinery operations into another set of districts called refining districts. These refining districts correspond with the grouping originated by the Petroleum Administration for War during World War II and called PAW districts (later changed to PAD districts).

PAD district	Refining district
1	*East Coast*—District of Columbia and Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida; the following New York counties: Cayuga, Tompkins, Chemung and all counties east and north thereof; and the following Pennsylvania counties: Bradford, Sullivan, Columbia, Montour, Northumberland, Dauphin, York, and all counties east thereof.
1	*Appalachian No. 1*—West Virginia and those parts of Pennsylvania and New York not included in the East Coast district.
2	*Appalachian No. 2*—The following counties of Ohio: Erie, Huron, Crawford, Marion, Delaware, Franklin, Pickaway, Ross, Pike, Scioto, and all counties east thereof.
2	*Indiana–Illinois–Kentucky*—Indiana, Illinois, Kentucky, Tennessee, Michigan, and that part of Ohio not included in the Appalachian district.
2	*Oklahoma–Kansas–Missouri*—Oklahoma, Kansas, Missouri, Nebraska, and Iowa.
2	*Minnesota–Wisconsin–North Dakota–South Dakota*—Minnesota, Wisconsin, North Dakota, and South Dakota.
3	*Texas Inland*—Texas, except the Texas Gulf Coast district.
3	*Texas Gulf Coast*—The following counties of Texas: Newton, Orange, Jefferson, Jasper, Tyler, Hardin, Liberty, Chambers, Polk, San Jacinto, Montgomery, Harris, Galveston, Waller, Fort Bend, Brazoria, Wharton, Matagorda, Jackson, Victoria, Calhoun, Refugio, Aransas, San Patricio, Nueces, Kleberg, Kenedy, Willacy, and Cameron.
3	*Louisiana Gulf Coast*—The following parishes of Louisiana: Vernon, Rapides, Avoyelles, Pointe Coupee, West Feliciana, East Feliciana, Tangipahoa, St. Helena, Washington, and all parishes south thereof; the following counties of Mississippi: Pearl River, Stone, George, Hancock, Harrison, and Jackson; and Mobile and Baldwin Counties, Ala.
3	*North Louisiana–Arkansas*—Arkansas and those parts of Louisiana, Mississippi, and Alabama not included in the Louisiana Gulf Coast district.
3	*New Mexico*—New Mexico.
4	*Rocky Mountain*—Montana, Idaho, Wyoming, Utah, and Colorado.
5	*West Coast*—Washington, Oregon, California, Nevada, and Arizona.

WORLD OIL SUPPLY

Total world production of crude oil in 1958 was 6,618 million barrels, an increase of 2.6 percent over 1957. The United States produced 37.0 percent of the total compared with 40.6 percent in 1957.

Refineries throughout the world processed 6,546 million barrels of crude oil in 1958, of which 2,776 million barrels was refined in the United States. Crude runs to stills throughout the world were 4.0 percent higher in 1958 than in 1957.

RESERVES

The American Petroleum Institute Committee on Petroleum Reserves estimated proved reserves of crude oil in the United States to be 30.5 billion barrels on December 31, 1958, an increase of 0.2 billion for the year.

The estimates of crude-oil reserves include only oil recoverable under existing economic and operating conditions.

TABLE 5.—Estimates of proved crude oil reserves in the United States on December 31, 1951–58, by States [1]

(Million barrels)

State	1951	1952	1953	1954	1955	1956	1957	1958
Eastern States:								
Illinois	646	619	625	658	691	700	655	608
Indiana	51	56	62	67	62	68	67	71
Kentucky	59	56	82	85	107	149	138	126
Michigan	64	57	61	60	59	55	49	45
New York	57	53	49	46	43	40	37	36
Ohio	26	27	32	37	56	64	68	71
Pennsylvania	95	122	111	102	93	135	126	120
West Virginia	39	37	36	37	47	51	53	52
Total	1,037	1,027	1,058	1,092	1,158	1,262	1,193	1,129
Central and Southern States:								
Arkansas	337	352	358	351	330	318	305	318
Kansas	792	917	913	979	998	992	947	922
Louisiana [2]	2,285	2,558	2,760	2,962	3,255	3,675	3,858	4,044
Mississippi	385	359	350	412	388	368	360	379
Nebraska	16	22	26	38	57	63	63	69
New Mexico	612	733	815	806	820	836	832	894
North Dakota	5	76	128	134	185	196	258	314
Oklahoma	1,476	1,558	1,752	1,955	2,016	2,010	1,941	1,898
Texas [2]	15,315	14,916	14,999	14,982	14,934	14,783	14,555	14,322
Total	21,223	21,491	22,101	22,619	22,983	23,241	23,119	23,160
Mountain States:								
Colorado	325	306	319	329	334	364	310	392
Montana	108	156	209	272	299	331	320	338
Utah	30	42	38	36	37	61	140	199
Wyoming	973	1,065	1,279	1,304	1,374	1,363	1,420	1,409
Total	1,436	1,569	1,845	1,941	2,044	2,119	2,190	2,338
Pacific Coast States: California [2]	3,761	3,854	3,920	3,889	3,801	3,771	3,760	3,866
Other States [3]	11	20	21	20	26	42	38	43
Total United States	27,468	27,961	28,945	29,561	30,012	30,435	30,300	30,536

[1] From reports of Committee on Petroleum Reserves, American Petroleum Institute. Includes crude oil that may be extracted by present methods from fields completely developed or explored enough to permit reasonably accurate calculations. The change in reserves during any year represents total new discoveries, extensions, and revisions, minus production.

[2] Includes offshore reserves.

[3] Includes Alabama, Arizona, Florida, Missouri, Nevada, South Dakota, Tennessee, Virginia and Washington.

CRUDE PETROLEUM

SUPPLY AND DEMAND

The new supply of crude petroleum in the United States is derived primarily from domestic production, but the supply is augmented by imports. Crude imports comprised 14.2 percent of the crude supply in 1958 compared with 12.5 percent in 1957. Actual imports of crude were lower in 1958 than in 1957, as they were restricted by the Voluntary Oil Import Controls that went into effect on July 1957.

The major part of the indicated demand for crude petroleum is converted into products before final consumption (98.6 percent in 1958), and the remainder represents exports, fuel, and losses.

TABLE 6.—Supply and demand [1] for crude petroleum in continental United States, 1954–58

(Thousand barrels)

	1954	1955	1956	1957	1958 [2]
Production	2,314,988	2,484,428	2,617,283	2,616,901	2,448,837
Imports [3]	239,479	285,421	341,833	373,255	348,007
Total new supply	2,554,467	2,769,849	2,959,116	2,990,156	2,796,844
Increase (+) or decrease (−) in stocks, end of year	−16,060	+7,225	+404	+15,799	−19,083
Demand:					
Domestic crude	2,331,269	2,478,889	2,616,826	2,605,781	2,466,207
Foreign crude	239,258	283,735	341,886	368,576	349,720
Total demand	2,570,527	2,762,624	2,958,712	2,974,357	2,815,927
Runs to stills:					
Domestic	2,300,766	2,446,833	2,563,655	2,529,672	2,430,919
Foreign	238,798	283,385	341,451	360,764	345,175
Exports [4]	13,599	11,571	28,624	50,243	4,329
Transfers to fuel oil:					
Distillate	1,500	1,347	1,375	1,305	950
Residual	5,924	5,559	6,439	13,884	10,965
Other fuel and losses	9,940	13,929	17,168	18,489	23,589
Total demand	2,570,527	2,762,624	2,958,712	2,974,357	2,815,927

[1] For definition, see footnote 1 at the beginning of this chapter.
[2] Preliminary figures.
[3] Bureau of Mines data.
[4] U.S. Department of Commerce.

TABLE 7.—Supply of and demand for crude petroleum in continental United States 1957–58, by months

(Thousand barrels)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
1957													
Supply:													
Production	231,631	214,967	238,490	226,392	230,466	213,302	212,781	210,150	206,777	212,055	205,249	214,641	2,616,901
Imports [1]	25,255	22,119	26,320	27,716	33,159	35,045	37,736	40,275	32,161	32,718	28,225	32,526	373,255
Total new supply	256,886	237,086	264,810	254,108	263,625	248,347	250,517	250,425	238,938	244,773	233,474	247,167	2,990,156
Change in stocks, end of period:													
Domestic	−9,370	1,872	−3,215	9,608	8,717	7,232	3,201	−5,359	−2,244	1,919	1,252	−2,493	11,120
Foreign	−400	−1,772	1,782	1,277	1,450	1,117	728	506	−675	2,129	−4,000	2,537	4,679
Demand:													
Domestic	241,001	213,095	241,705	216,784	221,749	206,070	209,580	215,509	209,021	210,136	203,997	217,134	2,605,781
Foreign	25,655	23,891	24,538	26,439	31,709	33,928	37,008	39,769	32,836	30,589	32,225	29,989	368,576
Runs to stills:													
Domestic	231,178	202,777	225,368	206,312	216,715	202,724	207,288	212,089	205,381	207,072	199,498	213,270	2,529,672
Foreign	25,307	23,684	24,077	25,885	31,045	33,278	36,124	38,758	32,225	30,071	31,275	29,035	360,764
Exports [2]	7,566	7,909	14,100	9,232	3,698	1,745	1,197	1,036	739	1,007	926	1,088	50,243
Transfers:													
Distillate	132	114	131	122	122	107	109	96	100	92	91	89	1,305
Residual	834	728	997	1,115	1,087	1,081	1,404	1,498	1,070	985	1,538	1,547	13,884
Losses	1,639	1,774	1,570	557	791	1,063	466	1,801	2,342	1,498	2,894	2,094	18,489
1958 [3]													
Supply:													
Production	212,810	190,651	194,472	188,631	193,215	190,240	203,700	215,114	212,972	216,304	209,518	221,210	2,448,837
Imports [1]	31,747	23,232	31,366	25,835	28,972	28,802	26,916	29,865	29,927	28,885	29,026	33,434	348,007
Total new supply	244,557	213,883	225,838	214,466	222,187	219,042	230,616	244,979	242,899	245,189	238,544	254,644	2,796,844
Change in stocks, end of period:													
Domestic	1,373	3,265	−8,414	−4,053	−10,821	−8,654	−7,029	177	5,311	4,342	2,891	4,242	−17,370
Foreign	1,353	−2,756	1,900	−522	−33	−901	35	−1,923	1,580	−698	−690	942	−1,713
Demand:													
Domestic	211,437	187,386	202,886	192,684	204,036	198,894	210,729	214,937	207,661	211,962	206,627	216,968	2,466,207
Foreign	30,394	25,988	29,466	26,357	29,005	29,703	26,881	31,788	28,347	29,583	29,716	32,492	349,720
Runs to stills:													
Domestic	208,321	185,207	199,484	189,896	201,168	196,402	207,287	211,236	204,845	209,138	203,606	214,329	2,430,919
Foreign	29,506	25,456	28,566	25,761	28,586	29,401	26,877	31,301	28,039	29,557	29,673	32,452	345,175
Exports [2]	425	213	838	643	503	216	308	334	170	330	275	74	4,329
Transfers:													
Distillate	93	86	85	84	74	72	72	72	76	76	78	82	950
Residual	1,386	983	1,464	1,054	885	701	571	1,250	956	610	511	594	10,965
Losses	2,100	1,429	1,915	1,603	1,825	1,805	2,495	2,532	1,922	1,834	2,200	1,929	23,589

[1] Bureau of Mines.
[2] U.S. Department of Commerce, except Alaska and Hawaii, which are Bureau of Mines data.
[3] Preliminary figures.

TABLE 8.—Petroleum produced in the United States, 1954–58, and total 1859–1958, by States [1]

(Thousand barrels)

	1954	1955	1956	1957	1958 [2]	1859–1958 total
Production:						
Alabama	1,584	1,411	3,069	5,406	5,887	23,979
Arkansas	29,130	28,369	29,355	31,047	28,700	1,031,759
California	355,865	354,812	350,754	339,646	314,429	11,414,125
Colorado	46,206	52,653	58,516	54,982	48,309	500,631
Florida	548	495	479	461	448	5,736
Illinois	66,798	81,423	82,346	77,083	82,125	2,075,636
Indiana	11,204	10,988	11,513	12,662	11,864	295,015
Kansas	119,317	121,669	124,204	123,614	118,188	[3] 3,076,965
Kentucky	13,791	15,518	17,628	17,029	17,509	[4] 368,558
Louisiana	246,558	271,010	299,421	329,896	312,070	4,750,036
Michigan	12,028	11,266	10,740	10,169	9,307	[5] 415,221
Mississippi	34,240	37,741	40,824	38,922	38,551	582,845
Montana	14,195	15,654	21,760	27,172	28,291	305,766
Nebraska	7,783	11,203	16,204	19,586	20,368	92,741
Nevada	33	64	64	44	40	245
New Mexico	74,820	82,958	87,893	94,759	98,323	[6] 1,302,429
New York	3,257	2,904	2,748	2,677	1,664	[7] 192,147
North Dakota	6,025	11,143	13,495	13,259	14,141	64,820
Ohio	3,880	4,353	4,785	5,478	6,260	655,819
Oklahoma	185,851	202,817	215,862	214,661	202,699	7,837,393
Pennsylvania	9,107	8,531	8,230	8,179	6,678	1,209,417
Texas	974,275	1,053,297	1,107,808	1,073,867	940,706	21,929,808
Utah	1,905	2,227	2,466	4,367	24,386	[8] 41,912
West Virginia	2,902	2,320	2,179	2,215	2,186	461,159
Wyoming	93,533	99,483	104,830	109,584	115,572	1,659,411
Other States [9]	153	119	110	136	136	2,674
Total	2,314,988	2,484,428	2,617,283	2,616,901	2,448,837	60,296,247
Value at wells:						
Total (thousand dollars)	6,424,930	6,870,380	7,296,760	8,079,259	7,410,422	112,175,349
Average per barrel	$2.78	$2.77	$2.79	$3.09	$3.03	$1.86

[1] For detailed figures by States, 1859–1935, see Minerals Yearbook, 1937, p. 1008.
[2] Preliminary figures.
[3] Oklahoma included with Kansas in 1905 and 1906.
[4] Includes Tennessee, 1883–1907.
[5] Figures represent 1925–58 production only; earlier years included under "Other States."
[6] Figures represent 1924–58 production only; earlier years included under "Other States."
[7] Early production in New York included with Pennsylvania.
[8] Figures represent 1946–58 production only; earlier years included under "Other States."
[9] Includes Alaska, 1912–33; Arkansas, 1920; Michigan, 1900–1919; Mississippi, 1933–35; Missouri, 1899–1911, 1913–16, 1919–23, 1932–58; New Mexico, 1913, 1919–23; South Dakota, 1955–58; Tennessee, 1916–58; Utah, 1907–11, 120, 1924–41; Virginia, 1943–58.

PRODUCTION

General

Production of crude petroleum in 1958 totaled 2,448.8 million barrels, an average of 6,709 thousand barrels daily. This figure was 6.4 percent below 1957.

The high level of stocks and the general economic recession caused a sharp curtailment in refinery runs for the first half of 1958, and crude-oil production during this period averaged 6,448 thousand barrels daily, 13.9 percent less than in the same period of 1957. For the last half of the year production averaged 6,950 thousand barrels daily, 1.4 percent higher than in the second half of 1957, as stocks were reduced to a more favorable level and the general economy of the country improved.

Texas, California, Louisiana, Oklahoma, Kansas, and Wyoming produced more than 100 million barrels each, and the output of these States comprised 81.8 percent of the United States total. In 1957 these States produced 83.7 percent of the total. Wyoming was the only State in the group that reported a gain in production in 1958.

By States

Additional data on crude production by States will be found in volume III of the Minerals Yearbook.

TABLE 9.—Production of crude petroleum in the United States in 1957–58, by States and months

[Thousand barrels]

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
1957													
Alabama	354	330	408	452	488	488	516	490	462	471	457	490	5, 406
Arkansas	2, 606	2, 496	2, 717	2, 547	2, 593	2, 533	2, 570	2, 510	2, 521	2, 664	2, 530	2, 760	31, 047
California [1]	29, 099	26, 316	28, 832	27, 876	28, 742	27, 749	28, 811	28, 836	28, 022	28, 735	27, 894	28, 734	339, 646
Colorado [2]	4, 918	4, 439	4, 882	4, 638	4, 741	4, 468	4, 656	4, 598	4, 451	4, 474	4, 289	4, 428	54, 982
Florida	39	35	38	38	42	36	38	39	39	38	40	39	461
Illinois	6, 710	6, 116	6, 475	6, 442	6, 625	5, 247	5, 630	5, 815	6, 796	7, 286	6, 850	7, 091	77, 083
Indiana	1, 097	1, 002	1, 076	1, 070	1, 134	1, 025	1, 003	1, 024	1, 061	1, 087	1, 014	1, 069	12, 662
Kansas	10, 523	9, 857	10, 123	10, 398	10, 802	10, 147	10, 554	10, 347	9, 972	10, 464	9, 802	10, 625	123, 614
Kentucky	1, 440	1, 346	1, 449	1, 423	1, 441	1, 384	1, 487	1, 462	1, 385	1, 463	1, 322	1, 427	17, 029
Louisiana	31, 856	29, 073	31, 421	29, 597	29, 999	26, 307	26, 285	24, 431	24, 019	26, 033	24, 760	26, 115	329, 896
Michigan [3]	885	807	856	868	886	822	897	850	836	869	784	809	10, 169
Mississippi	3, 507	3, 285	3, 517	3, 406	3, 461	3, 236	3, 287	2, 926	2, 951	3, 284	2, 916	3, 146	38, 922
Montana [4]	2, 120	1, 981	2, 233	2, 160	2, 289	2, 255	2, 380	2, 393	2, 318	2, 357	2, 280	2, 406	27, 172
Nebraska	1, 462	1, 413	1, 610	1, 543	1, 491	1, 505	1, 632	1, 798	1, 740	1, 785	1, 775	1, 832	19, 586
New Mexico	7, 937	7, 464	8, 304	7, 938	8, 195	7, 453	7, 956	7, 953	7, 384	7, 958	7, 986	8, 231	94, 759
New York	218	211	223	235	243	215	238	226	218	227	207	216	2, 677
North Dakota	1, 272	1, 086	1, 380	868	1, 211	1, 169	1, 216	1, 219	786	833	1, 040	1, 179	13, 259
Ohio	406	388	401	436	443	413	509	463	488	530	482	519	5, 478
Oklahoma	19, 027	18, 218	19, 837	18, 619	18, 424	16, 423	17, 287	17, 295	16, 727	17, 736	17, 091	17, 977	214, 661
Pennsylvania	697	649	698	707	746	680	719	696	652	692	620	623	8, 179
Texas	95, 438	89, 191	102, 451	96, 108	96, 473	90, 642	85, 497	85, 179	84, 070	83, 006	81, 223	84, 589	1, 073, 867
Utah	297	301	417	327	297	261	346	352	388	443	459	479	4, 367
West Virginia	181	168	175	186	191	173	200	188	184	200	182	187	2, 215
Wyoming	9, 529	8, 783	8, 956	8, 498	9, 498	8, 660	9, 054	9, 047	9, 289	9, 391	9, 227	9, 652	109, 584
Other States	13	12	11	12	11	11	13	13	18	29	19	18	[5] 180
Total: 1957	231, 631	214, 967	238, 490	226, 392	230, 466	213, 302	212, 781	210, 150	206, 777	212, 055	205, 249	214, 641	2, 616, 901
1956	223, 125	209, 078	225, 645	214, 412	218, 942	213, 010	219, 770	223, 035	211, 585	215, 570	214, 438	228, 673	2, 617, 283
Daily average, 1957	7, 472	7, 677	7, 693	7, 546	7, 434	7, 110	6, 864	6, 779	6, 893	6, 840	6, 842	6, 924	7, 170
Pennsylvania Grade (included above)	1, 210	1, 140	1, 210	1, 257	1, 315	1, 178	1, 307	1, 219	1, 179	1, 265	1, 133	1, 153	14, 566
1958 [6]													
Alabama	486	427	525	488	460	450	594	465	470	580	463	479	5, 887
Arkansas	2, 612	2, 403	2, 339	2, 407	2, 258	2, 328	2, 441	2, 397	2, 269	2, 487	2, 343	2, 416	28, 700
California [1]	28, 329	24, 800	27, 114	25, 750	26, 333	25, 520	26, 239	26, 352	25, 499	26, 526	25, 624	26, 343	314, 429
Colorado [2]	4, 308	3, 881	4, 255	4, 037	4, 096	3, 928	4, 077	4, 035	3, 875	4, 062	3, 809	3, 946	48, 309
Florida	38	36	39	38	38	37	37	38	36	36	38	37	448
Illinois	7, 204	6, 048	6, 749	6, 850	6, 862	6, 743	7, 103	6, 992	6, 836	6, 995	6, 690	7, 053	82, 125
Indiana	995	845	1, 001	1, 006	978	999	1, 032	921	915	1, 095	1, 035	1, 042	11, 864
Kansas	10, 349	8, 831	8, 955	9, 546	9, 997	9, 651	9, 876	10, 336	10, 052	10, 522	9, 988	10, 085	118, 188
Kentucky	1, 377	1, 103	1, 320	1, 374	1, 353	1, 335	1, 434	1, 412	1, 499	1, 699	1, 719	1, 884	17, 509

Louisiana	26, 124	23, 427	25, 416	24, 610	25, 039	24, 315	25, 675	26, 393	26, 723	28, 126	27, 506	28, 716	312, 070
Michigan [3]	782	686	808	789	782	760	789	753	782	793	738	845	9, 307
Mississippi	3, 059	2, 899	3, 281	2, 643	2, 789	2, 985	3, 335	3, 427	3, 350	3, 552	3, 652	3, 599	38, 551
Montana [4]	2, 331	2, 101	2, 326	2, 318	2, 397	2, 401	2, 457	2, 338	2, 375	2, 501	2, 277	2, 469	28, 291
Nebraska	1, 717	1, 515	1, 566	1, 516	1, 603	1, 703	1, 791	1, 878	1, 734	1, 868	1, 720	1, 757	20, 368
New Mexico	8, 133	7, 462	7, 644	7, 684	8, 359	7, 885	8, 750	8, 818	8, 157	8, 524	8, 206	8, 701	98, 323
New York	208	173	193	203	205	146	96	90	91	94	79	86	1, 664
North Dakota	1, 333	1, 144	1, 119	1, 201	1, 176	1, 346	1, 370	1, 419	751	652	1, 255	1, 375	14, 141
Ohio	528	430	534	566	544	525	560	515	530	549	476	503	6, 260
Oklahoma	17, 811	15, 953	16, 024	16, 459	16, 948	16, 124	17, 400	17, 656	16, 839	17, 405	16, 734	17, 346	202, 699
Pennsylvania	615	502	570	599	588	567	591	527	577	558	482	502	6, 678
Texas	84, 573	76, 963	72, 454	68, 308	68, 821	68, 801	74, 983	84, 669	86, 655	83, 742	82, 327	88, 410	940, 706
Utah	413	535	453	1, 060	2, 189	2, 463	2, 758	3, 154	2, 965	3, 324	2, 193	2, 879	24, 386
West Virginia	181	147	183	201	183	185	193	172	198	198	171	174	2, 186
Wyoming	9, 287	8, 328	9, 589	8, 962	9, 205	9, 027	10, 104	10, 343	9, 799	10, 401	9, 982	10, 545	115, 572
Other States	17	12	15	16	12	16	15	14	15	15	11	18	[7] 176
Total: 1958	212, 810	190, 651	194, 472	188, 631	193, 215	190, 240	203, 700	215, 114	212, 972	216, 304	209, 518	221, 210	2, 448, 837
1957	231, 631	214, 967	238, 490	226, 392	230, 466	213, 302	212, 781	210, 150	206, 777	212, 055	205, 249	214, 641	2, 616, 901
Daily average, 1958	6, 865	6, 809	6, 273	6, 288	6, 233	6, 341	6, 571	6, 939	7, 099	6, 978	6, 984	7, 136	6, 709
Pennsylvania Grade (included above)	1, 139	931	1, 096	1, 158	1, 126	998	996	896	973	975	838	884	12, 010

[1] Conservation Committee of California Oil Producers.
[2] Colorado Oil and Gas Conservation Commission.
[3] Michigan Department of Conservation.
[4] Montana Oil Conservation Board.
[5] Missouri (65), Nevada (44), South Dakota (54), Tennessee (7), Virginia (5), and Washington (5).
[6] Preliminary figures.
[7] Arizona (12), Missouri (51), Nevada (40), South Dakota (58), Tennessee (5), Virginia (6), and Washington (4).

TABLE 10.—Percentage of total crude petroleum produced in the United States 1949–58, by States

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958 [1]
Texas	40.4	42.1	45.0	44.6	43.2	42.1	42.4	42.3	41.0	38.4
California	18.1	16.6	15.8	15.7	15.5	15.4	14.3	13.4	13.0	12.8
Louisiana	10.4	10.6	10.3	10.7	10.9	10.6	10.9	11.4	12.6	12.7
Oklahoma	8.2	8.3	8.3	8.3	8.6	8.0	8.2	8.2	8.2	8.3
Kansas	5.5	5.5	5.1	5.0	4.9	5.2	4.9	4.7	4.7	4.8
Wyoming	2.6	3.1	3.1	3.0	3.5	4.0	4.0	4.0	4.2	4.7
New Mexico	2.6	2.4	2.3	2.6	3.0	3.2	3.3	3.4	3.6	4.0
Illinois	3.5	3.1	2.7	2.6	2.5	2.9	3.3	3.1	2.9	3.4
Colorado	1.3	1.2	1.2	1.3	1.5	2.0	2.1	2.2	2.1	2.0
Mississippi	2.1	1.9	1.7	1.6	1.5	1.5	1.5	1.6	1.5	1.6
Arkansas	1.6	1.6	1.3	1.3	1.3	1.3	1.1	1.1	1.2	1.2
Montana	.5	.4	.4	.4	.5	.6	.6	.8	1.0	1.2
Kentucky	.5	.5	.5	.5	.5	.6	.6	.7	.7	.7
Michigan	.9	.8	.6	.6	.5	.5	.5	.4	.4	.4
Other States	1.8	1.9	1.7	1.8	2.1	2.1	2.3	2.7	2.9	3.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Preliminary figures.

TABLE 11.—Production of crude petroleum in leading fields in the United States, 1957–58, and total production since discovery [1] in thousand barrels

[Oil and Gas Journal]

Field	State	1957	1958	Total since discovery [2]
East Texas	Texas	69,067	46,195	3,352,174
Wilmington	California	32,371	29,717	829,475
Sho-Vel-Tum	Oklahoma	29,008	25,823	499,244
Coalinga, all fields	California	21,843	21,803	913,831
Ventura	do	21,955	21,105	604,018
Rangely	Colorado	26,154	20,914	264,680
Elk Basin	Montana, Wyoming	13,793	16,576	137,980
Kelly-Snyder	Texas	25,142	16,339	209,070
Huntington Beach	California	21,514	19,512	632,910
South Pass, Block 24	Louisiana	18,000	15,067	67,780
Burbank	Oklahoma	14,280	14,548	348,485
Loudon	Illinois	11,691	13,158	222,804
Midway-Sunset	California	15,284	13,107	856,430
Golden Trend	Oklahoma	17,245	13,106	166,501
Cuyama, South	California	13,133	12,461	114,508
Eunice-Monument	New Mexico	12,817	11,674	304,278
Ward-Estes, North	Texas	10,582	11,196	83,172
Spraberry Trend Area	do	12,636	11,150	162,022
Cowden, all fields	do	15,348	11,006	291,183
San Ardo	California	11,862	10,873	79,694
Caillou Island	Louisiana	11,361	10,856	127,772
Aneth	Utah		9,948	11,764
Lake Washington	Louisiana	10,228	9,599	40,771
Wasson—66 and 72	Texas	14,655	9,496	328,499
Hawkins	do	14,773	8,782	235,663
Goldsmith	do	19,831	8,615	248,321
Timbalier Bay	Louisiana	8,464	8,558	34,363
Thompson, all fields	Texas	8,269	8,558	229,967
Bay Marchand, Block 2	Louisiana		8,421	30,552
Clay City	Illinois	8,187	7,972	204,551
Denton	New Mexico	9,391	7,968	64,412
Seeligson (all zones)	Texas	8,440	7,932	169,351
McElroy	do	10,043	7,610	165,461
Slaughter	do	10,863	7,100	250,751
South Mountain	California	6,577	7,007	73,092
Main Pass, Block 69	Louisiana		6,917	30,818
Buena Vista	California	7,407	6,862	470,176
Weeks Island	Louisiana	8,628	6,796	82,059
Kern Front and Kern River	California	7,296	6,568	436,619
Caddo	Louisiana	7,275	6,493	245,103
Bradford-Allegheny [3]	Pennsylvania-New York	9,125	6,459	682,720
Beaver Lodge	North Dakota	8,560	6,448	46,037
Salem	Illinois	5,644	6,475	264,602
Brea-Olinda	California	6,866	6,379	264,281
Long Beach	do	6,772	6,185	812,114
Conroe and West	Texas	6,412	5,998	374,544
Hamilton Dome	Wyoming	6,251	5,903	56,287
Howard Glasscock	Texas	6,487	5,901	198,690
Block 31	do	5,793	5,716	48,434

See footnotes at end of table.

TABLE 11.—Production of crude petroleum in leading fields in the United States, 1957–58, and total production since discovery [1] in thousand barrels—Continued

[Oil and Gas Journal]

Field	State	1957	1958	Total since discovery [2]
Hastings	Texas	9,374	5,712	291,195
Liberty South	do		5,592	44,396
Coles Levee, North and South	California	5,891	5,432	117,366
Yates	Texas	8,882	5,427	455,015
Levelland	do	10,392	5,402	108,590
Elk Hills	California	5,698	5,375	247,429
Delhi-Big Creek	Louisiana	7,003	5,320	99,651
Pierce Junction	Texas	7,408	5,310	77,233
Bridgeport	Illinois		5,280	271,015
Agua Dulce-Stratton	Texas	6,786	5,249	146,601
Diamond M	do	8,629	5,220	82,883
Caprock and East	New Mexico	6,362	5,216	32,473
Bemis-Shutts	Kansas	5,628	5,178	166,145
Tom O'Connor	Texas	8,604	5,106	238,204

[1] Fields under 5,000,000 barrels not shown for current year.
[2] Includes revisions.
[3] Bureau of Mines data.

TABLE 12.—Production of crude petroleum in Arkansas, 1954–58, by fields

(Thousand barrels)

Field	1954	1955	1956	1957	1958 [1]
Atlanta	554	483	438	399	228
Bradley West			499		
Buckner	529	478	444	415	363
Dorchear-Macedonia	624	617	632	721	303
El Dorado	838	857	923	990	826
Fouke	1,210	1,241	1,431	1,468	1,279
Horsehead	706	816	403	188	
Magnolia	3,289	2,890	3,609	4,521	4,058
McKamie	1,480	1,331	1,349	1,337	976
Midway	2,262	2,048	2,238	2,299	2,046
Shuler	2,599	2,593	2,353	2,119	1,791
Smackover	4,370	4,678	4,466	4,206	4,114
Stephens	1,077	1,014	1,157	1,745	1,681
Village	850	846	811	776	721
Wesson	2,699	1,840	1,591	2,491	2,239
Other fields [2]	6,043	6,637	7,011	7,372	8,075
Total Arkansas	29,130	28,369	29,355	31,047	28,700

[1] Preliminary figures.
[2] Includes oil consumed on leases and net change in stocks held on leases for entire State.

TABLE 13.—Production of crude petroleum in California, 1954–58, by districts and fields, in thousand barrels

[Conservation Committee of California Oil Producers]

District and field	1954	1955	1956	1957	1958
San Joaquin Valley:					
Belridge	4,015	4,092	4,297	4,677	4,782
Buena Vista	7,962	7,713	7,767	7,457	6,901
Coalinga	27,575	29,661	29,280	27,746	23,481
Coles Levee	6,462	6,585	5,313	5,888	5,443
Cuyama-Russell Ranch	16,769	16,132	15,940	16,215	15,084
Edison	4,419	4,951	4,568	4,135	3,808
Elk Hill	7,696	6,689	5,959	5,662	5,361
Fruitvale	3,576	3,399	3,212	2,994	2,721
Gosford, East	488	425	443		
Greeley	4,531	4,355	4,271	3,502	2,981
Helm	555	512	1,009	981	829
Kern River-Kern Bluff-Kern Front	5,610	5,921	7,437	7,665	6,888
Kettleman North Dome	6,041	5,447	5,252	4,898	4,515
Lost Hills	1,982	1,842	1,782	1,706	1,324

TABLE 13.—Production of crude petroleum in California, 1954–58, by districts and fields, in thousand barrels—Continued

District and field	1954	1955	1956	1957	1958
San Joaquin Valley—Continued					
McKitterick	7,764	8,503	8,984	7,807	7,018
Midway-Sunset	13,362	14,707	15,070	15,206	13,107
Mountain View	1,356	1,554	1,447	1,608	1,523
Mount Poso	3,078	3,161	2,927	3,319	3,392
Poso Creek	1,323	1,285	1,517	1,655	1,342
Raisin City	1,944	1,916	2,137	1,951	1,793
Rio Bravo	4,313	4,563	3,995	4,262	3,629
Riverdale	611	529	544	540	487
Round Mountain	1,793	1,681	1,630	1,590	1,497
Tejon Group	2,418	3,915	3,360	2,331	2,722
Ten Section	1,438	1,650	1,638	1,577	1,506
Other San Joaquin Valley	9,615	9,037	11,702	10,421	10,307
Total San Joaquin Valley	146,696	150,225	151,481	145,793	132,441
Coastal district:					
Aliso Canyon	2,790	2,845	2,606	2,343	2,027
Cat Canyon	6,065	5,382	6,133	4,481	4,197
Del Valle	1,070	926	747	1,140	961
Elwood	1,436	1,291	1,205	1,050	931
Gato Ridge	973	947	966	890	756
Lompoc	1,493	1,247	1,047	886	153
Newall-Potrero	3,558	3,612	3,459	3,199	2,871
Orcutt	1,265	1,231	1,144	1,099	1,046
Padre Canyon [1]	1,736	1,577	1,346		
Placerita	2,171	1,834	1,590	1,458	1,333
Romona	863	724	612		
Rincon	1,517	1,632	3,079	3,204	3,527
San Ardo	11,172	10,972	11,733	11,845	10,864
San Miguelito	1,990	1,835	1,648	2,346	2,102
San Maria	3,680	3,012	2,713	2,544	2,198
South Mountain	5,261	4,676	4,995	6,561	6,980
Ventura	31,129	25,603	24,357	21,159	20,451
Zaca Creek	1,709	1,317	953	780	668
Other Coastal	12,720	14,208	12,500	20,188	20,399
Total Coastal	92,598	84,871	82,833	85,173	81,464
Los Angeles Basin:					
Brea Olinda	8,314	7,498	6,864	6,850	6,362
Coyote	5,087	4,495	4,498	4,471	3,942
Dominquez	3,421	3,448	4,366	3,992	3,710
Huntington Beach	21,556	24,107	22,468	21,452	19,447
Inglewood	4,778	4,374	4,466	4,642	4,419
Long Beach	7,739	9,948	7,748	6,761	6,167
Montebello	1,575	1,559	1,518	1,450	1,360
Newport	1,555	1,671	1,546	1,507	1,467
Richfield	2,738	2,495	2,290	2,112	2,133
Rosecrans [2]	1,360	1,281	1,185	1,119	971
Sansinena	3,062	3,827	3,798	3,646	2,604
Santa Fe Springs	5,141	4,591	5,193	4,444	3,890
Seal Beach	3,545	3,634	3,946	4,037	3,881
Torrance	2,526	2,573	2,614	2,715	3,084
Wilmington	41,540	38,860	36,844	32,306	29,758
Other Los Angeles Basin	2,634	5,355	7,096	7,176	7,329
Total Los Angeles Basin	116,571	119,716	116,440	108,680	100,524
Total California	355,865	354,812	350,754	339,646	314,429

[1] Includes Oak Grove area.
[2] Includes Athens.

TABLE 14.—Production of crude petroleum in Colorado, 1954–58, by fields

(Thousand barrels)

Field [1]	1954	1955	1956	1957	1958 [2]
Adena	4,626	6,015	5,709	5,518	4,965
Badger Creek-West	1,033	747	518	498	383
Big Beaver	137	825	876	896	1,062
Black Hollow	500	783	676	656	549
Bobcat	496	1,200	884	625	670
Cliff	----------	820	979	565	553
Divide	416	677	405	----------	----------
Graylin-South and Northwest	1,996	1,588	1,051	690	631
Lewis Creek	782	674	456	----------	----------
Little Beaver-East	2,687	2,089	1,993	2,282	1,754
Mt. Hope-East and North	892	1,024	840	566	430
Plum Bush Creek	2	665	1,232	1,062	1,138
Rangely	22,780	23,901	28,302	26,154	20,914
Sand River	187	560	483	----------	----------
Wilson Creek	2,640	2,440	2,556	2,528	2,396
Yenter	1,120	904	647	621	658
Other [3]	5,912	7,741	10,909	12,321	12,206
Total Colorado	46,206	52,653	58,516	54,982	48,309

[1] Figures by fields supplemented by data from Oil and Gas Journal for 1958.
[2] Preliminary figures.
[3] Includes crude oil consumed on leases and net change in stocks held on leases for entire State.

TABLE 15.—Production of crude petroleum in Illinois, 1954–58, by fields in thousand barrels

[Oil and Gas Journal]

Field	1954	1955	1956	1957	1958 [1]
Albion	1,088	1,232	1,120	1,313	1,377
Benton	1,740	1,462	1,032	807	606
Boyd	533	718	899	952	668
Bridgeport	2,747	3,417	4,352	4,174	5,280
Centralia	634	563	546	2,076	3,480
Clay City	9,526	10,300	9,210	8,187	7,972
Dale	1,808	1,912	3,543	2,441	2,485
East Inman	461	1,067	1,513	1,415	1,537
Johnsonville	588	839	1,063	1,010	992
Louden	6,486	7,535	9,828	11,691	13,158
New Harmony	4,736	4,440	4,022	3,462	4,430
Phillipstown	868	979	1,168	547	691
Robinson	2,377	2,606	2,621	2,752	2,755
Roland	1,093	2,045	2,503	2,449	2,155
Sailor Springs	1,473	1,544	1,794	1,552	1,531
Salem	4,981	7,673	6,606	5,644	6,475
Other fields [2]	25,659	33,091	30,526	26,611	26,533
Total Illinois	66,798	81,423	82,346	77,083	82,125

[1] Preliminary figures.
[2] Bureau of Mines figures.

TABLE 16.—Production of crude petroleum in Kansas, 1954–58, by fields, in thousand barrels

[Oil and Gas Journal]

Field	1954	1955	1956	1957	1958 [1]
Bemis-Shutts	3,549	3,263	3,076	5,628	5,178
Bloomer	1,589	1,456	1,268	1,162	972
Burnett-Southwest	2,170	2,464	2,230	---	---
Burrton-Haury	809	732	695	668	641
Chase [2]	5,339	4,897	4,689	4,578	3,951
El Dorado	3,864	4,242	4,348	4,672	4,369
Fairport	823	903	964	1,054	1,063
Genesco-Edwards	2,869	2,941	2,734	2,222	1,935
Gladys	(3)	1,024	1,885	1,832	1,690
Gorham	1,692	1,589	1,543	1,308	1,203
Hall Gurney	4,528	4,064	3,587	3,580	3,325
Iuka-Carmi	1,421	1,464	1,486	1,141	1,058
Kraft-Prusa	4,357	3,826	3,498	3,238	2,949
Marcotte	1,681	1,712	1,621	2,061	1,793
Morel	1,654	1,470	1,461	1,623	1,480
Ray	1,280	1,312	1,225	1,320	1,366
Seeley-Wick	1,798	1,479	1,341	987	721
Stoltenberg	1,119	1,043	951	1,205	811
Thrall-Agard	1,002	775	748	599	490
Trapp	5,461	4,943	4,427	3,883	3,497
Welch-Bornholdt	1,361	1,254	1,108	1,024	1,075
Other fields [4]	70,951	74,816	79,319	79,829	78,621
Total Kansas	119,317	121,669	124,204	123,614	118,188

[1] Preliminary figures.
[2] Silica included with Chase.
[3] Included with "Other fields".
[4] Bureau of Mines figures.

TABLE 17.—Production of crude petroleum in Louisiana, 1954–58, by districts and fields

(Thousand barrels)

District and field	1954	1955	1956	1957	1958 [1]
Gulf Coast:					
Anse la Butte	1,699	1,719	1,890	2,065	1,656
Avery Island	2,724	3,499	3,303	3,240	2,580
Bateman Lake	---	---	1,718	2,120	2,191
Barataria	1,628	1,358	1,103	1,023	800
Bay de Chene	1,208	1,456	1,609	1,794	1,600
Bay Marchand	2,430	2,933	3,539	3,791	4,684
Bay St. Elaine	3,130	3,315	3,188	3,376	3,338
Bayou Blue	1,060	955	931	1,133	913
Bayou Choctaw	1,171	1,293	1,176	1,204	1,131
Bayou Mallett	1,413	1,140	1,043	823	829
Bayou Sale	3,589	3,090	2,825	2,712	2,297
Bully Camp	1,353	1,767	1,623	1,582	1,236
Caillou Island	8,398	9,017	9,626	11,298	11,260
Charenton	1,223	1,234	1,426	1,391	1,228
Cox Bay	3,413	3,113	2,762	2,303	1,565
Delta Farms	5,456	4,810	4,493	4,010	3,285
Dog Lake	1,270	1,072	947	887	755
Duck Lake	3,199	3,329	2,916	2,477	2,282
East White Lake	1,179	1,390	1,390	1,463	1,111
Egan	2,117	2,225	2,529	2,263	1,839
Erath	1,152	964	919	1,310	1,365
Garden Island	1,419	1,343	1,340	1,429	1,373
Gibson	1,140	1,020	919	910	809
Golden Meadows	3,974	3,784	3,452	3,032	2,649
Good Hope	1,446	1,208	1,087	1,058	859
Grand Bay	3,519	3,403	4,030	4,113	3,178
Gueydan	1,298	1,076	963	961	800
Hackberry	4,215	4,451	5,927	6,903	5,914
Horseshoe Bayou	1,097	871	836	807	722
Iberia	---	---	800	814	785
Iowa	2,701	2,465	2,214	2,006	1,743
Jeanerette	1,228	1,193	1,148	1,271	1,147
Jennings	---	---	1,024	1,247	1,301
Lafitte	3,686	3,323	2,935	3,058	2,670
Lake Arthur South	---	---	1,097	1,024	1,077
Lake Barre	1,056	1,363	1,723	2,066	2,577
Lake Chicot	1,021	1,031	1,009	954	721

See footnotes at end of table.

TABLE 17.—Production of crude petroleum in Louisiana, 1954–58, by districts and fields—Continued

Districts and field	1954	1955	1956	1957	1958 [1]
Gulf Coast—Continued					
Lake Fausse Point	823	1,344	1,499	1,750	1,499
Lake Pelto	2,324	2,421	2,652	2,951	3,102
Lake Salvador	1,415	1,370	1,391	1,641	1,635
Lake Washington	1,947	4,697	7,849	11,089	9,682
La Rose	----------	----------	1,095	1,009	1,021
Leeville	3,556	4,088	4,094	4,033	3,711
Little Lake	1,582	2,147	2,353	2,453	2,096
Lockport	----------	----------	908	920	768
Main Pass	4,981	6,354	8,417	11,064	9,672
North Crowley	1,273	1,299	1,168	1,107	924
Paradis	3,379	3,172	2,843	2,625	2,286
Phoenix Lake	1,778	1,533	1,367	1,228	1,042
Pine Prairie	864	885	927	826	692
Point-a-La Hache	2,451	2,168	1,999	1,884	915
Port Barre	1,056	925	852	763	680
Quarentine Bay	2,649	3,151	3,964	3,536	2,765
Romere Pass	4,719	3,913	3,485	3,488	2,638
St. Gabriel	1,278	1,047	825	731	597
Section 28	1,335	1,359	1,396	1,336	1,101
Shuteston	----------	----------	1,025	905	979
South Pass	----------	----------	8,208	9,301	10,359
Tepetate	1,722	1,692	1,706	1,580	1,418
Timbalier Bay	2,289	3,935	6,120	8,600	8,562
University	1,391	1,073	934	822	508
Valentine	1,379	1,684	1,802	1,688	2,302
Venice	5,364	4,903	5,117	5,514	4,317
Ville Platte	1,402	1,249	1,150	996	794
Vinton	2,712	2,352	2,203	2,061	1,756
Weeks Island	9,029	8,210	8,668	8,602	6,871
West Bay	2,525	2,423	3,326	4,016	3,705
West Cote Blanche	2,380	2,016	1,891	2,022	2,989
West Lake Verrett	1,517	1,332	1,361	1,333	1,259
White Castle	941	763	786	966	842
Other Gulf Coast	58,048	77,694	77,653	97,011	100,780
Total Gulf Coast	204,721	227,409	252,494	283,769	270,537
Northern:					
Big Creek	900	750	679	587	476
Caddo	8,251	9,111	8,417	7,305	7,066
Cotton Valley	----------	----------	1,407	945	771
Delhi	4,880	5,377	6,301	6,411	4,931
Esperance Point	----------	----------	1,684	1,621	1,415
Haynesville	3,694	3,234	2,859	2,695	3,213
Lake St. John	3,162	2,788	2,430	2,258	2,072
Nebo [2]	2,270	2,193	1,905	1,746	1,468
Olle [3]	1,934	1,709	1,626	1,432	1,432
Rodessa	784	793	751	710	597
Sligo	966	1,030	1,043	1,340	1,277
Urania	----------	----------	786	765	766
Other Northern	14,996	16,616	17,039	18,312	16,049
Total Northern	41,837	43,601	46,927	46,127	41,533
Total Louisiana	246,558	271,010	299,421	329,896	312,070

[1] Preliminary figures.
[2] Includes Hemphill, Trout Creek, and Jena.
[3] Includes Little Creek and Summerville.

