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# THE MINERAL INDUSTRY IN KANSAS 1950 TO 1954

By

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## FOREWORD

Mineral statistics for Kansas have been published by the United States Geological Survey for the years 1882 to 1923 and by the United States Bureau of Mines since 1924. The United States Bureau of the Census has also collected mineral data at stated intervals. Since at least 1913 the State Geological Survey of Kansas has cooperated with these agencies in the collecting of mineral data. Except for the period 1897 to 1903, the State Survey has not published any bulletin dealing with the entire mineral industry in Kansas. The Survey has, however, published annually since 1927 circulars and bulletins relative to the oil and gas resources and developments in Kansas during these years. Because of the demand for statistical information on all mineral commodities produced in the state and numerous requests for directories of mineral producers operating in Kansas, the Survey has decided to issue each year a report on the mineral industry in Kansas, in addition to the oil and gas development reports issued since 1927.

This first bulletin covers the five-year period 1950 through 1954; subsequent bulletins will consider the mineral industry for one year only, and will make comparison with the preceding year. Publication of statistical data in this series will be in addition to publication in the United States Bureau of Mines Minerals Yearbook.

Production figures for all the 22 mineral commodities produced in the state can be collected and compiled only with the fullest cooperation of the mineral producers themselves and of various state agencies. The cooperation in supplying mineral statistics is gratefully acknowledged.

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## ABSTRACT

Kansas, for many years rated among the first ten states in the United States in mineral production, produced $2,100,000,000 in mineral wealth between 1950 and 1954. Of this amount, the mineral fuels contributed approximately 85 percent, or $1,800,000,000, the nonmetals 13 percent, or $265,000,000, and the metals 2 percent, or $44,000,000. Annual increases ranged from 2 percent in 1952 to 8 percent in 1954. The average value of the yearly mineral production in the period was $419,719,231, or $27,500,000 more than the average value of wheat produced yearly in the same period. Total mineral production from 1950 to 1954 exceeded by $137,500,000 the value of wheat produced in the state during the same years. In each of the five years, twenty-two different minerals were produced, five others were available but not exploited, and at least six others, of still undetermined commercial value, were known in the state. Of the 105 counties in Kansas, 101 reported mineral production in 1954, and 49 counties annually produced mineral commodities valued at $1,000,000 or more. Barton County led all other counties in 1954, its mineral production exceeding $40,000,000 in value. Most important minerals produced in Kansas were oil, natural gas, portland cement, natural gasoline and LP gases, stone, salt, coal, clay, sand and gravel, zinc, and lead. This report discusses the production and value of all minerals produced in the state from 1950 to 1954, inclusive, and includes directories of mineral producers on record as of December 31, 1954. An estimate of mineral production in Kansas for 1955 concludes the report.


## INTRODUCTION

Kansas for many years has ranked among the first ten states in the United States in the total annual value of minerals produced. In the 5-year period, 1950 to 1954, Kansas produced $2,098,596,157 in mineral commodities (Table 1). Of this amount, the mineral fuels contributed 85.2 percent, or $1,789,516,278, the nonmetals excluding the mineral fuels 12.6 percent, or $265,140,545, and the metals, lead and zinc, 2.2 percent, or $43,939,334. Average yearly production amounted to $357,903,255 for the mineral fuels, $53,028,109 for the nonmetals, and $8,787,867 for the metals. Although the value of the metals produced decreased almost 50 percent between 1950 and 1954, the values of the mineral fuels and nonmetals, with one exception, increased in value each year in the 5-year period. Percentagewise the increase in value of all minerals produced has ranged from 2 percent in 1952 to 8 percent in 1954 (Table 1). To Kansans who are accustomed to thinking of Kansas in terms of wheat, because Kansas is the leading wheat-producing state in the nation, it may be of interest to note that (1) the value of minerals produced in Kansas from 1950 to 1954 exceeded by

TABLE 1.—*Summary of value of minerals produced in Kansas, 1950 to 1954, with value of wheat for comparison*

| Year | Mineral fuels | % of total | Nonmetals (excluding mineral fuels) | % of total | Metals | % of total | All minerals (total) | % change from previous year | Wheat |
|---|---|---|---|---|---|---|---|---|---|
| 1950 | $ 323,599,787 | 84.8 | $ 47,612,644 | 12.4 | $10,279,474 | 2.8 | $ 381,491,905 | .... | $ 395,681,000 |
| 1951 | 346,009,795 | 84.8 | 47,965,559 | 11.7 | 13,616,718 | 3.5 | 407,592,072 | +6.8 | 271,143,000 |
| 1952 | 351,144,578 | 84.3 | 54,617,360 | 13.1 | 10,364,976 | 2.6 | 416,126,914 | +2.0 | 646,021,000 |
| 1953 | 369,253,469 | 85.9 | 55,694,409 | 12.9 | 4,445,364 | 1.2 | 429,393,242 | +3.1 | 296,557,000 |
| 1954 | 399,508,639 | 86.5 | 59,250,573 | 12.7 | 5,232,802 | 0.8 | 463,992,024 | +8.0 | 387,658,000 |
| Total, 1950–54 | 1,789,516,278 | 85.2 | 265,140,545 | 12.6 | 43,939,334 | 2.2 | 2,098,596,157 | | 1,961,060,000 |
| Average, 1950–54 | 357,903,255 | | 53,028,109 | | 8,787,867 | | 419,719,231 | | 392,212,000 |

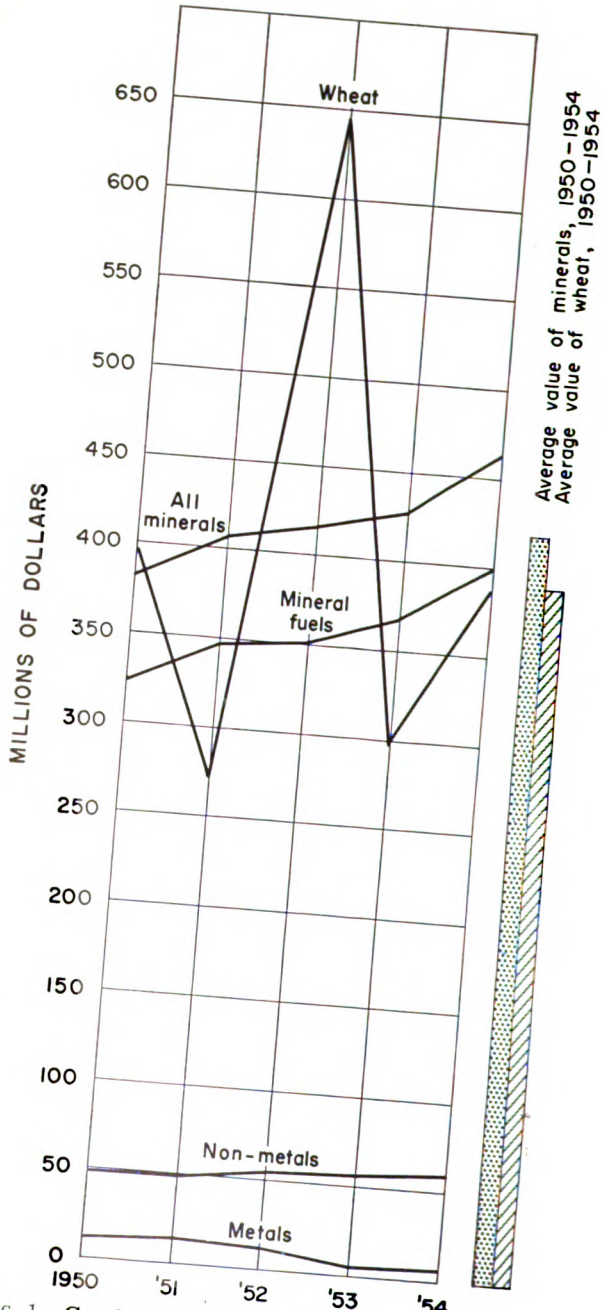


FIG. 1.—Graph showing value of metals, nonmetals, mineral fuels, all minerals, and wheat produced in Kansas, 1950 to 1954.

$137,536,157 the value of wheat produced in the state during the same period, (2) the average value of the annual mineral production from 1950 to 1954 was almost $27,500,000 more than the average value of the annual wheat production, and (3) the yearly change in value of the mineral production was an almost regular increase rather than erratic fluctuation, as for wheat, which ranged from $271,143,000 in 1951 to more than $646,000,000 in 1952 only to drop again to $296,557,000 in 1953 (Fig. 1). Just as Kansas is truly a great agricultural state, so likewise Kansas ranks equally high as a mineral-producing state.

Kansas produces twenty-two minerals commercially, five others are available but currently are not exploited, at least six other minerals are known to exist in the state but have not been studied sufficiently to determine their commercial possibilities, and at least two minerals are processed into useful mineral commodities from raw materials shipped into the state from outside sources. The rank of Kansas relative to the other states in the production of each of the various mineral commodities, and the rank of each mineral with respect to the other minerals produced in the state are shown in Table 2. Table 3 presents data on annual mineral production in Kansas from 1950 to 1954, inclusive.

Of the 105 counties in Kansas, 101 reported mineral production in 1954, and only Greeley, Mitchell, Rawlins, and Wichita Counties reported none. In 1954 each of 49 counties produced minerals worth $1,000,000 or more. Barton County, which produced minerals valued at $46,398,335, led all other Kansas counties. Ellis and Russell Counties, each of which produced minerals valued between $30,000,000 and $40,000,000, were second and third in importance. In the $20,000,000-to-$30,000,000 category were Butler, Rice, Rooks, and Stafford Counties, in order of rank. Counties that each produced in 1954 mineral wealth valued between $10,000,000 and $20,000,000 were Greenwood, Grant, Cowley, McPherson, Graham, and Stevens Counties. Table 4 summarizes the counties producing mineral wealth in the various value categories.

The counties that produce the greatest dollar volume of minerals are those in which oil is found. Most of these are western Kansas counties, but Butler, Greenwood, and Cowley Counties are included. Among the counties producing minerals valued at $1,000,000 or more, Allen, Cherokee, Elk, Montgomery, Neosho, Reno, Wilson, and Wyandotte Counties derived their mineral