TABLE 18.—Production of crude petroleum in Michigan, 1954–58, by fields, in thousand barrels

[Michigan Department of Conservation]

Field	1954	1955	1956	1957	1958 [1]
Beaver Creek	342	298	291	242	227
Coldwater	1,160	1,052	923	800	698
Deep River	1,569	1,180	875	576	286
East Norwich	462	415	402	361	332
Kawkawlin	447	400	434	595	583
Kimball Lake	194	115	57	42	22
Pentwater	274	219	197	165	135
Reed City and East Reed City	482	477	443	480	592
Rose City	553	464	392	302	292
St. Helen	238	223	209	174	142
Stony Lake	561	420	347	247	136
Other fields	5,746	6,003	6,170	6,185	5,862
Total Michigan	12,028	11,266	10,740	10,169	9,307

[1] Preliminary figures.

TABLE 19.—Production of crude petroleum in Mississippi, 1954–58, by fields, in thousand barrels

Field	1954	1955	1956	1957	1958 [1]
Baxterville	5,137	5,301	5,874	4,939	4,993
Bolton			842	1,148	1,248
Brookhaven	3,724	3,511	3,019	2,541	2,218
Cranfield	1,776	1,497	1,299	1,206	982
Eucutta	1,352	1,355	1,484	1,318	1,611
Heidelberg	3,098	3,253	3,641	3,395	2,916
La Grange	2,269	2,128	2,137	1,936	1,649
Mallaliou	1,252	1,117	1,021	841	739
Soso	748	3,110	4,289	4,241	4,174
Tinsley	4,326	4,475	4,399	3,884	3,830
Yellow Creek	1,526	1,433	1,494	1,323	1,054
Other fields	9,032	10,561	11,325	12,150	13,137
Total Mississippi	34,240	37,741	40,824	38,922	38,551

[1] Preliminary figures.

TABLE 20.—Production of crude petroleum in Montana, 1954–58, by fields, in thousand barrels

[Montana Oil Conservation Board]

Field	1954	1955	1956	1957	1958 [1]
Big Wall	258	300	255	248	218
Bowes	980	510	340	299	282
Cabin Creek	235	631	1,633	3,666	4,255
Cat Creek	200	174	162	163	170
Cut Bank	2,575	2,694	2,684	2,515	2,210
Elk Basin	1,643	1,441	2,007	2,603	3,143
Glendive	718	621	678	714	732
Kevin-Sunburst	1,207	1,131	1,017	953	969
Pine	430	1,115	3,667	5,326	5,346
Pondera	549	491	684	595	563
Poplar	3,016	3,185	4,098	4,894	4,641
Reagan	234	224	220	213	166
Sumatra	733	1,540	1,459	1,306	1,600
Other fields	1,417	1,597	2,856	3,677	3,996
Total Montana	14,195	15,654	21,760	27,172	28,291

[1] Preliminary figures.

TABLE 21.—Production of crude petroleum in New Mexico, 1954–58, by districts and fields, in thousand barrels

[Oil and Gas Journal]

District and field	1954	1955	1956	1957	1958 [1]
Southeast:					
Bagley	1, 867	1, 659	1, 614	1, 471	1, 312
Brunson	2, 264	1, 691	1, 193	870	627
Caprock-East	2, 135	2, 243	6, 942	6, 362	5, 216
Crossroad	1, 355	1, 193	1, 358	1, 307	1, 402
Denton	10, 651	11, 031	10, 778	9, 391	7, 968
Dollerhide-West	3, 251	3, 164	3, 027	2, 761	2, 510
Drinkard	2, 828	2, 482	2, 054	1, 850	1, 738
Eunice-Monument	9, 029	10, 544	10, 527	12, 817	11, 674
Fowler	837	1, 362	847	922	787
Gladiola	1, 571	1, 293	1, 605	4, 529	7, 324
Grayburg-Jackson	1, 114	1, 054	945	845	1, 318
Hare	1, 642	1, 290	973	829	583
Hobbs	3, 340	3, 397	3, 401	3, 495	3, 248
Langlie-Mattix	1, 402	1, 641	2, 046	1, 989	1, 996
Lovington-East	3, 250	3, 316	3, 080	2, 790	2, 466
Maljamar	1, 790	1, 878	2, 277	2, 227	2, 449
Moore	1, 166	1, 228	1, 235	1, 187	1, 042
Saunders-South	2, 200	1, 903	1, 727	1, 534	1, 781
Vacuum	3, 832	3, 804	3, 944	3, 724	3, 348
Warren	1, 469	1, 508	1, 473	1, 007	1, 604
Other fields [2]	17, 112	24, 260	25, 433	30, 333	29, 571
Northwest	715	1, 017	1, 414	2, 519	8, 359
Total New Mexico	74, 820	82, 958	87, 893	94, 759	98, 323

[1] Preliminary figures.
[2] Bureau of Mines figures.

TABLE 22.—Production of crude petroleum in Oklahoma, 1954–58, by fields in thousand barrels

[Oil and Gas Journal]

Field	1954	1955	1956	1957	1958 [1]
Allen	1, 709	1, 733	1, 638	1, 608	1, 590
Bebee	926	836	745	707	625
Burbank	3, 466	10, 139	13, 519	14, 280	14, 548
Cache Creek	787	707	661	721	827
Camp	1, 329	(2)	(2)	(2)	(2)
Cement	3, 517	4, 186	4, 372	4, 061	4, 405
Cumberland	1, 690	1, 841	1, 944	1, 812	1, 474
Cushing	3, 176	2, 823	2, 549	2, 650	2, 702
Dilworth	1, 279	1, 135	921	677	517
Doyle	2, 976	2, 683	3, 056	2, 798	2, 421
Elk City	5, 348	6, 277	5, 326	4, 078	2, 806
Eola	1, 424	2, 193	3, 566	3, 886	3, 188
Fox-Graham	4, 559	(2)	(2)	(2)	(2)
Glenn	2, 045	1, 983	1, 901	2, 259	2, 773
Healdton	2, 171	2, 307	2, 347	2, 260	2, 331
Hewitt	3, 339	3, 411	3, 495	3, 240	3, 084
Holdenville-East	1, 149	1, 476	1, 117	628	476
Hoover-Northwest	1, 189	1, 662	2, 063	1, 863	2, 417
Knox	1, 165	1, 143	1, 291	1, 232	1, 045
Milroy	1, 755	(2)	(2)	(2)	(2)
Oklahoma City	4, 148	3, 803	3, 743	3, 482	3, 290
Olympic	4, 083	2, 662	1, 752	1, 573	1, 341
Payson-East	1, 076	918	786	467	----------
Ringwood	727	551	484	----------	----------
Seminole:					
Bowlegs	872	718	685	655	619
Little River	756	699	571	478	430
St. Louis	1, 464	1, 672	1, 486	1, 443	1, 410
Seminole	998	921	827	912	876
Sholem-Alechem	10, 261	(2)	(2)	(2)	(2)
Sho-Vel-Tum	----------	30, 316	29, 717	29, 008	25, 823
South Burbank	1, 429	(2)	(2)	(2)	(2)
Tatums	3, 321	(2)	(2)	(2)	----------
Velma-West	8, 435	(2)	(2)	(2)	----------
West Edmonds	1, 821	1, 733	1, 945	1, 662	1, 153
Witcher	541	439	378	----------	----------
Yale-Quay	1, 915	1. 479	1, 322	1, 765	1, 927
Other fields [3]	99, 005	110, 371	121, 655	124, 456	118, 601
Total Oklahoma	185, 851	202, 817	215, 862	214, 661	202, 699

[1] Preliminary figures. [2] Included in "Other fields." [3] Bureau of Mines figures.

TABLE 23.—Production of crude petroleum in Texas, 1954–58, by districts and fields

(Thousand barrels)

Districts and field [1]	1954	1955	1956	1957	1958 [2]
Gulf Coast:					
Amelia	1,161	1,122	1,091	(3)	(3)
Anahuac	5,240	5,279	5,165	5,279	4,028
Barbers Hill	1,805	1,959	1,865	1,662	1,585
Beaumont-West	1,035	954	900	(3)	(3)
Bloomington	1,341	1,332	1,276	1,130	866
Boling	1,763	1,698	1,616	1,433	1,395
Chocolate Bayou	4,952	4,605	4,118	4,361	4,200
Conroe	10,081	10,376	10,455	9,492	6,979
Damon Mound	1,153	1,098	907	(3)	(3)
Dickenson-Gillock	4,030	3,987	3,946	3,571	3,222
Dyersdale	975	841	688	(3)	(3)
Esperson	1,284	1,154	1,023	1,005	1,037
Fairbanks	1,426	1,427	1,254	1,054	894
Falls City	898	904	854	(3)	(3)
Fannette	1,380	1,252	1,185	1,511	1,760
Francitas	1,172	1,556	1,540	1,272	846
Friendwood	10,378	10,620	10,515	9,511	6,760
Gohlke, Helen	2,478	2,305	2,081	1,715	1,244
Goose Creek	2,715	3,007	2,813	2,736	2,617
Greta	2,370	2,398	2,371	2,221	1,668
Hankamer	1,110	1,253	1,118	1,023	1,034
Hastings	11,570	11,649	11,396	10,304	7,919
Heyser	1,064	1,087	1,001	(3)	(3)
High Island	2,819	3,143	3,476	3,554	3,864
Houston-North-South	1,377	1,341	1,285	1,227	1,045
Hull	4,411	4,040	3,909	3,668	3,653
Humble	1,067	1,185	1,057	1,074	1,065
Liberty, South	2,348	2,677	3,324	4,100	5,657
Livingston	1,086	1,152	1,059	(3)	(3)
Lolita	1,247	1,358	1,459	1,378	1,407
Lovells Lake	863	860	870	(4)	----------
McFaddin	1,076	1,316	1,314	1,138	796
Manvel	1,735	1,709	1,649	1,469	1,069
Markham	1,548	1,422	1,598	1,819	1,957
Old Ocean	4,994	5,378	5,287	5,674	4,707
Oyster Bayou	3,104	3,080	2,968	2,612	2,044
Pierce Junction	1,036	1,213	5,395	6,720	5,007
Placedo	1,951	1,832	1,716	1,371	1,057
Port Neches	1,687	1,491	1,260	1,002	921
Raccoon Bend	2,068	2,082	2,084	1,694	1,321
Refugio-Fox	2,330	2,422	2,190	2,055	1,923
Saratoga	1,417	1,968	1,112	1,618	1,431
Silsbee	1,248	1,340	1,284	937	1,221
Sour Lake	1,451	1,459	1,408	1,319	1,194
Stowell	1,645	1,709	1,738	1,198	603
Sugarland	933	959	932	853	608
Sugar Valley	1,143	1,135	1,101	921	715
Thompson	9,099	8,944	8,990	8,193	6,000
Tomball	1,888	2,188	2,242	2,035	1,498
Village Mills	2,871	2,519	2,511	2,730	2,063
West Columbia	2,344	2,436	2,365	2,475	2,687
West Ranch	5,427	5,606	6,314	6,190	4,641
Withers-Magnet	3,467	3,273	3,241	3,162	2,458
Other Gulf Coast	62,098	78,202	81,254	77,995	68,720
Total Gulf Coast	203,159	221,302	225,570	209,461	179,386
East Texas:					
East Texas Proper	81,364	80,279	77,582	70,109	52,593
Cuyuga	1,082	1,078	1,088	999	925
Ham Gossett	1,099	1,067	871	659	486
Hawkins	16,589	16,865	16,304	14,786	10,687
Long Lake	959	988	1,161	1,779	645
New Hope	2,481	2,510	2,172	2,162	1,993
Pewitt Ranch	1,209	1,117	1,073	927	700
Pickton	1,477	1,453	1,429	1,189	983
Quitman	2,230	2,190	2,176	2,192	2,117
Taleo	4,928	4,994	4,896	4,523	3,977
Vac	8,850	8,816	8,703	7,823	5,683
Waskom	1,049	1,118	1,191	872	889
Woodlawn	1,045	919	652	419	380
Other East Texas	14,321	22,256	21,954	21,919	24,242
Total East Texas	138,683	145,650	141,252	130,358	106,300

See footnotes at end of table.

TABLE 23.—Production of crude petroleum in Texas, 1954–58, by districts and fields—Continued

(Thousand barrels)

Districts and fields [1]	1954	1955	1956	1957	1958 [2]
Central Texas:					
Big Foot	2,413	2,455	2,148	1,610	2,021
Charlotte	1,760	2,152	2,960	2,071	1,541
Darst Creek	3,442	3,487	3,415	3,450	3,465
Luling	2,433	2,555	2,699	2,598	2,444
Other Central Texas	5,110	7,648	9,225	8,727	6,916
Total Central Texas	15,158	18,297	20,447	18,456	16,387
South Texas:					
Aqua Dulce	1,500	1,389	1,428	1,479	1,171
Flour Bluff	1,286	900	829	872	750
Fulton Beach	2,985	2,701	2,579	4,340	2,415
Garcia	1,057	1,008	931	834	645
Hoffman	1,500	1,500	1,385	1,440	1,210
Kelsey	3,173	3,609	3,833	3,359	2,457
London Gin	955	1,101	1,238	1,083	728
Midway	928	1,070	1,090	940	644
Mustang Island	2,697	2,768	2,566	2,246	1,755
Plymouth	6,613	6,740	6,043	4,757	3,992
Portilla	3,506	3,719	3,144	2,936	2,228
Saxet-Saxet Frio	830	757	1,173	1,312	847
Stratton	2,403	2,401	2,345	1,999	1,500
Sun	1,752	1,360	1,843	1,673	1,439
Taft	1,580	1,353	1,251	929	744
White Point	2,973	3,260	3,444	3,426	2,417
Willamer, West	2,434	2,480	2,442	2,072	1,491
Other South Texas	50,111	52,130	52,930	47,002	43,057
Total South Texas	88,283	90,246	90,494	82,699	69,490
North Texas	114,979	129,701	138,696	132,457	120,716
Panhandle	30,903	33,400	36,682	38,481	38,587
West Texas:					
Abell	1,227	1,497	1,520	1,590	1,465
Adair	2,390	2,487	2,392	2,107	1,552
Andector	5,580	5,692	5,510	4,500	2,719
Anton Irish-Anton	2,586	2,930	2,933	2,600	2,000
Benedum	2,853	2,645	2,225	1,982	1,657
Big Lake	1,014	921	801	(3)	(3)
Block 31	5,182	5,191	5,727	5,690	5,695
Bronte	906	1,107	932	1,865	1,261
Cedar Lake	1,544	1,614	1,464	1,385	1,061
Cogdell	6,558	6,507	6,848	6,908	4,972
Cowden	8,595	10,009	10,769	9,764	9,178
Cree-Sykes	1,429	1,230	1,079	1,241	761
Diamond M	8,920	9,300	9,381	8,465	5,779
Dollarhide	6,728	5,944	4,959	4,139	3,227
Elkhorn	1,739	1,216	900	(3)	(3)
Embar	1,002	1,259	1,704	1,862	1,522
Emma	(4)	2,118	3,259	3,452	2,621
Fort Chadborne	5,275	4,516	3,802	3,788	3,806
Fort Stockton	1,325	1,294	1,525	1,272	976
Foster	3,714	4,616	4,816	4,282	3,388
Fuhrman	1,671	2,655	3,662	4,471	3,878
Fullerton	6,513	6,973	6,495	5,977	5,700
Garza	2,899	2,628	2,815	2,625	2,104
Goldsmith	14,577	16,212	18,385	20,434	20,827
Good	1,290	1,448	1,383	1,248	1,022
Harper	(4)	1,477	2,217	2,424	1,999
Hendrick	1,409	1,307	1,263	1,351	1,522
Howard-Glasscock	7,488	7,364	6,905	6,683	6,865
Hulldale-Hulldale Penn	1,528	1,824	2,104	1,763	1,278
Jameson	5,445	7,694	6,905	4,822	3,360
Jordan	3,620	3,481	3,316	3,378	3,007
Kelly Snyder	17,035	22,308	25,339	26,827	19,568
Kermit	1,972	2,834	3,704	4,841	4,510
Keystone	13,210	8,848	7,801	7,005	6,214
Lea	(4)	1,363	1,506	1,359	1,047
Levelland	9,992	9,504	8,714	7,892	6,584
Luther	(4)	1,136	1,246	1,073	900
McCamey	2,497	2,003	1,730	1,881	1,947
McElroy	6,718	6,829	9,562	10,751	9,220
McFarland	(4)	(4)	2,050	3,708	5,954
Mabee	944	1,016	1,024	1,093	1,112
Magutex	974	1,997	2,232	2,132	1,604
Martin	2,026	2,052	2,199	2,067	1,515
Means	1,336	2,996	6,421	6,495	5,058

See footnotes at end of table.

TABLE 23.—Production of crude petroleum in Texas, 1954–58, by districts and fields—Continued

(Thousand barrels)

Districts and fields [1]	1954	1955	1956	1957	1958 [2]
West Texas—Continued					
Midland Farms	4,953	6,997	7,638	7,143	5,993
Pegasus	5,778	5,481	5,165	4,490	3,342
Penwell	1,426	1,612	1,719	2,049	2,245
Prentice	4,187	5,529	5,753	5,164	4,322
Reinecke	1,642	1,572	1,525	1,401	1,008
Robertson	(4)	(4)	1,344	1,652	2,143
Russell	3,474	5,541	7,200	6,874	5,137
Salt Creek	3,371	4,180	4,039	3,679	2,840
Sand Hills	4,000	5,074	6,800	6,729	5,334
Seminole	5,459	5,547	5,584	5,246	3,836
Shafer Lake	3,343	3,799	3,444	3,019	2,375
Sharon Ridge	1,253	1,348	1,590	1,966	2,500
Slaughter	11,370	11,151	11,010	10,180	8,237
Spraberry Trend	39,968	22,155	24,010	19,835	15,021
Three Bar	2,201	1,214	1,189	1,036	758
Todd	2,492	2,502	2,435	1,939	1,298
Triple N	1,046	1,254	1,492	1,342	1,406
TXL	8,277	6,146	5,602	5,502	4,449
University	2,615	2,163	3,704	4,122	3,419
Vealmoor-East	3,603	3,440	3,248	2,903	2,088
Waddell	1,151	1,349	1,572	2,635	2,903
Ward-Estes	7,433	8,713	9,964	14,245	17,561
Wasson	15,422	15,752	15,617	14,377	11,566
Welch	1,032	1,392	1,835	1,858	1,616
Wellman	966	1,163	1,057	(3)	(3)
Westbrook	(4)	(4)	1,209	1,869	1,577
Wilshire	3,384	2,953	2,174	1,949	1,405
World	1,376	1,441	1,903	1,814	1,734
Yarbrough	2,023	2,202	2,141	1,900	1,372
Yates	9,903	9,878	9,681	8,818	6,396
Other West Texas	58,251	85,111	101,499	117,027	115,524
Total West Texas	383,110	414,701	454,667	461,955	409,840
Total Texas	974,275	1,053,297	1,107,808	1,073,867	940,706

[1] Texas Railroad Commission districts.
[2] Preliminary figures.
[3] Included in "Other" fields.
[4] Not available.

TABLE 24.—Production of crude petroleum in Wyoming, 1954–58, by fields

(Thousand barrels)

Field	1954	1955	1956	1957	1958 [1]
Beaver Creek	726	1,130	2,436	2,289	2,391
Big Muddy	1,088	1,232	2,120	1,915	1,781
Big Sand Draw	2,503	2,546	2,543	2,648	2,586
Bonanza	3,536	5,033	5,581	5,075	4,801
Byron-Garland	6,642	7,599	7,916	6,978	6,474
Cole Creek-Northeast and South	1,506	1,223	1,094	985	879
Elk Basin	6,889	7,543	11,200	12,716	15,518
Frannie	3,708	3,523	3,055	2,695	2,647
Gebo	698	1,469	1,342	1,165	1,067
Glenrock-South	3,940	3,660	3,488	3,091	2,711
Grass Creek	4,367	4,155	4,308	4,000	3,899
Hamilton Dome	3,766	4,681	5,106	5,617	8,577
Lance Creek	1,937	1,484	1,489	1,539	1,338
Little Buffalo	1,224	1,228	1,187	1,250	2,105
Lost Soldier-Wertz, etc	6,519	6,449	6,506	6,513	6,407
Oregon Basin	4,698	5,888	5,817	5,168	4,719
Salt Creek	4,583	4,423	5,085	6,796	8,486
Steamboat Butte	3,443	3,470	3,419	3,493	3,259
Sussex-Meadow	6,802	7,392	7,602	6,728	5,564
Winkleman	1,414	1,349	1,777	2,644	3,044
Other fields	23,344	24,006	21,759	26,279	27,319
Total Wyoming	93,333	99,483	104,830	109,584	115,572

[1] Preliminary figures.

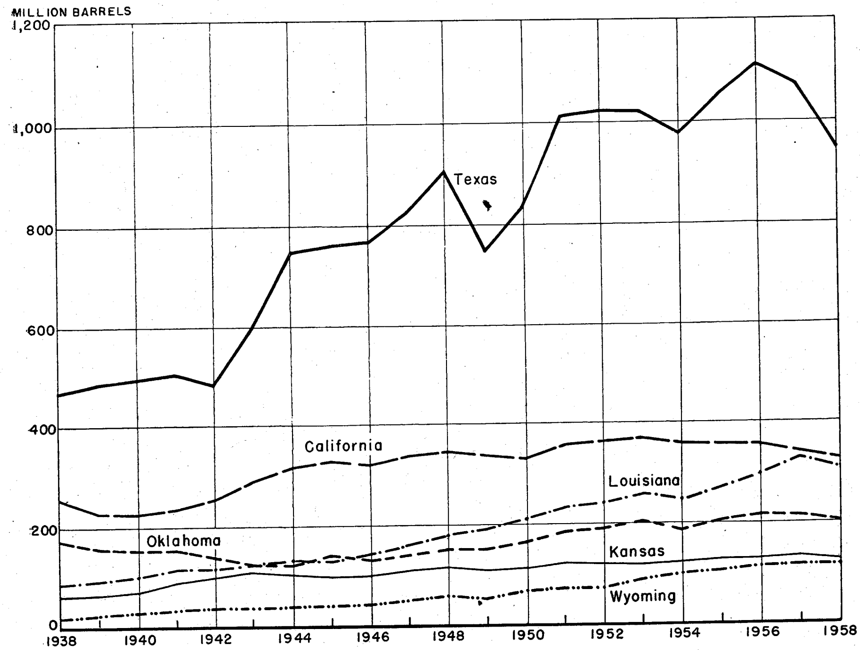

FIGURE 2.—Production of crude petroleum in the United States, 1938–58, by principal producing States.

WELLS

The number of wells drilled in the United States, including oil and gas wells and dry holes, totaled 47,758 in 1958—5,019 less than in 1957. The proportion of dry holes drilled to the total increased from 39.2 percent in 1957 to 39.4 percent in 1958. Kentucky was the only State reporting a sizable increase in number of wells drilled for the year. Drilling activity centered around Green County in western Kentucky where several new oil wells producing from shallow formations were found.

At the end of the year, 574,905 oil wells were reported as producing an average of 11.7 barrels per day, compared with 569,273 wells on December 31, 1957, with a daily average production of 12.8 barrels.

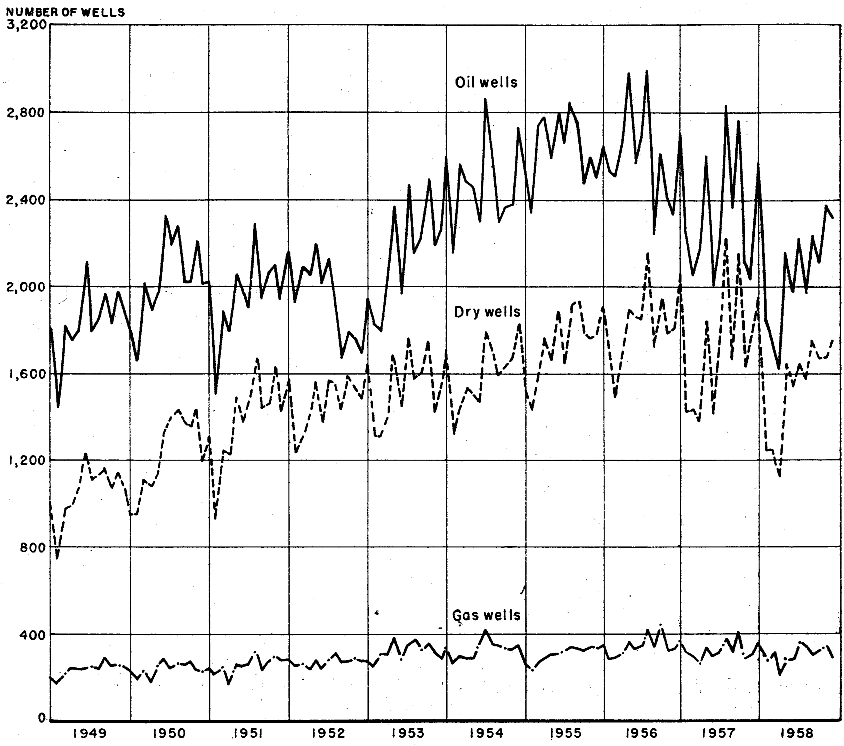

FIGURE 3.—Wells drilled for oil and gas in the United States, 1949–58, by months.

TABLE 25.—Wells drilled for oil and gas in the United States, 1957–58, by months

[Oil and Gas Journal]

Wells	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
													Number	Percent
1957														
Oil [1]	2,710	2,274	2,061	2,169	2,614	2,016	2,196	2,835	2,366	2,771	2,117	2,035	28,164	53.4
Gas	373	315	297	258	345	297	322	381	321	413	287	303	3,912	7.4
Dry	2,063	1,425	1,438	1,376	1,840	1,407	1,724	2,226	1,665	2,147	1,630	1,760	20,701	39.2
Total	5,146	4,014	3,796	3,803	4,799	3,720	4,242	5,442	4,352	5,331	4,034	4,098	52,777	100.0
1958														
Oil [1]	2,572	1,851	1,761	1,624	2,160	1,980	2,251	1,974	2,244	2,120	2,387	2,338	25,262	52.9
Gas	362	269	309	206	279	281	364	343	302	326	343	290	3,674	7.7
Dry	1,957	1,257	1,255	1,134	1,655	1,543	1,655	1,483	1,755	1,683	1,683	1,762	18,822	39.4
Total	4,891	3,377	3,325	2,964	4,094	3,804	4,270	3,800	4,301	4,129	4,413	4,390	47,758	100.0

[1] Includes condensate.

TABLE 26.—Wells drilled for oil and gas in the United States, 1957–58, by States and districts

[Oil and Gas Journal]

State and district	1957				1958			
	Oil [1]	Gas	Dry	Total	Oil [1]	Gas	Dry	Total
Alabama	50	1	27	78	47	--------	29	76
Arkansas	709	21	383	1,113	458	37	338	833
California	1,555	53	617	2,225	918	39	498	1,455
Colorado	144	91	620	855	151	80	605	836
Illinois	1,065	19	1,602	2,686	1,003	49	1,272	2,324
Indiana	263	14	475	752	310	16	546	872
Kansas	1,913	333	1,909	4,155	1,818	228	1,858	3,904
Kentucky	511	164	820	1,495	1,224	139	767	2,130
Louisiana:								
Gulf Coast	1,220	264	924	2,408	1,282	36	813	2,131
Northern	802	116	529	1,447	636	178	570	1,384
Total Louisiana	2,022	380	1,453	3,855	1,918	214	1,383	3,515
Michigan	180	47	228	455	159	27	218	404
Mississippi	132	3	251	386	179	2	217	398
Montana	189	15	229	433	160	6	171	337
Nebraska	291	2	593	886	215	--------	513	728
New Mexico	1,113	606	408	2,127	1,033	491	380	1,904
Oklahoma	3,536	234	2,148	5,918	3,373	340	2,336	6,049
Pennsylvania, New York, Ohio, West Virginia	1,191	964	467	2,622	1,065	1,057	473	2,595
Texas:								
Gulf Coast	1,107	237	1,070	2,414	937	137	958	2,032
West Texas	4,751	58	1,217	6,026	3,994	54	1,031	5,079
East Texas	765	46	544	1,355	709	3	506	1,218
Other districts	6,006	540	4,832	11,378	4,761	661	3,970	9,392
Total Texas	12,629	881	7,663	21,173	10,401	855	6,465	17,721
Wyoming	361	46	436	843	316	66	379	761
Other States	310	38	372	720	514	28	374	916
Total United States	28,164	3,912	20,701	52,777	25,262	3,674	18,822	47,758

[1] Includes condensate.

TABLE 27.—Producing oil wells in the United States and average production per well per day, 1957–58, by States

State and district	Producing oil wells			
	1957		1958 [1]	
	Approximate number of producing oil wells Dec. 31	Average production per well per day (barrels) [2]	Approximate number of producing oil wells Dec. 31	Average production per well per day (barrels) [2]
Arkansas	5,680	15.6	5,715	13.8
California	37,020	25.5	36,285	23.5
Colorado	2,185	69.5	2,195	60.4
Illinois	31,585	6.7	31,775	7.1
Indiana	4,515	7.8	4,865	6.9
Kansas	38,330	8.9	37,880	8.5
Kentucky	18,260	2.5	18,965	2.6
Louisiana:				
Gulf Coast	9,980	81.2	10,820	71.3
Northern	11,965	10.7	12,250	9.4
Total Louisiana	21,945	42.2	23,070	38.0
Michigan	3,995	6.8	3,895	6.5
Mississippi	2,313	45.5	2,240	46.4
Montana	3,792	20.2	3,916	20.1
Nebraska	1,030	57.8	1,190	50.3
New Mexico:				
Southeastern	10,351	(3)	11,065	23.0
Northwestern	469	(3)	980	31.6
Total New Mexico	10,820	25.7	12,045	23.6
New York	19,695	.4	19,530	.2
North Dakota	920	42.5	1,150	37.4
Ohio	14,490	1.0	15,200	1.2
Oklahoma	74,425	8.1	75,210	7.4
Pennsylvania	69,610	.3	68,485	.3
Texas: [4]				
Gulf Coast	23,500	25.9	24,495	20.5
East Texas proper	20,665	9.2	20,865	6.9
West Texas	59,850	21.8	60,395	18.7
Other districts	83,920	11.1	84,205	9.7
Total Texas	187,935	16.1	189,960	13.6
Utah [5]	225	71.0	519	179.6
West Virginia	12,715	.5	12,815	.5
Wyoming	7,405	41.1	7,530	42.4
Other States	383	45.9	[6] 470	41.8
Total United States	569,273	12.8	574,905	11.7

[1] Preliminary figures.
[2] Based on the average number of wells during the year.
[3] Not available.
[4] Divisions of the Texas Railroad Commission.
[5] Utah formerly included in "Other" States.
[6] Alabama 281; Alaska 2; Arizona 1; Florida 11; Missouri 127; Nevada 2; South Dakota 4; Tennessee 35; Virginia 6; Washington 1.

TABLE 28.—Runs to stills of crude petroleum in the United States in 1958, by district and month [1]

(Thousand barrels)

District [2]	January	February	March	April	May	June	July	August	September	October	November	December	Total
East Coast:													
Domestic	15,475	13,661	13,737	13,861	14,232	12,215	13,132	13,787	15,545	14,445	13,826	14,404	168,320
Foreign	20,221	17,798	21,179	18,503	20,242	20,582	17,947	20,639	18,515	18,752	19,374	21,206	234,958
Total East Coast	35,696	31,459	34,916	32,364	34,474	32,797	31,079	34,426	34,060	33,197	33,200	35,610	403,278
Appalachian	5,957	5,843	6,130	5,060	5,167	6,045	5,747	6,216	5,977	6,345	5,920	6,335	70,742
Indiana, Illinois, Kentucky, etc.:													
Domestic	43,334	40,708	41,830	38,060	42,111	40,771	41,698	42,553	40,972	41,513	41,495	44,523	499,568
Foreign	314	237	274	512	400	432	485	612	636	753	525	434	5,614
Total Indiana, Illinois, Kentucky, etc.	43,648	40,945	42,104	38,572	42,511	41,203	42,183	43,165	41,608	42,266	42,020	44,957	505,182
Minnesota, Wisconsin, North Dakota, and South Dakota:													
Domestic	1,326	1,187	939	1,532	1,671	1,585	1,594	1,591	590	994	1,515	1,610	16,134
Foreign	2,045	1,829	2,050	1,512	1,497	1,693	1,744	1,811	1,677	849	1,656	1,776	20,139
Total Minnesota, Wisconsin, North Dakota, and South Dakota	3,371	3,016	2,989	3,044	3,168	3,278	3,338	3,402	2,267	1,843	3,171	3,386	36,273
Oklahoma, Kansas, etc	22,820	20,274	19,436	19,097	22,502	22,244	23,324	23,316	21,107	20,689	21,063	23,580	259,452
Texas Inland	8,585	7,439	7,685	7,869	7,585	8,163	8,914	8,778	8,104	8,722	8,652	8,880	99,376
Texas Gulf Coast:													
Domestic	53,513	46,538	52,793	49,387	50,101	48,300	52,055	53,947	52,125	55,123	52,266	56,342	622,490
Foreign	947	387	386	791	812	687	916	1,887	1,797	2,077	1,849	1,437	13,973
Total Texas Gulf Coast	54,460	46,925	53,179	50,178	50,913	48,987	52,971	55,834	53,922	57,200	54,115	57,779	636,463
Louisiana Gulf Coast:													
Domestic	18,437	16,714	18,528	17,491	18,489	18,257	19,344	20,226	19,753	20,620	20,191	20,390	228,440
Foreign	42	----------	74	67	81	128	302	149	195	331	210	217	1,796
Total Louisiana Gulf Coast	18,479	16,714	18,602	17,558	18,570	18,385	19,646	20,375	19,948	20,951	20,401	20,607	230,236
Arkansas, Louisiana Inland, etc	2,945	2,254	3,130	3,429	3,124	3,003	3,104	2,883	2,593	2,998	2,462	2,932	34,857
New Mexico	711	612	521	903	893	824	691	757	752	720	740	766	8,890

See footnotes at end of table.

TABLE 28.—Runs to stills of crude petroleum in the United States in 1958, by district and month[1]—Continued

(Thousand barrels)

District[2]	January	February	March	April	May	June	July	June	September	October	November	December	Total
Rocky Mountain:													
Domestic	8,208	7,543	7,360	6,677	7,421	8,807	8,855	8,757	8,557	8,555	8,148	8,323	97,211
Foreign	6	3	1	3									13
Total Rocky Mountain	8,214	7,546	7,361	6,680	7,421	8,807	8,855	8,757	8,557	8,555	8,148	8,323	97,224
West Coast:													
Domestic	27,010	22,434	27,395	26,530	27,872	26,188	28,829	28,425	28,770	28,414	27,328	26,244	325,439
Foreign	5,931	5,202	4,602	4,373	5,554	5,879	5,483	6,203	5,219	6,795	6,059	7,382	68,682
Total West Coast	32,941	27,636	31,997	30,903	33,426	32,067	34,312	34,628	33,989	35,209	33,387	33,626	394,121
Total United States:													
Domestic	208,321	185,207	199,484	189,896	201,168	196,402	207,287	211,236	204,845	209,138	203,606	214,329	2,430,919
Foreign	29,506	25,456	28,566	25,761	28,586	29,401	26,877	31,301	28,039	29,557	29,673	32,452	345,175
Grand total, 1958	237,827	210,663	228,050	215,657	229,754	225,803	234,164	242,537	232,884	238,695	233,279	246,781	2,776,094
1957	256,485	226,461	249,445	232,197	247,760	236,002	243,412	250,847	237,606	237,143	230,773	242,305	2,890,436
Daily average, 1958	7,672	7,524	7,357	7,189	7,411	7,527	7,554	7,824	7,763	7,700	7,776	7,961	7,606

[1] Preliminary figures. [2] Where no breakdown is shown, all runs were domestic crude.

CONSUMPTION AND DISTRIBUTION

The total demand for crude oil in the United States was 5.3 percent below the peak demand of 1957. The demand for domestic crude oil declined 5.4 percent, and the demand for foreign crude oil was 5.1 percent below 1957.

Foreign crude oil supplied 12.4 percent of the total demand in 1958, the same proportion as in 1957.

Exports of crude oil totaled only 4 million barrels in 1958, compared with 50 million barrels in 1957 when large shipments were made to Europe to relieve the oil shortage created by the closing of the Suez Canal.

Runs to Stills.—Total crude runs to stills in 1958 averaged 7,606,000 barrels daily, 313,000 barrels daily below 1957. Runs for the first half of 1958 were 6.9 percent below the same period in 1957, and runs for the last half of 1958 were 1 percent below the same period in 1957.

Distribution.—The Bureau of Mines collects data on receipts of domestic and foreign crude petroleum at refineries in the United States. These receipts include crude runs to stills, a small quantity used as refinery fuel, and any increase in crude stocks at refineries. Classification of receipts, by State of origin, shows receipts from local production (intrastate), receipts from other States (interstate), and receipts of imported crude. Classification by method of transportation indicates final receipts by water, pipeline, and tank car and truck. Receipts of domestic crude by water usually were moved by pipeline from the point of production to the point of water shipment.

Receipts of domestic and foreign crude petroleum at refineries totaled 2,772.3 million barrels in 1958. Foreign crude represented 12.4 percent of the total. In addition to receipts, refineries withdrew 7 million barrels from stocks (3.8 million barrels for processing and 3.2 million barrels for use as refinery fuel or counted as losses).

Refineries received 73.9 percent of their supply of crude oil by pipeline, 24.8 percent by water, and the balance by tank cars and trucks.

TABLE 29.—Receipts of domestic and foreign crude petroleum at refineries in the United States, 1954–58

(Million barrels)

Method of transportation	1954	1955	1956	1957	1958 [1]
By water:					
Intrastate	161.0	155.4	166.4	152.2	141.4
Interstate	205.6	202.9	220.6	253.7	233.7
Foreign	236.9	268.6	304.5	318.0	313.4
Total by water	603.5	626.9	691.5	723.9	688.5
By pipeline:					
Intrastate	1,172.6	1,278.1	1,329.1	1,296.7	1,208.3
Interstate	721.2	772.0	819.3	790.6	808.3
Foreign	2.6	16.8	37.3	47.8	30.4
Total by pipeline	1,896.4	2,066.9	2,185.7	2,135.1	2,047.0
By tank cars and truck:					
Intrastate	26.2	28.9	28.9	31.9	27.6
Interstate	10.5	9.2	6.0	8.0	9.2
Foreign	----------	----------	----------	.1	----------
Total by tank cars and trucks	36.7	38.1	34.9	40.0	36.8
Grand total	2,536.6	2,731.9	2,912.1	2,899.0	2,772.3

[1] Preliminary figures.

TABLE 30.—Refinery receipts of domestic crude oil by States and districts, 1958

(Thousand barrels)

Receiving States and districts	Total domestic receipts	Intrastate receipts	Interstate receipts from— Ala. and Miss.	Ark.	Calif. and Nev.	Colo.	Fla. and N.Y.	Ill.	Ind.	Kans.	Ky. and Ohio	La.	Mont.	Nebr., N. Dak., and S. Dak.	N. Mex.	Okla.	Texas	Utah	W. Va.	Wyo.	Total
Delaware, Massachusetts, Rhode Island	27,559	----	2,071	----	1,364	----	113	----	----	----	----	6,106	----	----	----	----	17,905	----	----	----	27,559
Florida, Georgia, South Carolina, Virginia	2,284	----	1,493	----	----	----	----	----	----	----	----	----	----	----	----	----	791	----	----	----	2,284
Maryland	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
New Jersey	50,908	----	3,931	----	----	----	343	----	----	----	----	9,960	----	----	----	----	36,674	----	----	----	50,908
New York:																					
East	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
West	18,907	522	----	----	----	----	----	3,546	----	161	----	----	3,067	----	----	2,628	8,983	----	----	----	18,385
Pennsylvania:																					
East	86,544	----	4,544	----	----	----	----	----	----	----	----	18,135	----	----	----	----	63,865	----	----	----	86,544
West	13,005	8,592	----	----	----	----	----	----	----	----	819	----	----	----	----	----	3,025	----	569	----	4,413
West Virginia	2,389	1,523	----	----	----	----	----	----	----	----	866	----	----	----	----	----	----	----	----	----	866
District 1	201,596	10,637	12,039	----	1,364	----	456	3,546	----	161	1,685	34,201	3,067	----	----	2,628	131,243	----	569	----	190,959
Illinois	183,914	22,109	----	----	----	1,399	----	----	1,415	12,584	----	198	114	3,807	7,733	24,455	92,863	3,935	----	13,302	161,805
Indiana	147,635	637	----	----	----	3,130	----	6,358	----	26,978	----	----	6,299	1,004	672	27,205	35,667	----	----	39,685	146,998
Kansas	105,089	83,151	----	----	----	2,852	----	----	----	----	----	----	----	1,791	4,655	9,381	2,778	----	----	481	21,938
Kentucky, Tennessee	33,007	19,007	3,178	1,095	----	----	----	281	9,069	----	71	267	----	----	----	----	----	----	----	39	14,000
Michigan	44,338	9,412	----	----	----	513	----	4,778	301	391	----	----	2,321	1,361	----	2,018	9,641	----	----	13,602	34,926
Minnesota, Wisconsin	3,658	----	----	----	----	----	----	----	----	----	----	----	676	1,356	----	----	----	----	----	1,626	3,658
Missouri	27,045	----	----	----	----	----	----	----	----	403	----	----	----	----	10,935	3,616	9,272	----	----	2,819	27,045
Nebraska	909	4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	905	905
North and South Dakota	12,416	12,416	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Ohio:																					
East	36,491	4,457	639	198	----	----	----	26,359	----	480	709	----	----	----	----	3,349	300	----	----	----	32,034
West	91,500	36	76	828	----	2,064	----	11,125	----	----	1,261	7,413	----	4,697	3,103	12,084	48,722	----	----	91	91,464
Oklahoma	126,084	94,789	----	----	----	28	----	----	----	11,538	----	----	----	35	1,157	----	17,239	1,298	----	----	31,295
District 2	812,086	246,018	3,893	2,121	----	9,986	----	48,901	10,785	52,374	2,041	7,878	9,410	14,051	28,255	82,108	216,482	5,233	----	72,550	566,068

Alabama, Mississippi	9,040	7,043	1,758									239									1,997
Arkansas	24,589	22,558										1,923					108				2,031
Louisiana	229,121	158,963	21,765	11,707													35,737	949			70,158
New Mexico	8,895	8,289															606				606
Texas	720,516	573,564	724									85,009			54,807	3,794		2,618			146,952
District 3	992,161	770,417	24,247	11,707								87,171			54,807	3,794	36,451	3,567			221,744
Colorado	10,982	2,028											1,884							7,070	8,954
Montana	23,125	7,795																		15,330	15,330
Utah	29,309	3,927				23,565									8					1,809	25,382
Wyoming	33,195	30,614				2,432							52	97							2,581
District 4	96,611	44,364				25,997							1,936	97	8					24,209	52,247
California	316,473	305,903													3,854			6,716			10,570
Oregon, Washington	9,617	4			6,314										1,237			2,062			9,613
District 5	326,090	305,907			6,314										5,091			8,778			20,183
Total, 1958	2,428,544	1,377,343	40,179	13,828	7,678	35,983	456	52,447	10,785	52,535	3,726	129,250	14,413	14,148	88,161	88,530	384,176	17,578	569	96,759	1,051,201
Daily average	6,654	3,774	110	38	21	99	1	144	30	144	10	354	39	39	241	243	1,052	48	2	265	2,880
Daily average, 1957	6,940	4,057	113	42	6	118	1	134	29	154	10	351	37	38	226	256	1,114		1	253	2,883

TABLE 31.—Crude runs to stills and refinery receipts of crude oil by method of transportation and by States and districts, 1958

(Thousand barrels)

Receiving State and district	Crude runs to stills	Fuel and losses	Origin of domestic crude receipts	Change in refinery stocks	Total receipts by method of transportation						
					Intrastate			Interstate			
					Pipelines	Tank cars and trucks	Boats	Pipelines	Tank cars and trucks	Boats	Foreign boats
Delaware, Massachusetts, Rhode Island	50,552	119		−1,007						27,559	22,105
Florida, Georgia, South Carolina, Virginia	14,014	−20	456	+94					481	1,803	11,804
Maryland	5,333	−11		−500							4,822
New Jersey	127,358	195		−643						50,908	76,002
New York:											
East	9,771	51		+20							9,842
West	18,888	17	522	+2	522			18,385			
Pennsylvania:											
East	196,250	392		−143						86,544	109,955
West	13,021	−12	8,592	−4	8,573	19		3,439	209	765	
West Virginia	2,396	1	2,092	−8	1,517	6		648	218		
District 1	437,583	732	11,662	−2,189	10,612	25		22,472	908	167,579	234,530
Illinois	183,480	−6	74,556	+440	22,064	45		161,607	198		
Indiana	147,752	34	11,422	−151	412	225		146,924	74		
Kansas	104,954	−18	135,686	+153	81,800	1,351		21,786	152		
Kentucky, Tennessee	35,748	7	21,048	−121	3,954	353	14,700	3,407	71	10,522	2,627
Michigan	44,924	909	9,412	−144	8,192	1,220		34,926			[1] 1,351
Minnesota, Wisconsin	23,797	49		−93					2,440	1,218	[1] 20,095
Missouri	27,064			−19				27,045			
Nebraska	901		12,796	+8	4			859	46		
North and South Dakota	12,476	−3	13,772	−57	11,900	516					
Ohio:											
East	36,437	−4	6,178	+58	4,177	280		32,034			
West	93,278	−17		−506	8	28		91,464			1,255
Oklahoma	126,533	77	183,319	−526	93,492	1,297		31,294	1		
District 2	837,344	1,028	468,189	−958	226,003	5,315	14,700	551,346	2,982	11,740	25,328
Alabama, Mississippi	9,581	−8	47,222	−6	5,265	452	1,326		477	1,520	527
Arkansas	24,626	5	36,386	−42	21,768	790		1,985	46		
Louisiana	230,886	212	288,213	−803	90,802	1,217	66,944	66,110	328	3,720	1,174
New Mexico	8,890	21	96,450	−16	7,931	358		606			
Texas	735,839	96	957,740	−878	539,175	5,574	28,815	105,794		41,158	14,541
District 3	1,009,822	326	1,426,011	−1,745	664,941	8,391	97,085	174,495	851	46,398	16,242

Colorado	10,995	13	38,011	−26	1,498	530		8,954			
Montana	23,358	8	22,208	−228	7,257	538		15,203	127		[2] 13
Utah	29,535	−8	21,505	−218	3,635	292		25,284	98		
Wyoming	33,336	82	127,373	−223	28,844	1,770			2,581		
District 4	97,224	95	209,097	−695	41,234	3,130		49,441	2,806		13
California	364,029	1,012	313,581	−1,684	265,533	10,763	29,607	10,570			46,88
Oregon, Washington	30,092	33	4	+263		4			1,607	8,006	[3] 20,771
District 5	394,121	1,045	313,585	−1,421	265,533	10,767	29,607	10,570	1,607	8,006	67,655
Total 1958	2,776,094	3,226	2,428,544	−7,008	1,208,323	27,628	141,392	808,324	9,154	233,723	[4] 343,768
Daily average	7,606	9	6,654	−19	3,311	76	387	2,215	25	640	942
Daily average, 1957	7,919	10	6,940	+13	3,553	87	417	2,166	22	695	1,002

[1] Pipeline.
[2] Tank cars and trucks.
[3] Includes pipeline, 8,967; boats, 11,804.
[4] Excludes crude oil imported for direct fuel use.