TABLE 2.—*Rank of mineral commodities in Kansas, and rank of Kansas among the states, 1950 to 1954, based on values*

| Mineral commodity | 1950 | | 1951 | | 1952 | | 1953 | | 1954 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rank of commodity in Kansas | Rank of Kansas among states | Rank of commodity in Kansas | Rank of Kansas among states | Rank of commodity in Kansas | Rank of Kansas among states | Rank of commodity in Kansas | Rank of Kansas among states | Rank of commodity in Kansas | Rank of Kansas among states |
| Cement | 3 | 9[a] | 3 | 11[a] | 3 | 10[a] | 3 | 12[b] | 3 | 11[b] |
| Clay and clay products[c] | 10 | 15 | 8 | 13 | 6 | 14 | 6 | 14[d] | 6 | 14[d] |
| Coal | 6 | 17 | 7 | 17 | 8 | 17 | 8 | 17 | 8 | 17[d] |
| Lead | 11 | 10 | 11 | 9 | 10 | 12 | 11 | 12[b] | 11 | 10[b] |
| Natural gas | 2 | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 | 5[d] |
| Natural gasoline and LPG | 4 | 6 | 4 | 6 | 4 | 6 | 4 | 6 | 4 | 6[d] |
| Petroleum, crude | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 5[d] |
| Salt | 9 | 4 | 9 | 4 | 8 | 4 | 7 | 5[b] | 7 | 6[b] |
| Sand and gravel | 8 | 14 | 10 | 23 | 9 | 25 | 9 | 19 | 9 | 19[d] |
| Stone | 5 | 16 | 6 | 19 | 5 | 15 | 5 | 15[d] | 5 | 15[d] |
| Zinc | 7 | 11 | 5 | 11 | 7 | 11 | 10 | 13[b] | 10 | 11[b] |
| Total production | | 9 | | 10 | | 8 | | 9 | | 9[d] |

[a] Based on values given in Table 5, Mineral production in the United States, 1949-52, by states, Minerals Yearbook, Vol. 1, 1952, p. 55-82. Many states produce and ship portland cement but the value is included under "undistributed" and therefore the rank of those states in comparison to Kansas is indeterminate.
[b] Data provided by the U. S. Bureau of Mines.
[c] In determining rank of Kansas among the states only miscellaneous clays were used.
[d] Estimated and preliminary figures.

| Commodity | Unit | 1950 | | 1951 | | 1952 | | 1953 | | 1954 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Carbon black | Pounds | 82,508,506 | $ 3,992,268 | 112,205,669 | $ 5,334,126 | 82,000,000 | $ 3,900,000 | 69,985,475 | $ 3,207,600 | 54,328,515 | $ 3,014,326 |
| Cement (portland) | 376-lb. bbl. | 8,759,103 | 19,400,068 | 8,163,916 | 19,413,144 | 8,811,762 | 20,956,886 | 8,546,250 | 21,428,536 | 9,075,995 | 23,718,609 |
| Clay and clay products | Short tons | | 5,600,000 | | 7,000,000 | | 8,500,000 | | 8,500,000 | | 8,500,000 |
| Coal | do | 2,195,714 | 8,303,913 | 1,951,132 | 7,687,460 | 2,016,096 | 7,862,774 | 1,720,306 | 7,122,067 | 1,415,640 | 5,860,750 |
| Helium | Cu. ft. | .... | .... | 26,280,000 | 327,000 | 38,509,000 | 491,000 | 42,782,800 | 563,923 | 37,530,000 | 593,162 |
| Lead (recoverable content of ores, etc.) | Short tons | 9,487 | 2,561,490 | 8,947 | 3,095,662 | 5,916 | 1,904,952 | 3,347 | 876,914 | 4,033 | 1,105,042 |
| Natural gas | M cu. ft. | 360,874,912 | 25,860,907 | 407,192,252 | 29,099,451 | 408,732,836 | 32,860,740 | 420,588,383 | 37,680,408 | 405,841,987 | 44,692,618 |
| Natural gas liquids | | | | | | | | | | | |
| Natural gasoline | 42-gal. bbl. | 2,478,715 | 7,312,209 | 2,632,433 | 7,765,627 | 2,802,105 | 8,266,210 | 2,978,066 | 8,785,295 | 2,521,598 | 7,438,714 |
| Propane | do | 335,559 | 704,674 | 373,561 | 784,478 | 676,077 | 1,419,762 | 897,862 | 1,885,510 | 904,543 | 1,899,540 |
| Butane | do | 190,466 | 399,979 | 250,550 | 526,155 | 334,358 | 702,152 | 845,031 | 1,774,565 | 869,573 | 1,826,103 |
| LPG | do | 693,282 | 1,164,714 | 915,697 | 1,730,667 | 865,122 | 1,635,081 | 318,485 | 601,937 | 318,155 | 601,313 |
| Petroleum (crude) | do | 107,339,000 | 275,861,123 | 113,912,366 | 292,754,781 | 114,399,556 | 294,006,859 | 114,390,176 | 307,632,164 | 118,309,260 | 333,632,113 |
| Pumicite (volcanic ash) | Short tons | 3,852 | 12,060 | 3,688 | 11,801 | 3,218 | 26,069 | 3,203 | 36,568 | 23,433 | 92,899 |
| Salt (common) | do | 846,374 | 5,914,514 | 900,917 | 6,639,343 | 911,744 | 6,850,027 | 905,227 | 7,480,556 | 877,667 | 7,778,405 |
| Sand and gravel | do | 9,781,123 | 6,782,285 | 7,676,888 | 4,747,544 | 8,380,065 | 5,023,593 | 8,728,291 | 5,668,308 | 10,421,673 | 7,194,390 |
| Stone (except limestone for cement) | do | 7,630 300 | 8,920,207 | 7,191,483 | 9,058,512 | 8,830,871 | 12,051,740 | 8,385,378 | 10,681,737 | 7,096,057 | 10,597,540 |
| Zinc (recoverable content of ores, etc.) | do | 27,176 | 7,717,984 | 28,904 | 10,521,056 | 25,482 | 8,460,024 | 15,515 | 3,568,450 | 19,110 | 4,127,760 |
| Undistributed (diatomaceous marl, gypsum, natural cement, perlite,[a] dimension sandstone, expanded vermiculite[a]) | | | 983,510 | | 1,095,215 | | 1,209,045 | | 1,898,704 | | 1,368,695 |
| Total value | | | 381,491,905 | | 407,592,072 | | 416,126,914 | | 429,393,242 | | 463,991,538 |

[a] Minerals processed but not mined in Kansas.

TABLE 4.—*Range of value of 1954 mineral production per county*

| Value of annual production, millions of dollars | Number of counties producing minerals valued in this range |
|---|---|
| 40-50 | 1 |
| 30-40 | 2 |
| 20-30 | 4 |
| 10-20 | 6 |
| 1-10 | 36 |
| 0- 1 | 52 |
| no production | 4 |

wealth mainly from the nonfuel minerals. Counties that exploited the most different minerals (six) were Cherokee, Cowley, Kingman, Reno, and Wilson; of these, Cherokee produced no oil (Fig. 2). A summary evaluation based upon mineral fuels and nonfuel minerals for Kansas counties in 1954 is presented in Table 5.

*Sources of information.*—In compiling the information for this report many of the data were obtained from the tabulation sheets provided by the United States Bureau of Mines, with whom the State Geological Survey of Kansas has been cooperating for many years in collecting mineral statistics for the state. Coal statistics were derived from the reports of Mr. John Delplace, Chief Mine Inspector of the Mine Inspection Section and Mine Rescue Station of the Kansas Labor Department at Pittsburg, Kansas. Data pertaining to petroleum and related products were summarized from the reports by Ver Wiebe and others on Oil and Gas Developments in Kansas published as State Geological Survey Bulletins 92, 97, 103, 107, and 112. Many of the data on oil and gas production in these bulletins were supplied by the Kansas Corporation Commission, Conservation Division.

## THE MINERAL FUELS AND RELATED PRODUCTS

Since 1917 the mineral fuels—oil, gas, and coal, and more recently added natural gasoline and liquefied petroleum gases—have contributed the greatest share to the mineral wealth produced in Kansas. The mineral fuels account for 84 percent or more of the value of all minerals produced each year from 1950 to 1954.

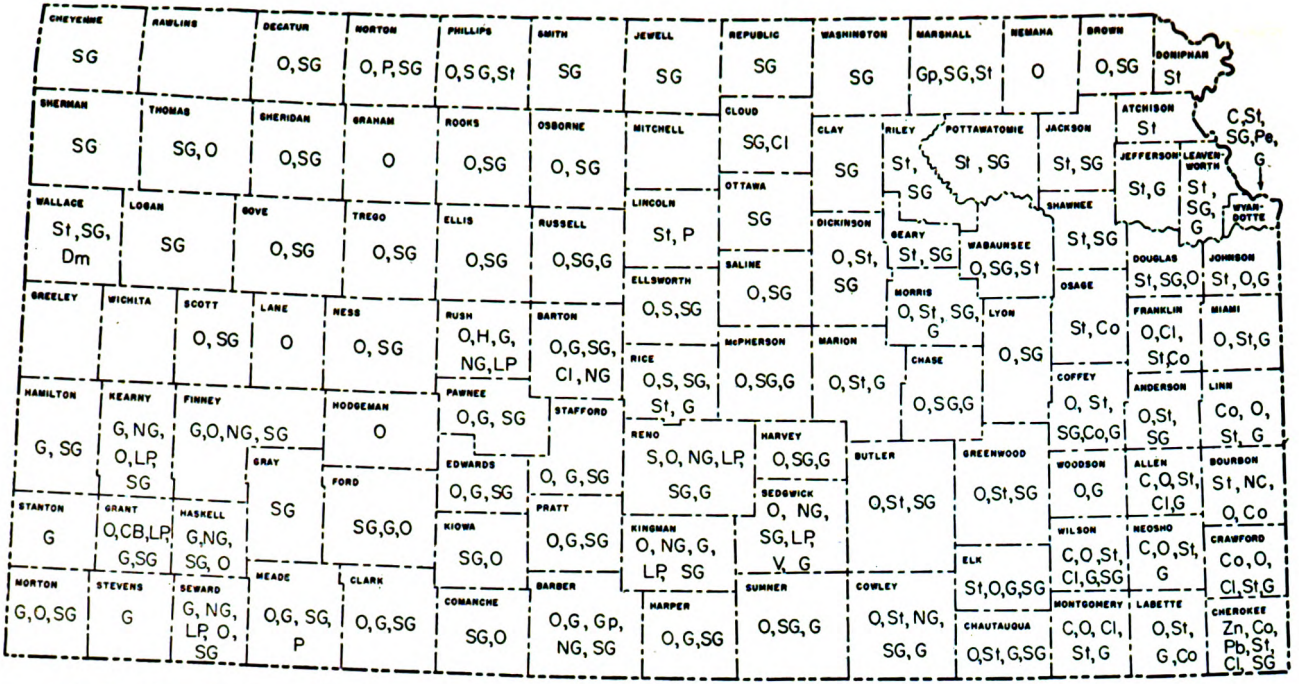


FIG. 2.—Map of Kansas showing mineral commodities produced in each county in 1954. Minerals are listed in order of value within counties. **C**—cement. **CB**—carbon black. **Cl**—clay. **Co**—coal. **Dm**—diatomaceous marl. **G**—natural gas. **Gp**—gypsum. **H**—helium. **LP**—liquefied petroleum gases. **NC**—natural cement. **NG**—natural gasoline. **O**—oil. **P**—pumicite or volcanic ash. **Pb**—lead. **Pe**—perlite. **S**—salt. **SG**—sand and gravel. **St**—stone. **V**—vermiculite. **Zn**—zinc.