TABLE 32.—Daily average total demand for crude petroleum in the United States in 1957–58, by State of origin and month

(Thousand barrels)

State	January	February	March	April	May	June	July	August	September	October	November	December	Year
1957													
Alabama	11.2	15.9	14.0	12.0	15.9	12.9	11.1	17.1	15.8	23.2	12.9	18.8	15.1
Arkansas	88.2	103.5	90.4	79.2	84.1	87.3	85.0	63.1	94.6	81.4	87.8	83.5	85.5
California	954.9	928.2	986.9	891.2	928.2	872.0	871.6	915.4	922.6	912.3	851.8	891.0	910.6
Colorado	170.8	164.8	152.5	159.1	141.6	145.4	160.9	126.8	152.5	134.6	166.5	137.2	150.9
Florida	.9	1.9	.3	.5	---	.8	3.2	1.7	1.7	1.0	2.8	---	1.2
Illinois	251.0	229.8	225.1	214.5	209.9	160.0	156.7	181.7	226.6	223.6	235.7	228.8	211.8
Indiana	34.2	35.8	35.8	35.6	38.8	29.4	30.9	32.8	36.6	35.8	35.6	34.7	34.7
Kansas	371.5	354.9	326.9	278.4	342.8	358.3	337.2	348.3	360.4	352.1	304.0	339.3	339.6
Kentucky	54.8	48.5	48.2	48.5	44.5	47.0	39.3	45.2	38.6	47.9	44.5	49.6	46.4
Louisiana	1,029.1	1,007.6	1,069.3	966.9	949.0	902.2	845.3	803.5	777.8	798.7	800.5	882.9	902.3
Michigan	27.9	28.9	30.7	26.7	25.6	29.3	29.8	32.4	29.4	30.1	25.3	25.0	28.4
Mississippi	105.8	147.6	118.9	84.1	131.8	85.6	116.0	104.4	92.5	111.1	98.7	99.1	107.8
Montana	61.4	95.8	65.9	70.7	78.7	87.0	60.7	71.5	80.4	68.8	84.0	82.6	75.4
Nebraska	48.1	47.7	47.6	60.7	32.4	49.3	62.4	47.7	51.4	71.0	48.7	79.1	53.9
New Mexico	252.2	286.8	271.3	240.1	255.2	260.1	210.4	266.7	264.7	243.1	277.7	252.8	256.5
New York	6.9	7.4	7.4	7.9	7.6	6.3	7.5	7.9	7.6	7.6	7.3	7.3	7.4
North Dakota	41.3	39.4	40.8	34.3	39.6	38.8	37.8	39.7	17.6	32.3	28.4	42.8	36.1
Ohio	14.6	14.9	9.9	12.2	12.8	13.7	12.9	13.6	18.5	17.5	15.4	19.6	14.6
Oklahoma	661.2	645.0	635.9	632.8	588.7	557.1	539.1	611.7	564.2	576.5	600.7	591.8	600.2
Pennsylvania	23.1	19.5	23.2	19.0	23.4	22.2	18.4	18.3	26.0	20.4	18.9	23.3	21.3
Texas	3,247.0	3,050.9	3,289.2	3,059.6	2,904.1	2,785.1	2,787.7	2,845.8	2,860.1	2,663.9	2,735.6	2,769.8	2,916.1
Utah	10.2	10.3	13.1	11.5	8.8	9.0	10.8	11.4	12.6	14.0	15.7	12.6	11.7
West Virginia	6.3	4.6	6.3	6.4	5.3	4.8	6.2	4.8	7.0	5.4	6.9	6.6	5.9
Wyoming	301.2	320.4	286.9	273.8	284.0	305.0	319.3	339.9	307.7	305.3	293.9	325.5	305.2
Other States [1]	.4	.4	.4	.4	.4	.4	.4	.4	.6	.9	.6	.6	.5
Total domestic crude	7,774.2	7,610.5	7,796.9	7,226.1	7,153.2	6,869.0	6,760.6	6,951.8	6,967.5	6,778.5	6,799.9	7,004.3	7,139.1
Foreign crude	827.6	853.3	791.5	881.3	1,022.9	1,131.0	1,193.9	1,283.0	1,094.4	986.8	1,074.2	967.4	1,009.8
Grand total 1957	8,601.8	8,463.8	8,588.4	8,107.4	8,176.1	8,000.0	7,954.5	8,234.8	8,061.9	7,765.3	7,874.1	7,971.7	8,148.9
Pennsylvania Grade (included above)	40.9	35.9	39.1	37.0	40.3	37.0	36.4	33.0	45.9	38.8	36.2	42.3	38.6
1958 [2]													
Alabama	11.9	17.0	10.9	17.6	19.5	11.1	20.8	18.7	10.4	18.1	17.0	15.3	15.7
Arkansas	95.4	75.1	80.0	87.4	81.3	81.8	85.8	80.9	73.9	79.4	66.9	86.0	81.3
California	883.9	793.2	911.4	866.2	866.4	811.6	885.1	891.1	951.6	882.3	868.5	800.7	869.4
Colorado	143.3	141.3	133.1	138.2	117.6	155.3	126.3	135.1	122.8	126.4	137.4	135.5	134.3
Florida	3.7	---	---	.3	3.7	.5	.2	.1	---	1.2	5.1	2.1	1.4
Illinois	236.5	241.9	238.1	207.3	200.1	231.4	224.0	232.8	239.4	229.8	208.0	225.5	226.3
Indiana	31.4	29.1	34.4	32.9	31.1	34.8	36.7	23.8	28.5	30.0	33.2	37.3	31.9

Kansas	322.6	346.4	296.5	261.2	363.3	334.6	336.5	326.0	335.9	290.0	349.1	329.1	324.1
Kentucky	50.1	42.3	43.8	46.3	48.1	44.8	39.2	45.7	55.3	48.6	47.8	68.6	48.4
Louisiana	831.5	829.8	883.0	833.5	854.5	858.7	816.3	822.5	906.0	871.8	930.1	920.5	863.3
Michigan	21.6	22.3	30.2	25.1	28.8	26.5	23.4	25.8	27.5	24.1	26.1	23.1	25.4
Mississippi	93.0	106.5	114.6	88.6	98.2	97.2	103.2	80.3	133.8	124.8	114.9	115.4	105.8
Montana	66.8	83.7	74.5	74.3	72.8	77.4	79.0	77.9	90.7	76.8	81.4	80.1	77.9
Nebraska	48.8	43.5	68.2	45.7	55.3	49.7	69.5	51.1	66.1	49.9	56.9	57.7	55.2
New Mexico	256.8	304.8	246.6	277.8	282.8	275.2	298.5	261.1	252.4	265.3	250.7	283.1	271.0
New York	6.6	6.8	6.4	6.7	6.3	3.3	3.1	2.9	3.0	3.1	2.6	2.8	4.4
North Dakota	42.9	43.1	27.6	41.7	44.8	46.6	44.4	45.2	10.6	22.7	46.0	49.5	38.8
Ohio	14.9	19.8	16.9	10.8	17.3	23.8	19.8	18.9	14.5	17.9	19.0	15.8	17.4
Oklahoma	588.2	585.6	512.5	542.1	552.6	588.3	579.0	558.8	514.7	560.7	554.3	568.5	558.6
Pennsylvania	22.6	18.7	16.1	18.6	19.7	19.4	24.4	15.9	24.2	15.2	17.1	18.9	19.2
Texas	2,721.0	2,636.1	2,501.6	2,499.9	2,456.7	2,441.4	2,547.4	2,731.4	2,664.5	2,621.4	2,656.1	2,726.9	2,600.5
Utah	10.3	12.2	7.2	25.8	37.3	84.5	72.9	114.7	53.3	122.9	80.9	92.6	58.7
West Virginia	5.5	8.1	6.2	6.6	6.1	5.8	6.0	3.9	4.1	9.2	7.0	7.4	6.3
Wyoming	310.7	284.7	284.4	267.6	317.1	325.6	355.7	368.3	338.3	345.4	311.0	336.0	320.8
Other States [1]	.5	.4	.5	.5	.4	.5	.5	.5	.5	.5	.4	.6	.5
Total domestic crude	6,820.5	6,692.4	6,544.7	6,422.7	6,581.8	6,629.8	6,797.7	6,933.4	6,922.0	6,837.5	6,887.5	6,999.0	6,756.6
Foreign crude	980.5	928.1	950.5	878.5	935.6	990.1	867.1	1,025.4	944.9	954.3	990.5	1,048.1	958.1
Grand total 1958	7,801.0	7,620.5	7,495.2	7,301.2	7,517.4	7,619.9	7,664.8	7,958.8	7,866.9	7,791.8	7,878.0	8,047.1	7,714.7
Pennsylvania Grade (included above)	37.2	39.8	33.8	34.5	36.2	33.7	38.6	26.1	34.4	31.8	30.4	34.0	34.2

[1] Arizona, Missouri, Nevada, South Dakota, Tennessee, Virginia, and Washington. [2] Preliminary figures.

TABLE 33.—Demand for total crude petroleum in the United States, 1957–58, by State of origin and month

(Thousand barrels)

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
1957													
Alabama	348	444	435	359	492	387	343	531	474	719	387	582	5,501
Arkansas	2,734	2,900	2,803	2,376	2,608	2,619	2,635	1,957	2,838	2,524	2,633	2,589	31,216
California	29,601	25,991	30,593	26,735	28,774	26,161	27,019	28,376	27,677	28,282	25,553	27,622	332,384
Colorado	5,295	4,616	4,729	4,773	4,389	4,363	4,989	3,932	4,574	4,174	4,996	4,252	55,082
Florida	29	54	10	15	1	24	100	53	51	32	83	------	452
Illinois	7,780	6,434	6,978	6,432	6,508	4,799	4,859	5,634	6,798	6,933	7,072	7,094	77,321
Indiana	1,061	1,001	1,110	1,069	1,204	882	958	1,017	1,098	1,109	1,067	1,075	12,651
Kansas	11,516	9,937	10,137	8,352	10,626	10,748	10,454	10,796	10,811	10,914	9,123	10,514	123,928
Kentucky	1,698	1,358	1,493	1,455	1,379	1,411	1,218	1,401	1,159	1,484	1,334	1,539	16,929
Louisiana	31,902	28,213	33,149	29,008	29,420	27,067	26,204	24,907	23,334	24,761	24,017	27,367	329,349
Michigan	866	808	952	800	794	878	925	1,003	882	933	758	776	10,375
Mississippi	3,279	4,133	3,686	2,524	4,085	2,569	3,595	3,235	2,774	3,444	2,962	3,072	39,358
Montana	1,904	2,681	2,045	2,121	2,439	2,610	1,883	2,218	2,412	2,134	2,519	2,562	27,528
Nebraska	1,492	1,336	1,476	1,821	1,004	1,480	1,935	1,480	1,542	2,202	1,460	2,453	19,681
New Mexico	7,819	8,030	8,410	7,204	7,912	7,803	6,523	8,268	7,942	7,537	8,331	7,838	93,617
New York	214	208	228	237	237	190	231	244	227	235	218	227	2,696
North Dakota	1,280	1,104	1,264	1,029	1,227	1,163	1,173	1,231	528	1,000	853	1,326	13,178
Ohio	452	417	306	367	397	410	400	421	554	542	461	607	5,334
Oklahoma	20,498	18,059	19,715	18,985	18,249	16,714	16,712	18,964	16,927	17,871	18,020	18,347	219,061
Pennsylvania	715	547	719	571	726	665	570	568	780	633	567	723	7,784
Texas	100,656	85,425	101,964	91,789	90,026	83,553	86,418	88,221	85,803	82,581	82,067	85,864	1,064,367
Utah	316	287	405	345	274	270	385	352	378	433	472	391	4,258
West Virginia	195	129	194	192	163	144	191	150	210	167	207	206	2,148
Wyoming	9,338	8,971	8,893	8,213	8,804	9,149	9,897	10,538	9,230	9,463	8,818	10,090	111,404
Other States [1]	13	12	11	12	11	11	13	12	18	29	19	18	179
Total domestic crude	241,001	213,095	241,705	216,784	221,749	206,070	209,580	215,509	209,021	210,136	203,997	217,134	2,605,781
Foreign crude	25,655	23,891	24,538	26,439	31,709	33,928	37,008	39,769	32,836	30,589	32,225	29,989	368,576
Grand total 1957	266,656	236,986	266,243	243,223	253,458	239,998	246,588	255,278	241,857	240,725	236,222	247,123	2,974,357
Daily average:													
Domestic crude	7,774	7,611	7,797	7,226	7,153	6,869	6,761	6,952	6,967	6,779	6,800	7,004	7,139
Domestic and foreign crude	8,602	8,464	8,588	8,107	8,176	8,000	7,954	8,235	8,062	7,765	7,874	7,972	8,149
Pennsylvania Grade (included above)	1,269	1,005	1,211	1,111	1,250	1,111	1,127	1,024	1,376	1,203	1,087	1,310	14,084
1958 [2]													
Alabama	370	476	341	531	606	333	645	579	312	562	511	473	5,739
Arkansas	2,956	2,104	2,482	2,622	2,520	2,455	2,660	2,510	2,220	2,462	2,007	2,666	29,664
California	27,401	22,209	28,254	25,985	26,859	24,348	27,439	27,621	28,549	27,350	26,056	24,822	317,343
Colorado	4,442	3,957	4,125	4,145	3,646	4,659	3,915	4,189	3,683	3,920	4,123	4,202	49,006
Florida	114	1	------	10	114	14	7	3	------	38	153	65	519
Illinois	7,332	6,774	7,381	6,220	6,204	6,943	6,944	7,219	7,181	7,124	6,240	6,989	82,551
Indiana	969	815	1,067	986	961	1,043	1,139	738	855	929	997	1,155	11,654

Kansas	10,002	9,699	9,193	7,835	11,261	10,037	10,430	10,105	10,076	8,990	10,473	10,202	118,303
Kentucky	1,554	1,185	1,357	1,389	1,490	1,344	1,215	1,416	1,660	1,509	1,435	2,126	17,680
Lousiana	25,778	23,234	27,372	25,004	26,490	25,762	25,306	25,498	27,179	27,026	27,903	28,535	315,087
Michigan	669	623	936	753	894	795	725	800	824	746	783	715	9,263
Mississippi	2,882	2,981	3,552	2,659	3,043	2,913	3,200	2,491	4,014	3,870	3,446	3,578	38,629
Montana	2,071	2,343	2,311	2,230	2,257	2,323	2,448	2,418	2,720	2,380	2,442	2,484	28,427
Nebraska	1,511	1,218	2,113	1,370	1,715	1,492	2,153	1,584	1,983	1,548	1,708	1,790	20,185
New Mexico	7,962	8,534	7,644	8,333	8,766	8,255	9,253	8,093	7,572	8,224	7,520	8,777	98,933
New York	204	191	197	201	195	100	96	90	91	94	79	86	1,624
North Dakota	1,330	1,206	857	1,252	1,390	1,398	1,376	1,401	319	703	1,381	1,533	14,146
Ohio	462	555	524	324	536	714	614	585	436	555	571	490	6,366
Oklahoma	18,233	16,398	15,886	16,263	17,131	17,648	17,950	17,323	15,440	17,383	16,630	17,622	203,907
Pennsylvania	701	524	498	557	611	583	755	493	726	470	509	587	7,014
Texas	84,352	73,810	77,549	74,998	76,159	73,242	78,970	84,674	79,935	81,264	79,679	84,534	949,166
Utah	320	340	224	774	1,157	2,535	2,261	3,555	1,599	3,809	2,426	2,871	21,421
West Virginia	172	225	193	199	190	173	186	122	124	285	213	231	2,313
Wyoming	9,633	7,972	8,815	8,028	9,829	9,769	11,027	11,416	10,148	10,706	9,331	10,417	117,091
Other States [1]	17	12	15	16	12	16	15	14	15	15	11	18	176
Total domestic crude	211.437	187,386	202,886	192,684	204,036	198,894	210,729	214,937	207,661	211,962	206,627	216,968	2,466,207
Foreign crude	30,394	25,988	29,466	26,357	29,005	29,703	26,881	31,788	28,347	29,583	29,716	32,492	349,720
Grand total 1958	241,831	213,374	232,352	219,041	233,041	228,597	237,610	246,725	236,008	241,545	236,343	249,460	2,815,927
Daily average:													
Domestic crude	6,821	6,692	6,545	6,423	6,582	6,630	6,798	6,933	6,922	6,837	6,888	6,999	6,757
Domestic and foreign crude	7,801	7,620	7,495	7,301	7,517	7,620	7,665	7,958	7,867	7,791	7,878	8,047	7,715
Pennsylvania Grade (included above)	1,153	1,115	1,048	1,034	1,123	1,011	1,197	808	1,033	985	912	1,055	12,474

[1] Arizona, Missouri, Nevada, South Dakota, Tennessee, Virginia, and Washington. [2] Preliminary figures.

The major waterborne shipments were from the gulf coast to the east coast and between States in the Gulf Coast districts. Some interstate and intrastate shipments also were made by water on the west coast and the Mississippi River.

All foreign-crude receipts into the East Coast and the Gulf Coast districts are received by water. Refineries in District II, which comprises the Great Lakes and midcontinent areas, receive most of their foreign crude by pipeline from Canada; however, some is barged upriver from gulf-coast ports where it arrived by tanker. Very little foreign crude is processed at refineries in the Rocky Mountain States; that used arrives by rail from Canada. West-coast refiners received 86.7 percent of their foreign-crude supply by water; the balance was received by pipeline at refineries near the Canadian border.

Demand by States of Origin.—Distribution of domestic crude oil by refining States and districts can be analyzed from receipts of crude oil at refineries. When long-distance shipments are involved, various crudes may be mixed in transit or storage, and identification by origin may be only approximate.

STOCKS

Total stocks of all oils at the end of 1958 were 788.8 million barrels—51.1 million barrels lower than at yearend 1957. Crude-oil stocks were 19.1 million barrels less and stocks of refined products 34.6 million less, whereas stocks of natural-gas liquids increased 2.6 million barrels during the year.

Crude-oil stocks reached an all-time peak of 285.0 million barrels at the end of February 1958, and production was cut back in several States that practiced prorationing. By August stocks were down to 244.8 million barrels, and by December 31, 1958, they had increased to 262.7 million barrels, which was considered a good figure.

Refinery runs were maintained below the 1957 level for the first 9 months of 1958, which helped to reduce surplus stocks of petroleum products.

TABLE 34.—Stocks of crude petroleum, natural-gas liquids, and refined products in the continental United States at end of year, 1954–58

(Thousand barrels)

Product	1954	1955	1956	1957	1958
Crude petroleum:					
At refineries	67,309	66,852	71,721	76,576	69,568
Pipeline and tank farm	172,081	178,771	173,278	183,526	172,458
Producers	18,995	19,987	21,015	21,711	20,704
Total crude petroleum	258,385	265,610	266,014	281,813	262,730
Natural-gas liquids	14,038	13,564	20,559	[1] 20,156	22,752
Refined products	442,510	435,685	493,818	537,937	503,314
Grand total	714,933	714,859	780,391	[1] 839,906	788,796

[1] New basis eliminates 1,411,000 barrels of nonrecoverable stocks of L.P.G. in underground storage.

TABLE 35.—Stocks of crude petroleum in the continental United States in 1958, by State of origin and month [1]

(Thousand barrels)

State of origin	Jan. 1	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
Alabama	460	576	527	711	668	522	639	588	474	632	650	602	608
Arkansas	3,035	2,691	2,990	2,847	2,632	2,370	2,243	2,024	1,911	1,960	1,985	2,321	2,071
California	36,241	36,969	39,310	38,170	37,935	37,409	38,581	37,381	36,112	33,062	32,238	31,806	33,327
Colorado	3,452	3,318	3,242	3,372	3,264	3,714	2,983	3,145	2,991	3,183	3,325	3,011	2,755
Florida	137	61	96	135	163	87	110	140	175	212	210	95	67
Illinois	9,422	9,294	8,568	7,936	8,566	9,224	9,024	9,183	8,956	8,611	8,482	8,932	8,996
Indiana	386	412	442	376	396	413	369	262	445	505	671	709	596
Kansas	10,152	10,499	9,631	9,393	11,104	9,840	9,454	8,900	9,131	9,107	10,639	10,154	10,037
Kentucky	1,823	1,646	1,564	1,527	1,512	1,375	1,366	1,585	1,581	1,420	1,610	1,894	1,652
Louisiana	19,244	19,590	19,783	17,827	17,433	15,982	14,535	14,904	15,799	15,343	16,443	16,046	16,227
Michigan	773	886	949	821	857	745	710	774	727	685	732	687	817
Mississippi	2,461	2,638	2,556	2,285	2,269	2,015	2,087	2,222	3,158	2,474	2,156	2,362	2,383
Montana	2,672	2,932	2,690	2,705	2,793	2,933	3,011	3,020	2,940	2,595	2,716	2,551	2,536
Nebraska	1,291	1,497	1,794	1,247	1,393	1,281	1,492	1,130	1,424	1,175	1,495	1,507	1,474
New Mexico	8,465	8,636	7,564	7,564	6,915	6,508	6,138	5,635	6,360	6,945	7,245	7,931	7,855
New York	83	87	69	65	67	77	123	123	123	123	123	123	123
North Dakota	817	819	757	1,019	966	753	700	695	713	1,145	1,094	968	811
Ohio	752	818	693	703	945	953	764	710	640	734	728	633	646
Oklahoma	18,616	18,194	17,749	17,887	18,083	17,900	16,376	15,826	16,159	17,558	17,580	17,684	17,408
Pennsylvania	1,797	1,711	1,689	1,761	1,803	1,780	1,764	1,600	1,634	1,484	1,572	1,545	1,460
South Dakota	1	2	2	2	4	3	4	3	3	3	3	3	2
Texas	125,888	126,109	129,262	124,167	117,477	110,139	105,698	101,711	101,706	108,426	110,904	113,552	117,428
Utah	167	460	905	1,134	1,420	2,452	2,380	2,877	2,476	3,842	3,357	3,124	3,132
West Virginia	687	696	618	608	610	603	615	622	672	746	659	617	560
Wyoming	15,297	14,951	15,307	16,081	17,015	16,391	15,649	14,726	13,653	13,304	12,999	13,650	13,778
Total domestic crude	264,119	265,492	268,757	260,343	256,290	245,469	236,815	229,786	229,963	235,274	239,616	242,507	246,749
Foreign [2]	17,694	19,047	16,291	18,191	17,669	17,636	16,735	16,770	14,847	16,427	15,729	15,039	15,981
Grand total	281,813	284,539	285,048	278,534	273,959	263,105	253,550	246,556	244,810	251,701	255,345	257,546	262,730
Pennsylvania Grade (includes above)	2,833	2,819	2,635	2,683	2,807	2,810	2,797	2,596	2,682	2,622	2,612	2,538	2,367

[1] Final figures.

[2] Includes foreign crude petroleum held in district 5: December 1957, 6,712,000; January, 6,039,000; February, 4,928,000; March, 5,036,000; April, 4,863,000; May, 4,971,000; June, 5,385,000; July, 5,362,000; August, 5,113,000; September, 6,463,000; October, 5,306,000; November, 5,254,000; December, 5,685,000 barrels.

TABLE 36.—Stocks of crude petroleum in the continental United States in 1958, by location and month [1]

(Thousand barrels)

State	Jan. 1	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
Alabama	540	537	712	699	594	479	655	582	577	660	645	486	490
Arizona	----------	200	450	481	459	453	456	452	454	455	456	451	456
Arkansas	2, 613	2, 417	2, 718	2, 578	2, 364	2, 209	1, 990	1, 861	1, 872	1, 940	1, 904	2, 189	1, 952
California, Oregon, Washington	42, 953	43, 008	44, 238	43, 293	43, 127	43, 271	44, 773	43, 033	41, 453	40, 417	38, 746	37, 992	39, 745
Colorado	1, 717	1, 828	1, 898	1, 800	1, 885	1, 831	1, 703	1, 540	1, 580	1, 560	1, 723	1, 539	1, 640
Florida, Georgia, South Carolina, Virginia	575	946	977	1, 112	988	949	751	883	630	878	762	709	599
Illinois	14, 942	15, 509	14, 671	14, 421	15, 557	15, 849	15, 488	15, 225	15, 362	15, 418	15, 409	15, 326	15, 548
Indiana	4, 615	4, 909	4, 582	4, 915	4, 983	5, 080	4, 791	4, 645	4, 770	4, 697	4, 938	5, 392	4, 713
Iowa, Missouri	6, 837	6, 840	7, 072	6, 913	6, 659	6, 574	6, 880	6, 575	6, 638	6, 945	6, 528	6, 834	6, 554
Kansas	11, 267	11, 803	10, 847	10, 461	11, 918	11, 434	10, 171	9, 501	10, 276	10, 421	11, 500	10, 896	10, 280
Kentucky, Tennessee	3, 525	3, 331	3, 279	3, 066	3, 273	2, 902	2, 975	2, 877	2, 829	2, 835	2, 769	3, 083	2, 991
Louisiana	15, 759	15, 596	15, 663	14, 279	13, 702	12, 752	12, 724	13, 160	12, 515	13, 645	13, 656	13, 543	13, 665
Maryland	1, 042	1, 086	983	1, 204	1, 336	1, 022	770	845	726	521	479	489	542
Massachusetts, Delaware, Rhode Island	2, 444	2, 331	2, 284	2, 246	1, 361	1, 638	1, 996	1, 949	1, 937	1, 815	1, 840	1, 780	1, 437
Michigan	1, 519	1, 718	1, 788	1, 735	1, 670	1, 556	1, 504	1, 548	1, 517	1, 483	1, 492	1, 398	1, 534
Minnesota, Wisconsin	1, 405	1, 367	1, 272	1, 212	1, 323	1, 362	1, 415	1, 321	1, 289	1, 046	1, 666	1, 449	1, 312
Mississippi	1, 694	1, 731	1, 631	1, 587	1, 595	1, 767	1, 760	1, 588	1, 833	1, 807	1, 709	1, 642	1, 866
Montana	1, 857	2, 019	1, 967	1, 808	1, 836	1, 905	1, 725	1, 810	1, 737	1, 864	1, 848	1, 650	1, 741
Nebraska	1, 737	1, 481	1, 536	1, 609	1, 575	1, 755	1, 750	1, 417	1, 489	1, 566	1, 701	1, 712	1, 566
New Jersey	5, 789	6, 123	5, 556	6, 414	6, 251	6, 080	4, 816	3, 899	4, 890	4, 752	5, 472	5, 281	5, 146
New Mexico	2, 725	2, 763	2, 678	2, 713	3, 107	3, 139	3, 032	3, 073	3, 189	3, 183	3, 328	3, 135	3, 102
New York	768	851	860	884	841	801	926	885	816	798	838	911	721
North Dakota	785	799	748	1, 007	911	717	675	670	678	1, 118	993	925	797
Ohio	7, 906	8, 194	7, 652	7, 618	8, 302	8, 186	7, 764	7, 947	7, 764	7, 592	7, 060	6, 820	6, 651
Oklahoma	23, 023	21, 443	21, 859	20, 270	20, 326	18, 793	16, 693	16, 757	16, 967	18, 922	21, 125	21, 824	22, 662
Pennsylvania	9, 857	11, 669	10, 003	11, 393	11, 201	10, 953	10, 365	10, 535	10, 095	8, 895	8, 496	9, 122	9, 442
South Dakota	----------	1	1	1	1	1	1	1	1	1	1	1	1
Texas	103, 689	103, 910	106, 766	101, 723	95, 375	88, 309	84, 348	82, 300	81, 572	87, 727	89, 694	91, 526	96, 067
Utah	978	982	1, 049	1, 269	988	1, 017	1, 088	1, 021	1, 010	1, 052	957	968	810
West Virginia	681	727	649	632	612	601	609	599	581	719	620	604	536
Wyoming	8, 571	8, 420	8, 659	9, 191	9, 839	9, 720	8, 956	8, 057	7, 763	6, 969	6, 990	7, 869	8, 164
Total	281, 813	284, 539	285, 048	278, 534	273, 959	263, 105	253, 550	246, 556	244, 810	251, 701	255, 345	257, 546	262, 730

[1] Final figures.

TABLE 37.—Stocks of crude petroleum in the continental United States in 1958, by classification and location [1]

(Thousand barrels)

Classification and location	Jan. 1	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
At refineries:													
Alabama	296	307	323	316	313	245	285	226	300	304	232	192	228
Arkansas	511	383	574	515	458	442	423	445	422	390	367	517	469
California, Oregon, Washington	17,273	17,409	17,424	17,121	16,420	16,139	17,410	16,741	16,176	16,745	15,623	15,571	15,852
Colorado	207	279	260	337	383	239	287	264	223	169	275	247	181
Florida, Georgia, South Carolina, Virginia	438	885	881	977	932	862	641	743	567	778	633	667	532
Illinois	3,607	4,029	3,603	3,255	3,776	3,912	3,724	3,633	3,608	3,878	4,053	3,921	4,047
Indiana	1,780	2,043	1,886	2,027	1,816	1,815	1,753	1,792	1,877	1,663	1,691	2,022	1,629
Kansas	1,242	1,535	1,528	1,446	1,762	1,402	1,377	1,370	1,429	1,531	1,639	1,425	1,395
Kentucky, Tennessee	1,047	1,133	991	1,090	976	1,007	1,090	1,100	953	984	831	1,020	926
Louisiana	5,823	5,793	5,258	4,846	5,047	4,410	4,088	4,763	4,502	5,176	5,118	4,774	5,020
Maryland	1,042	1,086	983	1,204	1,336	1,022	770	845	726	521	479	489	542
Massachusetts, Delaware, Rhode Island	2,444	2,331	2,284	2,246	1,361	1,638	1,996	1,949	1,937	1,815	1,840	1,780	1,437
Michigan	763	904	955	851	841	736	795	860	803	696	724	622	619
Minnesota, Wisconsin	1,405	1,367	1,272	1,212	1,323	1,362	1,415	1,321	1,289	1,046	1,666	1,449	1,312
Mississippi	29	22	84	89	106	102	116	90	113	105	115	76	91
Missouri	336	400	362	402	346	281	366	334	389	361	300	350	317
Montana	772	783	770	584	632	644	507	579	521	654	591	512	544
Nebraska	45	39	40	64	58	58	62	33	34	32	51	55	53
New Jersey	5,789	6,123	5,556	6,414	6,131	6,080	4,816	3,899	4,890	4,752	5,472	5,281	5,146
New Mexico	218	224	190	210	270	241	220	211	202	193	228	192	202
New York	527	613	630	675	617	561	771	757	669	612	640	727	549
North Dakota	399	359	317	384	363	265	215	209	207	564	405	338	342
Ohio	1,758	1,788	1,787	1,598	1,918	1,763	1,565	1,908	1,853	1,791	1,620	1,582	1,310
Oklahoma	3,172	2,783	2,578	2,638	2,997	2,419	2,277	2,149	2,156	2,376	2,588	2,611	2,646
Pennsylvania	7,975	9,747	7,983	9,442	9,189	8,892	8,330	8,663	8,283	7,277	6,814	7,392	7,828
Texas	16,153	16,013	17,288	16,130	16,239	14,341	14,878	14,318	13,381	14,336	14,920	14,178	15,275
Utah	559	532	472	544	478	522	408	415	430	428	401	404	341
West Virginia	41	57	51	46	63	51	39	57	45	54	67	36	33
Wyoming	925	769	739	893	830	900	795	682	707	675	549	578	702
Total at refineries	76,576	79,736	77,069	77,556	76,981	72,351	71,419	70,356	68,692	69,906	69,932	69,008	69,568

1 Final figures.

TABLE 37.—Stocks of crude petroleum in the continental United States in 1958, by classification and location [1]—Continued

(Thousand barrels)

Classification and location	Jan. 1	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
Pipeline and tank-farm stocks:													
Alabama	204	189	361	349	240	188	330	312	236	309	367	242	210
Arkansas	1,737	1,674	1,779	1,698	1,531	1,402	1,197	1,051	1,075	1,170	1,172	1,302	1,123
California, Arizona	20,542	20,721	22,701	22,068	22,630	23,061	23,292	22,203	21,188	19,573	19,055	18,325	19,810
Colorado	1,250	1,309	1,358	1,223	1,272	1,282	1,201	1,081	1,157	1,196	1,238	1,107	1,279
Florida, New Jersey	125	48	85	125	166	79	99	125	48	87	119	32	59
Illinois	10,765	10,890	10,498	10,576	11,211	11,362	11,179	11,037	11,169	10,985	10,806	10,825	10,941
Indiana	2,770	2,801	2,631	2,823	3,102	3,200	2,973	2,788	2,828	2,969	3,182	3,300	3,014
Iowa, Missouri	6,501	6,440	6,710	6,511	6,313	6,293	6,514	6,241	6,249	6,584	6,228	6,484	6,237
Kansas	9,200	9,563	8,584	8,245	9,441	9,267	8,049	7,411	8,137	8,215	9,196	8,766	8,210
Kentucky, Tennessee	2,423	2,138	2,228	1,916	2,237	1,835	1,830	1,722	1,821	1,796	1,883	2,003	2,005
Louisiana	7,866	7,788	8,350	7,348	6,570	6,347	6,576	6,552	5,983	6,699	6,748	6,819	6,875
Michigan	601	654	668	719	669	655	544	528	549	622	603	606	750
Mississippi	1,245	1,264	1,117	1,078	1,089	1,275	1,269	1,143	1,365	1,347	1,224	1,186	1,405
Montana	720	876	827	844	834	896	848	861	836	830	882	753	827
Nebraska	1,562	1,317	1,366	1,410	1,392	1,572	1,563	1,259	1,330	1,409	1,520	1,527	1,393
New Mexico	1,362	1,404	1,333	1,323	1,647	1,733	1,632	1,692	1,832	1,840	1,920	1,763	1,750
New York	211	208	200	179	194	210	125	98	117	156	168	154	142
North Dakota	201	203	205	205	207	204	206	204	205	206	204	205	202
Ohio	6,068	6,326	5,785	5,940	6,304	6,343	6,119	5,959	5,831	5,721	5,360	5,158	5,261
Oklahoma	18,336	17,110	17,771	15,982	15,779	14,854	12,851	13,143	13,271	15,046	17,022	17,663	18,526
Pennsylvania	1,732	1,772	1,870	1,801	1,862	1,911	1,885	1,722	1,662	1,468	1,532	1,580	1,464
Texas	80,291	80,537	82,183	78,429	72,252	67,009	62,591	61,253	60,757	65,962	67,430	69,664	73,403
Utah	388	405	524	648	442	440	619	550	525	565	500	519	412
West Virginia	475	505	433	421	384	385	405	377	371	500	388	403	338
Wyoming	6,951	6,901	7,310	7,603	8,344	8,105	7,476	6,725	6,401	5,659	5,816	6,606	6,822
Total pipeline and tank-farm stocks	183,526	183,043	186,877	179,464	176,112	169,908	161,373	156,037	154,943	160,914	164,563	166,992	172,458
Producer's stocks	21,711	21,760	21,102	21,514	20,866	20,846	20,758	20,163	21,175	20,881	20,850	21,546	20,704
Grand total:													
1958	281,813	284,539	285,048	278,534	273,959	263,105	253,550	246,556	244,810	251,701	255,345	257,546	262,730
1957	266,014	256,244	256,344	254,911	265,796	279,963	284,312	288,241	283,388	280,469	284,517	281,769	281,813

[1] Final figures.

VALUE AND PRICE

The average value of crude oil at the well in 1958 was $3.01 per barrel—8 cents below the 1957 average. The total value of crude oil at the well was $7,379 million in 1958.

The cut in crude-oil prices resulted from an oversupply of crude oil and a soft market for refined products. Refiners felt that the cost of the crude should be more in line with the value of the end products. Posted crude prices were cut throughout the year in various parts of the country.

TABLE 38.—Value of crude petroleum at wells in the United States, 1957–58, by States

State and district	1957		1958 [1]	
	Total value at wells (thousand dollars)	Average value per barrel	Total value at wells (thousand dollars)	Average value per barrel
Arkansas	$90,657	$2.92	$80,934	$2.82
California	1,035,920	3.05	911,844	2.90
Colorado	166,046	3.02	144,444	2.99
Illinois	240,499	3.12	246,375	3.00
Indiana	39,632	3.13	35,711	3.01
Kansas	372,078	3.01	354,564	3.00
Kentucky	53,301	3.13	51,652	2.95
Louisiana:				
Gulf Coast	944,951	3.33	884,656	3.27
Northern	149,451	3.32	132,906	3.20
Total Louisiana	1,094,402	3.32	1,017,562	3.26
Michigan	31,117	3.06	27,363	2.94
Mississippi	113,263	2.91	110,256	2.86
Montana	73,364	2.70	74,971	2.65
Nebraska	58,366	2.98	59,882	2.94
New Mexico:				
Southeastern	275,798	2.99	268,992	2.99
Northwestern	7,330	2.91	24,408	2.92
Total New Mexico	283,128	2.99	293,400	2.98
New York	12,662	4.73	7,039	4.23
North Dakota	41,501	3.13	42,282	2.99
Ohio	17,694	3.23	18,091	2.89
Oklahoma	650,423	3.03	599,989	2.96
Pennsylvania	38,687	4.73	27,380	4.10
Texas: [2]				
Gulf Coast	714,262	3.41	595,562	3.32
East Texas proper	224,349	3.20	168,298	3.20
West Texas	1,385,865	3.00	1,225,422	2.99
Other districts	1,013,643	3.05	884,706	2.96
Total Texas	3,338,119	3.11	2,873,988	3.06
Utah	9,913	2.27	72,914	2.99
West Virginia	9,436	4.26	7,629	3.49
Wyoming	291,493	2.66	301,643	2.61
Other States [3]	17,558	2.90	19,066	2.93
Total United States	8,079,259	3.09	7,378,979	3.01

[1] Preliminary figures.
[2] Texas Railroad Commission divisions.
[3] Alabama, Arizona (1958), Florida, Missouri, Nevada, South Dakota, Tennessee, Virginia, and Washington.

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TABLE 39.—Posted price per barrel of petroleum at wells in the United States in 1958, by grade, with date of change [1]

Date	Pennsylvania Grade: Bradford and Allegheny districts	Pennsylvania Grade: In southwest Pennsylvania	Corning Grade	Western Kentucky	Indiana-Illinois Basin	Coldwater, Mich.	Oklahoma-Kansas [2]: 34°–34.9°	Oklahoma-Kansas [2]: 36°–36.9°
Jan. 1	$4.65	$4.18	$2.90	$3.00	$3.05	$3.10	$3.03	$3.07
Jan. 8	-	-	2.77	-	-	2.95	-	-
Feb. 10	-	-	-	-	3.00	-	-	-
Feb. 15	-	-	2.72	-	-	-	-	-
Mar. 3	4.40	3.93	-	-	-	-	-	-
Apr. 16	4.15	3.68	-	-	-	-	-	-
June 18	3.90	3.43	-	-	-	-	-	-
Nov. 4	-	-	-	-	-	-	2.96	3.00
Nov. 20	-	-	-	-	-	3.10	-	-
Dec. 12	-	-	-	-	-	-	-	-

Date	Panhandle Texas (Carson, Gray, Hutchinson, and Wheeler Counties) 35°–35.9°	West Texas 30°–30.9° (sweet)	Lea County, N. Mex. 30°–30.9° (sour)	South Texas, Mirando 24°–24.9°	East Texas	Gulf Coast: Conroe, Tex.	Gulf Coast: Texas 30°–30.9°	Gulf Coast: Texas 20°–20.9°	Gulf Coast: Louisiana 30°–30.9°
Jan. 1	$2.92	$2.95	$2.82	$3.23	$3.25	$3.53	$3.30	$3.10	$3.25
Apr. 1	-	2.88	-	-	-	-	-	-	-
May 14	-	-	-	-	-	-	3.20	3.00	-
Aug. 8	-	-	-	-	-	-	-	-	3.15
Aug. 29	-	-	-	-	-	-	-	-	3.10

Date	Rodessa, La. 36°–36.9°	Smackover, Ark.	Elk Basin, Wyo. 30°–30.9°	California: Coalinga 32°–37.9°	California: Kettleman Hills 37°–37.9°	California: Midway-Sunset 19°–19.9°	California: Wilmington 24°–24.9°
Jan. 1	$3.17	$2.68	$2.63	$3.37	$3.55	$2.87	$3.13
Apr. 14	-	-	-	-	-	2.75	3.09
June 24	-	-	-	3.27	3.54	2.57	2.92
Aug. 8	3.07	-	-	-	-	-	-
Sept. 30	-	-	-	-	-	2.26	2.81

[1] Source: Platt's Oil Price Handbook and Oilmanac, 1958, compiled and published by McGraw-Hill Publishing Co., Inc.
[2] Price changes are those of the Continental Oil Co. posted in Platt's Oil Price Handbook.