TABLE 5.—*Value of mineral production in Kansas by counties in 1954*

| County | Value of mineral production | | | Commodities[a] in order of decreasing importance |
|---|---|---|---|---|
| | Fuels | Non-fuels | Total | |
| Allen | $ 2,371,008 | $ 7,511,609 | $ 9,882,617 | C, O, St, Cl, G |
| Anderson | 2,105,547 | 133,788 | 2,239,335 | O, St, SG |
| Atchison | .... | * | * | St |
| Barber | 4,010,790 | * | * | O, G, Gp, NG, SG |
| Barton | 46,116,926 | 281,409 | 46,398,335 | O, G, SG, Cl, NG |
| Bourbon | 225,669 | 903,540 | 1,129,209 | St, NC, O, Co |
| Brown | 6,193 | * | * | O, SG |
| Butler | 24,697,193 | 322,735 | 25,019,928 | O, St, SG |
| Chase | 98,834 | 38,095 | 136,929 | O, SG, G |
| Chautauqua | 2,708,189 | 40,300 | 2,748,489 | O, St, G, SG |
| Cherokee | 2,398,717 | 5,597,258 | 7,995,975 | Zn, Co, Pb, St, Cl, SG |
| Cheyenne | .... | 9,600 | 9,600 | SG |
| Clark | 466,845 | * | * | O, G, SG |
| Clay | .... | 224,037 | 224,037 | SG |
| Cloud | .... | 359,006 | 359,006 | SG, Cl |
| Coffey | 607,849 | 49,374 | 657,223 | O, St, SG, Co, G |
| Comanche | 744 | * | * | SG, O |
| Cowley | 12,540,139 | 617,212 | 13,157,351 | O, St, NG, SG, G, LP |
| Crawford | 1,304,293 | 181,229 | 1,485,522 | Co, O, Cl, St, G |
| Decatur | 981,495 | * | * | O, SG |
| Dickinson | 297,809 | 185,450 | 483,259 | O, St, SG |
| Doniphan | .... | 192,371 | 192,371 | St |
| Douglas | 38,769 | 210,759 | 249,528 | St, SG, O |
| Edwards | 241,817 | * | * | O, G, SG |
| Elk | 844,391 | 1,497,243 | 2,341,634 | St, O, G, SG |
| Ellis | 32,053,870 | * | * | O, SG |
| Ellsworth | 8,933,343 | 789,098 | 9,722,441 | O, S, SG |
| Finney | 3,942,084 | 86,295 | 4,028,379 | G, O, NG, SG |
| Ford | 12,500 | 109,072 | 121,572 | SG, G, O |
| Franklin | 1,284,518 | 259,471 | 1,543,989 | O, Cl, St, Co |
| Geary | .... | 395,143 | 395,143 | St, SG |
| Gove | 58,534 | * | * | O, SG |
| Graham | 10,930,111 | .... | 10,930,111 | O |
| Grant | 16,014,326 | * | * | G, CB, NG, LP, SG |
| Gray | .... | * | * | SG |
| Greeley | .... | .... | .... | None reported |
| Greenwood | 17,318,962 | 56,254 | 17,375,216 | O, St, SG |
| Hamilton | 487,972 | * | * | G, SG |
| Harper | 450,691 | * | * | O, G, SG |
| Harvey | 507,272 | * | * | O, SG, G |
| Haskell | 3,736,615 | * | * | G, NG, SG, O |
| Hodgeman | 394,910 | .... | 394,910 | O |

| County | Value of mineral production | | | Commodities[a] in order of decreasing importance |
|---|---|---|---|---|
| | Fuels | Non-fuels | Total | |
| Jackson | .... | 113,362 | 113,362 | St, SG |
| Jefferson | 3,293 | 347,944 | 351,237 | St, G |
| Jewell | .... | * | * | SG |
| Johnson | 19,260 | 340,625 | 359,885 | St, O, G |
| Kearny | 7,438,317 | * | * | G, NG, O, LP, SG |
| Kingman | 3,781,053 | * | * | O, NG, G, LP, SG |
| Kiowa | 8,432 | * | * | SG, O |
| Labette | 236,280 | 206,989 | 443,169 | O, St, G, Co |
| Lane | 6,063 | .... | 6,063 | O |
| Leavenworth | 547 | 551,869 | 552,416 | St, SG, G |
| Lincoln | .... | 384,329 | 384,329 | St, P |
| Linn | 2,056,791 | 132,342 | 2,189,133 | Co, O, St, G |
| Logan | .... | * | * | SG |
| Lyon | 1,080,261 | 114,550 | 1,194,811 | O, SG |
| Marion | 2,057,482 | * | * | O, St, G |
| Marshall | .... | 455,015 | 455,015 | Gp, SG, St |
| McPherson | 11,357,768 | 43,899 | 11,401,667 | O, SG, G |
| Meade | 1,874,910 | 103,582 | 1,978,492 | O, G, SG, P |
| Miami | 1,937,826 | * | * | O, St, G |
| Mitchell | .... | .... | .... | None reported |
| Montgomery | 2,652,598 | 5,467,226 | 8,119,824 | C, O, Cl, St, G |
| Morris | 113,683 | 96,403 | 210,086 | O, St, SG, G |
| Morton | 5,322,705 | * | * | G, O, SG |
| Nemaha | 105,947 | .... | 105,947 | O |
| Neosho | 1,760,662 | 4,493,813 | 6,254,475 | C, O, St, G |
| Ness | 741,147 | * | * | O, SG |
| Norton | 2,131,195 | 20,373 | 2,151,568 | O, P, SG |
| Osage | 44,239 | * | * | St, Co |
| Osborne | 254,237 | * | * | O, SG |
| Ottawa | .... | * | * | SG |
| Pawnee | 4,698,508 | 86,249 | 4,784,757 | O, G, SG |
| Phillips | 5,816,733 | 634,094 | 6,450,827 | O, SG, St |
| Pottawatomie | .... | 117,698 | 117,698 | St, SG |
| Pratt | 8,258,932 | 82,843 | 8,341,775 | O, G, SG |
| Rawlins | .... | .... | .... | None reported |
| Reno | 3,377,213 | 5,853,353 | 9,230,566 | S, O, NG, LP, SG, G |
| Republic | .... | * | * | SG |
| Rice | 21,426,416 | 1,548,218 | 22,974,634 | O, S, SG, St, G |
| Riley | .... | 279,634 | 279,634 | St, SG |
| Rooks | 20,278,583 | * | * | O, SG |
| Rush | 1,728,038 | .... | 1,728,038 | O, H, G, NG, LP |
| Russell | 31,573,900 | * | * | O, SG, G |
| Saline | 4,032,383 | * | * | O, SG |

| County | Value of mineral production | | | Commodities[a] in order of decreasing importance |
|---|---|---|---|---|
| | Fuels | Non-fuels | Total | |
| Scott | 135,947 | * | * | O, SG |
| Sedgwick | 5,072,247 | 1,230,276 | 6,302,523 | O, NG, SG, LP, V, G |
| Seward | 3,727,829 | * | * | G, NG, LP, O, SG |
| Shawnee | .... | 713,692 | 713,692 | St, SG |
| Sheridan | 1,076,682 | * | * | O, SG |
| Sherman | .... | 12,075 | 12,075 | SG |
| Smith | .... | * | * | SG |
| Stafford | 20,182,186 | * | * | O, G, SG |
| Stanton | 1,515,821 | .... | 1,515,821 | G |
| Stevens | 10,257,865 | .... | 10,257,865 | G |
| Sumner | 5,352,831 | * | * | O, SG, G |
| Thomas | 12,902 | 51,155 | 64,057 | SG, O |
| Trego | 2,898,072 | * | * | O, SG |
| Wabaunsee | 513,282 | 86,198 | 599,480 | O, SG, St |
| Wallace | .... | 69,854 | 69,854 | St, SG, Dm |
| Washington | .... | * | * | SG |
| Wichita | .... | .... | .... | None reported |
| Wilson | 545,276 | 3,163,705 | 3,708,981 | C, O, St, Cl, G, SG |
| Woodson | 2,135,886 | .... | 2,135,886 | O, G |
| Wyandotte | 467 | 6,792,599 | 6,793,066 | C, St, SG, Pe, G |
| Undistributed | | 2,303,332 | 172,518,557 | |
| Unassigned | | 7,650,098 | | Cl products and "granite" |
| Kansas total | 398,145,730 | 63,597,742 | 461,743,472 | |

*Undistributed, values may not be revealed.

[a] Commodities: C, cement; CB, carbon black; Cl, clay; Co, coal; Dm, diatomaceous marl; G, natural gas; Gp, gypsum; H, helium; LP, liquefied petroleum gases; NC, natural cement; NG, natural gasoline; O, oil; P, pumicite (volcanic ash); Pb, lead; Pe, perlite; S, salt; SG, sand and gravel; St, stone; V, vermiculite; Zn, zinc.

## Coal

Coal was the first mineral commodity sought in Kansas, which ranked 17th among the coal-producing states in the 5-year period 1950 to 1954. Among the minerals produced in the state coal ranked 5th to 9th in importance in those years. Coal production in Kansas, as elsewhere in the United States, has suffered a setback in the last decade. The average quantity of coal mined annually from 1945 to 1949 was 2,563,798 tons, 27.9 percent more than it was in 1950 to 1954, when average annual production was 1,849,777 tons of coal (Table 6). Strip mining decreased 24.7 percent and deep or shaft mining decreased 73.3 percent, on the average, between the 1945-1949 and 1950-1954 periods. Within the 5-year

TABLE 6.—*Summary of coal production in Kansas, 1950 to 1954, and changes from prior years*

| Year | Quantity, tons | | | Total value | Average price per ton | Percent change from previous year | |
|---|---|---|---|---|---|---|---|
| | Strip mines | Underground mines | Total | | | Quantity | Value |
| 1945-49 average | 2,353,953 | 209,845 | 2,563,798 | | | | |
| 1950 | 2,041,132 | 104,582 | 2,145,714 | $8,303,913 | $3.87 | .... | .... |
| 1951 | 1,876,412 | 74,720 | 1,951,132 | 7,687,460 | 3.94 | —10.9 | — 7.5 |
| 1952 | 1,971,183 | 44,913 | 2,016,096 | 7,862,774 | 3.90 | + 3.3 | + 2.2 |
| 1953 | 1,688,741 | 31,565 | 1,720,306 | 7,122,067 | 4.14 | —14.7 | — 9.5 |
| 1954 | 1,287,895 | 25,245 | 1,415,640 | 5,860,750 | 4.14 | —17.8 | —17.8 |
| 1950-54 average | 1,773,073 | 56,205 | 1,849,777 | 7,367,393 | 3.99 | | |
| Percent change in 5-year average | —24.7 | —73.3 | —27.9 | | | | |