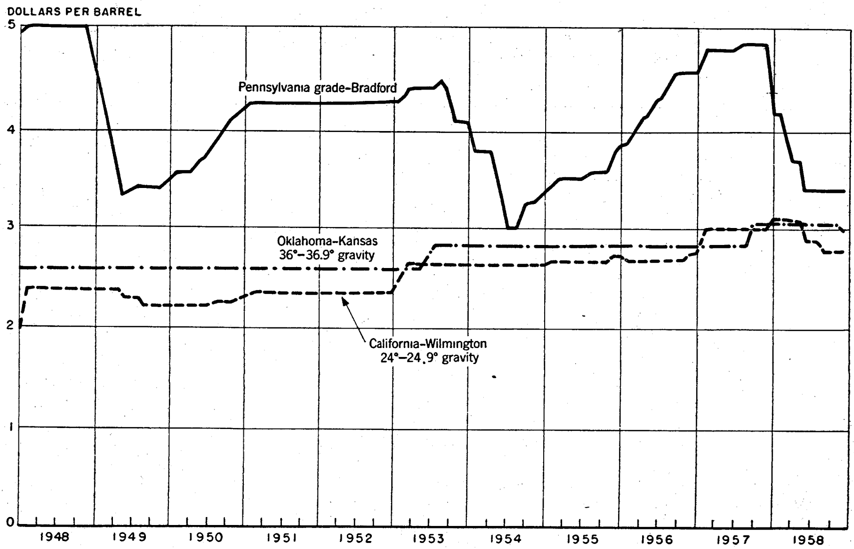

FIGURE 4.—Posted prices of selected grades of crude petroleum in the United States, 1948–58, by months.

REFINED PRODUCTS

GENERAL REVIEW

Petroleum is consumed in many finished products that must be considered individually. Competition with other fuels and economic and climatic conditions influence the consumption of these products.

Gasoline is consumed principally in highway transport, aviation, and mechanized farming. The demand for kerosine (a product defined as meeting lamp-oil specifications for color and flashpoint) has been drastically affected, especially in rural areas, by increased competition from electricity and liquefied petroleum. Distillate fuel oil, including light diesel oils, is used for space heating and for diesel locomotive fuel and has nearly replaced residual fuel oil and coal in railroad use. Residual fuel oil usually sells for less than crude oil at the refineries and competes directly with natural gas and coal for heavy fuel uses. As it cannot be moved by pipeline, its distribution depends on cheap water transport and limited tank-car movement. Therefore, it cannot normally compete with coal in coal-producing areas. Liquefied gases, in competition with kerosine and light distillate fuel oil in domestic use, are gaining in importance as fuel in internal combustion engines and as the initial raw material in synthesizing many petrochemicals. Jet fuels (a blend of gasoline, kerosine, and distillate fuel oils) are replacing gasoline in military combat aircraft.

The total demand for all oils in 1958 averaged 9,341,000 barrels per day, 0.5 percent less than the 1957 demand of 9,386,000 barrels. Domestic demand increased 2.8 percent over 1957.

TABLE 40.—Salient statistics of the major refined petroleum products in continental United States, 1954–58

(Thousand barrels)

	1954	1955	1956	1957	1958 [1]
Gasoline (finished and natural):					
Production	1, 261, 304	1, 373, 950	1, 428, 807	1, 438, 140	1, 422, 835
Imports	1, 185	4, 809	1, 682	2, 906	12, 572
Exports	34, 366	34, 521	35, 572	38, 588	27, 448
Stocks, end of year	155, 400	165, 433	187, 271	196, 776	186, 760
Domestic demand	1, 230, 595	1, 334, 205	1, 373, 079	1, 392, 953	1, 417, 975
Kerosine:					
Production	122, 305	117, 137	123, 480	108, 929	110, 008
Transfers from gasoline plants [2]	-----------	1, 950	1, 781	1, 780	1, 343
Imports	-----------	-----------	10	30	34
Exports	4, 852	3, 335	3, 297	5, 258	1, 215
Stocks, end of year	27, 826	26, 770	31, 420	29, 200	26, 040
Domestic demand	118, 311	116, 808	117, 324	107, 701	113, 330
Distillate fuel oil:					
Production	542, 278	602, 547	665, 687	668, 573	631, 405
Transfers from gasoline plants [2]	-----------	615	818	866	799
Transfers from crude	1, 500	1, 347	1, 375	1, 305	950
Imports	3, 195	4, 413	5, 159	8, 566	14, 101
Exports	24, 223	24, 605	34, 535	47, 752	19, 148
Stocks, end of year	108, 144	111, 333	133, 981	149, 449	125, 101
Domestic demand	526, 347	581, 128	615, 856	616, 090	652, 455
Residual fuel oil:					
Production	416, 757	420, 331	426, 699	415, 656	363, 358
Transfers from crude	5, 924	5, 559	6, 439	13, 884	10, 965
Imports	129, 124	152, 035	162, 869	173, 299	181, 884
Exports	26, 753	33, 799	27, 877	38, 570	25, 542
Stocks, end of year	52, 105	39, 174	44, 491	59, 959	59, 508
Domestic demand	522, 317	557, 057	562, 813	548, 801	531, 116
Jet fuel:					
Production	46, 550	56, 648	66, 443	63, 322	73, 676
From gasoline	32, 889	43, 262	51, 472	46, 007	53, 195
From kerosine	9, 934	9, 887	11, 124	12, 572	14, 516
From distillate	3, 727	3, 499	3, 847	4, 743	5, 965
Transfers from gasoline plants [2]	-----------	-----------	-----------	-----------	1, 063
Imports	(3)	(3)	7, 763	9, 185	21, 169
Exports	149	120	186	119	210
Stocks, end of year	3, 215	3, 457	5, 322	4, 749	5, 871
Domestic demand	45, 852	56, 286	72, 155	72, 961	94, 576
Lubricants:					
Production	53, 243	55, 836	59, 211	55, 723	51, 298
Imports	1	-----------	-----------	-----------	-----------
Exports:					
Grease	412	440	428	428	347
Oil	14, 663	13, 858	13, 431	13, 398	12, 689
Stocks, end of year	9, 702	8, 763	10, 182	10, 864	9, 687
Domestic demand	38, 537	42, 477	43, 933	41, 215	39, 439
Wax (1 barrel=280 pounds):					
Production	5, 290	5, 293	5, 367	5, 461	5, 252
Imports	1	-----------	-----------	-----------	5
Exports	1, 342	1, 248	920	1, 023	911
Stocks, end of year	562	551	658	666	712
Domestic demand	3, 925	4, 056	4, 340	4, 430	4, 300
Coke (5 barrels=1 short ton):					
Production	24, 284	28, 337	31, 095	33, 466	37, 808
Exports	3, 261	4, 517	6, 423	5, 225	4, 406
Stocks, end of year	2, 107	1, 524	1, 319	2, 534	4, 818
Domestic demand	19, 776	24, 403	24, 877	27, 026	31, 118
Asphalt (5.5 barrels=1 short ton):					
Production	74, 912	83, 121	90, 636	85, 683	89, 380
Imports	3, 394	3, 325	3, 606	6, 391	7, 339
Exports	1, 868	1, 567	1, 513	1, 788	1, 371
Stocks, end of year	7, 175	7, 768	9, 150	10, 463	9, 757
Domestic demand	76, 577	84, 286	91, 347	88, 973	96, 054
Road oil:					
Production	7, 213	8, 482	8, 027	7, 209	5, 925
Stocks, end of year	434	560	501	587	417
Domestic demand	7, 216	8, 356	8, 086	7, 123	6, 095

See footnotes at end of table.

TABLE 40.—Salient statistics of the major refined petroleum products in continental United States, 1954–58—Continued

(Thousand barrels)

	1954	1955	1956	1957	1958 [1]
Still gas (1 barrel=3,600 cu. ft.): Production	102, 552	116, 506	121, 993	125, 720	125, 951
Liquefied gases:					
Production [4]	34, 169	43, 615	51, 962	53, 437	57, 623
Transfers of liquefied gas [5] from natural gasoline plants	98, 394	108, 325	114, 208	117, 029	121, 940
Exports	3, 953	4, 277	4, 274	4, 526	2, 831
Stocks, end of year	941	1, 032	1, 393	1, 913	2, 207
Domestic demand	128, 461	147, 572	161, 535	165, 420	176, 438
Miscellaneous:					
Production	11, 013	10, 806	12, 493	15, 816	18, 718
Transfers from gasoline plants [2]	----------	2, 677	2, 347	1, 664	1, 518
Exports	292	330	306	269	266
Stocks, end of year	1, 236	1, 327	1, 476	1, 811	2, 409
Domestic demand	10, 486	13, 062	14, 385	16, 876	19, 372
Unfinished gasoline:					
Rerun (net)	(6)	(6)	(6)	(6)	(6)
Stocks, end of year	(6)	(6)	(6)	(6)	(6)
Other unfinished oils:					
Rerun (net)	7, 974	11, 231	4, 008	−1, 355	32, 493
Transfers of other products from natural gasoline plants	4, 772	(2)	(2)	(2)	(2)
Imports	7, 576	5, 561	2, 669	957	33, 554
Stocks, end of year	73, 663	67, 993	66, 654	68, 966	70, 027
Shortage	(8, 468)	(12, 356)	(15, 704)	(15, 159)	(23, 192)

[1] Preliminary figures.
[2] Production at natural gasoline plants shown as direct "transfers" and omitted from the input and output at refineries.
[3] Imports of jet fuel formerly included with gasoline.
[4] Liquefied refinery gases (LR-gases).
[5] Liquefied petroleum gases (LP-gases).
[6] Included with gasoline (finished and natural).

Exports returned to a normal of 276,000 barrels daily in 1958. The peak of 568,000 barrels daily in 1957 was caused by large shipments to Europe during the first few months to replace supplies shut off by the closing of the Suez Canal.

Domestic demand for the first half of 1958 was slightly above that for the same period of 1957, as industrial production dropped to its lowest level of the recession. In the third quarter, general business activity began to improve, and domestic demand for petroleum increased 2.8 percent over 1957. Owing to colder than normal weather and a sharp increase in industrial production demand in the fourth quarter of 1958 exceeded that in the same quarter of 1957 by 7.0 percent.

Military purchases from domestic sources averaged 443,000 barrels daily in 1958, an increase of 13.9 percent over 1957.

The new supply of refined products comprises the refinery output from crude oil, the production of natural-gas liquids, a small quantity of motor benzol derived from coal, and imports of refined products from other countries. Crude runs to stills and the production of natural-gas liquids declined in 1958. Although imports increased, demand exceeded the new supply, resulting in a stock reduction for the year of 51.1 million barrels.

The yield of gasoline from crude oil increased from 43.8 percent in 1957 to 44.9 percent in 1958, whereas the yield of the heavier products declined. Imports of unfinished oil—an oil that has been semi-refined to remove the heavier end products, were much higher in 1958. To arrive at product yields, the rerun of unfinished oil is added to the crude-oil run to stills. The result of a large input of unfinished oils, such as occurred in 1958, is to increase the yield of light products.

The monthly wholesale-price index of petroleum and petroleum products decreased from 127.0 in 1957 to 117.7 in 1958. The wholesale prices of the four principal products averaged 9.27 cents per gallon compared with 10.10 cents in 1957.

Prices of gasoline, kerosine, and distillate fuel oil dropped to their lowest level for the year in the second quarter of 1958, and residual-fuel-oil prices were lowest in the fourth quarter.

TABLE 41.—Input and output of petroleum products at refineries in the United States, 1954–58

(Thousand barrels)

	1954	1955	1956	1957	1958 [1]
Input:					
Crude petroleum:					
Domestic	2,300,766	2,446,833	2,563,655	2,529,672	2,430,919
Foreign	238,798	283,385	341,451	360,764	345,175
Total crude petroleum	2,539,564	2,730,218	2,905,106	2,890,436	2,776,094
Natural-gas liquids	117,549	126,382	135,062	150,090	150,579
Total input	2,657,113	2,856,600	3,040,168	3,040,526	2,926,673
Output:					
Gasoline	1,232,989	1,331,528	1,396,787	1,415,335	1,411,956
Kerosine [2]	122,305	117,137	123,480	108,929	110,008
Distillate fuel oil [2]	542,278	602,547	665,687	668,573	631,405
Residual fuel oil	416,757	420,331	426,699	415,656	363,358
Jet fuel	46,550	56,648	66,443	63,322	73,676
Lubricants	53,243	55,836	59,211	55,723	51,298
Wax [3]	5,290	5,293	5,367	5,461	5,252
Coke [3]	24,284	28,337	31,095	33,466	37,808
Asphalt [3]	74,912	83,121	90,636	85,683	89,380
Road oil	7,213	8,482	8,027	7,209	5,925
Still gas [3]	102,552	116,506	121,993	125,720	125,951
Liquefied gases	34,169	43,615	51,962	53,437	57,623
Other finished products	11,013	10,806	12,493	15,816	18,718
Other unfinished oils (net)	[4] 7,974	[4] 11,231	[4] 4,008	1,355	[4] 32,493
Shortage (or overage) [5]	−8,468	−12,356	−15,704	−15,159	−23,192
Total output	2,657,113	2,856,600	3,040,168	3,040,526	2,926,673

[1] Preliminary figures.
[2] Production at natural gasoline plants shown as direct "transfers" and omitted from the input and output at refineries.
[3] Conversion factors: 280 pounds of wax to the barrel; 5.0 barrels of coke to the short ton; 5.5 barrels asphalt to the short ton.
[4] Negative quantity; represents net excess of unfinished oils rerun over unfinished oil produced.
[5] Includes losses or gains in volume during processing.

TABLE 42.—Percentage yields of refined petroleum products in the United States, 1949–58 [1]

Product	1949	1950	1951	1952 [2]	1953	1954	1955	1956	1957	1958 [3]
Finished products:										
Gasoline	43.7	43.0	42.4	42.4	43.9	43.8	44.0	43.4	43.8	44.9
Kerosine	5.2	5.6	5.7	5.3	4.8	4.8	4.3	4.2	3.8	3.9
Distillate fuel oil	17.5	19.0	20.0	21.2	20.7	21.3	22.0	22.9	23.1	22.5
Residual fuel oil	21.7	20.2	19.7	18.5	17.6	16.4	15.3	14.7	14.4	12.9
Jet fuel [4]	-------	-------	-------	.8	1.4	1.8	2.1	2.3	2.2	2.6
Lubricating oil	2.3	2.5	2.6	2.3	2.1	2.1	2.0	2.0	1.9	1.8
Wax	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
Coke	.9	.8	.8	.7	.8	1.0	1.0	1.1	1.2	1.4
Asphalt	2.5	2.8	2.8	2.9	2.8	2.9	3.0	3.1	3.0	3.2
Road oil	.4	.3	.3	.3	.3	.3	.3	.3	.2	.2
Still gas	4.2	4.0	4.1	3.9	4.0	4.0	4.3	4.2	4.3	4.5
Liquefied gases	([5])	([5])	([5])	1.3	1.3	1.3	1.6	1.8	1.9	2.0
Other finished products	1.4	1.6	1.7	.3	.4	.4	.4	.4	.5	.7
Shortage	-------	-------	–.3	–.1	–.3	–.3	–.5	–.6	–.5	–.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Other unfinished oils added to crude in computing yields.
[2] Yields computed on the 1953 basis to show jet fuel separately.
[3] Preliminary figures.
[4] From 1948 through 1951, jet fuel was included in statistics of gasoline, kerosine, and distillate fuel oil.
[5] From 1948 through 1951, statistics on liquefied gases were included in "Other" finished products.

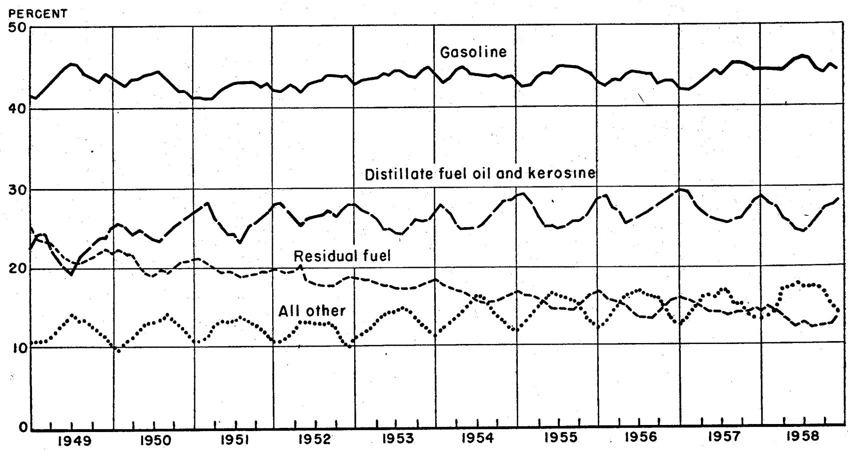

FIGURE 5.—Yields of principal products from crude runs to stills in the United States, 1949–58, by months.

TABLE 43.—Stocks of refined petroleum products in the continental United States at end of month, 1957–58

(Thousand barrels)

Product	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 3	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
1957												
Gasoline [1]	360, 696	347, 589	340, 555	339, 091	359, 564	381, 871	397, 561	420, 376	449, 066	451, 699	446, 222	435, 384
Jet fuel	5, 185	5, 326	4, 868	5, 322	5, 656	6, 321	5, 470	5, 248	5, 042	4, 681	4, 645	4, 749
Lubricating oil	10, 412	10, 308	10, 428	10, 587	10, 710	10, 591	10, 313	10, 124	10, 210	9, 953	10, 396	10, 864
Wax	661	632	670	707	706	728	706	658	662	655	655	666
Coke	1, 461	1, 686	1, 847	1, 723	1, 858	1, 972	2, 001	2, 006	2, 175	2, 296	2, 504	2, 534
Asphalt	10, 381	11, 314	12, 972	14, 606	15, 160	14, 435	11, 509	9, 970	8, 586	7, 863	8, 996	10, 463
Road oil	456	518	880	1, 085	1, 228	1, 226	957	842	677	600	594	587
Liquefied refinery gases	1, 317	1, 551	1, 749	1, 844	2, 141	2, 285	2, 258	2, 174	1, 977	2, 102	2, 012	1, 913
Miscellaneous	1, 341	1, 553	1, 734	1, 588	1, 507	1, 641	1, 509	1, 586	1, 707	1, 679	1, 741	1, 811
Other unfinished oils	62, 765	61, 547	65, 868	67, 153	70, 335	69, 743	70, 273	70, 479	69, 152	69, 522	72, 795	68, 966
Total 1957	454, 675	442, 024	441, 571	443, 706	468, 865	490, 813	502, 557	523, 463	549, 254	551, 050	550, 560	537, 937
1958												
Gasoline [1]	410, 125	376, 133	365, 655	359, 283	367, 374	379, 618	392, 254	413, 105	429, 678	433, 728	438, 109	397, 409
Jet fuel	4, 801	4, 451	4, 488	4, 981	5, 494	5, 752	6, 004	6, 253	6, 145	5, 373	5, 184	5, 871
Lubricating oil	11, 284	11, 360	11, 218	11, 090	11, 011	10, 659	10, 574	10, 215	10, 037	9, 765	9, 412	9, 687
Wax	702	694	719	721	735	743	692	699	708	665	733	712
Coke	2, 795	2, 879	3, 112	3, 347	3, 642	3, 625	3, 976	4, 105	4, 226	4, 412	4, 655	4, 818
Asphalt	11, 790	13, 269	14, 554	15, 698	15, 465	13, 953	12, 294	10, 256	8, 696	7, 351	8, 416	9, 757
Road oil	484	513	666	735	968	923	894	627	578	421	443	417
Liquefied refinery gases	1, 641	1, 654	1, 859	1, 955	2, 110	2, 075	2, 139	2, 244	2, 409	2, 353	2, 496	2, 207
Miscellaneous	1, 932	2, 046	2, 193	2, 233	2, 255	2, 152	2, 187	2, 201	1, 996	2, 053	2, 131	2, 409
Other unfinished oils	67, 798	65, 945	69, 108	71, 148	74, 911	77, 974	74, 199	73, 836	73, 057	73, 481	74, 831	70, 027
Total 1958	513, 352	478, 944	473, 572	471, 191	483, 965	497, 474	505, 213	523, 541	537, 530	539, 602	546, 410	503, 314

[1] Includes kerosine, distillate fuel oil, residual fuel oil, and unfinished gasoline.

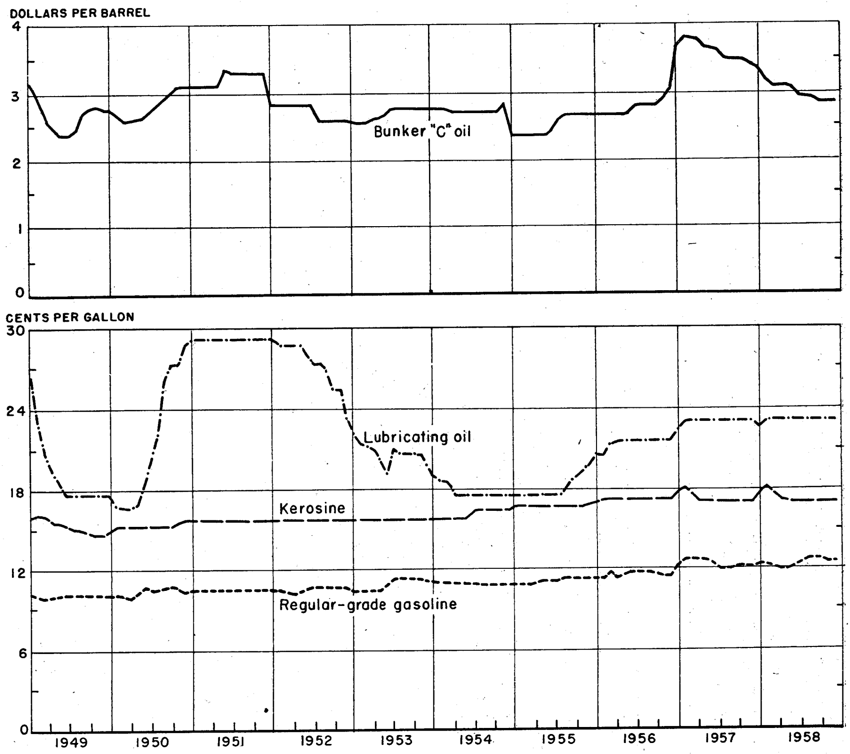

FIGURE 6.—Prices of Bunker "C" oil at New York Harbor, bright stock at Oklahoma refineries, tank-wagon kerosine at Chicago, and Regular-Grade gasoline at refineries in Oklahoma, 1949–58, by months.

TABLE 44.—Input and output of petroleum products at refineries in the United States, 1957–58, by months

(Thousand barrels)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
1957													
Input:													
Crude petroleum	256, 485	226, 461	249, 445	232, 197	247, 760	236, 002	243, 412	250, 847	237, 606	237, 143	230, 773	242, 305	2, 890, 436
Natural-gas liquids	12, 702	10, 974	12, 296	11, 836	12, 158	11, 506	12, 414	13, 171	13, 193	13, 424	13, 224	13, 192	150, 090
Total input	269, 187	237, 435	261, 741	244, 033	259, 918	247, 508	255, 826	264, 018	250, 799	250, 567	243, 997	255, 497	3, 040, 526
Output:													
Gasoline [1]	122, 114	106, 088	116, 037	110, 611	118, 788	116, 436	118, 807	125, 287	121, 868	120, 747	115, 923	122, 629	1, 415, 335
Kerosine [2]	11, 384	9, 874	10, 307	8, 520	8, 440	7, 617	7, 718	7, 804	8, 284	8, 230	9, 709	11, 042	108, 929
Distillate fuel oil [2]	65, 662	56, 970	57, 680	52, 934	55, 444	53, 180	54, 236	55, 979	53, 164	52, 863	52, 006	58, 455	668, 573
Residual fuel oil	40, 990	35, 546	37, 351	33, 964	34, 196	33, 033	33, 776	33, 754	32, 987	32, 602	32, 059	35, 398	415, 656
Jet fuel	6, 207	5, 830	6, 800	6, 203	5, 813	4, 412	5, 514	5, 260	3, 702	4, 723	4, 245	4, 613	63, 322
Lubricating oil	4, 960	4, 334	4, 858	5, 124	5, 131	4, 246	4, 657	4, 704	4, 378	4, 476	4, 423	4, 432	55, 723
Wax [3]	460	376	499	473	468	421	446	430	462	498	450	478	5, 461
Coke [3]	2, 859	2, 539	2, 573	2, 604	2, 962	2, 795	2, 597	2, 812	2, 765	2, 997	2, 928	3, 035	33, 466
Asphalt [3]	3, 918	3, 909	5, 496	6, 538	8, 303	9, 012	9, 789	10, 505	9, 318	8, 085	6, 107	4, 703	85, 683
Road oil	157	219	544	460	698	1, 049	1, 174	1, 388	668	395	243	214	7, 209
Still gas [3]	9, 988	9, 051	10, 438	10, 314	11, 374	11, 011	11, 273	11, 324	10, 929	10, 313	9, 392	10, 313	125, 720
Liquefied refinery gases	4, 791	4, 310	4, 544	4, 386	4, 622	4, 471	4, 456	4, 460	4, 101	4, 369	4, 091	4, 836	53, 437
Miscellaneous [2]	1, 103	1, 254	1, 530	1, 144	1, 342	1, 289	1, 221	1, 474	1, 391	1, 380	1, 261	1, 427	15, 816
Other unfinished oils (net)	[4] 3, 941	[4] 1, 260	4, 259	1, 268	3, 026	[4] 592	530	206	[4] 1, 523	367	3, 058	[4] 4, 043	1, 355
Shortage or overage	(1, 465)	(1, 605)	(1, 175)	(510)	(689)	(872)	(368)	(1, 369)	(1, 695)	(1, 478)	(1, 898)	(2, 035)	(15, 159)
Total output	269, 187	237, 435	261, 741	244, 033	259, 918	247, 508	255, 826	264, 018	250, 799	250, 567	243, 997	255, 497	3, 040, 526
1958 [5]													
Input:													
Crude petroleum	237, 827	210, 663	228, 050	215, 657	229, 754	225, 803	234, 164	242, 537	232, 884	238, 695	233, 279	246, 781	2, 776, 094
Natural-gas liquids	12, 192	11, 151	11, 132	11, 680	11, 164	11, 594	12, 285	13, 179	13, 323	13, 912	14, 355	14, 612	150, 579
Total input	250, 019	221, 814	239, 182	227, 337	240, 918	237, 397	246, 449	255, 716	246, 207	252, 607	247, 634	261, 393	2, 926, 673

Output:													
Gasoline [1]	118, 642	105, 467	111, 151	106, 754	113, 726	115, 602	124, 513	126, 531	119, 328	120, 902	120, 832	128, 508	1, 411, 956
Kerosine [2]	11, 204	10, 651	10, 436	8, 102	7, 036	6, 978	6, 984	8, 202	8, 544	9, 778	10, 500	11, 593	110, 008
Distillate [2]	57, 120	48, 179	51, 149	47, 032	50, 723	48, 342	51, 145	52, 878	53, 506	56, 372	54, 364	60, 595	631, 405
Residual fuel oil	33, 803	31, 054	31, 468	28, 412	28, 537	27, 346	30, 407	29, 789	29, 197	29, 738	29, 361	34, 246	363, 358
Jet fuel	4, 542	4, 625	5, 697	6, 556	6, 506	6, 480	6, 314	6, 551	7, 061	6, 558	5, 804	6, 982	73, 676
Lubricating oil	4, 221	3, 843	3, 973	4, 065	4, 325	4, 224	4, 397	4, 564	4, 162	4, 519	4, 313	4, 692	51, 298
Wax [3]	440	389	445	436	425	445	390	422	475	455	474	456	5, 252
Coke [3]	3, 229	2, 802	2, 960	3, 137	3, 323	2, 964	3, 191	3, 187	3, 021	3, 324	3, 237	3, 433	37, 808
Asphalt [3]	4, 047	3, 703	4, 498	6, 603	8, 451	9, 895	10, 189	10, 785	10, 352	9, 384	6, 949	4, 524	89, 380
Road oil	56	156	225	242	756	821	1, 116	1, 150	765	345	177	116	5, 925
Still gas [3]	9, 836	8, 964	10, 108	10, 179	10, 693	11, 113	11, 546	11, 453	10, 769	10, 496	10, 150	10, 644	125, 951
Liquefied refinery gases	4, 850	4, 597	4, 694	4, 635	4, 768	4, 715	4, 946	4, 846	4, 691	4, 506	4, 773	5, 602	57, 623
Miscellaneous [2]	1, 518	1, 209	1, 531	1, 536	1, 681	1, 377	1, 630	1, 741	1, 646	1, 655	1, 762	1, 432	18, 718
Other unfinished oils (net)	[4] 1, 477	[4] 2, 454	2, 712	1, 206	1, 767	[4] 1, 112	[4] 7, 840	[4] 3, 893	[4] 5, 418	[4] 3, 670	[4] 2, 933	[4] 9, 381	[4] 32, 493
Shortage or overage	(2, 012)	(1, 371)	(1, 865)	(1, 558)	(1, 799)	(1, 793)	(2, 479)	(2, 490)	(1, 892)	(1, 755)	(2, 129)	(2, 049)	(23, 192)
Total output	250, 019	221, 814	239, 182	227, 337	240, 918	237, 397	246, 449	255, 716	246, 207	252, 607	247, 634	261, 393	2, 926, 673

[1] Includes unfinished gasoline (net).
[2] Production at natural gasoline plants shown as direct "transfers" and omitted from the input and output at refineries.
[3] Conversion factors: 280 pounds of wax to the barrel; 5.0 barrels of coke to the short ton; 5.5 barrels of asphalt to the short ton.
[4] Negative quantity; represents net excess of unfinished oils rerun over unfinished oil produced.
[5] Preliminary figures.

TABLE 45.—Input and output of petroleum products at refineries in the United States, 1957–58, by districts

(Thousand barrels)

	East Coast	Appalachian	Indiana, Illinois, Kentucky, etc.	Minnesota, Wisconsin, etc.	Oklahoma, Kansas, etc.	Texas Inland	Texas Gulf Coast	Louisiana Gulf Coast	Arkansas-Louisiana Inland, etc.	New Mexico	Rocky Mountain	West Coast	Total
1957													
Input:													
Crude petroleum	435, 760	71, 473	505, 830	34, 723	256, 932	98, 643	688, 208	236, 849	33, 257	9, 681	99, 797	419, 283	2, 890, 436
Natural-gas liquids	2, 279	8	14, 372	239	13, 939	25, 359	42, 150	22, 320	581	882	2, 159	25, 802	150, 090
Total input	438, 039	71, 481	520, 202	34, 962	270, 871	124, 002	730, 358	259, 169	33, 838	10, 563	101, 956	445, 085	3, 040, 526
Output:													
Gasoline [1]	179, 897	33, 348	258, 128	16, 482	143, 899	73, 900	333, 193	127, 061	12, 719	5, 081	47, 647	183, 980	1, 415, 335
Kerosine [2]	11, 633	3, 491	24, 172	1, 941	5, 326	2, 974	37, 102	17, 140	2, 300	127	1, 045	1, 678	108, 929
Distillate fuel oil [2]	118, 145	14, 098	105, 975	9, 198	61, 607	18, 278	180, 525	64, 658	7, 651	1, 899	23, 269	63, 270	668, 573
Residual fuel oil	76, 494	7, 265	63, 475	3, 290	12, 016	8, 362	83, 230	17, 821	2, 421	1, 142	13, 143	126, 997	415, 656
Jet fuel	1, 851	1, 038	5, 124	424	10, 860	5, 145	13, 398	4, 008	570	984	3, 343	16, 577	63, 322
Lubricating oil	8, 210	4, 408	4, 453		4, 856	16	20, 992	5, 764	1, 630		173	5, 221	55, 723
Wax [3]	1, 805	378	253		567	34	1, 211	695			55	463	5, 461
Coke [3]	3, 579	476	10, 681	1, 271	5, 478	438	2, 702	2, 883	691		1, 494	3, 773	33, 466
Asphalt [3]	19, 122	3, 065	15, 833	932	8, 639	4, 512	6, 080	4, 599	4, 963	596	5, 499	11, 843	85, 683
Road oil	40	56	1, 676	83	1, 277	4	23	2	13		1, 499	2, 536	7, 209
Still gas [3]	14, 754	3, 884	26, 872	1, 093	11, 187	5, 244	26, 947	10, 129	1, 290	216	4, 676	19, 428	125, 720
Liquefied refinery gases	6, 621	367	4, 481	717	4, 569	2, 655	16, 031	10, 536	419	73	522	6, 446	53, 437
Miscellaneous [2]	2, 583	194	1, 713	50	949	487	3, 439	2, 121	62	4	198	4, 016	15, 816
Other unfinished oils (net)	[4] 4, 941	43	[4] 558	125	454	[4] 188	7, 142	[4] 1, 888	[4] 540	31	[4] 3	1, 678	1, 355
Shortage or overage	(1, 754)	(630)	(2, 076)	(644)	(813)	2, 141	(1, 657)	(6, 360)	(351)	410	(604)	(2, 821)	(15, 159)
Total output	438, 039	71, 481	520, 202	34, 962	270, 871	124, 002	730, 358	259, 169	33, 838	10, 563	101, 956	445, 085	3, 040, 526
1958 [5]													
Input:													
Crude petroleum	403, 278	70, 742	505, 182	36, 273	259, 452	99, 376	636, 463	230, 236	34, 857	8, 890	97, 224	394, 121	2, 776, 094
Natural-gas liquids	2, 216	81	12, 496	287	13, 405	25, 051	43, 827	24, 413	2, 031	594	2, 246	23, 932	150, 579
Total input	405, 494	70, 823	517, 678	36, 560	272, 857	124, 427	680, 290	254, 649	36, 888	9, 484	99, 470	418, 053	2, 926, 673

Output:													
Gasoline [1]	182, 851	33, 558	260, 513	17, 081	144, 520	71, 939	325, 996	131, 564	15, 495	4, 442	45, 914	178, 083	1, 411, 956
Kerosine [2]	10, 722	3, 400	24, 008	1, 935	5, 260	3, 072	37, 340	19, 370	2, 010	136	1, 013	1, 742	110, 008
Distillate fuel oil [2]	113, 982	14, 648	108, 092	9, 639	63, 186	17, 417	161, 938	53, 619	8, 010	1, 655	21, 693	57, 526	631, 405
Residual fuel oil	66, 813	6, 836	57, 383	3, 999	10, 224	7, 440	69, 805	16, 174	2, 560	953	11, 497	109, 674	363, 358
Jet fuel	1, 151	372	5, 913	417	12, 307	9, 978	13, 610	5, 833	421	1, 052	4, 859	17, 763	73, 676
Lubricating oil	6, 734	3, 884	4, 266	------	4, 280	3	19, 673	5, 547	1, 560	------	260	5, 091	51, 298
Wax [3]	1, 614	389	239	------	771	37	1, 095	626	------	------	67	414	5, 252
Coke [3]	4, 239	422	11, 457	1, 341	6, 072	429	3, 013	3, 449	1, 316	------	1, 604	4, 466	37, 808
Asphalt [3]	20, 002	3, 388	16, 273	846	9, 433	5, 058	6, 053	4, 724	4, 301	540	6, 346	12, 416	89, 380
Road oil	24	38	1, 564	148	1, 232	------	17	4	14	------	1, 678	1, 206	5, 925
Still gas [3]	16, 089	3, 877	26, 642	1, 124	11, 141	5, 790	24, 466	8, 864	1, 375	189	4, 507	21, 887	125, 951
Liquefied refinery gases	7, 962	376	4, 951	701	5, 790	3, 035	14, 477	13, 169	692	67	784	5, 619	57, 623
Miscellaneous [2]	2, 840	556	1, 478	52	1, 056	415	4, 648	2, 656	38	45	357	4, 577	18, 718
Other unfinished oils (net)	[4] 2, 988	[4] 277	418	[4] 130	[4] 358	[4] 1, 209	1, 275	[4] 2, 686	[4] 921	10	[4] 330	[4] 1, 744	[4] 32, 493
Shortage or overage	(26, 541)	(644)	(5, 519)	(593)	(2, 057)	1, 023	(3, 116)	(8, 264)	17	395	(779)	(667)	(23, 192)
Total output	405, 494	70, 823	517, 678	36, 560	272, 857	124, 427	680, 290	254, 649	36, 888	9, 484	99, 470	418, 053	2, 926, 673

[1] Includes unfinished gasoline (net).
[2] Production at natural gasoline plants shown as direct "transfers" and omitted from the input and output at refineries.
[3] Conversion factor: 280 pounds of wax to the barrel; 5.0 barrels of coke to the short ton; 5.5 barrels of asphalt to the short ton.
[4] Negative quantity; represents net excess of unfinished oils rerum over unfinished oils produced.
[5] Preliminary figures.

TABLE 46.—Petroleum refinery capacity in the United States, January 1, 1954–59

	Number of refineries				Capacity (barrels per day)			
	Operating	Shut down	Total	Building	Operating	Shut down	Total	Building
1954	308	29	337	7	7,782,103	[1] 224,794	8,006,897	397,500
1955	296	30	326	4	8,069,154	[1] 351,476	8,420,630	146,800
1956	294	24	318	2	8,380,801	[1] 251,589	8,632,390	267,000
1957	298	21	319	3	8,808,841	[1] 314,833	9,123,674	256,350
1958	288	30	318	2	8,939,907	[1] 467,800	9,407,707	185,265
1959	293	22	315	----------	9,450,741	[1] 369,105	9,819,846	108,400

[1] Includes 22,920 in 1954; 34,586 in 1955; 49,754 in 1956; 51,977 in 1957; 49,400 in 1958, and 58,400 in 1959, reported as inoperable without reconditioning.

REFINERY CAPACITY

The total crude-oil capacity of petroleum refineries in the United States on January 1, 1959, was 9,819,846 barrels daily—412,139 barrels daily more than on January 1, 1958. No new refineries were reported under construction at the beginning of the year. Approximately 83.8 percent of the total installed capacity was reported as operating on January 1, 1959.

AVIATION GASOLINE

The total demand for aviation gasoline was 98.3 million barrels in 1958—5.4 percent above 1957. Domestic demand totaled 81.4 million barrels compared with 73.4 million in 1957. Exports of aviation gasoline were 14.8 percent lower than in 1957.

Jet fuels are not included in aviation gasoline. They are reported as a separate product in another section of this chapter.

TABLE 47.—Salient statistics of aviation gasoline in the United States, 1957 total and 1958, by months

(Thousand barrels)

	1958 [1]													1957 Total
	January	February	March	April	May	June	July	August	September	October	November	December	Total	
Production, by grades:														
115–145 octane	4,102	3,458	3,812	4,161	3,868	4,336	5,243	6,191	5,492	5,262	5,032	5,334	56,291	47,263
108–135 octane	275	178	271	211	210	243	189	357	358	283	280	248	3,103	3,402
100–130 octane	2,646	2,253	2,292	2,583	2,370	2,377	2,688	2,425	2,605	2,498	2,652	2,030	29,419	34,973
91–98 octane	233	260	368	320	306	365	320	365	313	369	322	390	3,931	4,831
Other grades	251	138	250	280	363	365	404	399	384	424	273	223	3,754	3,559
Alkylate	1,798	2,365	2,143	1,953	2,508	2,312	2,180	2,390	1,990	2,007	1,905	2,465	26,016	18,298
Transfers out [2]	2,395	2,074	2,229	2,448	3,045	2,515	2,700	2,569	1,760	1,858	1,423	1,724	26,740	16,630
Exports	1,243	1,197	802	1,503	1,108	1,265	1,694	1,765	1,633	1,470	1,722	1,507	16,909	19,847
Stocks, by grades:														
115–145 octane	3,981	4,157	3,965	3,914	3,741	3,699	3,700	3,312	3,475	3,701	3,702	4,029	4,029	4,321
108–135 octane	319	353	462	390	366	366	272	275	344	355	349	329	329	323
100–130 octane	3,839	3,889	3,759	3,587	3,490	3,526	3,214	2,983	3,027	3,021	3,257	3,241	3,241	3,877
91–98 octane	701	696	726	711	681	682	660	674	678	687	720	780	780	788
Other grades	481	452	442	434	493	461	431	399	412	459	490	479	479	443
Alkylate	4,748	5,081	5,009	4,592	3,941	3,539	2,903	2,540	2,628	2,555	2,958	3,442	3,442	5,116
Domestic demand, all grades	6,466	4,822	6,370	6,292	6,388	6,657	7,723	8,790	7,368	7,301	6,621	6,635	81,433	73,416
Total demand,[3] by grades:														
115–145 octane	4,166	3,251	3,978	4,168	4,034	4,359	5,226	6,546	5,301	5,003	5,006	4,980	56,018	46,440
108–135 octane	277	142	162	282	234	243	282	353	283	268	285	266	3,077	3,292
100–130 octane	2,719	2,198	2,382	2,675	2,437	2,332	2,974	2,625	2,545	2,520	2,409	2,042	29,858	34,418
91–98 octane	318	262	335	334	333	361	342	351	308	364	288	329	3,925	4,516
Other grades	185	166	258	285	303	395	426	430	343	352	241	232	3,616	3,514
Alkylate	44	-	57	51	155	232	167	250	221	264	114	293	1,848	1,083
Production, by districts:														
District 1	592	612	635	1,067	1,002	804	1,162	1,176	1,102	871	531	807	10,361	7,154
District 2	1,083	1,293	1,274	1,165	1,334	1,605	1,482	1,634	1,624	1,595	1,566	1,429	17,084	16,320
District 3	5,823	4,717	4,988	5,127	5,199	5,217	5,866	6,656	6,141	6,142	6,190	6,128	68,194	66,747
District 4	63	79	168	86	103	77	119	111	102	128	122	113	1,271	1,472
District 5	1,744	1,951	2,071	2,063	1,987	2,295	2,395	2,550	2,173	2,107	2,055	2,213	25,604	20,633
Total	9,305	8,652	9,136	9,508	9,625	9,998	11,024	12,127	11,142	10,843	10,464	10,690	122,514	112,326
Exports, by districts:														
District 1	2	-	2	5	8	39	-	70	282	144	45	29	626	118
District 2	24	33	36	101	62	44	73	100	38	86	111	85	793	667
District 3	914	807	563	1,148	874	776	1,350	1,274	940	914	1,380	955	11,895	15,294
District 4	2	2	1	-	-	-	-	-	-	-	-	-	5	19
District 5	301	355	200	249	164	406	271	321	373	326	186	438	3,590	3,749
Total	1,243	1,197	802	1,503	1,108	1,265	1,694	1,765	1,633	1,470	1,722	1,507	16,909	19,847

See footnotes at end of table.

TABLE 47.—Salient statistics of aviation gasoline in the United States, 1957 total and 1958, by months—Continued

(Thousand barrels)

	1958 [1]													1957 Total
	January	February	March	April	May	June	July	August	September	October	November	December	Total	
Stocks, by districts:														
District 1	1,419	1,548	1,635	1,536	1,412	1,442	1,204	1,103	1,200	1,149	1,250	1,371	1,371	1,464
District 2	2,843	2,920	2,862	2,767	2,366	2,297	2,086	2,091	2,221	2,279	2,635	2,529	2,529	3,184
District 3	6,751	7,260	6,826	6,352	6,032	5,705	5,018	4,589	4,942	5,379	5,255	5,940	5,940	6,858
District 4	137	120	130	117	122	90	76	71	66	71	97	107	107	165
District 5	2,919	2,780	2,910	2,856	2,780	2,739	2,796	2,329	2,135	1,900	2,239	2,353	2,353	3,197
Total	14,069	14,628	14,363	13,628	12,712	12,273	11,180	10,183	10,564	10,778	11,476	12,300	12,300	14,868
Total demand,[3] by districts:														
District 1	231	141	204	422	319	225	615	679	652	489	180	372	4,529	5,453
District 2	928	727	725	748	975	868	941	834	871	973	733	1,006	10,329	11,158
District 3	4,909	3,494	4,581	4,794	4,502	4,782	5,751	6,144	5,149	4,992	5,733	4,692	59,523	58,327
District 4	69	69	129	72	62	100	112	102	98	105	79	85	1,082	1,259
District 5	1,572	1,588	1,533	1,759	1,638	1,947	1,998	2,796	2,231	2,212	1,618	1,987	22,879	17,066
Total demand	7,709	6,019	7,172	7,795	7,496	7,922	9,417	10,555	9,001	8,771	8,343	8,142	98,342	93,263

[1] Preliminary figures. [2] Reject material used as automotive gasoline. [3] Includes exports.

GASOLINE

The total demand for gasoline in 1958 was 1,445 million barrels, an increase of 1 percent over 1957. Domestic demand increased 1.8 percent in 1958, and exports declined 28.9 percent. Imports jumped from a daily average of 8,000 barrels in 1957 to 34,000 barrels in 1958. All figures for aviation gasoline and naphtha are included under total gasoline.

Production.—Gasoline production in 1958 totaled 1,422.8 million barrels—1,261.4 million barrels from crude oil and 161.4 million barrels from natural-gas liquids blended at refineries and outside refineries.