period 1950 to 1954, coal tonnage and value were greatest in 1950 and least in 1954. In 1950 coal production amounted to 2,145,714 tons valued at $8,303,913, whereas by 1954 production had dropped to 1,415,640 tons valued at $5,860,750, a decrease of 34.1 percent in tonnage and 29.5 percent in value. With the exception of 1952 each year saw a decrease in quantity and in value from the preceding year, most strikingly shown by a 17.8 percent decrease in both quantity and value in 1954. Although less coal was produced year after year, the average price of coal advanced from $3.87 a ton in 1950 to $4.14 a ton in 1954. It is interesting to note (Table 7) that production by strip mining has increased steadily from approximately 95 percent of all coal mined in the state in 1950 to slightly more than 98 percent in 1954, whereas deep or shaft mining decreased correspondingly. The advantage of strip mining over underground mining is clearly indicated by the fact that the average strip miner produced 9 to 11 times as much coal as the average shaft miner. In 1950 each strip miner produced 2,363 tons of coal whereas the shaft miner produced only 263 tons. In 1954 the strip miner produced 2,920 tons of coal, the shaft miner 255 tons (Table 7). The decline in the coal-mining industry is not only

TABLE 7.—*Average annual production of coal, short tons per miner, and percent of strip and underground mine production in Kansas, 1950 to 1954*

| Year | Average annual production, tons per miner | | | Percent of total production | |
|---|---|---|---|---|---|
| | Strip mines | Underground mines | All mines | Strip mines | Underground mines |
| 1950 | 2,362 | 263 | 1,703 | 95.2 | 4.8 |
| 1951 | 2,735 | 240 | 1,955 | 96.3 | 3.7 |
| 1952 | 3,428 | 251 | 2,674 | 97.8 | 2.2 |
| 1953 | 3,198 | 251 | 2,630 | 98.2 | 1.8 |
| 1954 | 2,920 | 255 | 2,622 | 98.1 | 1.9 |

recorded in the amount of coal produced annually but is also indicated by the marked decrease of the number of mines and by the number of miners employed (Table 8). In 1950 there were 84 coal mines in Kansas, 52 of which were strip mines and 32 underground mines. The 84 mines employed a total of 1,261 miners, of whom 864 worked in the strip mines and 397 in the underground mines. By 1954 the total number of coal mines has decreased to 40 and the total number of miners employed to 540, in each case a decline of more than 50 percent.

Coal in Kansas was produced in eight eastern counties—Bourbon, Cherokee, Coffey, Crawford, Franklin, Labette, Linn, and Osage. In 1954, Cherokee County was foremost in production, followed by Linn and Crawford Counties, each producing more than 200,000 tons of coal (Table 9). Counties producing 12,000 tons of coal or less were, in order of importance, Bourbon, 12,003 tons; Osage, 10,660 tons; Coffey, 2,834 tons; Labette, 1,277 tons; and

TABLE 8.—*Number of coal mines and number of men employed in Kansas coal mines, 1950 to 1954*

| Year | Number of mines | | | Number of men employed | | |
|---|---|---|---|---|---|---|
| | Strip mines | Underground mines | Total | Strip mines | Underground mines | Total |
| 1950 | 52 | 32 | 84 | 864 | 397 | 1,261 |
| 1951 | 46 | 23 | 69 | 686 | 312 | 998 |
| 1952 | 32 | 15 | 47 | 575 | 179 | 754 |
| 1953 | 30 | 11 | 41 | 528 | 126 | 654 |
| 1954 | 30 | 10 | 40 | 441 | 99 | 540 |

TABLE 9.—*Kansas coal production, by type of mine and by counties, 1950 to 1954*

| County | Type of mine | Production, short tons | | | | | Rank of county, 1954 |
|---|---|---|---|---|---|---|---|
| | | 1950 | 1951 | 1952 | 1953 | 1954 | |
| Bourbon | Strip | 102,907 | 75,405 | 17,566 | 15,632 | 12,003 | |
| | Underground | .... | .... | .... | .... | .... | |
| | Total | 102,907 | 75,405 | 17,566 | 15,632 | 12,003 | 4 |
| Cherokee | Strip | 505,035 | 608,368 | 585,385 | 656,525 | 578,004 | |
| | Underground | 7,096 | 1,828 | .... | .... | .... | |
| | Total | 512,131 | 610,196 | 585,385 | 656,525 | 578,004 | 1 |
| Coffey | Strip | 3,100 | 3,877 | 3,579 | 3,284 | 2,834 | |
| | Underground | .... | .... | .... | .... | .... | |
| | Total | 3,100 | 3,877 | 3,579 | 3,284 | 2,834 | 6 |
| Crawford | Strip | 698,389 | 713,012 | 781,842 | 520,739 | 253,631 | |
| | Underground | 72,579 | 56,535 | 34,721 | 24,604 | 20,053 | |
| | Total | 770,968 | 769,547 | 816,563 | 545,343 | 273,684 | 3 |
| Franklin | Strip | 423 | .... | .... | .... | .... | |
| | Underground | 2,501 | 1,903 | 1,073 | 1,017 | 731 | |
| | Total | 2,924 | 1,903 | 1,073 | 1,017 | 731 | 8 |
| Labette | Strip | 3,162 | 2,995 | 482 | 527 | 1,277 | |
| | Underground | .... | .... | .... | .... | .... | |
| | Total | 3,162 | 2,995 | 482 | 527 | 1,277 | 7 |
| Linn | Strip | 714,525 | 458,253 | 572,422 | 486,470 | 435,678 | |
| | Underground | 2,488 | 957 | 199 | 115 | 269 | |
| | Total | 717,013 | 459,210 | 572,621 | 486,585 | 435,947 | 2 |
| Osage | Strip | 13,591 | 14,502 | 9,907 | 5,564 | 6,468 | |
| | Underground | 19,918 | 13,497 | 8,920 | 5,280 | 4,192 | |
| | Total | 33,509 | 27,999 | 18,827 | 11,384 | 10,660 | 5 |