Yields.—Refiners maintained a high-percentage yield of gasoline from crude oil throughout most of 1958. The monthly yield was highest in July when it reached 46.4 percent. The yield for the year was 44.9 percent, compared with 43.8 percent in 1957.

TABLE 48.—Salient statistics of gasoline in the United States, 1956 total and 1957, by months

(Thousand barrels)

	1957						
	Jan.	Feb.	Mar.	Apr.	May	June	July
Production:							
Finished gasoline and naphtha from crude oil	109, 269	95, 032	103, 407	99, 193	107, 358	104, 894	107, 245
Unfinished gasoline (net)	143	82	334	−418	−728	36	−852
Natural-gas liquids used at refineries	12, 702	10, 974	12, 296	11, 836	12, 158	11, 506	12, 414
Sold to jobbers	1, 559	2, 128	2, 552	2, 498	1, 962	3, 059	1, 693
Total production	123, 673	108, 216	118, 589	113, 109	120, 750	119, 495	120, 500
Daily average	3, 989	3, 864	3, 825	3, 770	3, 895	3, 983	3, 887
Imports	161	84	141	251	6	136	141
Exports	4, 204	3, 960	4, 325	2, 787	2, 895	3, 187	2, 492
Daily average	135	141	139	92	93	106	80
Stocks, end of period:							
Finished gasoline	184, 942	192, 428	193, 540	188, 649	183, 064	177, 997	166, 654
Unfinished gasoline	12, 760	12, 842	13, 176	12, 758	12, 030	12, 066	11, 214
Total stocks	197, 702	205, 270	206, 716	201, 407	195, 094	190, 063	177, 868
Domestic demand	109, 199	96, 772	112, 959	115, 882	124, 174	121, 475	130, 344
Daily average	3, 523	3, 456	3, 644	3, 863	4, 006	4, 049	4, 205

	1957						1956 Total
	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
Production:							
Finished gasoline and naptha from crude oil	112, 109	109, 264	107, 041	102, 323	110, 204	1, 267, 339	1, 258, 494
Unfinished gasoline (net)	7	−589	282	376	−767	−2, 094	3, 231
Natural-gas liquids used at refineries	13, 171	13, 193	13, 424	13, 224	13, 192	150, 090	135, 062
Sold to jobbers	2, 542	1, 054	1, 332	1, 050	1, 376	22, 805	32, 020
Total production	127, 829	122, 922	122, 079	116, 973	124, 005	1, 438, 140	1, 428, 807
Daily average	4, 123	4, 097	3, 938	3, 899	4, 000	3, 940	3, 903
Imports	483	585	255	282	381	2, 906	1, 682
Exports	3, 403	3, 311	2, 712	3, 315	1, 997	38, 588	35, 572
Daily average	109	110	87	110	64	106	97
Stocks, end of period:							
Finished gasoline	162, 810	170, 056	169, 988	175, 851	186, 253	186, 253	174, 654
Unfinished gasoline	11, 221	10, 632	10, 914	11, 290	10, 523	10, 523	12, 617
Total stocks	174, 031	180, 688	180, 902	187, 141	196, 776	196, 776	187, 271
Domestic demand	128, 746	113, 539	119, 408	107, 701	112, 754	1, 392, 953	1, 373, 079
Daily average	4, 153	3, 785	3, 852	3, 590	3, 637	3, 816	3, 751

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TABLE 49.—Salient statistics of gasoline in the United States, 1957 total and 1958,[1] by months

(Thousand barrels)

	1958						
	Jan.	Feb.	Mar.	Apr.	May	June	July
Production:							
Finished gasoline and naphtha from crude oil	106,713	93,102	99,915	95,181	102,331	104,899	112,043
Unfinished gasoline (net)	−263	1,214	104	−107	231	−891	185
Natural-gas liquids used at refineries	12,192	11,151	11,132	11,680	11,164	11,594	12,285
Sold to jobbers	623	634	1,696	931	1,383	1,263	1,700
Total production	119,265	106,101	112,847	107,685	115,109	116,865	126,213
Daily average	3,847	7,789	3,640	3,590	3,713	3,896	4,071
Imports	407	353	581	954	1,031	1,741	1,624
Exports	2,052	2,123	1,739	2,527	2,155	2,074	2,505
Daily average	66	76	56	84	70	69	81
Stocks, end of period:							
Finished gasoline	196,855	204,456	207,127	194,869	183,486	175,465	169,709
Unfinished gasoline	10,260	11,474	11,578	11,471	11,702	10,811	10,996
Total stocks	207,115	215,930	218,705	206,340	195,188	186,276	180,705
Domestic demand	107,281	95,516	108,914	118,477	125,137	125,444	130,903
Daily average	3,461	3,411	3,513	3,949	4,037	4,181	4,223

	1958						1957 total
	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
Production:							
Finished gasoline and naphtha from crude oil	113,128	106,263	105,408	106,335	114,348	1,259,666	1,267,339
Unfinished gasoline (net)	224	−258	1,582	142	−452	1,711	−2,094
Natural-gas liquids used at refineries	13,179	13,323	13,912	14,355	14,612	150,579	150,090
Sold to jobbers	1,256	682	637	45	29	10,879	22,805
Total production	127,787	120,010	121,539	120,877	128,537	1,422,835	1,438,140
Daily average	4,122	4,000	3,921	4,029	4,146	3,898	3,940
Imports	1,335	889	730	813	2,114	12,572	2,906
Exports	2,551	2,524	2,389	2,649	2,160	27,448	38,588
Daily average	82	84	77	88	70	75	106
Stocks, end of period:							
Finished gasoline	166,131	164,375	157,576	165,888	174,526	174,526	186,253
Unfinished gasoline	11,220	10,962	12,544	12,686	12,234	12,234	10,523
Total stocks	177,351	175,337	170,120	178,574	186,760	186,760	196,776
Domestic demand	129,925	120,389	125,097	110,587	120,305	1,417,975	1,392,953
Daily average	4,191	4,013	4,035	3,686	3,881	3,885	3,816

[1] Preliminary figures.

TABLE 50.—Production of gasoline in the United States in 1958, by districts and months

(Thousand barrels)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Gasoline from crude oil (excludes net unfinished):													
East Coast	15,352	12,904	14,423	13,822	15,480	14,280	15,444	15,987	15,626	14,500	14,329	17,288	179,435
Appalachian	2,777	2,544	2,551	2,269	2,548	2,948	2,895	3,062	2,848	2,878	2,727	2,938	32,985
Indiana, Illinois, Kentucky, etc.	20,715	18,363	19,887	18,453	20,556	20,567	21,561	21,486	20,939	19,871	20,684	21,599	244,681
Minnesota, Wisconsin, etc.	1,565	1,400	1,304	1,432	1,464	1,566	1,612	1,663	917	790	1,467	1,620	16,800
Oklahoma, Kansas, etc.	11,605	9,923	9,475	9,300	11,224	11,505	11,916	12,075	10,661	10,242	10,149	11,740	129,815
Texas Inland	3,889	3,505	3,242	3,325	3,447	3,781	4,108	3,895	3,281	3,744	3,858	4,038	44,113
Texas Gulf Coast	23,529	19,997	21,328	21,238	21,745	21,810	24,215	24,689	22,902	24,325	23,856	25,065	274,699
Louisiana Gulf Coast	8,473	7,698	8,472	7,579	7,729	8,962	9,494	9,500	9,442	9,117	8,948	8,934	104,348
Arkansas, Louisiana Inland, etc.	1,068	797	1,330	1,231	1,085	1,047	1,244	1,062	905	1,010	989	1,183	12,951
New Mexico	301	210	192	400	409	354	255	353	342	316	338	343	3,813
Rocky Mountain	3,677	3,493	3,564	2,818	3,241	3,801	4,015	3,943	3,671	3,710	3,755	3,715	43,403
West Coast	12,189	10,691	12,342	11,354	11,758	12,375	13,431	13,552	12,823	13,006	13,207	13,734	150,462
Total gasoline	105,140	91,525	98,110	93,221	100,686	102,996	110,190	111,267	104,357	103,509	104,307	112,197	1,237,505
Naphtha:													
East Coast	113	84	99	308	135	138	136	142	142	177	152	101	1,727
Appalachian	46	37	105	24	65	58	42	70	48	31	45	26	597
Indiana, Illinois, Kentucky, etc.	102	210	232	225	192	304	250	285	318	228	293	261	2,900
Minnesota, Wisconsin, etc.													
Oklahoma, Kansas, etc.	88	87	98	128	99	121	133	132	83	118	87	132	1,306
Texas Inland	45	41	37	70	63	69	43	82	52	82	75	62	721
Texas Gulf Coast	620	614	696	645	699	654	612	629	758	727	799	855	8,308
Louisiana Gulf Coast	215	239	210	246	113	170	217	186	228	216	252	237	2,529
Arkansas, Louisiana Inland, etc.	70	54	51	50	64	58	42	34	34	47	42	34	580
New Mexico	18	12	4	50	15	13							112
Rocky Mountain	10	8	7	1	25	24	15	23	19	8	7	13	160
West Coast	246	191	266	213	175	294	363	278	224	265	276	430	3,221
Total naphtha	1,573	1,577	1,805	1,960	1,645	1,903	1,853	1,861	1,906	1,899	2,028	2,151	22,161
Total gasoline and naphtha from crude	106,713	93,102	99,915	95,181	102,331	104,899	112,043	113,128	106,263	105,408	106,335	114,348	1,259,666

TABLE 50.—Production of gasoline in the United States in 1958, by districts and months—Continued

(Thousand barrels)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Unfinished gasoline (net):													
East Coast	−40	190	−86	−678	−417	367	107	−97	−26	112	15	26	−527
Appalachian	90	76	1	61	−11	−86	−34	−43	−43	−50	−18	−48	−105
Indiana, Illinois, Kentucky, etc	−13	271	226	−62	−73	−192	−99	390	−137	316	111	−302	436
Minnesota, Wisconsin, etc	−6	3	−3	1			−1		1	−1	1	−1	−6
Oklahoma, Kansas, etc	−47	26	−65	−2	107	−147	157	35	−24	28	−104	30	−6
Texas Inland	18	134	237	146	55	130	174	94	351	81	302	332	2,054
Texas Gulf Coast	−173	299	37	−22	354	−776	−5	−101	−305	493	−365	−274	−838
Louisiana Gulf Coast	−40	149	−64	43	241	−136	6	−53	−172	229	17	54	274
Arkansas, Louisiana Inland, etc				−60	23	3	−22	−29	8	15	12	−17	−67
New Mexico				−11	−7	−6	−15	−8	−9	−9	−6	−6	−77
Rocky Mountain	−31	83	−51	23	−25	20	−19	20	−16	52	−11	60	105
West Coast	−21	−17	−128	454	−16	−68	−64	16	114	316	188	−306	468
Total unfinished gasoline (net)	−263	1,214	104	−107	231	−891	185	224	−258	1,582	142	−452	1,711
Percent yield of gasoline and naphtha [1]	44.5	44.3	44.4	44.3	45.0	45.8	46.4	46.0	44.5	44.1	45.1	44.5	44.9
Natural gas liquids blended at refineries	12,192	11,151	11,132	11,680	11,164	11,594	12,285	13,179	13,323	13,912	14,355	14,612	150,579
Total refinery production:													
East Coast	15,590	13,275	14,530	13,632	15,371	14,938	15,849	16,182	15,884	15,000	14,752	17,848	182,851
Appalachian	2,914	2,657	2,657	2,355	2,605	2,927	2,920	3,115	2,873	2,865	2,754	2,916	33,558
Indiana, Illinois, Kentucky, etc	21,981	19,824	21,111	19,303	21,665	21,568	22,578	23,277	22,184	21,785	22,356	22,881	260,513
Minnesota, Wisconsin, etc	1,577	1,420	1,304	1,465	1,482	1,591	1,644	1,684	938	800	1,508	1,668	17,081
Oklahoma, Kansas, etc	12,912	11,036	10,539	10,353	12,287	12,489	13,229	13,303	12,035	11,575	11,506	13,256	144,520
Texas Inland	5,964	5,452	5,647	5,597	5,229	5,787	6,544	6,418	6,059	6,126	6,414	6,702	71,939
Texas Gulf Coast	26,989	24,203	25,214	24,869	26,018	25,181	28,474	29,521	27,304	29,699	28,762	29,762	325,996
Louisiana Gulf Coast	10,821	9,959	10,412	10,010	10,036	10,859	11,686	11,440	11,504	11,735	11,546	11,556	131,564
Arkansas, Louisiana Inland, etc	1,180	878	1,437	1,581	1,307	1,251	1,415	1,248	1,106	1,301	1,294	1,497	15,495
New Mexico	351	254	227	497	465	406	288	401	394	375	386	398	4,442
Rocky Mountain	3,858	3,765	3,569	3,041	3,412	4,038	4,180	4,152	3,899	4,011	3,955	4,034	45,914
West Coast	14,505	12,744	14,504	14,051	13,849	14,567	15,706	15,790	15,148	15,630	15,599	15,990	178,083
Total 1958	118,642	105,467	111,151	106,754	113,726	115,602	124,513	126,531	119,328	120,902	120,832	128,508	1,411,956
Natural-gas liquids used in other gasoline blends [2]	623	634	1,696	931	1,383	1,263	1,700	1,256	682	637	45	29	10,879
Total gasoline production	119,265	106,101	112,847	107,685	115,109	116,865	126,213	127,787	120,010	121,539	120,877	128,537	1,422,835

[1] Based on crude runs to stills adjusted for net stocks of unfinished oils.

[2] This represents a net figure and includes exports.

Domestic Demand.—Domestic demand for gasoline and naphtha in 1958 totaled 1,418.0 million barrels, 1.8 percent higher than in 1957. Civilian highway use of gasoline, as computed from data compiled by the Bureau of Public Roads, accounted for 1,227.7 million barrels or 86.6 percent of the total demand in 1958, compared with 85.8 percent in 1957. Aviation gasoline represented 5.7 percent of the total domestic demand. The balance, 108.9 million barrels or 7.7 percent, was considered as used for nonhighway motor vehicles, military motor vehicles, stationary and marine engines, and losses.

Production and Consumption by States.—Table 52, which shows gasoline production and consumption by States, indicates the areas of surplus production and deficit supply. Refinery-production data compiled by the Bureau of Mines do not include natural-gas liquids blended outside of refineries. Consumption data by States, compiled by the American Petroleum Institute, exclude commercial naphthas and offshore military shipments. These omissions roughly offset each other.

District 1 (Atlantic Coast States and West Virginia) produced 197 million barrels of gasoline and consumed 479 million in 1958. District 3 supplied most of the deficit in District 1, shipping 224 million barrels to that area by water, 46 million by pipeline and approximately 2 million by rail. District 1 also received about 6 million barrels from District 2 by lake, barge, and rail and, in turn, shipped to District 2 about 4 million barrels by pipeline and rail. District 1 also imported about 4 million barrels of gasoline from Puerto Rico.

District 2 (refinery districts Appalachian 2 in eastern Ohio, Indiana-Illinois, Minnesota-Wisconsin, and Oklahoma-Kansas) produced 441 million barrels and consumed 502 million. Shipments by pipeline, barge, and rail, principally from District 3, supplied the deficit.

District 3 (Texas, Louisiana, Mississippi, Alabama, and New Mexico) produced 354 million barrels more than it consumed. The surplus production was used to supply other refining districts and for export.

District 4 (States in the Rocky Mountain region, excluding New Mexico) produced 46 million barrels of gasoline and consumed 42 million. Net pipeline shipments from the district were 3 million barrels; the rest of the surplus was shipped from the district by rail and truck.

District 5 (States on the west coast, Arizona, and Nevada) produced 178 million and consumed 190 million barrels of gasoline. Pipeline receipts of gasoline from other districts totaled 11 million barrels (5 million from District 3 and 6 million from District 4). Shipments of gasoline from District 5 to other districts by rail and truck totaled about 1 million barrels.

Method of Distribution.—Gasoline deliveries by pipeline totaled 659 million barrels, or 70 percent of the volume of product pipeline shipments in 1958. Waterborne shipments of gasoline totaled approximately 282 million barrels. Coastwise shipments (from gulf-coast ports to the Atlantic seaboard) were 224 million barrels, and shipments by barge on the Mississippi and Ohio rivers accounted for 58 million barrels. Tanker shipments of gasoline from gulf-coast ports to the west coast were less than 1 million barrels in 1958. Data on the intradistrict shipments of gasoline by waterways is not available but the volume is presumed to be large.

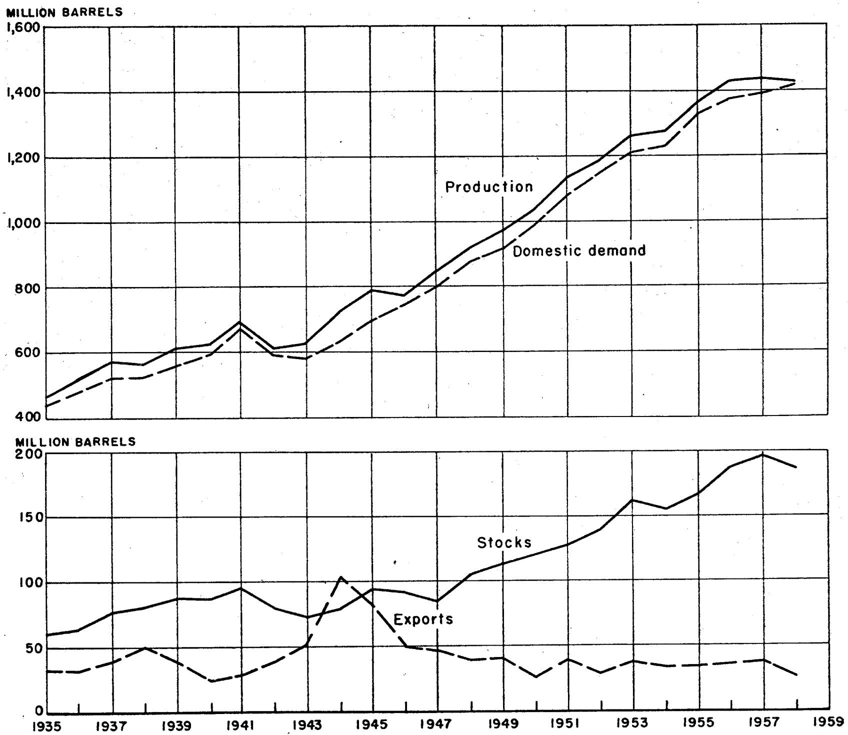

FIGURE 7.—Production, domestic demand, exports, and stocks of gasoline in the United States, 1935–58.

TABLE 51.—Production (refinery output) and consumption of gasoline in the United States, 1956–58, by States

(Thousand barrels)

	1956		1957		1958 [1]	
	Production [2]	Consumption [3]	Production [2]	Consumption [3]	Production [2]	Consumption [3]
Alabama	(4)	21,115	(4)	21,696	(4)	22,517
Arizona	----------	9,295	----------	9,996	----------	10,773
Arkansas	11,251	13,154	11,399	13,039	11,158	13,565
California	[5] 177,820	126,991	[5] 183,980	130,041	178,083	136,738
Colorado	5,283	15,194	5,303	15,782	5,564	16,289
Connecticut	----------	16,513	----------	17,277	----------	17,593
Delaware	(6)	3,703	(6)	4,398	(6)	4,463
District of Columbia	----------	4,863	----------	4,715	----------	4,716
Florida	26	36,516	----------	39,860	----------	41,955
Georgia	[7] 9,597	27,842	[7] 10,922	28,452	[7] 6,306	29,354
Idaho	----------	6,082	----------	6,192	----------	6,462
Illinois	105,065	67,005	99,437	69,283	104,299	70,261
Indiana	65,997	40,898	68,463	40,951	69,340	40,715
Iowa	----------	26,632	----------	26,831	----------	27,994
Kansas	52,408	24,752	56,511	24,642	56,752	24,772
Kentucky	[8] 12,673	19,470	[8] 14,877	20,583	[8] 15,086	20,746
Louisiana	[4] 129,905	20,872	[4] 128,381	21,651	[4] 135,901	22,392
Maine	----------	7,133	----------	7,465	----------	7,636
Maryland	(7)	19,525	(7)	19,886	(7)	20,484
Massachusetts	[6] 7,163	30,141	[6] 21,086	31,569	[6] 22,668	32,252
Michigan	19,502	59,179	19,525	61,069	18,294	61,362
Minnesota	7,399	28,625	8,423	29,517	8,921	31,059
Mississippi	(4)	14,525	(4)	14,391	(4)	14,809
Missouri	[9] 12,255	38,140	[9] 12,967	38,176	[9] 14,993	39,291
Montana	9,621	6,929	9,856	6,906	9,518	6,966
Nebraska	(9)	13,548	(9)	13,844	(9)	14,214
Nevada	----------	3,074	----------	3,221	----------	3,285
New Hampshire	----------	4,396	----------	4,692	----------	4,694
New Jersey	54,286	43,955	54,220	44,054	59,162	45,417
New Mexico	4,583	8,919	5,081	9,642	4,442	10,573
New York	14,668	88,334	15,220	93,428	14,040	95,255
North Carolina	----------	31,235	----------	31,817	----------	32,587
North Dakota	[10] 7,811	7,250	[10] 8,059	7,482	[10] 8,160	7,646
Ohio	79,866	73,109	73,645	74,502	72,578	74,309
Oklahoma	73,812	22,469	74,421	22,372	72,775	23,991
Oregon	----------	15,267	----------	15,086	----------	15,376
Pennsylvania	95,984	71,172	93,139	74,133	94,396	75,604
Rhode Island	(6)	5,591	(6)	5,769	(6)	5,861
South Carolina	(7)	15,813	(7)	16,039	(7)	16,436
South Dakota	----------	7,777	----------	7,983	----------	8,163
Tennessee	(8)	24,690	(8)	25,353	(8)	26,392
Texas	407,222	107,045	407,093	105,079	397,935	112,030
Utah	15,085	7,210	15,678	7,444	14,573	7,782
Vermont	----------	2,898	----------	2,947	----------	3,006
Virginia	(7)	28,545	(7)	29,524	(7)	30,098
Washington	(5)	22,176	(5)	22,714	(5)	24,047
West Virginia	981	11,491	839	11,959	753	11,830
Wisconsin	(10)	28,909	(10)	29,604	(10)	30,640
Wyoming	16,524	3,900	16,810	3,983	16,259	4,036
Total	1,396,787	1,333,867	1,415,335	[11] 1,367,039	1,411,956	1,408,436

1 Preliminary figures.
2 Excludes jet fuel.
3 American Petroleum Institute.
4 Alabama and Mississippi included with Louisiana.
5 Washington included with California.
6 Delaware and Rhode Island included with Massachusetts.
7 Maryland, South Carolina, and Virginia included with Georgia.
8 Tennessee included with Kentucky.
9 Missouri included with Nebraska.
10 North Dakota included with Wisconsin.
11 Revised.

TABLE 52.—Transportation of petroleum products by pipeline in 1957–58, by months

(Thousand barrels)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
1957													
Turned into lines:[1]													
Gasoline	50,011	45,749	53,986	51,411	55,764	55,771	58,071	58,954	53,120	56,489	51,771	50,920	645,017
Kerosine	4,191	3,565	2,948	2,595	1,825	1,765	2,077	2,281	2,773	4,177	4,584	5,659	38,440
Distillate fuel oil	25,278	19,901	15,722	14,119	11,625	13,562	13,241	13,090	15,228	16,405	18,537	23,958	200,666
Liquefied petroleum gases	1,711	1,502	1,111	1,151	1,162	1,151	1,312	1,262	1,470	1,545	1,781	2,456	17,614
Delivered from lines:[1]													
Gasoline	49,109	44,722	52,992	51,683	56,333	55,623	58,842	59,758	55,268	56,855	51,870	51,606	644,661
Kerosine	4,927	3,638	3,100	2,705	1,593	1,486	1,943	2,049	2,451	3,721	4,506	5,529	37,648
Distillate fuel oil	26,632	21,584	17,679	14,287	11,039	11,604	12,205	11,930	14,473	15,537	19,110	23,937	200,017
Liquefied petroleum gases	1,780	1,385	1,155	1,088	1,093	1,020	1,113	1,102	1,352	1,457	1,700	2,261	16,506
Shortage (or overage):[2]													
Gasoline	127	17	(115)	15	73	165	----------	(158)	(162)	99	(146)	(42)	(127)
Kerosine	96	86	81	60	64	59	73	73	43	68	76	95	874
Distillate fuel oil	12	----------	(3)	19	8	15	3	43	100	44	92	103	436
Liquefied petroleum gases	67	52	19	42	27	13	12	51	50	54	62	79	528
Stocks in lines and working tanks at end of month:													
Gasoline	21,162	22,172	23,281	22,994	22,352	22,335	21,564	20,918	21,932	21,467	21,514	20,870	20,870
Kerosine	1,822	1,663	1,430	1,260	1,428	1,648	1,709	1,868	2,147	2,535	2,537	2,572	2,572
Distillate fuel oil	11,997	10,314	8,360	8,173	8,751	10,694	11,727	12,844	13,499	14,323	13,658	13,576	13,576
Liquefied petroleum gases	825	890	827	848	890	1,008	1,195	1,304	1,372	1,406	1,425	1,541	1,541

1958													
Turned into lines:[1]													
Gasoline	51,433	45,087	53,616	53,603	56,206	58,355	58,493	58,928	55,712	56,781	55,339	55,381	658,934
Kerosine	5,581	4,723	4,423	3,141	2,579	1,828	2,756	3,156	3,272	4,265	4,013	6,338	46,075
Distillate fuel oil	23,478	19,895	17,931	13,329	11,986	13,264	14,045	14,474	15,946	16,282	17,965	26,356	204,951
Liquefied petroleum gases	2,634	2,357	2,437	2,158	2,266	2,442	3,022	2,727	3,397	3,226	3,111	4,564	34,341
Delivered from lines:[1]													
Gasoline	49,922	43,711	52,955	53,073	56,912	58,585	58,808	59,035	56,505	57,956	54,768	56,415	658,645
Kerosine	5,847	5,243	4,243	3,094	2,405	1,832	2,231	2,823	3,024	3,961	4,363	5,970	45,036
Distillate fuel oil	24,881	22,698	18,893	13,618	11,113	11,598	12,523	13,085	14,257	16,004	17,577	28,381	204,628
Liquefied petroleum gases	2,630	2,474	2,561	2,154	2,205	2,334	2,961	2,565	3,273	2,622	3,142	4,505	33,426
Shortage (or overage):[2]													
Gasoline	(34)	14	(520)	(109)	(16)	(47)	(38)	1	(41)	(34)	(90)	43	(871)
Kerosine	104	104	94	75	69	58	65	84	67	76	103	85	984
Distillate fuel oil	71	58	101	81	79	83	101	108	96	114	91	(41)	942
Liquefied petroleum gases	58	51	58	38	44	13	40	42	23	52	53	50	522
Stocks in lines and working tanks at end of month:													
Gasoline	22,415	23,777	24,958	25,597	24,907	24,724	24,447	24,339	23,587	22,446	23,107	22,030	22,030
Kerosine	2,202	1,578	1,664	1,636	1,741	1,679	2,130	2,388	2,569	2,797	2,344	2,627	2,627
Distillate fuel oil	12,102	9,241	8,178	7,808	8,602	10,185	11,606	12,887	14,480	14,644	14,941	12,957	12,957
Liquefied petroleum gases	1,487	1,519	1,137	1,103	1,120	1,215	1,236	1,356	1,457	2,009	1,925	1,934	1,934

[1] The quantities "Turned into lines" and "Delivered from lines" are on a net basis, eliminating intersystem transfers, and are not comparable with data published for previous years.

[2] Figures in parentheses represent overage.

TABLE 53.—Transportation of petroleum products by pipeline between PAD districts in the United States in 1957–58, by months

(Thousand barrels)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
1957													
From District 1 to District 2:													
Gasoline	398	347	456	474	343	352	473	380	441	465	527	416	5,072
Kerosine	-	6	5	9	-	-	-	6	2	8	-	13	49
Distillate fuel oil	36	42	7	21	-	12	5	51	12	32	-	34	252
From District 2 to District 3:													
Gasoline	838	749	872	1,058	1,270	1,459	1,626	1,391	1,302	1,143	962	1,049	13,719
Kerosine	-	-	-	-	-	-	-	-	-	-	-	2	2
Distillate fuel oil	852	672	790	380	296	364	366	550	593	735	725	717	7,040
From District 3 to District 1:													
Gasoline	3,472	3,486	3,856	3,399	3,910	3,945	3,673	3,907	3,725	3,720	3,952	3,628	44,673
Kerosine	1,422	782	622	430	287	356	647	532	684	682	811	1,235	8,490
Distillate fuel oil	1,094	1,256	886	718	696	682	979	865	950	975	920	1,400	11,421
From District 3 to District 2:													
Gasoline	2,812	2,470	3,623	2,751	3,645	3,518	3,579	3,431	3,448	3,194	2,711	2,624	37,806
Kerosine	173	117	105	77	48	85	40	45	52	104	121	226	1,193
Distillate fuel oil	879	838	566	652	344	456	395	804	675	803	953	1,057	8,422
From District 3 to District 4:													
Gasoline	248	224	267	234	260	307	304	269	332	289	303	284	3,321
Kerosine	24	28	10	12	12	7	4	6	11	15	13	24	166
Distillate fuel oil	17	15	24	21	23	20	22	24	17	8	39	19	249
From District 3 to District 5:													
Gasoline	382	328	396	382	372	325	341	339	361	406	354	376	4,362
Kerosine	-	-	-	-	1	1	1	1	1	1	1	91	98
Distillate fuel oil	32	52	46	52	23	47	29	53	39	31	46	51	501
From District 4 to District 5:													
Gasoline	545	462	508	556	534	475	580	587	548	609	564	528	6,496
Kerosine [1]	18	49	68	91	76	72	147	89	125	141	129	132	1,137
Distillate fuel oil	395	491	414	349	234	271	332	323	336	302	401	396	4,244
1958													
From District 1 to District 2:													
Gasoline	371	280	263	379	125	343	271	234	308	339	257	199	3,369
Kerosine	9	8	18	5	-	21	8	13	-	-	2	-	84
Distillate fuel oil	45	35	30	20	46	22	27	13	-	21	21	32	312
From District 2 to District 3:													
Gasoline	1,164	911	1,036	860	1,212	1,422	1,087	1,179	931	941	1,078	1,059	12,880
Kerosine	-	-	-	-	-	-	-	-	-	-	-	-	-
Distillate fuel oil	479	401	147	254	137	129	217	201	441	452	664	716	4,238

From District 3 to District 1:													
Gasoline	3,408	2,834	4,024	3,686	4,038	4,075	3,779	4,095	3,952	4,070	4,023	3,829	45,813
Kerosine	1,235	1,493	764	622	437	372	381	732	651	1,082	1,079	1,248	10,096
Distillate fuel oil	1,312	1,395	1,537	1,100	693	696	909	1,019	1,198	1,164	1,007	1,382	13,412
From District 3 to District 2:													
Gasoline	2,360	2,336	3,467	3,362	3,192	2,876	3,237	2,975	2,777	3,072	3,101	2,887	35,642
Kerosine	181	171	115	89	85	27	50	80	200	195	151	169	1,513
Distillate fuel oil	1,236	737	701	732	429	422	503	814	728	773	628	1,049	8,752
From District 3 to District 4:													
Gasoline	251	244	186	210	227	306	308	214	258	255	235	229	2,923
Kerosine [1]	24	16	12	16	24	1	1	----	8	46	----	1	149
Distillate fuel oil	18	19	30	27	26	26	26	35	35	38	40	43	363
From District 3 to District 5:													
Gasoline	401	368	378	385	379	351	431	447	403	412	483	545	4,983
Kerosine [1]	157	152	163	191	242	191	212	146	228	60	1	1	1,744
Distillate fuel oil	57	43	55	53	58	38	52	42	42	53	50	55	598
From District 4 to District 5:													
Gasoline	517	509	465	480	422	499	513	426	603	429	424	520	5,807
Kerosine [1]	143	56	172	91	76	96	124	79	98	83	178	142	1,338
Distillate fuel oil	380	281	218	186	156	126	223	213	198	304	254	366	2,905

[1] Jet fuel.

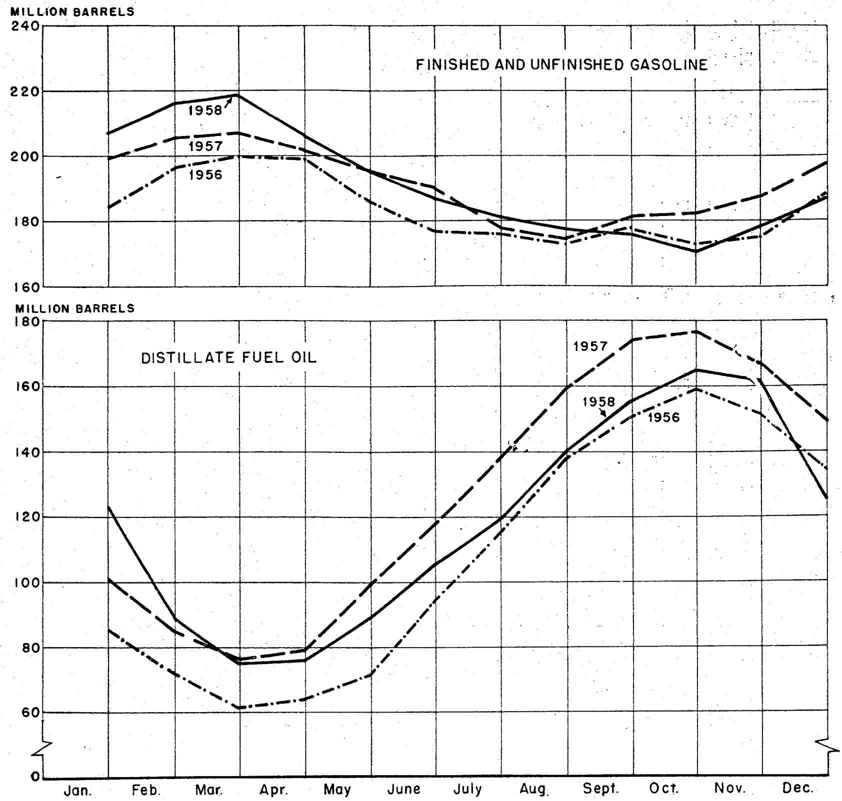

FIGURE 8.—Stocks of finished and unfinished gasoline and stocks of distillate fuel oil in the United States, 1956–58, by months.

Stocks.—Stocks of finished gasoline, as reported, include those held at refineries, at bulk terminals, and in pipelines but do not include those held by secondary distributors, by consumers, or in military custody. The Bureau of Mines definition of a bulk-terminal installation is any storage facility that receives its principal products by tanker, barge, or pipeline or any storage point with a combined capacity for storing gasoline, kerosine, distillate fuel oil, residual fuel oil, or jet fuels of 50,000 barrels or more, regardless of transportation means by which products are received.

There are definite normal seasonal variations in gasoline storage because of a summer peak and a winter low in gasoline demand. These stocks build up in the winter, although refinery yields are lower, and decrease sharply during the summer. This variation in stocks makes unnecessary large varations in seasonal yields of gasoline from crude oil. Distillate fuel oil follows the exact reverse of this pattern, as demand is high in winter and low in summer.

Total stocks of gasoline declined 10 million barrels in 1957. Except for June, end-of-month stocks of gasoline during the first 8 months of 1958 were above those for the same months of 1957. A high demand during the last 4 months of 1958 reduced stocks of gasoline, so that at the end of the year the estimated supply on hand was 55.6 days compared with 61.9 days on December 31, 1957.

TABLE 54.—Stocks of gasoline in the United States in 1958, by districts and months

(Thousand barrels)

	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
Finished gasoline: [1]												
East Coast	42,105	40,794	46,238	44,502	43,709	41,632	40,343	38,494	38,669	38,092	40,183	39,478
Appalachian	7,926	7,716	7,576	7,287	6,946	7,302	6,824	6,775	6,892	6,596	7,138	6,831
Indiana, Illinois, Kentucky, etc	35,231	37,888	40,525	37,227	34,962	33,301	31,972	31,403	30,405	27,190	28,610	30,051
Minnesota, Wisconsin, North Dakota, and South Dakota	6,982	6,833	6,976	6,584	6,453	7,298	6,810	6,905	6,997	6,483	7,158	6,723
Oklahoma, Kansas, etc	18,934	20,426	20,272	18,444	17,127	15,881	16,526	16,934	16,641	15,677	15,892	17,941
Texas Inland	8,181	8,771	8,002	7,225	6,584	6,255	6,271	6,400	6,252	6,173	6,779	7,000
Texas Gulf Coast	27,318	28,913	25,670	23,911	21,664	19,598	19,194	19,625	18,867	19,452	19,858	22,092
Louisiana Gulf Coast	11,823	12,734	11,535	11,164	9,443	9,306	8,578	8,323	9,331	9,277	9,663	10,580
Arkansas, Louisiana Inland, etc	4,551	5,715	5,169	5,198	4,875	4,785	4,830	5,167	4,874	4,353	4,436	5,099
New Mexico	463	425	323	559	628	501	431	451	496	547	673	732
Other Rocky Mountain	6,793	7,581	7,994	7,090	6,575	6,145	5,347	4,528	4,194	4,057	4,682	5,183
West Coast	26,548	26,660	26,847	25,678	24,520	23,461	22,583	21,126	20,757	19,679	20,816	22,816
Total finished gasoline	196,855	204,456	207,127	194,869	183,486	175,465	169,709	166,131	164,375	157,576	165,888	[2] 174,526
Unfinished gasoline:												
East Coast	1,539	1,851	1,846	1,381	1,334	1,532	1,638	1,650	1,642	1,858	1,872	1,979
Appalachian	174	170	137	156	231	198	217	204	231	226	244	227
Indiana, Illinois, Kentucky, etc	1,491	1,842	2,102	2,082	1,923	1,678	1,526	1,886	1,679	1,950	2,025	1,692
Minnesota, Wisconsin, North Dakota, and South Dakota	1	4	1	2	2	2	1	1	2	1	2	1
Oklahoma, Kansas, etc	664	690	625	623	730	583	740	775	751	779	675	705
Texas Inland	283	308	400	373	298	363	365	294	454	263	324	413
Texas Gulf Coast	3,221	3,518	3,649	3,437	3,568	2,990	3,134	3,048	2,849	3,536	3,349	3,237
Louisiana Gulf Coast	434	572	478	567	791	691	726	714	609	812	893	947
Arkansas, Louisiana Inland, etc	1	1	1	45	68	71	44	15	23	38	50	33
New Mexico	----	----	----	10	15	20	15	10	10	10	10	10
Other Rocky Mountain	164	247	196	198	161	170	141	158	133	176	159	213
West Coast	2,288	2,271	2,143	2,597	2,581	2,513	2,449	2,465	2,579	2,895	3,083	2,777
Total unfinished gasoline	10,260	11,474	11,578	11,471	11,702	10,811	10,996	11,220	10,962	12,544	12,686	12,234

See footnotes at end of table.

TABLE 54.—Stocks of gasoline in the United States in 1958, by districts and months—Continued

(Thousand barrels)

	Jan. 31	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31
Total finished and unfinished gasoline:												
East Coast	43,644	42,645	48,084	45,883	45,043	43,164	41,981	40,144	40,311	39,950	42,055	41,457
Appalachian	8,100	7,886	7,713	7,443	7,177	7,500	7,041	6,979	7,123	6,822	7,382	7,058
Indiana, Illinois, Kentucky, etc	36,722	39,730	42,627	39,309	36,885	34,979	33,498	33,289	32,084	29,140	30,635	31,743
Minnesota, Wisconsin, North Dakota, and South Dakota	6,983	6,837	6,977	6,586	6,455	7,300	6,811	6,906	6,999	6,484	7,160	6,724
Oklahoma, Kansas, etc	19,598	21,116	20,897	19,067	17,857	16,464	17,266	17,709	17,392	16,456	16,567	18,646
Texas Inland	8,464	9,079	8,402	7,598	6,882	6,618	6,636	6,694	6,706	6,436	7,103	7,413
Texas Gulf Coast	30,539	32,431	29,319	27,348	25,232	22,588	22,328	22,673	21,716	22,988	23,207	25,329
Louisiana Gulf Coast	12,257	13,306	12,013	11,731	10,234	9,997	9,304	9,037	9,940	10,089	10,556	11,527
Arkansas, Louisiana Inland, etc	4,552	5,716	5,170	5,243	4,943	4,856	4,874	5,182	4,897	4,391	4,486	5,132
New Mexico	463	425	323	569	643	521	446	461	506	557	683	742
Other Rocky Mountain	6,957	7,828	8,190	7,288	6,736	6,315	5,488	4,686	4,327	4,233	4,841	5,396
West Coast	28,836	28,931	28,990	28,275	27,101	25,974	25,032	23,591	23,336	22,574	23,899	25,593
Total: 1958	207,115	215,930	218,705	206,340	195,188	186,276	180,705	177,351	175,337	170,120	178,574	186,760
1957	197,702	205,270	206,716	201,407	195,094	190,063	177,868	174,031	180,688	180,902	187,141	196,776

[1] Includes stocks of finished gasoline at refineries and bulk terminals and in pipelines. [2] Includes 3,902,000 barrels of naphtha.

TABLE 55.—Day's supply of gasoline on hand in the United States at end of month, 1956–58 [1]

	1956			1957			1958 [2]		
	Finished and unfinished	Natural gasoline	Total gasoline	Finished and unfinished	Natural gasoline	Total gasoline	Finished and unfinished	Natural gasoline	Total gasoline
January	53.5	3.4	56.9	54.9	4.9	59.8	59.4	4.7	64.1
February	52.7	3.1	55.8	54.3	4.7	59.0	60.5	4.3	64.8
March	51.7	3.3	55.0	52.3	4.8	57.1	54.2	3.8	58.0
April	47.4	3.5	50.9	49.1	5.1	54.2	50.3	4.1	54.4
May	43.3	3.9	47.2	47.0	6.0	53.0	46.1	4.9	51.0
June	44.2	4.9	49.1	44.4	6.4	50.8	41.9	5.4	47.3
July	42.4	5.2	47.6	41.7	6.7	48.4	42.3	5.7	48.0
August	45.2	5.8	51.0	44.7	7.5	52.2	43.3	6.4	49.7
September	45.1	6.0	51.1	45.9	7.4	53.3	42.6	6.7	49.3
October	44.9	6.3	51.2	49.3	7.6	56.9	45.1	7.4	52.5
November	48.0	6.3	54.3	50.6	6.9	57.5	45.2	6.9	52.1
December	51.2	5.6	56.8	55.8	6.1	61.9	49.6	6.0	55.6

[1] Stocks divided by daily average total demand (domestic demand plus exports) for succeeding month.
[2] Preliminary figures.

Prices.—The dealer's average net price for Regular Grade gasoline (exclusive of dealers' margin and sales tax) in 50 representative cities in the United States provides an index of wholesale gasoline prices. The average service station price (excluding taxes) decreased from 22.11 cents per gallon in 1957 to 21.47 in 1958. The average tax on gasoline (including Federal, State, and local taxes) was 8.91 cents per gallon in 1958.

TABLE 56.—Average monthly prices of gasoline in the United States, 1957–58, in cents per gallon

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average for year
1957													
Monthly average at refineries in Oklahoma, regular, 89 octane [1]	12.27	12.63	12.63	12.63	12.63	12.41	12.01	12.00	12.11	12.13	12.13	12.13	12.31
Average of 50 cities on 1st of month: [2]													
Dealer's net (excluding tax)	16.21	17.24	17.02	16.63	16.76	16.78	16.65	16.75	16.82	16.21	16.60	16.46	16.69
Service station (including State, local, and Federal taxes)	30.36	31.54	31.41	30.87	31.09	30.99	31.05	31.15	31.23	30.34	30.96	30.81	30.96
1958													
Monthly average at refineries in Oklahoma, regular, 89 octane [1]	12.38	12.28	12.15	12.00	12.00	12.25	12.57	12.88	12.88	12.76	12.50	12.50	12.43
Average of 50 cities on 1st of month: [2]													
Dealer's net (excluding tax)	16.55	15.94	16.56	16.39	16.13	16.07	15.97	16.65	16.64	16.16	16.08	15.55	16.22
Service station (including State, local, and Federal taxes)	30.61	30.02	30.65	30.46	30.37	30.35	30.31	31.12	30.99	30.44	29.99	29.30	30.38

[1] Platt's Oil Price Handbook. [2] Platt's Oilgram Price Service.

KEROSINE

The total demand for kerosine in 1958 was 114.5 million barrels, an increase of 1.4 percent over 1957. Exports for the year were much lower, but domestic demand increased 5.2 percent. The increase in domestic demand was due primarily to additional jet planes, which use kerosine as fuel, being placed in service by commercial airlines.

Kerosine stocks were reduced 3.2 million barrels in 1958, and production increased 1.1 million barrels.

According to Platt's Oil Price Handbook, kerosine prices in 1958 declined 0.6 cent per gallon at refineries in Oklahoma and tank-wagon prices were 1.5 cents less in the New York City area and 0.2 cent less in the Chicago area.

Deliveries of kerosine by pipeline were 19.6 percent higher in 1958 than in 1957. Pipeline shipments from the Gulf Coast district to both the West Coast and East Coast districts were 1.6 million barrels higher than in 1957. Waterborne shipments between gulf coast and east coast ports also increased for the year.

Tanker rates for kerosine from the gulf coast area to United States destinations north of Hatteras averaged 31.1 cents per barrel in 1958, compared with 35.3 cents in 1957.

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TABLE 57.—Salient statistics of kerosine in the United States, 1957–58, by months and districts

(Thousand barrels)

Month and district	Production		Yield (percent)		Transfers from gasoline plants		Imports		Exports		Domestic demand		Stocks (end of period)	
	1957	1958 [1]	1957	1958 [1]	1957	1958 [1]	1957	1958 [1]	1957 [2]	1958 [1]	1957 [2]	1958 [1]	1957	1958 [1]
Month:														
January	11,384	11,204	4.4	4.7	200	183	30	------	1,099	55	17,916	17,459	24,019	23,073
February	9,874	10,651	4.3	5.0	210	110	------	------	921	108	12,169	16,524	21,013	17,202
March	10,307	10,436	4.2	4.6	149	133	------	17	974	62	10,272	11,020	20,223	16,706
April	8,520	8,102	3.7	3.8	143	64	------	------	594	52	6,780	6,091	21,512	18,729
May	8,440	7,036	3.5	3.1	143	109	------	------	426	58	4,295	4,379	25,374	21,437
June	7,617	6,978	3.5	3.1	124	98	------	------	386	68	3,857	4,278	28,872	24,167
July	7,718	6,984	3.2	2.9	136	87	------	------	51	45	4,962	5,538	31,713	25,655
August	7,804	8,202	3.1	3.3	141	124	------	------	269	47	4,813	5,272	34,576	28,662
September	8,284	8,544	3.5	3.6	118	127	------	17	125	60	6,471	6,031	36,382	31,259
October	8,230	9,778	3.5	4.0	119	83	------	------	225	235	10,122	9,008	34,384	31,877
November	9,709	10,500	4.3	4.4	139	137	------	------	85	280	11,451	10,114	32,696	32,120
December	11,042	11,593	4.5	4.5	158	88	------	------	103	145	14,593	17,616	29,200	26,040
Total	108,929	110,008	3.8	3.9	1,780	1,343	30	34	5,258	1,215	107,701	113,330	29,200	26,040
District:														
East Coast	11,633	10,722	2.6	2.5	------	------							12,934	10,921
Appalachian	3,491	3,400	4.9	4.8	------	------							1,098	915
Indiana, Illinois, Kentucky, etc	24,172	24,008	4.8	4.8	------	------							6,348	5,622
Minnesota, Wisconsin, North Dakota, etc	1,941	1,935	5.6	5.3	------	------							1,146	1,143
Oklahoma, Kansas, etc	5,326	5,260	2.1	2.5	------	------	(3)	(3)	(3)	(3)	(3)	(3)	1,204	1,434
Texas Inland	2,974	3,072	3.0	3.1	562	531							490	411
Texas Gulf Coast	37,102	37,340	5.4	5.9	609	393							2,707	2,352
Louisiana Gulf Coast	17,140	19,370	7.2	8.3	218	188							1,765	1,715
Arkansas, Louisiana Inland, etc	2,300	2,010	6.8	5.6	391	218							795	898
Rocky Mountain	1,172	1,149	1.1	1.1	------	13							354	263
West Coast	1,678	1,742	.4	.4	------	------							359	366
Total	108,929	110,008	3.8	3.9	1,780	1,343	30	34	5,258	1,215	107,701	113,330	29,200	26,040

[1] Preliminary figures. [2] Revised. [3] Not available.

TABLE 58.—Sales of kerosine [1] in the United States, 1957–58, by districts, States, and uses

(Thousand barrels)

District [2] and State	Sold as range oil		Tractor fuel		All other uses		Total	
	1957	1958	1957	1958	1957	1958	1957	1958
District 1:								
Connecticut	3,528	3,663	6	-----	234	132	3,768	3,795
Delaware	625	953	2	6	22	59	649	1,018
District of Columbia	155	225	3	5	12	14	170	244
Florida	1,875	3,658	73	83	743	1,371	2,691	5,112
Georgia	1,759	2,217	188	184	502	649	2,449	3,050
Maine	2,883	3,025	22	-----	182	22	3,087	3,047
Maryland	1,454	3,281	76	24	483	172	2,013	3,477
Massachusetts	8,859	8,040	29	-----	639	134	9,527	8,174
New Hampshire	1,198	1,505	4	-----	33	8	1,235	1,513
New Jersey	3,607	3,575	16	41	1,432	702	5,055	4,318
New York	7,047	6,216	124	13	667	617	7,838	6,846
North Carolina	8,842	12,310	50	54	3,008	1,684	11,900	14,048
Pennsylvania	2,228	3,684	97	67	1,002	670	3,327	4,421
Rhode Island	2,210	2,269	25	-----	26	10	2,261	2,279
South Carolina	3,676	4,144	42	20	1,162	1,053	4,880	5,217
Vermont	574	1,059	14	-----	35	13	623	1,072
Virginia	2,360	4,412	18	41	766	417	3,144	4,870
West Virginia	130	188	2	7	94	197	226	392
Total	53,010	64,424	791	545	11,042	7,924	64,843	72,893
District 2:								
Illinois	2,937	4,437	193	7	986	979	4,116	5,423
Indiana	1,674	2,729	54	5	1,134	187	2,862	2,921
Iowa	1,174	1,648	188	22	671	118	2,033	1,788
Kansas	786	888	72	35	200	115	1,058	1,038
Kentucky	761	828	33	36	323	389	1,117	1,253
Michigan	2,811	3,735	49	-----	1,361	375	4,221	4,110
Minnesota	1,385	1,516	12	19	400	132	1,797	1,667
Missouri	1,419	1,110	36	30	503	184	1,958	1,324
Nebraska	519	438	36	17	140	110	695	565
North Dakota	695	578	37	3	78	29	810	610
Ohio	1,346	1,209	67	73	564	420	1,977	1,702
Oklahoma	401	157	94	56	557	113	1,052	326
South Dakota	409	590	32	-----	48	26	489	616
Tennessee	1,409	917	54	23	484	407	1,947	1,347
Wisconsin	1,195	1,787	64	7	687	252	1,946	2,046
Total	18,921	22,567	1,021	333	8,136	3,836	28,078	26,736
District 3:								
Alabama	593	593	125	42	423	206	1,141	841
Arkansas	542	116	101	131	467	191	1,110	438
Louisiana	437	82	54	116	480	1,406	971	1,604
Mississippi	467	219	84	33	618	234	1,169	486
New Mexico	144	149	17	28	53	141	214	318
Texas	1,060	669	215	341	1,691	2,219	2,966	3,229
Total	3,243	1,828	596	691	3,732	4,397	7,571	6,916
District 4:								
Colorado	197	148	7	15	20	39	224	202
Idaho	31	15	1	-----	19	8	51	23
Montana	156	132	4	-----	41	12	201	144
Utah	8	4	1	-----	12	29	21	33
Wyoming	32	38	1	-----	75	80	108	118
Total	424	337	14	15	167	168	605	520
District 5:								
Arizona	-----	1	-----	-----	38	28	38	29
California	51	128	-----	-----	1,048	1,105	1,099	1,233
Nevada	-----	-----	-----	-----	-----	2	-----	2
Oregon	1	2	-----	-----	58	46	59	48
Washington	-----	5	-----	-----	85	76	85	81
Total	52	136	-----	-----	1,229	1,257	1,281	1,393
Total U.S. sales	75,650	89,292	2,422	1,584	24,306	17,582	102,378	108,458

[1] Total sales of kerosine for 1957 are below the domestic demand shown in the Monthly Petroleum Statement No. 425 for December 1957, as some kerosine was reported as sold for jet fuel.

[2] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.

TABLE 59.—Monthly average prices of kerosine in the United States, 1957–58, in cents per gallon

[Platt's Oil Price Handbook]

Year and grade	January	February	March	April	May	June	July	August	September	October	November	December	Average for year
1957													
42°–44° gravity, water-white kerosine at refineries, Oklahoma	10.90	11.11	10.85	10.75	10.75	10.60	10.50	10.48	10.25	10.25	10.25	10.25	10.58
Kerosine (and/or No. 1 fuel oil) at New York Harbor	12.11	12.50	12.50	12.50	12.35	12.19	11.84	11.28	11.25	11.25	11.25	11.25	11.86
Kerosine, tank-wagon at Chicago	17.80	18.10	17.79	17.12	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.30
Kerosine, tank-wagon at New York City [1]	16.35	16.80	16.80	16.80	16.53	16.37	15.93	15.41	15.40	15.40	15.40	15.40	16.05
1958													
42°–44° gravity, water-white kerosine at refineries, Oklahoma	10.24	10.01	9.97	9.75	9.75	9.75	9.76	10.00	10.25	10.25	10.25	10.34	10.03
Kerosine (and/or No. 1 fuel oil) at New York Harbor	11.25	10.66	10.23	9.80	9.80	9.80	9.90	10.28	10.40	10.40	10.55	11.04	10.34
Kerosine, tank-wagon at Chicago	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10	17.10
Kerosine, tank-wagon at New York City [1]	15.00	14.50	14.20	14.20	14.20	14.20	14.50	14.80	14.80	14.80	15.30	15.80	14.70

[1] Manhattan and Queens.

DISTILLATE FUEL OIL

Lower crude runs to stills and a 0.6-percent decline in the percentage yield from crude oil resulted in a 5.6-percent reduction in refinery production of distillate fuel oil in 1958. Stocks were reduced at the rate of 66.7 thousand barrels daily during the year.

Total demand for distillate in 1958 was slightly lower, but domestic demand increased 5.9 percent. Exports declined from 47.7 million in 1957 to 19.1 million in 1958, or 59.9 percent. Exports in 1957 were much higher than normal because of large shipments to Europe during the Suez crisis.

Imports of distillate fuel oil totaled 14.1 million barrels in 1958, an increase of 64.6 percent over 1957.

Total sales of distillate in 1958 were 36.3 million barrels higher than in 1957. Most of the increase was in sales for space heating. Small gains were reported in sales to the military and to gas and electric utility companies. According to the Bureau of the Census, U.S. Department of Commerce, sales of diesel fuel for bunkering vessels engaged in foreign trade were 12 million barrels in 1958, an 8.3-percent decline from 1957.

Average prices of distillate fuel were lower in 1958 than in 1957. No. 2 fuel oil sold for 0.8 cent per gallon less at Oklahoma refineries and 1.5 cents less at New York Harbor. Prices of diesel fuel oil for ships bunkers decreased 61 cents per barrel at New York Harbor in 1958, 25 cents per barrel at New Orleans, and 34 cents per barrel at San Pedro.

Waterborne shipments of distillate fuel oil from gulf coast to east coast ports were approximately the same in 1958 as in 1957. The West Coast district shipped 2 million barrels of distillate to the east coast during the year.

The tanker freight rate for No. 2 distillate fuel oil from the gulf coast to New York Harbor averaged 32.8 cents a barrel in 1958—4.6 cents per barrel less than in 1957.

TABLE 60.—Salient statistics of distillate fuel oil in the United States, 1957–58, by months and districts

(Thousand barrels)

Month and district	Production		Yield (percent)		Transfers from gasoline plants		Transfers[1] east of California		Imports		Exports		Domestic demand		Stocks (end of period)	
	1957	1958[2]	1957	1958[2]	1957	1958[2]	1957	1958[2]	1957[3]	1958[2]	1957[3]	1958[2]	1957[3]	1958[2]	1957	1958[2]
Month:																
January	65, 662	57, 120	25. 2	23. 9	51	75	132	93	570	822	7, 316	1, 580	92, 508	83, 604	100, 572	122, 375
February	56, 970	48, 179	25. 0	22. 6	78	63	114	86	723	1, 208	7, 988	1, 836	65, 364	82, 169	85, 105	87, 906
March	57, 680	51, 149	23. 5	22. 7	71	70	131	85	887	439	7, 076	2, 036	60, 553	62, 298	76, 245	75, 315
April	52, 934	47, 032	22. 9	21. 9	65	73	122	84	634	1, 122	5, 054	1, 166	46, 203	46, 221	78, 743	76, 239
May	55, 444	50, 723	22. 6	22. 2	74	84	122	74	510	884	3, 971	1, 554	32, 862	37, 290	98, 060	89, 160
June	53, 180	48, 342	22. 6	21. 3	59	60	107	72	444	1, 120	2, 560	1, 308	31, 926	32, 135	117, 364	105, 311
July	54, 236	51, 145	22. 3	21. 1	67	62	109	72	453	1, 789	2, 806	2, 078	31, 064	36, 864	138, 359	119, 437
August	55, 979	52, 878	22. 3	21. 4	85	53	96	72	1, 165	1, 243	2, 793	1, 906	33, 767	31, 915	159, 124	139, 862
September	53, 164	53, 506	22. 2	22. 5	67	56	100	76	822	1, 538	1, 630	1, 570	38, 378	38, 056	173, 269	155, 412
October	52, 863	56, 372	22. 3	23. 2	82	73	92	76	1, 014	1, 174	2, 243	1, 102	48, 689	47, 319	176, 388	164, 686
November	52, 006	54, 364	22. 8	23. 0	88	64	91	78	592	1, 035	2, 365	2, 025	60, 037	57, 010	166, 763	161, 192
December	58, 455	60, 595	23. 7	23. 6	79	66	89	82	752	1, 727	1, 950	987	74, 739	97, 574	149, 449	125, 101
Total	668, 573	631, 405	23. 1	22. 5	866	799	1, 305	950	8, 566	14, 101	47, 752	19, 148	616, 090	652, 455	149, 449	125, 101
District:																
East Coast	118, 145	113, 982	26. 8	26. 5					(4)	(4)	(4)	(4)	(4)	(4)	58, 855	46, 040
Appalachian	14, 098	14, 648	19. 7	20. 6											4, 318	4, 182
Indiana, Illinois, Kentucky, etc.	105, 975	108, 092	20. 9	21. 4			288	250							20, 241	21, 599
Minnesota, Wisconsin, etc.	9, 198	9, 639	26. 6	26. 5											7, 159	6, 478
Oklahoma, Kansas, etc.	61, 607	63, 186	23. 9	24. 3			158	151							10, 999	9, 835
Texas Inland	18, 278	17, 417	18. 5	17. 3	269	362	453	198							2, 023	2, 252
Texas Gulf Coast	180, 525	161, 938	26. 5	25. 5	264	139	136	101							17, 523	11, 321
Louisiana Gulf Coast	64, 658	53, 619	27. 1	23. 0	25	19	44	38							7, 125	5, 593
Arkansas, Louisiana Inland, etc.	7, 651	8, 010	22. 6	22. 4	308	279	34	32							2, 093	2, 123
Rocky Mountain	25, 168	23, 348	23. 0	21. 9			192	97							3, 044	2, 969
West Coast	63, 270	57, 526	15. 2	14. 5				83							16, 069	12, 709
Total	668, 573	631, 405	23. 1	22. 5	866	799	1, 305	950	8, 566	14, 101	47, 752	19, 148	616, 090	652, 455	149, 449	125, 101

[1] Figures represent crude oil used as fuel on pipelines, which is considered part of the demand for distillate.
[2] Preliminary figures.
[3] Revised.
[4] Not available.

TABLE 61.—Sales of distillate fuel oil [1] in the United States, 1954–58, by uses

(Thousand barrels)

Uses	1954	1955	1956	1957	1958	Change, percent
Railroads	77,389	84,668	89,439	88,315	83,719	−5.2
Vessels (including tankers)	15,563	16,675	18,487	20,420	18,768	−8.1
Gas and electric powerplants	6,070	5,884	5,403	5,296	5,382	1.6
Smelters, mines, and manufacturing industries	41,589	43,606	44,949	43,532	461,508	14.3
Heating oils	304,540	339,215	359,827	360,212		
Fuel oil (No. 1) sold as range oil	15,577	17,374	17,435	16,832	9,102	−45.9
U.S. Army, Navy, Air Force, and Coast Guard	8,752	10,945	11,326	12,737	13,412	5.3
Oil-company fuel	7,699	8,597	10,131	10,419	7,815	−25.0
Miscellaneous uses	49,066	54,163	58,778	59,512	53,853	−9.5
Total United States	526,245	581,127	615,775	617,275	653,559	5.9

[1] Includes diesel fuel.

TABLE 62.—Sales of distillate fuel oil [1] in the United States, 1954–58, by districts and States

(Thousand barrels)

District [2] and State	1954	1955	1956	1957	1958
District 1:					
Connecticut	14,928	16,071	18,490	18,574	23,885
Delaware	2,365	2,677	3,235	3,245	2,413
District of Columbia	3,728	3,907	4,139	4,124	3,402
Florida	8,441	9,613	10,169	10,188	8,150
Georgia	4,225	4,560	4,914	4,877	4,887
Maine	5,309	5,703	6,425	6,426	6,434
Maryland	14,468	16,009	17,916	18,091	16,086
Massachusetts	31,306	34,036	35,859	35,981	47,452
New Hampshire	4,220	4,498	5,123	5,089	3,951
New Jersey	35,733	38,971	41,335	41,370	42,923
New York	64,262	70,276	72,606	72,755	85,779
North Carolina	7,860	8,982	9,279	9,312	10,406
Pennsylvania	40,288	44,286	45,734	45,698	45,322
Rhode Island	4,484	4,762	5,513	5,530	7,250
South Carolina	2,990	3,259	3,445	3,588	4,266
Vermont	1,415	1,726	1,937	1,883	2,796
Virginia	10,888	13,242	14,293	14,782	13,300
West Virginia	1,307	1,500	2,095	2,039	1,913
Total	258,217	284,078	302,507	303,552	330,615
District 2:					
Illinois	30,388	33,371	35,290	35,350	42,869
Indiana	16,294	18,962	20,441	20,482	24,099
Iowa	10,399	11,417	12,543	12,548	9,883
Kansas	5,897	6,493	6,388	6,361	4,477
Kentucky	3,291	4,126	4,476	4,548	4,978
Michigan	24,625	27,402	29,071	28,995	29,385
Minnesota	16,218	17,409	18,765	18,726	16,468
Missouri	11,283	12,137	12,306	12,418	14,274
Nebraska	4,723	5,229	5,561	5,549	3,527
North Dakota	2,600	3,151	3,740	3,726	2,976
Ohio	18,150	20,184	21,937	22,045	24,221
Oklahoma	2,368	2,493	2,454	2,470	1,754
South Dakota	2,756	3,298	3,556	3,508	2,800
Tennessee	3,529	3,845	3,767	3,652	3,226
Wisconsin	13,648	16,089	17,099	17,149	20,136
Total	166,169	185,606	197,394	197,527	205,073
District 3:					
Alabama	3,508	3,914	4,277	4,326	4,346
Arkansas	2,136	2,357	2,558	2,575	2,433
Louisiana	6,242	7,385	7,653	7,877	10,756
Mississippi	1,619	1,808	1,840	1,856	1,744
New Mexico	1,457	1,991	2,167	2,205	2,492
Texas	18,913	20,728	22,258	22,812	24,077
Total	33,875	38,183	40,753	41,651	45,848

See footnotes at end of table.

TABLE 62.—Sales of distillate fuel oil [1] in the United States, 1954–58, by districts and States—Continued

(Thousand barrels)

District [2] and State	1954	1955	1956	1957	1958
District 4:					
Colorado	3, 108	3, 371	3, 532	3, 585	3, 238
Idaho	3, 080	3, 706	3, 837	3, 834	3, 938
Montana	3, 755	3, 980	4, 219	4, 209	3, 642
Utah	3, 574	3, 994	4, 235	4, 256	4, 655
Wyoming	2, 624	2, 829	3, 092	2, 977	3, 697
Total	16, 141	17, 880	18, 915	18, 861	19, 170
District 5:					
Arizona	1, 279	1, 073	1, 716	1, 742	2, 018
California	23, 812	23, 873	24, 643	24, 613	24, 884
Nevada	2, 375	1, 686	1, 748	1, 679	1, 656
Oregon	8, 939	10, 981	10, 862	10, 132	9, 380
Washington	15, 438	17, 767	17, 237	17, 518	14, 915
Total	51, 843	55, 380	56, 206	55, 684	52, 853
Total United States	526, 245	581, 127	615, 775	617, 275	653, 559

[1] Includes diesel fuel oil.
[2] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.

TABLE 63.—Monthly average prices of distillate fuel oil and diesel fuel in the United States, 1957–58

[Platt's Oil Price Handbook]

Year and grade	January	February	March	April	May	June	July	August	September	October	November	December	Average for year
1957													
No. 2 fuel oil at refineries, Oklahoma ____ cents per gallon	10.02	10.24	9.99	9.94	9.94	9.77	9.69	9.65	9.19	9.19	9.19	9.19	9.67
No. 2 fuel oil at New York Harbor ____ cents per gallon	11.51	11.90	11.90	11.90	11.75	11.61	11.30	10.78	10.75	10.75	10.75	10.75	11.30
Diesel oil, shore plants, New York Harbor ____ cents per gallon	11.91	12.30	12.30	12.30	12.15	12.02	11.72	11.20	11.15	11.15	11.15	11.15	11.71
Diesel oil for ships:													
New York ____ dollars per barrel	4.85	5.02	5.02	5.02	4.96	4.89	4.77	4.55	4.54	4.54	4.54	4.54	4.77
New Orleans ____ do	4.29	4.45	4.45	4.45	4.45	4.42	4.35	4.21	4.20	4.20	4.20	4.20	4.32
San Pedro ____ do	5.12	5.25	5.25	5.25	5.25	5.29	5.38	5.38	5.38	5.38	5.38	5.38	5.31
1958													
No. 2 fuel oil at refineries, Oklahoma ____ cents per gallon	9.18	8.95	8.82	8.68	8.56	8.56	8.60	8.77	9.00	9.04	9.25	9.29	8.89
No. 2 fuel oil at New York Harbor ____ cents per gallon	10.75	10.16	9.73	9.30	9.30	9.30	9.40	9.78	9.90	9.90	10.05	10.54	9.84
Diesel oil, shore plants, New York Harbor ____ cents per gallon	11.15	10.56	10.13	9.70	9.70	9.70	9.80	10.18	10.30	10.30	10.46	10.94	10.24
Diesel oil for ships:													
New York ____ dollars per barrel	4.54	4.29	4.11	3.93	3.93	3.93	4.06	4.13	4.18	4.18	4.24	4.45	4.16
New Orleans ____ do	4.20	4.08	3.96	3.90	3.90	3.90	3.94	4.10	4.15	4.15	4.18	4.34	4.07
San Pedro ____ do	5.11	4.96	4.96	4.96	4.96	4.96	4.96	4.96	4.96	4.96	4.96	4.96	4.97

RESIDUAL FUEL OIL

The total demand for residual fuel oil declined from 587.4 million barrels in 1957 to 556.7 million in 1958. Domestic demand decreased 3.2 percent and exports 33.8 percent.

The new supply of residual fuel oil available in 1958 totaled 556.2 million barrels, 7.7 percent less than in 1957. The supply comprised refinery production (363.3 million barrels), crude used directly as fuel oil (11 million barrels), and imports (181.9 million barrels). The refinery output of residual fuel oil for the year was 12.6 percent below 1957. The yield of residual fuel oil from crude was cut down from 14.4 percent in 1957 to 12.9 percent in 1958.

Stocks of residual fuel oil in the United States declined about 0.5 million barrels in 1958, but on district basis the changes were more significant. States east of the Rocky Mountains had a stock reduction of 5.9 million barrels for the year, whereas West Coast States had a stock increase of 5.5 million barrels.

Excepting a 29.2-percent increase in sales to the military and a small increase in residual fuel oil used for space heating, sales for all other principal uses declined in 1958. Total sales were 2.4 percent lower for the year.

Shipments of residual fuel oil from the Gulf Coast to the East Coast district were 1.5 million barrels less in 1958, but this loss was more than offset by shipments of 3.2 million barrels from the West Coast district.

The tanker freight rate for Bunker "C" fuel oil on the gulf coast-New York Harbor run averaged 34.2 cents a barrel for 1958 compared with 41.6 cents in 1957.

Average prices of residual fuel oil were lower in 1958. No. 6 fuel oil at refineries in Oklahoma dropped 52 cents per barrel and No. 5 fuel oil at New York Harbor 60 cents per barrel. The decline in average price per barrel for Bunker "C" was 52 cents at New York Harbor, 41 cents at New Orleans, and 40 cents at San Pedro.

TABLE 64.—Salient statistics of residual fuel oil in the United States, 1957–58, by months and districts

(Thousand barrels)

Month and district	Production		Yield (percent)		Transfers [1] East of California		Transfers [1] California		Imports		Exports		Domestic demand		Stocks (end of period)	
	1957	1958 [2]	1957	1958 [2]	1957	1958 [2]	1957 [3]	1958 [2]	1957 [3]	1958 [2]	1957 [3]	1958 [2]	1957 [3]	1958 [2]	1957	1958 [2]
Month:																
January	40, 990	33, 803	15. 8	14. 1	679	1, 241	155	145	17, 593	20, 465	4, 385	1, 695	61, 120	56, 356	38, 403	57, 562
February	35, 546	31, 054	15. 6	14. 6	578	876	150	107	16, 059	17, 467	4, 158	1, 573	50, 377	50, 398	36, 201	55, 095
March	37, 351	31, 468	15. 2	14. 0	888	1, 212	109	252	17, 486	15, 185	4, 227	1, 989	50, 437	46, 294	37, 371	54, 929
April	33, 964	28, 412	14. 7	13. 2	909	948	206	106	16, 690	16, 635	4, 214	1, 564	47, 497	41, 491	37, 429	57, 975
May	34, 196	28, 537	14. 0	12. 5	967	757	120	128	14, 474	12, 519	3, 442	2, 511	42, 708	35, 816	41, 036	61, 589
June	33, 033	27, 346	14. 0	12. 1	956	665	125	36	12, 045	10, 493	3, 193	2, 201	38, 430	34, 064	45, 572	63, 684
July	33, 776	30, 407	13. 9	12. 6	1, 202	359	202	212	11, 097	12, 390	3, 159	2, 657	39, 069	38, 118	49, 621	66, 457
August	33, 754	29, 789	13. 5	12. 1	1, 346	844	152	406	11, 011	11, 024	2, 997	2, 271	40, 242	39, 019	52, 645	67, 230
September	32, 987	29, 197	13. 8	12. 2	870	699	200	257	10, 083	10, 139	1, 979	2, 782	36, 079	37, 070	58, 727	67, 670
October	32, 602	29, 738	13. 8	12. 3	862	359	123	251	13, 318	16, 564	2, 505	2, 488	43, 102	45, 049	60, 025	67, 045
November	32, 059	29, 361	14. 1	12. 4	1, 315	386	223	125	14, 103	15, 945	2, 129	1, 997	45, 974	44, 642	59, 622	66, 223
December	35, 398	34, 246	14. 1	13. 4	1, 342	437	205	157	19, 340	23, 058	2, 182	1, 814	53, 766	62, 799	59, 959	59, 508
Total	415, 656	363, 358	14. 4	12. 9	[4] 11, 914	[4] 8, 783	1, 970	2, 182	173, 299	181, 884	38, 570	25, 542	548, 801	531, 116	59, 959	59, 508
District:																
East Coast	76, 494	66, 813	17. 4	15. 5	[4] 7, 361	[4] 4, 239	----	----							13, 312	10, 245
Appalachian	7, 265	6, 836	10. 2	9. 6	----	----	----	----							1, 191	524
Indiana, Illinois, Kentucky, etc	63, 475	57, 383	12. 5	11. 4	1, 167	1, 560	----	----							5, 905	4, 241
Minnesota, Wisconsin, etc	3, 290	3, 999	9. 5	11. 0	184	36	----	----							494	517
Oklahoma, Kansas, etc	12, 016	10, 224	4. 7	3. 9	388	360	----	----							1, 327	1, 071
Texas Inland	8, 362	7, 440	8. 5	7. 4	812	604	----	----	(5)	(5)	(5)	(5)	(5)	(5)	2, 153	2, 182
Texas Gulf Coast	83, 230	69, 805	12. 2	11. 0	633	651	----	----							6, 138	6, 099
Louisiana Gulf Coast	17, 821	16, 174	7. 5	6. 9	746	770	----	----							1, 515	1, 618
Arkansas, Louisiana Inland, etc	2, 421	2, 560	7. 2	7. 2	260	224	----	----							232	116
Rocky Mountain	14, 285	12, 450	13. 1	11. 7	363	87	----	----							1, 084	803
West Coast	126, 997	109, 674	30. 4	27. 7	----	252	1, 970	2, 182							26, 608	32, 092
Total	415, 656	363, 358	14. 4	12. 9	[4] 11, 914	[4] 8, 783	1, 970	2, 182	173, 299	181, 884	38, 570	25, 542	548, 801	531, 116	59, 959	59, 508

[1] Represents crude oil used as fuel on leases and for general industrial purposes.
[2] Preliminary figures.
[3] Revised.
[4] Includes heavy crude oil imported and used directly as fuel oil.
[5] Not available.

TABLE 65.—Sales of residual fuel oil [1] in the United States, 1954–58, by uses

(Thousand barrels)

Uses	1954	1955	1956	1957	1958	Change, percent
Railroads	16,122	15,018	10,575	6,953	5,772	−17.0
Vessels (including tankers)	108,790	115,128	117,445	123,651	106,269	−14.1
Gas and electric powerplants	70,749	75,966	[2] 73,987	[2] 76,577	76,424	−0.2
Smelters, mines, and manufacturing industries	160,121	173,030	177,807	166,885	249,352	0.4
Heating oils	78,845	86,282	87,601	81,412		
U.S. Army, Navy, Air Force, and Coast Guard	26,887	28,368	30,546	28,962	37,428	29.2
Oil-company fuel	52,165	53,387	53,271	50,153	46,463	−7.4
Miscellaneous uses	7,035	9,804	10,331	9,984	9,659	−3.3
Total United States	520,714	556,983	[2] 561,563	[2] 544,577	531,367	−2.4

[1] Includes Navy grade and crude oil burned as fuel.
[2] Revised.

TABLE 66.—Sales of residual fuel oil [1] in the United States, 1954–58, by districts and States

(Thousand barrels)

District [2] and State	1954	1955	1956	1957	1958
District 1:					
Connecticut	12,897	13,108	13,219	12,712	13,360
Delaware	2,228	2,907	2,956	2,973	4,577
District of Columbia	1,963	2,152	2,106	2,501	2,087
Florida	28,909	32,236	34,910	36,228	35,463
Georgia	5,590	6,118	5,955	6,128	6,650
Maine	3,481	4,443	4,872	5,063	7,146
Maryland	14,031	15,466	15,770	15,364	13,937
Massachusetts	30,500	30,496	29,574	28,744	27,277
New Hampshire	2,129	2,377	2,107	2,096	1,881
New Jersey	43,339	46,154	44,587	45,136	46,287
New York	50,809	51,912	51,737	51,168	54,575
North Carolina	1,809	2,377	2,558	2,467	2,823
Pennsylvania	42,734	45,176	45,325	44,482	40,109
Rhode Island	9,473	11,215	11,303	11,114	10,356
South Carolina	3,985	4,291	4,389	4,383	4,337
Vermont	409	424	402	380	423
Virginia	12,998	16,556	17,452	17,739	19,927
West Virginia	1,269	1,355	1,317	1,321	832
Total	268,553	288,763	290,539	289,999	292,047
District 2:					
Illinois	20,499	22,227	22,571	21,375	27,433
Indiana	14,234	14,588	15,206	14,753	14,202
Iowa	884	994	1,165	1,125	1,032
Kansas	4,020	4,179	3,827	3,586	2,087
Kentucky	949	1,013	1,062	1,051	597
Michigan	14,675	15,387	16,008	15,330	13,596
Minnesota	2,352	2,700	2,987	2,955	4,696
Missouri	4,837	5,863	6,126	5,758	6,484
Nebraska	313	363	377	375	180
North Dakota	179	515	870	783	743
Ohio	18,118	18,915	19,260	18,530	15,548
Oklahoma	1,479	1,783	1,857	1,740	1,189
South Dakota	165	176	211	217	119
Tennessee	652	930	879	865	457
Wisconsin	2,109	2,168	2,290	2,201	3,308
Total	85,465	91,801	94,696	90,644	91,671
District 3:					
Alabama	3,123	3,907	4,162	4,203	4,574
Arkansas	415	419	545	549	491
Louisiana	9,710	10,601	10,804	11,359	14,469
Mississippi	160	179	219	232	268
New Mexico	262	283	505	438	387
Texas	36,312	38,108	37,883	37,859	31,498
Total	49,982	53,497	54,118	54,640	51,687

TABLE 66.—Sales of residual fuel oil[1] in the United States, 1954–58, by districts and States—Continued

(Thousand barrels)

District[2] and State	1954	1955	1956	1957	1958
District 4:					
Colorado	1, 326	1, 363	1, 434	1, 369	1, 131
Idaho	1, 115	1, 421	1, 256	1, 185	679
Montana	1, 751	1, 692	1, 646	1, 554	1, 396
Utah	4, 321	4, 392	4, 478	[3] 4, 828	4, 316
Wyoming	2, 076	2, 118	2, 156	1, 847	1, 976
Total	10, 589	10, 986	10, 970	[3] 10, 783	9, 498
District 5:					
Arizona	45	61	35	21	37
California	79, 973	83, 959	84, 421	79, 245	72, 232
Nevada	1, 353	1, 359	383	269	195
Oregon	9, 776	10, 152	9, 401	7, 181	5, 253
Washington	14, 978	16, 405	16, 975	11, 795	8, 747
Total	106, 125	111, 936	111, 215	98, 511	86, 464
Total United States	520, 714	556, 983	561, 538	[3] 544, 577	531, 367

[1] Includes some crude oil burned as fuel.
[2] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.
[3] Revised.

TABLE 67.—Monthly average prices of residual fuel oil in the United States, 1957–58, in dollars per barrel

[Platt's Oil Price Handbook]

Year and grade	January	February	March	April	May	June	July	August	September	October	November	December	Average for year
1957													
No. 6 fuel oil at refineries, Oklahoma	2.60	2.64	2.52	2.48	2.48	2.41	2.26	2.10	2.03	1.90	1.80	1.80	2.25
No. 5 fuel oil at New York Harbor	3.69	3.83	3.83	3.81	3.67	3.64	3.63	3.52	3.48	3.48	3.48	3.45	3.63
Bunker "C" for ships:													
New York	3.23	3.35	3.35	3.33	3.14	3.11	3.09	2.99	2.95	2.95	2.95	2.95	3.12
New Orleans	2.63	2.75	2.75	2.75	2.75	2.76	2.80	2.80	2.74	2.65	2.65	2.65	2.72
San Pedro	2.63	2.80	2.80	2.81	2.88	2.88	2.90	2.90	2.88	2.85	2.85	2.85	2.83
1958													
No. 6 fuel oil at refineries, Oklahoma	2.03	1.88	1.68	1.71	1.73	1.73	1.64	1.59	1.60	1.63	1.73	1.83	1.73
No. 5 fuel oil at New York Harbor	3.37	3.19	3.10	3.10	3.10	3.07	2.95	2.95	2.93	2.87	2.87	2.87	3.03
Bunker "C" for ships:													
New York	2.92	2.74	2.65	2.65	2.62	2.61	2.61	2.61	2.52	2.40	2.41	2.41	2.60
New Orleans	2.62	2.44	2.35	2.35	2.35	2.35	2.35	2.35	2.31	2.10	2.10	2.10	2.31
San Pedro	2.72	2.65	2.65	2.54	2.45	2.45	2.45	2.45	2.44	2.11	2.10	2.10	2.43

LUBRICANTS

Demand for lubricants in 1958 was lower than in any year since 1949. Total demand (52.5 million barrels) declined 4.7 percent from 1957, domestic demand 4.3 percent, and exports 5.7 percent. Reasons cited for the gradual decline of the lubricating-oil market are improved quality, which enables the oils to withstand harder and longer use; changes in engine design which has reduced consumption; and a decline in the export market caused by refineries abroad installing lubricating-oil facilities to supply their own markets.

Production of lubricants in 1958 was 7.9 percent less in 1957. The Rocky Mountain was the only district reporting increased output of lubricating oils for the year.

TABLE 68.—Salient statistics of lubricants in the United States, 1957–58, by months and districts

Month and district	1957					1958 [1]				
	Production (thousand barrels)	Yield (percent)	Exports (thousand barrels)	Stocks, end of period (thousand barrels)	Domestic demand (thousand barrels)	Production (thousand barrels)	Yield (percent)	Exports (thousand barrels)	Stocks, end of period (thousand barrels)	Domestic demand (thousand barrels)
By months:										
January	4,960	1.9	978	10,412	3,752	4,221	1.8	842	11,284	2,959
February	4,334	1.9	1,056	10,308	3,382	3,843	1.8	1,018	11,360	2,749
March	4,858	2.0	1,375	10,428	3,363	3,973	1.7	924	11,218	3,191
April	5,124	2.2	1,314	10,587	3,651	4,065	1.9	1,196	11,090	2,997
May	5,131	2.1	1,139	10,710	3,869	4,325	1.9	1,221	11,011	3,183
June	4,246	1.8	1,326	10,591	3,039	4,224	1.9	868	10,659	3,708
July	4,657	1.9	1,038	10,313	3,897	4,397	1.8	1,179	10,574	3,303
August	4,704	1.9	1,180	10,124	3,713	4,564	1.8	1,403	10,215	3,520
September	4,378	1.8	1,115	10,210	3,177	4,162	1.7	978	10,037	3,362
October	4,476	1.9	1,112	9,953	3,621	4,519	1.9	1,262	9,765	3,529
November	4,423	1.9	1,100	10,396	2,880	4,313	1.8	1,168	9,412	3,498
December	4,432	1.8	1,093	10,864	2,871	4,692	1.8	977	9,687	3,440
Total	55,723	1.9	13,826	10,864	41,246	51,298	1.8	13,036	9,687	39,439
By districts:										
East Coast	8,210	1.8		2,306		6,734	1.4		2,193	
Appalachian	4,408	5.2		1,029		3,884	5.2		843	
Indiana, Illinois, Kentucky, etc.	4,453	.6		1,193		4,266	.7		1,341	
Oklahoma, Kansas, etc.	4,856	1.4		688		4,280	1.5		592	
Texas Inland	16	----------	[2]	1	[2]	3	----------	[2]	1	[2]
Texas Gulf Coast	20,992	3.1		3,903		19,673	3.2		2,990	
Louisiana Gulf Coast	5,764	2.4		918		5,547	2.7		814	
Arkansas, Louisiana Inland, etc.	1,630	4.4		187		1,560	4.7		122	
Rocky Mountain	173	.3		98		260	.8		162	
West Coast	5,221	1.3		541		5,091	1.3		629	
Total	55,723	1.9	----------	10,864	----------	51,298	1.8	----------	9,687	----------

[1] Preliminary figures. [2] Figures not available.

TABLE 69.—Average monthly refinery prices of five selected grades of lubricating oil in the United States, 1957–58, in cents per gallon

[Platt's Oil Price Handbook]

Year and grade	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average for year
1957													
Oklahoma:													
200 viscosity, No. 3 color, neutral	18.17	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.70
150–160 viscosity at 210° bright stock, 10–25 pour test	22.52	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	22.96
Pennsylvania:													
200 viscosity, No. 3 color, neutral 420–425 flash, 25 pour test	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
600 steam-refined, cylinder stock, filterable	20.55	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	20.98	19.81	20.86
South Texas: 500 viscosity, No. 2½–3½ color, neutral	17.09	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	17.92
1958													
Oklahoma:													
200 viscosity, No. 3 color, neutral	18.75	18.75	18.41	17.03	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.41
150–160 viscosity at 210° bright stock, 10–25 pour test	23.00	23.00	22.61	20.55	20.50	20.50	20.50	20.50	20.50	20.50	20.50	20.50	21.10
Pennsylvania:													
200 viscosity, No. 3 color, neutral 420–425 flash, 25 pour test	25.00	24.68	24.50	24.32	22.00	21.57	21.00	21.00	21.00	21.00	21.00	21.00	22.34
600 steam-refined, cylinder stock, filterable	19.59	18.74	18.50	18.22	15.19	15.00	15.00	15.00	15.00	15.00	15.00	15.00	16.27
South Texas: 500 viscosity, No. 2½–3½ color, neutral	18.00	17.89	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	17.99

JET FUEL

Jet fuel is blended to specifications from gasoline, kerosine, and distillate fuel oil. It is used principally by the military for aircraft engines or by aircraft manufacturers for testing these engines. Commercial planes with turboprop engines use kerosine for fuel.

Domestic demand for jet fuel increased 29.6 percent in 1958, refinery production 10.4 million barrels, imports 12.4 million barrels, and stocks 1.1 million barrels above 1957 levels.

A separation of jet-fuel production from other products of natural-gasoline plants was made for the first time in 1958. This production is now reported in the data on jet fuel as "transfers from gasoline plants."

TABLE 70.—Salient statistics of jet fuel in the United States, 1957–58, by months and districts

(Thousand barrels)

	1957								1958 [1]								
	Production, blended from—				Imports	Exports	Stocks, end of period	Domestic demand	Production, blended from—				Transfers from gasoline plants	Imports	Exports	Stocks, end of period	Domestic demand
	Gasoline	Kerosine	Distillate	Total					Gasoline	Kerosine	Distillate	Total					
By months:																	
January	4,785	1,031	391	6,207	599	82	5,185	6,861	3,258	707	577	4,542	-------	2,011	17	4,801	6,484
February	4,344	1,100	386	5,830	1,213	9	5,326	6,893	3,419	843	363	4,625	172	1,712	-------	4,451	6,859
March	5,005	1,275	520	6,800	986	-------	4,868	8,244	4,353	895	449	5,697	135	1,808	-------	4,488	7,603
April	4,507	1,247	449	6,203	861	1	5,322	6,609	4,837	1,087	632	6,556	98	2,679	1	4,981	8,839
May	4,043	1,388	382	5,813	904	-------	5,656	6,383	4,847	1,233	426	6,506	64	728	5	5,494	6,780
June	2,978	1,113	321	4,412	588	2	6,321	4,333	4,464	1,546	470	6,480	88	2,584	4	5,752	8,890
July	3,909	1,228	377	5,514	759	2	5,470	7,122	4,317	1,639	358	6,314	81	2,135	-------	6,004	8,278
August	4,003	909	348	5,260	352	2	5,248	5,832	4,558	1,611	382	6,551	79	904	25	6,253	7,260
September	2,752	666	284	3,702	357	1	5,042	4,264	4,733	1,771	557	7,061	116	1,455	56	6,145	8,684
October	3,397	925	401	4,723	702	11	4,681	5,775	4,891	1,093	574	6,558	71	2,350	73	5,373	9,678
November	2,971	905	369	4,245	1,656	5	4,645	5,932	4,283	979	542	5,804	41	1,090	24	5,184	7,100
December	3,313	785	515	4,613	208	4	4,749	4,713	5,235	1,112	635	6,982	118	1,713	5	5,871	8,121
Total	46,007	12,572	4,743	63,322	9,185	119	4,749	72,961	53,195	14,516	5,965	73,676	1,063	21,169	210	5,871	94,576
By districts:																	
East Coast	1,691	107	53	1,851			304		932	148	71	1,151				512	
Appalachian	1,038	-------	-------	1,038			24		372	-------	-------	372				56	
Indiana, Illinois, Kentucky, etc.	4,499	493	132	5,124			569		4,874	369	670	5,913				570	
Minnesota, Wisconsin, North and South Dakota	424	-------	-------	424			34		417	-------	-------	417				47	
Oklahoma, Kansas, Missouri, etc	7,249	1,755	1,856	10,860			535		8,535	2,500	1,272	12,307				748	
Texas Inland	4,629	93	423	5,145	(2)	(2)	414	(2)	8,877	278	823	9,978	(2)	(2)	(2)	667	(2)
Texas, Gulf Coast	8,091	5,110	197	13,398			845		8,570	4,251	789	13,610				886	
Louisiana Gulf Coast	3,258	750	-------	4,008			305		4,582	1,251	-------	5,833				432	
Arkansas, Louisiana Inland, etc.	507	63	-------	570			31		421	-------	-------	421				68	
New Mexico	984	-------	-------	984			98		1,052	-------	-------	1,052				126	
Rocky Mountain	2,344	614	385	3,343			323		3,330	936	593	4,859				458	
West Coast	11,293	3,587	1,697	16,577			1,267		11,233	4,783	1,747	17,763				1,301	
Total	46,007	12,572	4,743	63,322	-------	-------	4,749	-------	53,195	14,516	5,965	73,676	-------	-------	-------	5,871	-------

[1] Preliminary figures. [2] Figures not available.

LIQUEFIED GASES

Liquefied gases are derived from two sources. Those produced at refineries are called liquefied refinery gases to distinguish them from those extracted from natural gas, which are called liquefied petroleum gases. The liquefied petroleum gases are all saturated (that is, propane, butane, etc.). The liquefied refinery gases may contain unsaturated compounds or olefins (that is, propylene, butylene, etc.). The olefins are used as feed stock for chemical plants. The saturated gases may be used as chemical raw material or as fuel. Liquefied gases are also used in producing gasoline and are reported in this chapter as natural-gas liquids used at refineries or as gasoline.

The production of liquefied gases in 1958 was 5.3 percent higher than in 1957. The refinery output of liquefied gas totaled 57.6 million barrels in 1958, and natural-gasoline plants extracted 121.9 million barrels. Domestic demand for liquefied gas increased 6.7 percent in 1958.

More detailed information on liquefied gases may be found in the Natural-Gas Liquids chapter.

ASPHALT AND ROAD OIL

Output of petroleum asphalt in 1958 increased 4 percent over 1957. Imports rose 15 percent, and exports decreased 23 percent. Stocks at yearend were 7 percent lower than at yearend 1957. Apparent domestic consumption (production, plus imports, less exports, and plus or minus the change in stocks) was 8 percent higher in 1958.

Production of road oil in 1958 declined 18 percent; apparent consumption declined 14 percent and yearend stocks 29 percent.

Sales of asphalt and asphaltic products increased 11 percent to 18.2 million short tons in 1958. Asphalt sales for paving (13.4 million short tons in 1958) rose 12 percent, indicating the increased use of asphalt in the public-road construction program, and accounted for 74 percent of total domestic sales. Asphalt used for roads on private property, sidewalks, automobile parking areas, and airfield runways are included in the paving category.

Sales of road oil were 1.1 million short tons in 1958—about 8 percent below 1957.

Imports of asphalts, including solid and liquid petroleum asphalts and a small quantity of natural asphalts, increased from 1.2 million short tons valued at $17.2 million in 1957 to 1.4 million short tons valued at $18.9 million in 1958. Most of the petroleum asphalt originated in the Netherlands Antilles and Venezuela. The natural asphalt and bitumens came mainly from Trinidad and Tobago.

Exports of petroleum asphalt and products in 1958 (197,000 short tons valued at $6.0 million) were lower than in 1957 (281,000 short tons valued at $10.0 million).

Asphalt and road oil formerly were reported in a separate chapter of the Minerals Yearbook.

TABLE 71.—Statistical summary of petroleum asphalt and road oil 1954–58

(Thousand short tons)[1]

	1954	1955	1956	1957	1958
Petroleum asphalt:					
Production	13,620	15,113	16,479	15,579	16,251
Imports[2] (including natural)	617	605	656	[3] 1,162	1,334
Exports[4]	340	285	275	325	249
Stocks (end of period)	1,305	1,413	1,664	1,902	1,774
Apparent domestic consumption[5]	13,923	15,325	16,609	16,177	17,464
Petroleum-asphalt sales:					
Paving	9,968	10,766	12,208	11,934	13,384
Roofing	3,250	3,502	3,411	2,819	3,101
All other	1,463	1,412	1,638	1,620	1,694
Total	14,681	15,680	17,257	16,373	18,179
Road oil:					
Production	1,312	1,542	1,459	1,311	1,077
Stocks (end of period)	79	102	91	107	75
Apparent domestic consumption[6]	1,312	1,519	1,470	1,295	1,109
Road-oil sales	1,346	1,460	1,493	1,306	1,165

[1] Converted from barrels to short tons (5.5 barrels = 1 short ton).
[2] Imports into continental United States only.
[3] Revised.
[4] Includes shipments to noncontiguous territories.
[5] Production, plus imports, less exports, plus or minus change in stocks
[6] Production, plus or minus change in stocks.

TABLE 72.—Salient statistics of petroleum asphalt in the United States, 1957–58, by months and districts

(Thousand short tons)[1]

Month and district	Production		Imports[2] (including natural)		Exports[3]		Stocks (end of period)		Apparent domestic consumption[4]	
	1957	1958[5]	1957[6]	1958[5]	1957[6]	1958[5]	1957	1958[5]	1957[6]	1958[5]
Month:										
January	712	736	106	101	15	16	1,887	2,144	580	580
February	711	673	14	24	19	29	2,057	2,413	535	400
March	999	818	54	69	25	11	2,359	2,646	727	642
April	1,189	1,201	82	107	24	22	2,656	2,854	950	1,078
May	1,510	1,537	79	98	19	13	2,756	2,812	1,469	1,664
June	1,639	1,799	100	153	30	22	2,625	2,537	1,840	2,205
July	1,780	1,853	94	183	39	35	2,093	2,235	2,367	2,302
August	1,910	1,961	104	100	47	31	1,813	1,865	2,247	2,401
September	1,694	1,882	118	144	25	19	1,561	1,581	2,039	2,291
October	1,470	1,706	146	116	34	25	1,430	1,337	1,713	2,041
November	1,110	1,263	132	101	16	17	1,636	1,530	1,020	1,153
December	855	822	133	138	32	9	1,902	1,774	690	707
Total	15,579	16,251	1,162	1,334	325	249	1,902	1,774	16,177	17,464
District:										
East Coast	3,477	3,637	(7)	(7)	(7)	(7)	340	359	(7)	(7)
Appalachian	557	616					55	55		
Indiana, Illinois, Kentucky, etc	2,879	2,959					377	358		
Minnesota, Wisconsin, North Dakota	170	154					33	15		
Oklahoma, Kansas, etc	1,571	1,715					285	229		
Texas Inland	820	920					76	81		
Texas Gulf Coast	1,106	1,100					84	80		
Louisiana Gulf Coast	836	859					111	89		
Arkansas, Louisiana Inland, etc	902	782					105	101		
Rocky Mountain	1,108	1,252					194	184		
West Coast	2,153	2,257					242	223		
Total	15,579	16,251	1,162	1,334	325	249	1,902	1,774	16,177	17,464

[1] Converted from barrels to short tons (5.5 barrels = 1 short ton).
[2] Imports into continental United States only.
[3] Includes shipments to noncontiguous territories.
[4] Production, plus imports, less exports, plus or minus change in stocks.
[5] Preliminary figures.
[6] Revised.
[7] Not available.

TABLE 73.—Salient statistics of road oil in the United States, 1957–58, by months and districts

(Short tons) [1]

	Production		Stocks (end of period)		Apparent domestic consumption [2]	
	1957	1958 [3]	1957	1958 [3]	1957	1958 [3]
Month:						
January	28,545	10,181	82,909	88,000	36,727	28,909
February	39,818	28,364	94,182	93,273	28,545	23,091
March	98,909	40,909	160,000	121,091	33,091	13,091
April	83,636	44,000	197,273	133,636	46,363	31,455
May	126,909	137,455	223,273	176,000	100,909	95,091
June	190,727	149,273	222,909	167,818	191,091	157,455
July	213,455	202,909	174,000	162,545	262,364	208,182
August	252,364	209,091	153,091	114,000	273,273	257,636
September	121,455	139,091	123,091	105,091	151,455	148,000
October	71,818	62,727	109,091	76,545	85,818	91,273
November	44,182	32,182	108,000	80,545	45,273	28,182
December	38,909	21,091	106,727	75,273	40,182	25,817
Total	1,310,727	1,077,273	106,727	75,273	1,295,091	1,108,182
District:						
East Coast	7,273	4,364	1,091	727	(4)	(4)
Appalachian	10,182	6,909	364	182		
Indiana, Illinois, Kentucky, etc.	304,727	284,364	18,909	24,545		
Minnesota, Wisconsin, North Dakota	15,091	26,909	---	---		
Oklahoma, Kansas, etc.	232,182	224,000	21,272	8,182		
Texas Inland	727	---	---	---		
Texas Gulf Coast	4,182	3,091	---	364		
Louisiana Gulf Coast	364	727	182	364		
Arkansas, Louisiana Inland, etc.	2,363	2,545	182	182		
Rocky Mountain	272,545	305,091	28,545	21,636		
West Coast	461,091	219,273	36,182	19,091		
Total	1,310,727	1,077,273	106,727	75,273	1,295,091	1,108,182

[1] Converted from barrels to short tons (5.5 barrels = 1 short ton).
[2] Production, plus or minus change in stocks.
[3] Preliminary figures.
[4] Not available.

TABLE 74.—Sales of petroleum-asphalt paving products in the United States, 1957–58, by districts and States

(Short tons)

District [1] and State	Asphalt cements 1957	Asphalt cements 1958	Cutback asphalts 1957	Cutback asphalts 1958	Emulsified asphalts 1957	Emulsified asphalts 1958	Total 1957	Total 1958
District 1:								
Connecticut	176,215	115,660	16,085	63,053	6,181	5,319	198,481	184,032
Delaware	17,073	18,827	26,757	29,613	575	3,760	44,405	52,200
Florida	304,021	325,385	141,045	157,561	31,742	32,513	476,808	515,459
Georgia	161,867	241,976	76,369	63,565	18,281	8,810	256,517	314,351
Maine	32,318	27,056	53,681	73,079	9,574	8,271	95,573	108,406
Maryland and District of Columbia	152,603	159,083	84,216	102,883	23,725	25,707	260,544	287,673
Massachusetts	235,756	222,417	84,838	55,246	452	150	321,046	277,813
New Hampshire	19,044	27,548	55,862	56,903	100	82	75,006	84,533
New Jersey	217,963	205,720	100,092	114,234	12,635	16,582	330,690	336,536
New York	427,304	431,743	226,998	194,860	89,975	99,746	744,277	726,349
North Carolina	200,118	196,147	89,491	111,574	30,520	38,922	320,129	346,643
Pennsylvania	360,451	303,358	154,147	169,128	40,812	24,637	555,410	497,123
Rhode Island	47,554	42,653	36,770	35,285	27	774	84,351	78,712
South Carolina	74,720	107,415	42,246	35,906	5	4,388	116,971	147,709
Vermont	10,285	11,793	24,635	24,562	214	665	35,134	37,020
Virginia	149,278	180,968	126,110	121,863	4,629	5,080	280,017	307,911
West Virginia	59,919	56,172	28,994	23,811	876	2,059	89,789	82,042
Total	2,646,489	2,673,921	1,368,336	1,433,126	270,323	277,465	4,285,148	4,384,512
District 2:								
Illinois	294,602	344,855	119,203	129,205	7,796	11,610	421,601	485,670
Indiana	95,699	126,602	117,938	137,357	67,831	101,158	281,468	365,117
Iowa	136,240	164,801	71,571	101,326	37,742	45,313	245,553	311,440
Kansas	81,792	133,556	180,274	233,607	122	115	262,188	367,278
Kentucky	79,175	134,460	92,527	108,413	17,494	23,154	189,196	266,027
Michigan	174,930	252,039	84,279	76,803	52,853	58,459	312,062	387,301
Minnesota	124,827	141,622	183,357	264,042	13,559	14,625	321,743	420,289
Missouri	89,315	109,667	127,929	163,134	2,545	15,568	219,789	288,369
Nebraska	28,212	61,121	31,038	53,412	274	58	59,524	114,591
North Dakota	94,640	116,192	47,111	75,899	17,139	56,018	158,890	248,109
Ohio	390,234	371,868	295,173	301,664	111,495	114,710	796,902	788,242
Oklahoma	97,107	138,318	119,840	161,234	5,097	2,766	222,044	302,318
South Dakota	67,163	51,122	35,035	36,580	885	42	103,083	87,744
Tennessee	161,459	172,842	85,241	97,232	16,103	17,161	262,803	287,235
Wisconsin	125,418	140,523	95,398	107,611	9,573	10,419	230,389	258,553
Total	2,040,813	2,459,588	1,685,914	2,047,519	360,508	471,176	4,087,235	4,978,283
District 3:								
Alabama	154,310	144,663	59,752	78,756	36,449	38,591	250,511	262,010
Arkansas	39,647	51,380	12,632	17,953	8,869	7,702	61,148	77,035
Louisiana	112,108	180,841	33,122	30,586	17,398	27,173	162,628	238,600
Mississippi	82,666	90,039	38,860	22,885	17,095	20,115	138,621	133,039
New Mexico	92,484	127,021	53,129	65,915	4,342	7,068	149,955	200,004
Texas	459,569	585,067	137,092	166,275	15,837	31,631	612,498	782,973
Total	940,784	1,179,011	334,587	382,370	99,990	132,280	1,375,361	1,693,661
District 4:								
Colorado	89,269	164,386	40,260	71,119	1,323	265	130,852	235,770
Idaho	12,066	20,885	31,881	30,637	1,979	22	45,926	51,544
Montana	34,585	36,518	38,378	48,931	7,062	7,686	80,025	93,135
Utah	54,168	66,783	54,683	64,653	1	1	108,852	131,437
Wyoming	81,387	58,660	56,228	34,198		7	137,615	92,865
Total	271,475	347,232	221,430	249,538	10,365	7,981	503,270	604,751
District 5:								
Arizona	40,183	44,517	14,961	22,418	10,393	14,515	65,537	81,450
California	927,571	966,353	116,754	116,502	129,056	113,065	1,173,381	1,195,920
Nevada	11,189	17,762	10,568	9,380	1,354	3,780	23,111	30,922
Oregon	169,910	133,007	43,344	37,479	5,157	3,522	218,411	174,008
Washington	103,917	135,436	97,675	103,575	1,468	1,332	203,060	240,343
Total	1,252,770	1,297,075	283,302	289,354	147,428	136,214	1,683,500	1,722,643
Total United States	7,152,331	7,956,827	3,893,569	4,401,907	888,614	1,025,116	11,934,514	13,383,850

[1] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.

TABLE 75.—Sales of petroleum-asphalt roofing products in the United States, 1957–58, by districts and States

(Short tons)

District [1] and State	Asphalt cements and fluxes		Emulsified asphalts		Total	
	1957	1958	1957	1958	1957	1958
District 1:						
Connecticut	15,976	18,475	58	74	16,034	18,549
Delaware	6,495	1,399	43	186	6,538	1,585
Florida	88,947	84,866		30	88,947	84,896
Georgia	93,036	132,756	7	1,806	93,043	134,562
Maine	38				38	
Maryland and District of Columbia	47,837	49,946	302	201	48,139	50,147
Massachusetts	48,350	54,277	37	94	48,387	54,371
New Hampshire	405	71	1	25	406	96
New Jersey	292,659	323,229	78	138	292,737	323,367
New York	52,740	51,804	176	419	52,916	52,223
North Carolina	30,815	30,774		3	30,815	30,777
Pennsylvania	114,174	114,469	154	452	114,328	114,921
Rhode Island	34,279	49,687		35	34,279	49,722
South Carolina	28,510	38,578			28,510	38,578
Vermont	165	141	3	11	168	152
Viriginia	4,725	4,389	18	47	4,743	4,436
West Virginia	12,617	38,537		37	12,617	38,574
Total	871,768	993,398	877	3,558	872,645	996,956
District 2:						
Illinois	523,376	505,467	108	91	523,484	505,558
Indiana	56,117	85,984	72	48	56,189	86,032
Iowa	5,790	5,588	11	39	5,801	5,627
Kansas	9,113	13,514			9,113	13,514
Kentucky	2,370	1,622	11	7	2,381	1,629
Michigan	42,305	42,011	124	213	42,429	42,224
Minnesota	105,775	108,500	22	53	105,797	108,553
Missouri	124,163	143,188	1		124,164	143,188
Nebraska	4,279	5,270			4,279	5,270
North Dakota	1,414	1,820			1,414	1,820
Ohio	49,749	54,819	2,628	3,036	52,377	57,855
Oklahoma	12,159	362			12,159	362
South Dakota	1,012	2,271			1,012	2,271
Tennessee	36,224	28,595			36,224	28,595
Wisconsin	6,445	4,645	80	129	6,525	4,774
Total	980,291	1,003,656	3,057	3,616	983,348	1,007,272
District 3:						
Alabama	111,809	113,893	701	4	112,510	113,897
Arkansas	32,753	38,184	13,152		45,905	38,184
Louisiana	104,437	119,826	11,792		116,229	119,826
Mississippi	15,903	9,590			15,903	9,590
New Mexico	8,667	11,439			8,667	11,439
Texas	84,064	237,883			84,064	237,883
Total	357,633	530,815	25,645	4	383,278	530,819
District 4:						
Colorado	27,003	22,603			27,003	22,603
Idaho	3,545	1,521			3,545	1,521
Montana	2,757	3,476			2,757	3,476
Utah	5,586	5,951		1	5,586	5,952
Wyoming	2,388	2,793			2,388	2,793
Total	41,279	36,344		1	41,279	36,345
District 5:						
Arizona	4	20			4	20
California	433,290	410,540	124	71	433,414	410,611
Nevada	280	333			280	333
Oregon	75,838	90,842	6	45	75,844	90,887
Washington	28,524	27,933	10	11	28,534	27,944
Total	537,936	529,668	140	127	538,076	529,795
Total United States	2,788,907	3,093,881	29,719	7,306	2,818,626	3,101,187

[1] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.

TABLE 76.—Sales of all other petroleum-asphalt products in the United States, 1957–58, by districts and States

(Short tons)

District [1] and State	Asphalt cements and fluxes		Emulsified asphalts		Total	
	1957	1958	1957	1958	1957	1958
District 1:						
Connecticut	11,536	13,928	267	741	11,803	14,669
Delaware	357	674	28	11	385	685
Florida	50,162	108,251	1,479	255	51,641	108,506
Georgia	42,606	15,942	289	281	42,895	16,223
Maine	4,049	4,610	90	74	4,139	4,684
Maryland and District of Columbia	21,865	15,160	1,554	1,413	23,419	16,573
Massachusetts	27,753	41,691	1,826	1,038	29,579	42,729
New Hampshire	32	122	91	24	123	146
New Jersey	170,236	185,614	3,967	3,349	174,203	188,963
New York	31,466	32,590	1,482	2,493	32,948	35,083
North Carolina	26,104	58,889	49	897	26,153	59,786
Pennsylvania	157,789	170,734	1,820	1,910	159,609	172,644
Rhode Island	15,530	9,673	143	184	15,673	9,857
South Carolina	981	1,108	10	675	991	1,783
Vermont	1,946	1,645	33	7	1,979	1,652
Virginia	19,181	21,468	148	157	19,329	21,625
West Virginia	43,469	30,623	55	31	43,524	30,654
Total	625,062	712,722	13,331	13,540	638,393	726,262
District 2:						
Illinois	264,194	218,374	7,358	10,838	271,552	229,212
Indiana	83,833	93,861	351	293	84,184	94,154
Iowa	4,950	4,880	407	699	5,357	5,579
Kansas	10,751	14,819	95	161	10,846	14,980
Kentucky	1,056	861	765	626	1,821	1,487
Michigan	35,613	19,431	1,510	3,954	37,123	23,385
Minnesota	35,441	33,272	1,061	1,085	36,502	34,357
Missouri	50,014	51,816	1,387	1,770	51,401	53,586
Nebraska	2,286	2,413	18	13	2,304	2,426
North Dakota	4,348	4,191		18	4,348	4,209
Ohio	82,570	86,438	3,571	3,744	86,141	90,182
Oklahoma	15,901	14,325	51	33	15,952	14,358
South Dakota	133	299		74	133	373
Tennessee	22,119	21,038	146	59	22,265	21,097
Wisconsin	55,141	47,955	693	934	55,834	48,889
Total	668,350	613,973	17,413	24,301	685,763	638,274
District 3:						
Alabama	5,403	9,503	603	1,945	6,006	11,448
Arkansas	7,425	994	22	2,982	7,447	3,976
Louisiana	47,733	48,911		3,113	47,733	52,024
Mississippi	9,826	13,486	755	727	10,581	14,213
New Mexico	4,919	1,630	29	10	4,948	1,640
Texas	66,020	75,015	810	1,897	66,830	76,912
Total	141,326	149,539	2,219	10,674	143,545	160,213
District 4:						
Colorado	9,356	9,398	25	391	9,381	9,789
Idaho	554	443	40	56	594	499
Montana	622	582	937	7	1,559	589
Utah	2,248	4,012	111	31	2,359	4,043
Wyoming	2,669	4,953	8	17	2,677	4,970
Total	15,449	19,388	1,121	502	16,570	19,890
District 5:						
Arizona	1,296	1,789	230	117	1,526	1,906
California	113,613	121,938	5,713	6,447	119,326	128,385
Nevada	319	421	17	8	336	429
Oregon	2,663	4,703	1,514	1,841	4,177	6,544
Washington	8,181	10,252	2,164	1,907	10,345	12,159
Total	126,072	139,103	9,638	10,320	135,710	149,423
Total United States	1,576,259	1,634,725	43,722	59,337	1,619,981	1,694,062

[1] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.

TABLE 77.—Sales of petroleum asphalt and road oil in the United States, 1957–58, by districts and States

(Short tons)

District[1] and State	Asphalt cements and fluxes	Emulsified asphalts	Cutback asphalts	Total 1958	Total 1957	Percent change	Road oil 1958	Road oil 1957	Percent change
District 1:									
Connecticut	148,063	6,134	63,053	217,250	226,318	-4.0	37		
Delaware	20,900	3,957	29,613	54,470	51,328	6.1	116	108	7.4
Florida	518,502	32,798	157,561	708,861	617,396	14.8			
Georgia	390,674	10,897	63,565	465,136	392,455	18.5		56	
Maine	31,666	8,345	73,079	113,090	99,750	13.4	1,117	21	5,219.0
Maryland and District of Columbia	224,189	27,321	102,883	354,393	332,102	6.7	680	371	83.3
Massachusetts	318,385	1,282	55,246	374,913	399,012	-6.0	685	1,053	-35.0
New Hampshire	27,741	131	56,903	84,775	75,535	12.2			
New Jersey	714,563	20,069	114,234	848,866	797,630	6.4	1,278	2,540	-49.7
New York	516,137	102,658	194,860	813,655	830,141	-2.0	5,842	9,561	-38.9
North Carolina	285,810	39,822	111,574	437,206	377,097	15.9	701	710	-1.3
Pennsylvania	588,561	26,999	169,128	784,688	829,347	-5.4	7,295	6,054	20.5
Rhode Island	102,013	993	35,285	138,291	134,303	3.0	105	149	-29.5
South Carolina	147,101	5,063	35,906	188,070	146,472	28.4			
Vermont	13,579	683	24,562	38,824	37,281	4.1			
Virginia	206,825	5,284	121,863	333,972	304,089	9.8			
West Virginia	125,332	2,127	23,811	151,270	145,930	3.7	78	636	-87.7
Total 1958	4,380,041	294,563	1,433,126	6,107,730		5.4	17,934		-15.7
Total 1957	4,143,319	284,531	1,368,336		5,796,186			21,259	
District 2:									
Illinois	1,068,696	22,539	129,205	1,220,440	1,216,637	.3	197,637	211,563	-6.6
Indiana	306,447	101,499	137,357	545,303	421,841	29.3	30,557	28,802	6.1
Iowa	175,269	46,051	101,326	322,646	256,711	25.7	30,525	38,656	-21.0
Kansas	161,889	276	233,607	395,772	282,147	40.3	9,748	3,376	188.7
Kentucky	136,943	23,787	108,413	269,143	193,398	39.2	16,374	16,700	-2.0
Michigan	313,481	62,626	76,803	452,910	391,614	15.7	24,843	30,974	-19.8
Minnesota	283,394	15,763	264,042	563,199	464,042	21.4	14,542	15,431	-5.8
Missouri	304,671	17,338	163,134	485,143	395,354	22.7	98,316	114,497	-14.1
Nebraska	68,804	71	53,412	122,287	66,107	85.0	3,992	5,316	-24.9
North Dakota	122,203	56,036	75,899	254,138	164,652	54.3	7,521	5,536	35.9
Ohio	513,125	121,490	301,664	936,279	935,420	.1	22,170	18,500	19.8
Oklahoma	153,005	2,799	161,234	317,038	250,155	26.7	5,236	5,807	-9.8
South Dakota	53,692	116	36,580	90,388	104,228	-13.3	23,348	37,199	-37.2
Tennessee	222,475	17,220	97,232	336,927	321,292	4.9	1	581	-99.8
Wisconsin	193,123	11,482	107,611	312,216	292,748	6.7	124,486	112,012	11.1
Total 1958	4,077,217	499,093	2,047,519	6,623,829		15.1	609,296		-5.5
Total 1957	3,689,454	380,978	1,685,914		5,756,346			644,950	

District 3:									
Alabama	268,059	40,540	78,756	387,355	369,027	5.0	67	173	−61.3
Arkansas	90,558	10,684	17,953	119,195	114,500	4.1	500	1,680	−70.2
Louisiana	349,578	30,286	30,586	410,450	326,590	25.7	1,182	3,580	−67.0
Mississippi	113,115	20,842	22,885	156,842	165,105	−5.0	15	458	−96.7
New Mexico	140,090	7,078	65,915	213,083	163,570	30.3	6,997	1,019	586.7
Texas	897,965	33,528	166,275	1,097,768	763,392	43.8	39,539	32,166	22.9
Total 1958	1,859,365	142,958	382,370	2,384,693		25.4	48,300		23.6
Total 1957	1,439,743	127,854	334,587		1,902,184			39,076	
District 4:									
Colorado	196,387	656	71,119	268,162	167,236	60.3	19,125	17,420	9.8
Idaho	22,849	78	30,637	53,564	50,065	7.3	20,915	24,063	−13.1
Montana	40,576	7,693	48,931	97,200	84,341	15.2	12,034	7,866	53.0
Utah	76,746	33	64,653	141,432	116,797	21.1	18,085	20,670	−12.5
Wyoming	66,406	24	34,198	100,628	142,680	−29.5	25,936	26,430	−1.9
Total 1958	402,964	8,484	249,538	660,986		17.8	96,095		−.4
Total 1957	328,203	11,486	221,430		561,119			96,449	
District 5:									
Arizona	46,326	14,632	22,418	83,376	67,067	24.3	4,887	15,385	−68.2
California	1,498,831	119,583	116,502	1,734,916	1,726,121	.5	353,293	460,930	−23.4
Nevada	18,516	3,788	9,380	31,684	23,727	33.5	22,573	17,734	27.3
Oregon	228,552	5,408	37,479	271,439	298,432	−9.1	4,982	5,978	−16.7
Washington	173,621	3,250	103,575	280,446	241,939	15.9	7,616	4,107	85.4
Total 1958	1,965,846	146,661	289,354	2,401,861		1.9	393,351		−22.0
Total 1957	1,916,778	157,206	283,302		2,357,286			504,134	
Total United States 1958	12,685,433	1,091,759	4,401,907	18,179,099		11.0	1,164,976		−10.8
Total United States 1957	11,517,497	962,055	3,893,569		16,373,121			1,305,868	

[1] States are grouped according to petroleum-marketing districts rather than conventional geographic regions.

OTHER PRODUCTS

Wax.—Total demand for wax in 1958 was 5.2 million barrels—4.4 percent below 1957. Exports declined 10.9 percent and domestic demand 2.9 percent. Wax is used primarily for waterproofing paper products and for candles.

Coke.—Total production of petroleum coke was 37.8 million barrels in 1958—4.3 million above 1957. Output included 14.2 million barrels of nonmarketable catalyst coke, which forms on the catalyst in cracking operations and must be burned off at the plant. The heat generated in burning it is used as refinery fuel.

The domestic demand for petroleum coke in 1958 increased 15.1 percent over 1957. Coke with a low sulfur content is in considerable demand for making electrodes used in the electrolic production of aluminum. The refiners used 22.4 million barrels of coke for plant fuel, increased refinery stocks by 2.3 million barrels, and exported 4.4 million barrels in 1958.

TABLE 78.—Salient statistics of wax in the United States, 1957–58, by types, months, and districts

(Thousand barrels) [1]

	1957									
	Production				Exports (all types)	Stocks, end of period				Domestic demand (all types)
	Microcrystalline	Fully refined	Other	Total		Microcrystalline	Fully refined	Other	Total	
By months:										
January	91	203	166	460	82	104	288	269	661	375
February	109	157	110	376	68	103	266	263	632	337
March	92	241	166	499	105	115	286	269	670	356
April	62	224	187	473	77	108	295	304	707	359
May	62	266	140	468	77	105	311	290	706	392
June	47	227	147	421	74	99	323	306	728	325
July	58	215	173	446	94	109	300	297	706	374
August	53	231	146	430	110	106	294	258	658	368
September	53	221	188	462	91	103	285	274	662	367
October	64	270	164	498	93	102	295	258	655	412
November	47	245	158	450	82	95	297	263	655	368
December	75	240	163	478	70	104	345	217	666	397
Total	813	2,740	1,908	5,461	1,023	104	345	217	666	4,430
By districts:										
East Coast	407	955	443	1,805		30	84	29	143	
Appalachian	23	94	261	378		13	35	16	64	
Indiana, Illinois, Kentucky, etc	16	176	61	253		1	12	10	23	
Oklahoma, Kansas, etc	223	93	251	567		45	6	26	77	
Texas Inland	11	-------	23	34	(3)	-------	-------	2	2	(3)
Texas Gulf Coast	85	841	285	1,211		9	54	87	150	
Louisiana Gulf Coast	43	84	568	695		3	14	35	52	
Rocky Mountain	5	34	16	55		3	5	12	20	
West Coast	-------	463	-------	463		-------	135	-------	135	
Total	813	2,740	1,908	5,461	-------	104	345	217	666	-------

See footnotes at end of table.

TABLE 78.—Salient statistics of wax in the United States, 1957–58, by types, months, and districts—Continued

(Thousand barrels)[1]

	1958[2]										
	Production				Imports (all types)	Exports (all types)	Stocks, end of period				Domestic demand (all types)
	Microcrystalline	Fully refined	Other	Total			Microcrystalline	Fully refined	Other	Total	
By months:											
January	47	171	222	440	------	62	128	308	266	702	342
February	48	159	182	389	------	59	116	298	280	694	338
March	66	204	175	445	------	73	112	325	282	719	347
April	83	170	183	436	------	65	121	316	284	721	369
May	67	159	199	425	------	78	118	329	288	735	333
June	67	163	215	445	------	66	123	337	283	743	371
July	57	171	162	390	------	82	117	288	287	692	359
August	62	200	160	422	------	72	120	276	303	699	343
September	77	203	195	475	------	84	121	256	331	708	382
October	81	223	151	455	------	85	118	243	304	665	413
November	71	216	187	474	2	86	130	263	340	733	322
December	55	224	177	456	3	99	129	247	336	712	381
Total	781	2,263	2,208	5,252	5	911	129	247	336	712	4,300
By districts:											
East Coast	308	764	542	1,614			28	64	37	129	
Appalachian	12	82	295	389			10	34	13	57	
Indiana, Illinois, Kentucky, etc	18	186	35	239			1	10	6	17	
Oklahoma, Kansas, etc	333	97	341	771	(3)	(3)	57	6	75	138	(3)
Texas Inland	------	------	37	37			------	------	26	26	
Texas Gulf Coast	65	669	361	1,095			23	36	101	160	
Louisiana Gulf Coast	40	8	578	626			6	5	56	67	
Rocky Mountain	-------	43	19	62			4	8	22	34	
West Coast	5	414	------	419			------	84	-------	84	
Total	781	2,263	2,208	5,252	------	------	129	247	336	712	-------

[1] Conversion factor: 280 pounds to the barrel. [2] Preliminary figures. [3] Figures not available.

TABLE 79.—Average monthly refinery prices of 124°–126° white crude scale wax at Pennsylvania refineries, 1954–58, in cents per pound

[Platt's Oil Price Handbook]

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average for year
1954	5.00	5.00	5.05	5.13	5.16	5.44	5.45	5.45	5.45	5.45	5.45	5.45	5.29
1955	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.68	5.47
1956	5.91	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.03	6.25	6.02
1957	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
1958	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25

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TABLE 80.—Salient statistics of petroleum coke in the United States, 1957–58, by months and districts [1]

	Production (thousand barrels)		Yields (percent)		Domestic demand (thousand barrels)		Exports (thousand barrels)		Stocks, end of period (thousand barrels)	
	1957	1958 [2]	1957	1958 [2]	1957	1958 [2]	1957	1958 [2]	1957	1958 [2]
By months:										
January	2,859	3,229	1.1	1.3	2,316	2,661	401	307	1,461	2,795
February	2,539	2,802	1.1	1.3	1,978	2,292	336	426	1,686	2,879
March	2,573	2,960	1.1	1.3	2,038	2,388	374	339	1,847	3,112
April	2,604	3,137	1.1	1.5	2,151	2,414	577	488	1,723	3,347
May	2,962	3,323	1.2	1.5	2,356	2,711	471	317	1,858	3,642
June	2,795	2,964	1.2	1.5	2,253	2,650	428	331	1,972	3,625
July	2,597	3,191	1.1	1.3	2,012	2,383	556	457	2,001	3,976
August	2,812	3,187	1.1	1.3	2,521	2,655	286	403	2,006	4,105
September	2,765	3,021	1.2	1.3	2,092	2,654	504	246	2,175	4,226
October	2,997	3,324	1.3	1.4	2,398	2,722	478	416	2,296	4,412
November	2,928	3,237	1.3	1.4	2,194	2,661	526	333	2,504	4,655
December	3,035	3,433	1.2	1.3	2,717	2,927	288	343	2,534	4,818
Total	[3] 33,466	[4] 37,808	1.2	1.4	27,026	31,118	5,225	4,406	2,534	4,818
By districts:										
East Coast	3,579	4,239	.9	1.1	([5])	([5])	([5])	([5])	301	643
Appalachian	476	422	1.3	1.2						
Indiana, Illinois, Kentucky, etc	10,681	11,457	2.0	2.3					523	1,021
Minnesota, Wisconsin, etc	1,271	1,341	3.9	3.8					157	227
Oklahoma, Kansas, etc	5,478	6,072	2.1	2.3					176	299
Texas Inland	438	429	.4	.5					30	69
Texas Gulf Coast	2,702	3,013	.4	.5						
Louisiana Gulf Coast	2,883	3,449	1.5	1.1					54	24
Arkansas, Louisiana Inland, etc	691	1,316	1.9	4.0					24	303
Rocky Mountain	1,494	1,604	1.8	1.8					196	456
West Coast	3,773	4,466	1.0	1.1					1,073	1,776
Total	[3] 33,466	[4] 37,808	1.2	1.4					2,534	4,818

[1] Conversion factor: 5.0 barrels to the short ton.
[2] Preliminary figures.
[3] Includes 14,173 thousand barrels of non-marketable catalyst coke.
[4] Includes 15,188 thousand barrels of non-marketable catalyst coke.
[5] Figures not available.

Still Gas.—The production of still gas in 1958 totaled 126 million barrels (715 billion cubic feet) compared with 125.7 million barrels (686 billion cubic feet) in 1957. The conversion from cubic feet to barrels is in terms of the crude-oil equivalent to balance the refinery input and output and is not based on heating value. Most still gas is consumed as refinery fuel.

Miscellaneous Oils.—The domestic demand for miscellaneous finished products increased 14.8 percent in 1958. Included in this category are petrolatum, medicinal oils, absorption oils, specialty oils, solvents, and other oils. Petrochemicals are included under specialty oils and other oils.

Unfinished Oils.—Unfinished oils include all oils requiring cracking or further distillation, except the unfinished gasoline portion of naphtha distillate. Unfinished oils are ordinarily rerun and become finished products.

TABLE 81.—Production of still gas in the United States, 1956–58, by districts

District	1956		1957		1958 [1]	
	Million cubic feet	Equivalent in thousand barrels	Million cubic feet	Equivalent in thousand barrels	Million cubic feet	Equivalent in thousand barrels
East Coast	73, 636	14, 269	76, 771	14, 754	89, 405	16, 089
Appalachian	16, 835	3, 997	17, 910	3, 884	18, 975	3, 877
Indiana, Illinois, Kentucky, etc	128, 691	25, 479	144, 104	26, 872	149, 069	26, 642
Minnesota, Wisconsin, North Dakota, and South Dakota	3, 952	868	6, 044	1, 093	6, 783	1, 124
Oklahoma, Kansas, etc	48, 051	9, 648	59, 529	11, 187	63, 193	11, 141
Texas Inland	27, 337	5, 529	27, 483	5, 244	28, 891	5, 790
Texas Gulf Coast	169, 209	29, 357	158, 710	26, 947	151, 925	24, 466
Louisiana Gulf Coast	51, 783	9, 105	56, 965	10, 129	54, 658	8, 864
Arkansas, Louisiana Inland, etc	5, 709	1, 192	5, 223	1, 290	4, 947	1, 375
New Mexico	(2)	134	(2)	216	(2)	189
Rocky Mountain	20, 065	4, 106	23, 478	4, 676	22, 080	4, 507
West Coast	102, 277	18, 309	109, 617	19, 428	124, 915	21, 887
Total	647, 545	121, 993	685, 834	125, 720	714, 841	125, 951

[1] Preliminary figures.
[2] Included with Rocky Mountain.

TABLE 82.—Production of miscellaneous finished oils in the United States in 1958, by districts and classes

(Thousand barrels)

District	Petrolatum	Medicinal oil	Absorption oil	Specialties oil	Solvents	Other	Total
East Coast	----------	27	----------	223	311	2, 279	2, 840
Appalachian	92	10	----------	249	202	3	556
Indiana, Illinois, Kentucky, etc	41	----------	16	297	678	446	1, 478
Minnesota, Wisconsin, North and South Dakota	----------	----------	----------	----------	----------	52	52
Oklahoma, Kansas, etc	326	----------	121	236	152	231	1, 066
Texas Inland	----------	----------	572	33	308	72	985
Texas Gulf Coast	65	----------	50	92	3, 209	1, 282	4, 698
Louisiana Gulf Coast	1	----------	227	----------	108	2, 547	2, 883
Arkansas-Louisiana Inland	----------	----------	601	----------	36	2	639
Rocky Mountain and New Mexico	----------	----------	60	24	----------	378	462
West Coast	86	26	24	576	186	3, 679	4, 577
Total	611	63	1, 671	1, 730	5, 190	10, 971	20, 236

INTERCOASTAL SHIPMENTS

Shipments of crude oil and products from the gulf-coast ports to east-coast ports comprise the bulk of intercoastal shipments. Some petroleum shipments are made from the gulf coast to the west coast and from the west coast to the east coast, but the volume of these shipments is small.

Total shipments from gulf- to east-coast ports were 661.9 million barrels, 4.1 percent less than in 1957. Crude-oil shipments were down 14.1 percent, and refined-product shipments were 0.2 percent below the 1957 level.

TABLE 83.—Petroleum oils, crude and refined, shipped commercially from gulf coast to east coast ports of the United States, 1957–58, by classes [1]

(Thousand barrels)

Year and class	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1957													
Crude petroleum	21,407	18,270	19,763	18,555	15,117	13,558	12,546	12,549	13,948	13,833	15,446	16,135	191,127
Gasoline	17,252	15,151	19,503	18,637	19,459	19,208	19,683	21,573	19,010	19,467	19,266	16,811	225,020
Kerosine	4,754	3,559	3,127	2,598	2,213	2,017	3,026	3,313	2,589	3,345	4,344	4,708	39,593
Distillate fuel oil	19,016	14,854	14,769	11,926	12,226	11,127	12,820	11,731	11,985	12,678	15,794	17,993	166,919
Residual fuel oil	4,053	4,604	3,965	3,823	3,583	3,305	3,166	3,682	4,919	4,643	4,216	5,108	49,067
Lubricating oils	710	731	689	706	658	572	675	661	605	786	586	541	7,920
Miscellaneous oils	509	681	1,149	1,564	907	835	1,038	705	837	768	571	613	10,177
Total	67,701	57,850	62,965	57,809	54,163	50,622	52,954	54,214	53,893	55,520	60,223	61,909	689,823
1958													
Crude petroleum	15,005	12,861	14,663	13,169	13,268	11,712	11,803	14,271	14,679	13,959	14,216	14,603	164,209
Gasoline	16,650	16,039	20,353	17,627	19,669	18,811	19,158	18,527	19,936	20,314	19,213	17,766	224,063
Kerosine	4,885	5,283	3,347	2,454	2,116	2,457	2,561	2,794	2,461	3,713	4,249	5,170	41,490
Distillate fuel oil	17,554	15,407	15,403	12,875	11,432	10,795	12,151	10,358	12,176	13,374	15,425	20,203	167,153
Residual fuel oil	4,539	4,122	4,696	4,524	2,905	2,099	3,344	4,132	3,731	4,321	4,545	4,569	47,527
Lubricating oils	448	516	786	559	626	575	586	637	834	721	739	750	7,777
Miscellaneous oils	595	523	1,115	618	595	898	793	964	797	902	1,154	699	9,653
Total	59,676	54,751	60,363	51,826	50,611	47,347	50,396	51,683	54,614	57,304	59,541	63,760	661,872

[1] Source: Office of Oil and Gas, U.S. Department of the Interior.

FOREIGN TRADE

Foreign-trade statistics in this section, as reported by the U.S. Department of Commerce, differ slightly from those used in other sections of this chapter. Bureau of Mines statistics on petroleum imports pertain to the continental United States only, and its export statistics include not only foreign coutries but also shipments to Territories. Imports of crude petroleum and unfinished oils (table 84) are obtained by the Bureau of Mines from petroleum companies to balance refinery reports; therefore, they differ from the totals reported by the U.S. Department of Commerce.

Imports.—According to U.S. Department of Commerce data, imports totaled 1,735,000 barrels daily in 1958, an increase of 10.2 percent over 1957.

As a result of the Voluntary Oil Import Program, imports of crude oil for the year were 32,000 barrels daily less than in 1957, but imports of products that were not restricted increased sharply. In July, the Administrator of the import program requested all importing companies to limit imports of unfinished oils to the May-June 1958 levels. During the year the Government also issued directives to all Federal purchasing agencies limiting the placement of contracts with petroleum suppliers. They were required to show proof that the company producing the product either imported no crude oil or complied with the provisions of the Voluntary Oil Import Program during the 3-month period before the date of sale.

Net imports (imports minus exports) into the continental United States averaged 1,456,000 barrels daily in 1958 compared with 1,004,000 in 1957. The gain in net imports in 1958 is not entirely normal, as exports in 1957 were high because of heavy shipments to Europe during the Suez crisis.

Exports.—Total exports from the United States in 1958 averaged 279,000 barrels daily compared with 570,000 in 1957. Exports returned to their normal downward trend after two abnormally high years (1956 and 1957) resulting from the Middle East crisis. Shipments to all continents declined for the year.

TABLE 84.—Petroleum oils, crude and refined, imported into continental United States, 1956–57, by months [1]

(Thousand barrels)

Year and class	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1957													
Crude petroleum	25,255	22,119	26,320	27,716	33,159	35,045	37,736	40,275	32,161	32,718	28,225	32,526	373,255
Refined products:													
Gasoline	161	84	141	251	6	136	141	483	585	255	282	381	2,906
Kerosine	30												30
Distillate fuel oil	570	723	887	634	510	444	453	1,165	822	1,014	592	752	8,566
Residual fuel oil	17,593	16,059	17,486	16,690	14,474	12,045	11,097	11,011	10,083	13,318	14,103	19,340	173,299
Jet fuel	599	1,213	986	861	904	588	759	352	357	702	1,656	208	9,185
Asphalt	583	75	298	451	433	551	515	573	651	803	726	732	6,391
Unfinished oils	52	42	62	17	156				196	3	215	214	957
Total refined	19,588	18,196	19,860	18,904	16,483	13,764	12,965	13,584	12,694	16,095	17,574	21,627	201,334
Total crude and refined	44,843	40,315	46,180	46,620	49,642	48,809	50,701	53,859	44,855	48,813	45,799	54,153	574,589
1958 [2]													
Crude petroleum	31,747	23,232	31,366	25,835	28,972	28,802	26,916	29,865	29,927	28,885	29,026	33,434	348,007
Refined products:													
Gasoline	407	353	581	954	1,031	1,741	1,624	1,335	889	730	813	2,114	12,572
Kerosine			17						17				34
Distillate fuel oil	822	1,208	439	1,122	884	1,120	1,789	1,243	1,538	1,174	1,035	1,727	14,101
Residual fuel oil	20,465	17,467	15,185	16,635	12,519	10,493	12,390	11,024	10,139	16,564	15,945	23,058	181,884
Jet fuel	2,011	1,712	1,808	2,679	728	2,584	2,135	904	1,455	2,350	1,090	1,713	21,169
Wax											2	3	5
Asphalt	555	134	379	587	541	843	1,005	551	790	637	554	763	7,339
Unfinished oils	309	601	451	834	1,996	4,175	4,065	3,530	4,639	4,094	4,283	4,577	33,554
Total refined	24,569	21,475	18,860	22,811	17,699	20,956	23,008	18,587	19,467	25,549	23,722	33,955	270,658
Total crude and refined	56,316	44,707	50,226	48,646	46,671	49,758	49,924	48,452	49,394	54,434	52,748	67,389	618,665

[1] Imports of crude reported to the Bureau of Mines; imports of refined products compiled from records of the U.S. Department of Commerce.
[2] Preliminary figures.

TABLE 85.—Crude petroleum and petroleum products imported for consumption into continental United States, 1957–58, by country, in thousand barrels [1]

[Bureau of the Census]

Country	Crude petroleum	Gasoline [2]	Kerosine	Distillate oils [3]	Residual oil [3]	Asphalt	Unfinished oil	Miscellaneous oils [4]	Total
1957									
North America:									
Canada	53,804	1,573		635	772	(5)	9	(5)	56,793
Mexico	3,187	1		294	10,929				14,411
Netherlands Antilles	369	8,347	119	5,134	84,312	3,535			101,816
Trinidad and Tobago	1,175	6		233	1,799	19	260		3,492
Other North America	130			(5)	495				625
Total	58,665	9,927	119	6,296	98,307	3,554	269	(5)	177,137
South America:									
Brazil					648				648
Colombia	8,491				2				8,493
Ecuador	454								454
Venezuela	[6] 208,642	1,411	6	2,329	74,672	[6] 3,012	[6] 1,690		[6] 291,762
Other South America					7	1			8
Total	[6] 217,587	1,411	6	2,329	75,329	[6] 3,013	[6] 1,690		[6] 301,365
Europe:									
Netherlands	201				124	(5)		(5)	325
Other Europe		16		41	10	1	(5)	(5)	68
Total	201	16		41	134	1	(5)	(5)	393
Asia:									
Bahrein		129		358	681				1,168
Indonesia	24,226								24,226
Iran	5,176			1	1				5,178
Iraq	5,649								5,649
Kuwait	59,446								59,446
Qatar [7]	2,257								2,257
Saudi Arabia	12,595			122	[6] 1,537				[6] 14,254
Other Asia				1	32			(5)	[6] 33
Total	109,349	129		482	2,251			(5)	112,211
Grand total	[6] 385,802	11,483	125	9,148	176,021	[6] 6,568	[6] 1,959	(5)	[6] 591,106

See footnotes at end of table.

TABLE 85.—Crude petroleum and petroleum products imported for consumption into continental United States, 1957–58, by country, in thousand barrels [1]—Continued

[Bureau of the Census]

Country	Crude petroleum	Gasoline [2]	Kerosine	Distillate oils [3]	Residual oil [3]	Asphalt	Unfinished oil	Miscellaneous oils [4]	Total
Shipments from noncontiguous Territories and possessions to continental United States:									
Puerto Rico [8]		1,446			454				1,900
Imports into United States Territories and possessions from foreign countries:									
Alaska		395			105				500
Hawaii		223		480	1,051				1,754
Puerto Rico	13,183	222	95	104	2,019	51	589	(5)	16,263
Total	13,183	840	95	584	3,175	51	589	(5)	18,517
Total net imports into continental United States	[6] 372,619	12,089	30	8,564	173,300	[6] 6,517	[6] 1,370	(5)	[6] 574,489
1958									
North America:									
Canada	30,621	748	17	154	362	34	33	(5)	31,969
Mexico	999				11,070			6	12,075
Netherlands Antilles	1,702	22,357	(5)	7,212	84,891	3,834	6,256	6	126,258
Trinidad and Tobago	329	1,757		1,524	5,606	44	3,367		12,627
Other North America		5		4	2,178				2,187
Total	33,651	24,867	17	8,894	104,107	3,912	9,656	12	185,116
South America:									
Brazil	402				1,398				1,800
Colombia	9,770				187				9,957
Venezuela	191,559	2,420	17	4,952	84,898	3,573	7,646		295,065
Other South America	96					(5)			96
Total	201,827	2,420	17	4,952	86,483	3,573	7,646		306,918
Europe:									
Netherlands						16		1	17
Other Europe		11	(5)	41	1,813		935	1	2,801
Total		11	(5)	41	1,813	16	935	2	2,818

Asia:									
Bahrein				311	1,206				1,517
Indonesia	23,845								23,845
Iran	5,829								5,829
Iraq	8,411								8,411
Kuwait	81,037	265		133	2,026		1,839		85,300
Qatar [7]	1,538								1,538
Saudi Arabia	27,159	372		545	119				28,195
Other Asia	684	1,198		2	2		434	(5)	2,320
Total	148,503	1,835		991	3,353		2,273	(5)	156,955
Grand total	383,981	29,133	34	14,878	195,756	7,501	20,510	14	651,807
Shipments from noncontiguous Territories and possessions to continental United States:									
Puerto Rico [8]		5,392		1,073	3,571				10,036
Imports into United States Territories and possessions from foreign countries:									
Alaska		19							19
Hawaii		371		856	1,325				2,552
Puerto	22,957	148		38	1,187	25	1,631	6	25,992
Total	22,957	538		894	2,512	25	1,631	6	28,563
Total net imports into continental United States	361,024	33,987	34	15,057	196,815	7,476	18,879	8	633,280

[1] Compiled by Mae B. Price and Elsie D. Jackson, of the Bureau of Mines, from records of the Bureau of the Census, U.S. Department of Commerce.

[2] Includes jet fuel and naphtha, but excludes benzol (thousand barrels: 1957—1,317; 1958—1,061).

[3] Includes quantities imported free for manufacture in bond and export and for supplies and aircraft.

[4] Includes quantities imported free for supplies of vessels and aircraft.

[5] Less than 1,000 barrels.

[6] Revised figure.

[7] Assumed source; classified in import statistics under "Arabia Peninsular States, n.e.c."

[8] As reported to the Bureau of Mines by shipping companies.

TABLE 86.—Petroleum oils, crude and refined, shipped from continental United States, including shipments to Territories and possessions, 1957–58, by classes and months [1]

(Thousand barrels)

Year and class	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1957													
Crude petroleum	7,566	7,909	14,100	9,232	3,698	1,745	1,197	1,036	739	1,007	926	1,088	50,243
Refined products:													
Gasoline [2]	4,204	3,960	4,325	2,787	2,895	3,187	2,492	3,403	3,311	2,712	3,315	1,997	38,588
Kerosine	1,099	921	974	594	426	386	51	269	125	225	85	103	5,258
Distillate fuel oil	7,316	7,988	7,076	5,054	3,971	2,560	2,806	2,793	1,630	2,243	2,365	1,950	47,752
Residual fuel oil	4,385	4,158	4,227	4,214	3,442	3,193	3,159	2,997	1,979	2,505	2,129	2,182	38,570
Jet fuel	82	9		1		2	2	2	1	11	5	4	119
Lubricants	978	1,056	1,375	1,314	1,139	1,326	1,038	1,180	1,115	1,112	1,100	1,093	13,826
Paraffin wax	82	68	105	77	77	74	94	110	91	93	82	70	1,023
Coke	401	336	374	577	471	428	556	286	504	478	526	288	5,225
Asphalt	82	107	138	131	103	167	212	260	137	188	89	174	1,788
Liquefied gases	398	382	387	378	324	356	396	364	370	384	345	442	4,526
Miscellaneous oils	33	25	28	21	22	16	19	23	19	21	19	23	269
Total refined	19,060	19,010	19,009	15,148	12,870	11,695	10,825	11,687	9,282	9,972	10,060	8,326	156,944
Total crude and refined	26,626	26,919	33,109	24,380	16,568	13,440	12,022	12,723	10,021	10,979	10,986	9,414	207,187
1958 [3]													
Crude petroleum	425	213	838	643	503	216	308	334	170	330	275	74	4,329
Refined products:													
Gasoline [2]	2,052	2,123	1,739	2,527	2,155	2,074	2,505	2,551	2,524	2,389	2,649	2,160	27,448
Kerosine	55	108	62	52	58	68	45	47	60	235	280	145	1,215
Distillate fuel oil	1,580	1,836	2,036	1,166	1,554	1,308	2,078	1,906	1,570	1,102	2,025	987	19,148
Residual fuel oil	1,695	1,573	1,989	1,564	2,511	2,201	2,657	2,271	2,782	2,488	1,997	1,814	25,542
Jet fuel	17			1	5	4		25	56	73	24	5	210
Lubricants	842	1,018	924	1,196	1,221	868	1,179	1,403	978	1,262	1,168	977	13,036
Paraffin wax	62	59	73	65	78	66	82	72	84	85	86	99	911
Coke	307	426	339	488	317	331	457	403	246	416	333	343	4,406
Asphalt	86	157	60	119	74	123	193	168	103	139	95	54	1,371
Liquefied gases	283	265	403	223	165	209	201	206	228	210	208	230	2,831
Miscellaneous oils	21	19	23	22	19	17	21	26	25	27	23	23	266
Total refined	7,000	7,584	7,648	7,423	8,157	7,269	9,418	9,078	8,656	8,426	8,888	6 837	96,384
Total crude and refined	7,425	7,797	8,486	8,066	8,660	7,485	9,726	9,412	8,826	8,756	9,163	6,911	100,713

[1] Compiled from records of the U.S. Department of Commerce, except Alaska and Hawaii, which are Bureau of Mines data; figures may differ slightly from those used in other sections of this chapter.

[2] Includes benzol, naphtha, natural gasoline, and antiknock compounds.

[3] Preliminary figures.

TABLE 87.—Crude petroleum and petroleum products exported from contintental United States, 1957–58, by country of destination, and shipments to and exports from Territories and possessions, in thousand barrels [1]

[Bureau of the Census]

Country	Crude petroleum	Gasoline [2] [3]	Kerosine	Distillate oil	Residual oil	Lubricating oil [2]	Asphalt	Liquefied petroleum gases	Wax	Coke	Petrolatum	Miscellaneous products [2]	Total
1957													
North America:													
Canada	8, 240	1, 696	437	5, 236	5, 918	1, 026	198	1, 340	131	2, 225	13	87	26, 547
Cuba	3, 283	1, 049	4	371	1, 214	230	11	242	23	(4)	2	19	6, 448
El Salvador	-------	161	14	17	-------	16	1	20	7	-------	1	2	239
Mexico	902	5, 494	1, 306	3, 080	3, 069	136	332	2, 313	161	1	10	48	16, 852
Netherlands Antilles	-------	2, 625	375	2, 479	469	14	-------	160	-------	-------	(4)	(4)	6, 122
Other North America	-------	253	28	529	283	265	33	126	56	-------	6	15	1, 594
Total	12, 425	11, 278	2, 164	11, 712	10, 953	1, 687	575	4, 201	378	2, 226	32	171	57, 802
South America:													
Argentina	-------	(4)	408	1, 483	1, 358	25	8	3	1	-------	(4)	1	3, 287
Brazil	-------	55	71	150	-------	1, 062	1	271	45	25	11	3	1, 694
Chile	-------	4	(4)	20	767	131	38	(4)	33	-------	1	10	1, 004
Colombia	-------	4	-------	-------	-------	183	23	6	163	-------	3	7	389
Peru	-------	6	-------	-------	-------	106	2	(4)	22	-------	1	8	145
Venezuela	-------	3	-------	-------	(4)	325	5	3	26	-------	2	31	395
Other South America	-------	7	3	5	19	112	11	(4)	27	-------	(4)	12	196
Total	-------	79	482	1, 658	2, 144	1, 944	88	283	317	25	18	72	7, 110
Europe:													
Belgium-Luxembourg	1, 742	135	2	1, 257	405	861	2	(4)	9	328	6	7	4, 754
France	8, 939	752	258	4, 116	2, 833	50	1	1	41	306	9	5	17, 311
Germany, West	2, 197	90	14	1, 043	2, 738	362	-------	(4)	16	23	9	7	6, 499
Italy	2, 439	196	(4)	-------	185	268	6	20	18	246	7	33	3, 418
Netherlands	3, 254	35	153	3, 570	635	302	(4)	(4)	21	19	4	31	8, 024
Sweden	674	626	139	1, 944	317	416	1	3	6	68	1	10	4, 205
United Kingdom	[5] 14, 880	1, 480	851	11, 028	5, 081	1, 039	(4)	2	52	75	52	(4)	[5] 34, 540
Other Europe	1, 758	414	230	1, 532	1, 077	865	17	15	27	478	20	19	6, 452
Total	[5] 35, 883	3, 728	1, 647	24, 490	13, 271	4, 163	27	41	190	1, 543	108	112	[5] 85, 203

See footnotes at end of table.

TABLE 87.—Crude petroleum and petroleum products exported from continental United States, 1957–58, by country of destination, and shipments to and exports from Territories and possessions, in thousand barrels [1]—Continued

[Bureau of the Census]

Country	Crude petroleum	Gasoline [2][3]	Kerosine	Distillate oil	Residual oil	Lubricating oil [2]	Asphalt	Liquefied petroleum gases	Wax	Coke	Petrolatum	Miscellaneous products [2]	Total
Asia:													
India		6	1			625	15	(4)	2	31	13	11	704
Japan-Nansei and Nanpo Islands	1,057	84	(4)	5,794	5,608	435	7	5	22	1,261	19	407	14,699
Malaya and Singapore		(4)		(4)		84	16		1		2	3	106
Philippines		7	(4)	(4)		293	132	1	14		9	13	469
Turkey		140	154	313	(4)	421			1		(4)	17	1,046
Other Asia	339	276	198	236	706	965	366	1	48	25	33	54	3,247
Total	1,396	513	353	6,343	6,314	2,823	536	7	88	1,317	76	505	20,271
Africa:													
Belgian Congo		40	1	26		91	86		(4)		(4)	6	250
French West Africa		60	30	186	17	2	4				(4)	1	300
Union of South Africa		43	(4)			500	127	(4)	38		21	28	757
United Arab Republic (Egypt Region)		2				256	(4)		(4)		(4)	10	268
Other Africa	539	313	221	617	155	299	81	3	1	36	3	24	2,292
Total	539	458	252	829	172	1,148	298	3	39	36	24	69	3,867
Oceania:													
Australia		157	1	10		693	(4)		8	29	9	1	908
French Pacific Islands		29	12	29	21	5	2	1					99
New Zealand		12	2			149	19	2	3		3		190
Other Oceania			1			(4)	(4)						1
Total		198	16	39	21	847	21	3	11	29	12	1	1,198
Grand total	[5] 50,243	30,792	4,914	45,071	32,875	13,193	1,545	4,538	1,023	5,176	270	1,032	[5] 190,672
Shipments from continental United States to Territories and possessions:													
Alaska and Hawaii [6]		6,386	135	2,868	7,046	145	187		(7)	50	(7)	16	16,833
Puerto Rico	(7)	1,401	243	184	(7)	69	47	(7)	(7)	(7)	(7)	4	1,948
Wake	(7)	879		20	(7)	(4)	1	(7)	(7)	(7)	(7)	(4)	900
Other	(7)	174	12	81	(7)	4	7	(7)	(7)	(7)	(7)	(4)	278
Total		8,840	390	3,153	7,046	218	242		(7)	50	(7)	20	19,959

Exports from noncontiguous Territories and possessions to foreign countries:													
Alaska		115		266		(4)						(4)	381
Other		130	47	152	1,859	2	(4)	12			(4)		2,202
Total		245	47	418	1,859	2	(4)	12			(4)	(4)	2,583
Total net shipments from continental United States	5 50,243	39,387	5,257	47,806	38,062	13,409	1,787	4,526	1,023	5,226	270	1,052	5 208,048
1958													
North America:													
Canada	1,153	1,562	587	3,665	4,385	970	103	369	145	1,653	13	45	14,650
Cuba	592	381	(4)	179	239	202	3	96	30		2	14	1,738
El Salvador		186	28	42	110	23	(4)	6	6		1	2	404
Mexico	696	3,990	258	1,868	2,763	126	292	2,119	102	8	6	36	12,264
Netherlands Antilles		1,330		639	2,014	14	(4)		1		(4)	(4)	3,998
Other North America		314	88	230	1,341	247	75	51	62		7	14	2,429
Total	2,441	7,763	961	6,623	10,852	1,582	473	2,641	346	1,661	29	111	35,483
South America:													
Argentina		(4)				11	(4)		(4)		(4)	(4)	11
Brazil		10	2	64		1,010	92	209	25	25	8	1	1,446
Chile		6	(4)	20	749	151	52		30		1	7	1,016
Colombia		2	(4)	(4)		169	(4)	(4)	108		3	8	290
Peru		22			(4)	120	2		24		1	6	175
Venezuela		2				430	3	(4)	27		2	23	487
Other South America		1	(4)	3	39	102	48	(4)	29	(4)	2	8	232
Total		43	2	87	788	1,993	197	209	243	25	17	53	3,657
Europe:													
Belgium-Luxembourg		25	1	109	64	676	2		9	599	5	6	1,496
France	450	15	(4)	(4)	120	46	1	(4)	29	266	4	2	933
Germany, West		78	6	203	892	281	(4)	(4)	15	15	10	1	1,501
Italy		90	(4)			205	2		28	228	7	6	566
Netherlands		50	1	1,212	1,075	275	(4)		25		4	5	2,647
Sweden		16	1	496	237	312	(4)		8	37	2	6	1,115
United Kingdom	378	93	80	3,319	1,424	942	(4)	(4)	49	67	35	1	6,388
Other Europe	(4)	12	17	245	126	742	7		26	407	16	14	1,612
Total	828	379	106	5,584	3,938	3,479	12	(4)	189	1,619	83	41	16,258

See footnotes at end of table.

TABLE 87.—Crude petroleum and petroleum products exported from continental United States, 1957–58, by country of destination, and shipments to and exports from Territories and possessions, in thousand barrels [1]—Continued

[Bureau of the Census]

Country	Crude petroleum	Gasoline [2] [3]	Kerosine	Distillate oil]	Residual	Lubricating oil [2]	Asphalt	Liquefied petroleum gases	Wax	Coke	Petrolatum	Miscellanous products [2]	Total
Asia:													
India		21	2			476	5	([4])	1	47	13	8	573
Japan-Nansei and Nanpo Islands	1,076	49	3	4,458	6,471	550	5	([4])	19	897	17	7	13,552
Malaya and Singapore		([4])				68	1	([4])	1		3	2	75
Philippines		3	([4])			280	119		12		12	10	436
Turkey		278		105	([4])	429	([4])		1		([4])	17	830
Other Asia		25	([4])	76	84	1,040	42		46	28	42	40	1,423
Total	1,076	376	5	4,639	6,555	2,843	172	([4])	80	972	87	84	16,889
Africa:													
Belgian Congo		5	2			64	58		([4])		([4])	3	132
French West Africa		8	3	12	317	4	1				([4])	2	347
Union of South Africa		30	([4])		([4])	422	111		34		21	22	640
United Arab Republic (Egypt Region)		2				391			1		1	11	406
Other Africa		5	43	100	297	233	49	([4])	2	95	4	15	843
Total		50	48	112	614	1,114	219	([4])	37	95	26	53	2,368
Oceania:													
Australia		5	1	6		763	([4])	([4])	8	34	12	1	830
French Pacific Islands		37	15	60	25	4	([4])	1				([4])	142
New Zealand		8	1			150	10	3	2		2		176
Other Oceania		1	1	4		([4])		([4])			([4])		6
Total		51	18	70	25	917	10	4	10	34	14	1	1,154
Grand total	4,345	20,370	1,140	17,115	22,772	12,464	1,083	2,854	905	4,406	256	518	88,228
Shipments from continental United States to Territories and possessions:													
Alaska and Hawaii [6]		6,680	131	2,698	5,837	116	137	2	([7])	([7])	([7])	57	15,658
Puerto Rico	([7])	481	18	6	([7])	78	129	([7])	([7])	([7])	([7])	5	717
Wake	([7])	942	([4])	12	([7])	1	([4])	([7])	([7])	([7])	([7])	([4])	955
Other	([7])	102	11	34	([7])	6	17	([7])	([7])	([7])	([7])	([4])	170
Total		8,205	160	2,750	5,837	201	283	2	([7])	([7])	([7])	62	17,500

Exports from noncontiguous Territories and possessions to foreign countries:													
Alaska		77	(4)	243		2		8				(4)	330
Other		128	80	631	2,858	(4)	(4)	20	(4)				3,717
Total		205	80	874	2,858	2	(4)	28	(4)			(4)	4,047
Total net shipments from continental United States	4,345	28,370	1,220	18,991	25,751	12,663	1,366	2,828	905	4,406	256	580	101,681

1 Compiled by Mae B. Price and Elsie D. Jackson, of the Bureau of Mines, from records of the Bureau of the Census, U.S. Department of Commerce.
2 Country and continent totals exclude but grand totals include: 1957—14,538; 1958—11,708 thousand barrels of aviation gasoline; 1957—581; 1958—536 thousand barrels of lubricating oils; and 1957—102; 1958—175 thousand barrels of jet fuel for which country breakdown may not be published for security reasons.
3 Includes naphtha but excludes benzol (thousand barrels): 1957—64; 1958—273.
4 Less than 1,000 barrels.
5 Revised figure.
6 Figures represent shipments from refining companies to Alaska and Hawaii through Pacific coast ports, as reported to Bureau of Mines by shippers.
7 Not separately classified.

WORLD PRODUCTION

CRUDE PETROLEUM [2]

World production of crude petroleum increased 2.6 percent in 1958, reaching 6.6 billion barrels. During the year, output of crude by the U.S.S.R. and Soviet bloc countries accounted for 14.1 percent of the total, as against 12.9 percent in 1957. North America continued, as in past years, to supply the largest percentage of world output—41.5 percent of the total. The next largest supplier, the Middle East, contributed 23.5 percent. South America accounted for 16.4 percent. Production by these three free world areas comprised 81.4 percent of the world total, compared with 82.9 percent in 1957. Although African production of crude was insignificant in 1958, the relative gain in output, compared with 1957, far exceeded relative gains in other regions.

In North America, crude production in 1958 was 2.7 billion barrels, 6 percent less than in 1957. The decline reflected appreciable drops of 6.4 percent and 9 percent in the United States and Canada, respectively. Output of crude in Mexico partly offset these declines, amounting to 94 million barrels or a gain of 6.8 percent. Cuba's small production dropped 13.0 percent.

Crude production in South America declined slightly to 1,084 million barrels in 1958. Venezuela's output was 951 million barrels, a decrease of 6.3 percent. Argentina produced 36 million barrels, a gain of 17.4 percent, by heavier production from existing fields. There was little change in the output of Colombia, which totaled 48 million barrels.

In Brazil, production rose sharply in 1958 by 87.2 percent to 19 million barrels. The Agua Grande field, principal source of Brazilian crude, doubled its output to 12 million barrels, and production from the Candeias field, second largest source, reached 5 million barrels, a gain of 87.6 percent. The increase in output of Brazilian crude, which has a high wax content, resulted in exports of slightly over 8 million barrels to countries with refineries adapted to processing crude of this type. Peruvian production dropped 2.5 percent.

The Middle East (excluding Egypt) produced 1.6 billion barrels in 1958, a gain of 20.5 percent. Iraq, which produced 266 million barrels, had the largest relative increase, 62.8 percent. The sharp rise in Iraq production reflected restoration of normal pipeline movements to the Mediterranean, which were seriously curtailed by the Suez crisis in Egypt late in 1956 and early 1957. Production in Kuwait, the principal source of crude in the Middle East, rose 22.5 percent to 510 million barrels in 1958. A large gain, 14.5 percent, was made in Iran, which produced 301 million barrels. Output in Saudi Arabia, 370 million barrels, increased 2.3 percent. The Kuwait-Saudi Arabia Neutral Zone increased production by 26.7 percent to 29 million barrels.

In Western Europe (comprising Austria, France, Western Germany, Italy, Netherlands, and United Kingdom) total production in 1958 was 84 million barrels, a gain of 4.2 percent. The output of crude in Austria, the second largest producer, continued to decline.

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[2] By J. V. Hightower.

Output in Germany, the principal producer of crude in Western Europe, was 32 million barrels in 1958, a gain of 11.9 percent. Italy, which produced 10 million barrels in 1958, had the largest relative increase over 1957—21.7 percent. Almost the entire output came from the island of Sicily. Production in France, virtually all of which came from ESSO's Parentis field, dropped slightly.

In 1958, the U.S.S.R. and Russian-associated countries (defined in this chapter as Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, and Yugoslavia) produced 935 million barrels of crude, a gain of 12.5 percent. Of this total, the U.S.S.R. produced 89.2 percent, or 834 million barrels. Production in Russia increased 13.9 percent over 1957. Output of crude petroleum in Rumania continued the slow rise reported in recent years; the 1958 figure, 84 million barrels, was a gain of 1.4 percent. Hungary, next to Rumania in productivity among the Soviet bloc countries, increased crude production by 23.4 percent in 1958 to over 6 million barrels. Output of crude in Albania dropped appreciably. Production in Yugoslavia increased 16.8 percent.

Africa (included are Algeria, Angola, Egypt, French Equatorial Africa, Morocco, and Nigeria) contributed unimportant quantities of crude petroleum to the world total in 1958, but relative gains over 1957 far exceeded increases in other geographical groups. Africa produced 32 million barrels, an increase of 76.6 percent.

Most of Africa's output of crude came from Egypt, which produced 22 million barrels, 36.8 percent more than in 1957. The gain was due primarily to a heavy increase in production from fields of the Sinai Peninsula, which yielded 70 percent of the total output of Egyptian crude in 1958. The serious decline in production from Algeria during recent years was sharply reversed in 1958, when output of crude from the Algerian Sahara reached a commercial level. Sahara production constituted practically the entire Algerian output of more than 3 million barrels. The first shipment went to France early in the year. The Gabon region of French Equatorial Africa trebled its 1957 production to approximately 4 million barrels in 1958 as the result of further development in the major producing fields. Most of the crude went to France. Commercial production of almost 2 million barrels was established in Nigeria in 1958 by Shell-BP Petroleum Development Co. Almost all of the crude was exported to the Netherlands and United Kingdom. Production in Angola was five times the output of 1957. Early in 1958 the first refinery, a 2,000-barrel-per-day topping plant, was completed in Angola. It processed all the crude produced in that country.

In the Far East the combined output of Indonesia, British Borneo, New Guinea, Japan, Taiwan, Communist China, Burma, India, and Pakistan was 178 million barrels in 1958, a gain of 2.3 percent. The increase was appreciably less than that of 13.6 percent in 1957. Output of crude in Indonesia, the principal producer in the area, rose 4.0 percent in 1958, but the gain was only one-third of the increase noted in 1957. Production of British Borneo, the second-largest producer, declined 5.4 percent in 1958 or twice as much as in 1957. The steady downward trend of crude production in New Guinea continued during 1958, with a drop of 18.8 percent. Japanese production rose 14.3 percent to approximately 3 million barrels. Burma, India, and Pakistan together produced 9 million barrels, a gain of 8.9 percent.

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TABLE 88.—World production of crude petroleum, by countries, 1954–58, in thousand barrels [1]

[Compiled by Pearl J. Thompson and Berenice B. Mitchell]

Country	1954	1955	1956	1957	1958 [2]
North America:					
Canada	96,080	129,440	171,981	181,848	165,519
Cuba [3]	25	375	543	395	344
Mexico	83,653	89,406	90,660	88,266	93,533
Trinidad	23,629	24,896	28,929	34,064	37,355
United States (including Alaska)	2,314,988	2,484,428	2,617,283	2,616,778	2,448,866
Total	2,518,375	2,728,545	2,909,396	2,921,351	2,745,617
South America:					
Argentina	29,573	30,501	31,013	30,557	35,829
Bolivia	1,695	2,693	3,196	3,575	3,435
Brazil	993	2,022	4,059	10,106	18,919
Chile	1,736	2,577	3,542	4,337	5,568
Colombia	39,981	39,711	44,968	46,782	47,951
Ecuador	3,146	3,599	3,420	3,191	3,108
Peru	17,162	17,242	18,383	19,222	18,732
Venezuela	691,810	787,409	899,212	1,014,457	950,796
Total	786,096	885,754	1,007,793	1,132,227	1,084,338
Europe:					
Albania	1,168	1,388	1,868	3,268	2,690
Austria	23,400	24,886	23,622	21,955	19,548
Bulgaria	-----------	1,103	1,691	2,095	2,205
Czechoslovakia	848	726	732	732	950
France	3,616	6,224	9,100	10,157	9,986
Germany, West	19,008	22,435	25,408	28,698	32,126
Hungary	9,286	12,216	9,172	5,127	6,325
Italy	535	1,519	4,209	8,593	10,461
Netherlands	6,535	7,126	7,652	10,623	11,306
Poland	1,363	1,334	1,363	1,340	1,300
Rumania	72,600	78,670	81,390	83,327	84,487
U.S.S.R. [4]	426,960	509,760	611,740	732,630	834,225
United Kingdom	450	408	489	606	584
Yugoslavia	1,557	2,027	2,076	2,797	3,267
Total [4]	567,326	669,822	780,512	911,948	1,019,460
Asia:					
Bahrein	10,992	10,982	11,015	11,691	14,873
Burma	1,345	1,582	1,726	2,981	3,454
China [5]	3,000	3,500	4,700	5,000	6,000
India	2,235	2,526	2,876	3,241	3,448
Indonesia	79,586	87,083	93,820	114,151	118,715
Iran	21,500	120,562	197,148	263,134	301,361
Iraq	228,432	251,206	232,307	163,498	266,125
Israel	-----------	-----------	146	394	642
Japan	2,124	2,229	2,169	2,243	2,563
Kuwait	347,319	398,493	399,874	416,045	509,654
Kuwait-Neutral Zone	5,995	8,848	11,684	23,259	29,469
Pakistan	1,945	2,068	2,118	2,200	2,272
Qatar	36,450	41,983	45,300	50,798	63,412
Sarawak and Brunei	36,315	39,751	42,983	41,821	39,551
Saudi Arabia	347,845	352,240	360,923	362,121	370,486
Taiwan (Formosa)	35	24	21	17	15
Turkey	399	1,205	2,213	2,159	2,379
Total [4]	1,125,517	1,324,282	1,411,023	1,464,753	1,734,419
Africa:					
Algeria	570	438	253	101	[6] 3,420
Angola	-----------	-----------	52	71	358
Egypt	13,774	12,634	12,185	16,157	22,109
French Equatorial Africa	-----------	-----------	-----------	1,207	3,550
Morocco: Southern Zone	881	765	734	566	560
Nigeria	-----------	-----------	-----------	-----------	1,970
Total	15,225	13,837	13,224	18,102	31,967
Oceania:					
New Guinea	4,045	3,413	2,610	2,279	1,850
New Zealand	7	6	7	6	5
Total	4,052	3,419	2,617	2,285	1,855
World total	5,016,591	5,625,659	6,124,565	6,450,666	6,617,656

[1] This table incorporates a number of revisions of data published in previous Petroleum chapters.
[2] Preliminary figures.
[3] Natural naphtha and gas oil.
[4] U.S.S.R. in Asia (including Sakhalin) included with U.S.S.R. in Europe.
[5] Estimate.
[6] Including Sahara.

OIL SHALE[3]

The year 1958 was not auspicious for oil-shale production.

The development program instituted in Colorado by the Union Oil Co. of California was terminated, and both the underground mine and retort were shut down. The work at the Denver Research Institute sponsored by The Shale Oil Co. is continuing.

Production in France and Scotland decreased considerably, and production in Scotland probably will be shut down. Fortunately, production in Spain and Sweden increased slightly. Apparently the U.S.S.R. continued to be the largest single producer of oil shale.

TABLE 89.—Production of oil shale, 1952–57, by countries [1]

(Long tons)

Country	1952	1953	1954	1955	1956	197
Great Britain	1,401,191	1,385,665	1,356,218	1,336,100	1,053,835	902,062
South Africa	191,583	276,296	257,407	274,459	256,942	(2)
Australia	21,661					
Austria	753	942	1,038	841	707	694
France	338,040	308,000	243,976	214,000	144,000	40,000
Spain	156,111	189,119	234,071	486,669	589,343	721,845
Sweden	1,630,271	1,901,744	1,793,034	1,829,070	2,101,852	2,113,159

[1] Source: Statistical Summary of the Mineral Industry, published by Her Majesty's Stationary Office, London, 1957. Oil shale is also produced in Germany, Manchuria, and U.S.S.R; U.S.S.R. mined 11,600,000 tons in1956.

[2] Not reported in 1957.

[3] By S. Klosky, assistant chief, Branch of Oil Shale, Washington, D.C.

C. Helium

Helium

By Q. L. Wilcox and Henry P. Wheeler, Jr.

Contents

GENERAL SUMMARY

THE BUREAU OF MINES produced a record-breaking 334 million cubic feet of helium in 1958. In addition, 7 million cubic feet withdrawn from underground storage and 11 million cubic feet on hand in high-pressure storage and shipping containers were shipped, but there was not enough available to supply the demand.

In May the Secretary of the Interior announced a new national policy to conserve an estimated 32 billion cubic feet of helium, which would otherwise be wasted. The announcement was followed in August by a request for new legislation, which would empower the Department of the Interior to take the first steps in the program. The proposed legislation would encourage private industry to participate in financing, constructing, and operating the 12 conservation helium plants under consideration.

Funds were obtained in August to construct a fifth helium plant. The contract for its design and construction was awarded in November. The scheduled completion date is August 1959.

All four of the Bureau of Mines helium plants operated during the year. However, the Navajo plant at Shiprock, N. Mex., was shut down in August because of an inadequate supply of helium-bearing natural gas.

PRODUCTION

Helium production for 1958 was 334,175,000 cubic feet. The Bureau of Mines helium plants at Amarillo and Exell, Tex., and at Otis, Kans., were operated throughout the year. The Navajo plant at Shiprock, N. Mex., produced until August, but was shut down and put on a standby basis as of November 1 because of the insufficient supply of helium-bearing natural gas available for processing. Nevertheless, production increased nearly 43 million cubic feet over that for 1957 because the expanded facilities at Exell were on stream for the full year (see table 1).

Some work was done in 1957 and early in 1958 to modify the older part of the Exell plant. However, it was not feasible to shut down the plant to finish alterations because demand increased rapidly, starting in April. Consequently, completion of the job was postponed until after the new helium plant is in operation.

In April a contract with Colorado Interstate Gas Co. was signed for exclusive rights to produce helium from natural gas owned or controlled by the company in the Keyes field, Cimarron County, Okla. Approximately $12 million was provided by the Congress in August to erect a new helium plant in the field. The contract for the design and construction was awarded in November to the Fluor Corporation of Los Angeles, Calif. The scheduled completion date is August 1959. At year end work on the plant was well under way.

Both the helium content and the proved reserves of helium in the Keyes field natural gas are above average. The helium content is about 2 percent. The deposit can supply a plant capable of producing 290 million cubic feet of helium per year for many years.

TABLE 1.—Helium production in the United States, 1921–58

Year	Active plants	Production (thousand cubic feet)
1921—January 1929 [1]	Fort Worth, Tex	46,089
1929—April 1942	Amarillo, Tex	164,867
1943	Amarillo and Exell, Tex., and Otis, Kans	116,307
1944	Amarillo and Exell, Tex., Otis and Cunningham, Kans., and Navajo (Shiprock), N. Mex.	126,933
1945	Amarillo and Exell, Tex., and Otis and Cunningham, Kans	94,734
1946	Amarillo and Exell, Tex	58,236
1947	Exell, Tex	70,298
1948	do	63,144
1949	do	55,166
1950	Amarillo and Exell, Tex	81,394
1951	Amarillo and Exell, Tex., and Otis, Kans	112,009
1952	do	144,556
1953	Amarillo and Exell, Tex., Otis Kans., and Navajo (Shiprock), N. Mex.	161,087
1954	do	190,741
1955	do	220,711
1956	do	243,880
1957	do	291,457
1958	do	334,175
Total		[2] 2,575,784

[1] No helium was produced at Government helium plants in February or March 1929. The Fort Worth plant was shut down Jan. 10, 1929, and the Amarillo plant began operating in April.
[2] Includes 17,220,000 cubic feet extracted at the Exell plant and injected into the Government-owned Cliffside gasfield for conservation, in excess of that later withdrawn.

SHIPMENTS

The Bureau of Mines shipped 352,134,000 cubic feet of helium; 10,688,000 cubic feet came from shipping containers and high-pressure storage at the plants; 7,271,000 cubic feet of conservation helium was withdrawn from underground storage in excess of that injected early in the year; and helium produced during the year was shipped. The entire demand was not satisfied.

The delivery of 15 new tank cars in May and June increased the total in the tank car pool to 137. A contract was awarded for the delivery in August 1959 of 20 additional tank cars for use when the Keyes plant is completed. The Bureau of Mines also ordered six new tank cars for the Atomic Energy Commission to be delivered in 1959. All cars are used interchangeably for shipping helium, regardless of ownership, to provide efficient fleet operation.

CONSUMPTION AND USES

The Federal agencies received about 77 percent of the shipments in 1958. Contractors for the Government used more than half of the helium available for non-Federal consumption. Directly and indirectly, at least 90 percent of the total helium used benefited the Government.

To assure that helium for commercial (non-Federal) distribution was used in the public interest, it was necessary to continue the informal allocation system that had been intermittently in force since 1955 and carried out through the cooperation of the distributors, who buy helium directly from the Bureau of Mines. This system was effective in assuring helium for defense, atomic energy, and medical purposes; most research needs were met.

Obtaining helium for less essential purposes was difficult; some users were not able to get all they wanted because the demands of the Federal agencies had to be assured first necessitating allotment of the remaining helium to the commercial helium distributors.

The defense and space agencies and the Atomic Energy Commission continued to use more helium in their operations and research. The low boiling point of helium makes it indispensable in low-temperature research. Its high thermal conductivity and chemical inertness are proving essential in many phases of gas chromatography. Both uses will become increasingly important in the next few years.

Some other applications of helium are in inflating airships and meteorological balloons, in shielded arc welding and leak detection, and in atomic energy and guided-missile operations.

RESERVES

Helium is found in about 1 part in 200,000 in the earth's atmosphere and in gases from some mineral springs, volcanoes, and fumeroles. Helium also is found in some natural gases. In particular, substantial natural gas deposits in the southwestern part of the United States contain helium as a minor constituent. The deposits are within a 250-mile radius of Amarillo, Tex. Ninety-nine percent of the known helium-bearing natural gas resources in the United States are concentrated in this area. The natural gas deposits have been developed by private companies to supply gas for fuel markets and are being operated for that purpose.

Government Helium Reserves.—The Government owns one major source of helium-bearing natural gas—the Cliffside field in the Texas Panhandle not far from Amarillo. The Bureau of Mines Amarillo plant is producing helium from the natural gas of this deposit. Enough natural gas has been withdrawn to create storage capacity for 32 billion cubic feet of conservation helium without exceeding the original field pressure.

The two wells in the Government-leased Rattlesnake field in San Juan County, N. Mex., could not be brought back into production, although both were worked over in an attempt to shut off water in the producing horizon. Private producers of nearby helium-bearing natural gas wells had a similar experience, resulting in the Navajo (Shiprock) plant being shut down.

Two relatively small helium-bearing natural gasfields have been discovered on lands of the public domain. These lands have been withdrawn and established as Helium Reserve No. 1, Woodside structure, Utah, and Helium Reserve No. 2, Harley Dome, Utah, in March 1924 and in June 1933, respectively. Neither has been produced.

Other Sources of Helium-Bearing Natural Gas.—Apparently, the United States has the only important helium-bearing natural gas deposits in the free world. The last significant helium-bearing natural gas find was in 1943. Since then, nearly 650,000 wells have been drilled for oil or gas in the United States without discovering comparable new sources of helium.

The Bureau of Mines conducts a continuous survey to determine new sources of helium in the United States. Gas samples from new fields and producing formations and some samples from foreign countries are analyzed for helium content. None of the samples from outside the United States has disclosed a source of recoverable helium.

CONSERVATION

In the first 3 months of the year 7,142,000 cubic feet of helium was injected into the Government-owned Cliffside gasfield near Amarillo. In these months helium in excess of demand was produced. Over the remaining months of the year 14,413,000 cubic feet of helium was withdrawn to help meet burgeoning demands. The result was a net withdrawal of 7,271,000 cubic feet of conservation helium, leaving at year end 17,220,000 cubic feet in underground storage in the Cliffside field that had been injected in years past when production exceeded helium requirements.

At Otis, Kans., and Exell, Tex., helium was produced at Bureau of Mines plants from privately owned natural gas before the gas was transported to fuel markets. However, over 10 times the produced volume of helium was withdrawn from fields in natural gas that was not processed. This helium was lost to the atmosphere without serving any useful purpose when the natural gas was consumed as fuel.

In May, a new national conservation policy was announced. Under the policy, most of the helium now wasted is to be extracted from the natural gas before it is transported to fuel markets. Recovery is to be accomplished in up to 12 new plants, now estimated to cost about $224 million. Private industry will be encouraged to finance, construct, and operate the plants.

In August, a bill was introduced in Congress to facilitate the long-range conservation program and amend the Helium Act of 1937. If enacted, the legislation would enable the first steps to be taken in a program to recover and conserve some 32 billion cubic feet of helium.

PRICES

The Helium Act of 1937 (50 Stat. 885; 50 U.S.C. 161, 163–166) provides that Federal agencies may requisition helium from the Bureau of Mines by paying proportionate shares of the expenses incident to the administration, operation, and maintenance of the Government helium plants and properties. Throughout 1958 the price to Federal agencies was $15.50 per thousand cubic feet.

The price of helium sold by the Bureau of Mines to non-Federal customers was $19 per thousand cubic feet. An additional charge of $2 per thousand cubic feet covered filling costs, when the helium was required in standard-type cylinders. A list of charges and other information concerning the sale of helium by the Bureau of Mines is included in the Code of Federal Regulations (30 C.F.R. 1).

FOREIGN TRADE

Relatively small quantities of helium are exported annually under licenses approved by the Secretary of State.

TECHNOLOGY

Research was conducted at the Bureau of Mines Helium Activity headquarters in Amarillo to improve the efficiency and reduce the costs of producing and transporting helium. Part of the research in 1958 was on the compressibility of pure helium and of helium-nitrogen mixtures to 4,000 p.s.i.a. and enabled empirical equations to be derived from which accurate compressibility factors can be calculated. The phase relationships of the helium-nitrogen systems were studied, and equations of state were derived.

A portable helium leak detector was built and successfully field tested. Work is in progress on a helium purity tester to detect as little as 10 parts per million total impurity. This work will be continued, as will experiments on cylinder drying, which has a great potential for maintaining 99.995 plus percent helium purity from the plant to the consumer.

A continuous survey also was conducted to determine potential new sources of helium-bearing natural gas from various places throughout the United States and, to a limited extent, from other countries. The analysis of the gas and the heating value calculated from the analysis (16 components in all) are furnished to the gas-well or pipeline owner in return for supplying the sample. Four hundred twenty-five samples were analyzed in 1958 without discovery of any new worthwhile deposits of helium-bearing natural gas. Bureau of Mines Bulletin 576, containing the results of 1,575 analyses made from late 1947 to about May 1956 in the course of the helium survey, was published in 1958. Copies may be obtained from the Superintendent of Documents, Washington 25, D.C., for $1.25.

Results of another part of the research were published in Industrial and Engineering Chemistry, Vol. 50, No. 5, May 1958, pp. 849–852. The article by L. W. Brandt and Lowell Stroud was entitled "Phase Equilibria in Natural Gas Systems. An Apparatus With Windowed Cell for 800 PSIG and Temperatures to −320° F."

PART III. APPENDIX

Tables of Measurement

Volumetric measures

	U.S. gallons	Imperial gallons	Cubic feet	Barrels	Cubic centimeters	Liters	Cubic meter
1 U.S. gallon[1]	1	0.83268	0.13368	0.02381	3,785.4	3.7853	0.0037854
1 imperial gallon[2]	1.201	1	.16054	.028594	4,546.04	4.5460	.004546
1 cubic foot	7.4805	6.22888	1	.17811	28,317.01	28.316	.028317
1 barrel[3]	42	34.972	5.6146	1	158,987.55	158.98	.15899
1 cubic centimeter	.00026417	.00021996	.000035314	.0000062895	1	.00099997	.000001
1 liter	.26418	.219976	.035316	.0062899	1,000.027	1	.001000027
1 cubic meter	264.17	219.97	35.314	6.2898	1,000,000	999.97	1

[1] U.S. gallon=the volume occupied by 231 cubic inches.
[2] 1 imperial gallon=the volume occupied by 10 pounds of water at 62° F. when weighed against brass in air at 30″ barometric pressure.
[3] 1 barrel=42 U.S. gallons.

Weight measures

	Pounds	Kilograms	Short or net tons	Metric tons	Long ton
1 pound	1	0.45359	0.0005	0.00045359	0.00044643
1 short or net hundredweight	100.0	45.359	.05	.04536	.04464
1 gross or long hundredweight	112.0	50.802	.056	.05080	.05
1 kilogram	2.2046	1	.0011023	.001	.0009842
1 short or net ton	2,000	907.185	1	.90718	.89286
1 metric ton	2,204.6	1,000	1.1023	1	.98421
1 long ton	2,240	1,016.06	1.12	1.01606	1

NOTE.—1 English water ton=the volume occupied by 1 long ton of water at 60° F.

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