Franklin, 731 tons. Bourbon, Cherokee, Coffey, and Labette Counties have produced only strip coal since 1952, whereas Franklin County has produced coal only by underground mines since 1951. Sharpest decline in coal production in 1954 was in Crawford County, where production declined from 816,563 tons in 1952 and 545,343 tons in 1953 to a low of 273,684 tons in 1954, a loss of 66.5 and 49.8 percent respectively. Coal production by counties and by type of mining for each year, 1950 to 1954, is presented in Table 9.

All the Kansas coal is mined from rocks of Pennsylvanian age, is thin compared to the coals of the eastern states, and is all of bituminous rank, ranging from high volatile C to high volatile A coals. In currently operating mines the coal is 10 to 40 inches thick and lies at the surface or at depths not exceeding 285 feet. Typical B.t.u. values per pound of coal range from 10,700 to 13,300. Kansas coal reserves are estimated at somewhat more than one billion tons. The Kansas coal fields are in Coal Producing District 15 as defined by the Bituminous Coal Act of 1937 and are part of the Western Region of the Interior Province, which includes also parts of Iowa, Missouri, Oklahoma, and Arkansas.

Coal companies operating in Kansas on record December 3, 1954, are listed in Table 10.

TABLE 10.—*Directory of Kansas coal-mining companies on record as of December 31, 1954*

| County | Coal company | Address |
|---|---|---|
| Bourbon | Brooks | Route 2, Pittsburg |
| do | Garrett | Route 2, Garland |
| do | Jones | Arcadia |
| do | Pellett | Route 5, Fort Scott |
| do | Wood | Route 1, Pleasanton |
| Cherokee | Apex-Compton | P.O. Box 267, Pittsburg |
| do | Black Diamond | Route 3, Pittsburg |
| do | Boyd | 301 W. Walnut, Columbus |
| do | Markley | Route 2, McCune |
| do | Pittsburg-Midway | 314 Natl. Bank Building, Pittsburg |
| do | Semple | Baxter Springs |
| do | Wilkinson | Weir |
| Coffey | Thorne | P.O. Box 171, Lebo |
| Crawford | Clemens | 312 Globe Building, Pittsburg |
| do | Cliff Carr | Route 1, Mulberry |
| do | Davis | Cherokee |
| do | De Gasperi | Route 2, Pittsburg |
| do | Hill | Route 1, Garland |
| do | Illner | 802 N. Taylor, Pittsburg |
| do | Lucky Star | 2024 S. Broadway, Pittsburg |
| do | Mark | Route 1, Mulberry |
| do | N Coal Co. | 1010 S. Catalpa, Pittsburg |
| do | Palmer & Son | Mulberry |
| do | Quality | Route 3, Girard |
| do | Savage | 704 N. Water, Pittsburg |
| do | Target | P.O. Box 321, Mulberry |
| do | True Cherokee | Arma |
| do | Victory | 3240 Gillham Plaza, Kansas City, Mo. |

| County | Coal company | Address |
|---|---|---|
| Franklin | Red Star | Homewood |
| Labette | Gallagher | P.O. Box 65, Oswego |
| do | Richards | Oswego |
| Linn | Fyock | Prescott |
| do | Hume-Sinclair | 309 N. Maple, Butler, Mo. |
| do | La Cygne | La Cygne |
| do | Snow | Pleasanton |
| Osage | Linville & Son | P.O. Box 266, Carbondale |
| do | Osage | Osage City |
| do | Oxbow | Osage City |
| do | Rogers | Lebo |

## Oil

After coal, petroleum or crude oil was the next mineral sought in Kansas. Search for oil was made in Miami County as early as 1860, approximately a year after the first commercial oil well in the United States was completed in Pennsylvania. Since records of its production have been kept, Kansas has produced, to the end of 1954, a recorded cumulative total of 2,521,520,272 barrels of crude oil valued in excess of $4,700,000,000. As an oil state Kansas has ranked 3rd to 6th in the United States since 1916; among the minerals produced in the state, oil has headed the list since 1917.

Oil production has steadily increased from year to year. In 1950 Kansas produced 107,339,000 barrels of crude oil valued at $275,861,123, but by 1954 production had reached 118,309,260 barrels valued at $333,632,113, an increase of 10.2 percent in quantity

Table 11.—*Petroleum or crude oil production in Kansas, 1950 to 1954*

| | Production | | | Percent change from previous year | |
|---|---|---|---|---|---|
| Year | Barrels | Value | Estimated average price per bbl. | Quantity | Value |
| 1950 | 107,339,000 | $ 275,861,123 | $2.57 | | |
| 1951 | 113,912,366 | 292,754,781 | 2.57 | +6.1 | +6.1 |
| 1952 | 114,399,556 | 294,006,859 | 2.57 | +0.4 | +0.4 |
| 1953 | 114,390,176 | 307,632,164 | 2.689 | −0.1 | +4.6 |
| 1954 | 118,309,260 | 333,632,113 | 2.82 | +3.4 | +8.5 |
| Total | 568,350,358 | 1,503,887,040 | | | |

and 20.9 percent in value. With the exception of 1953, when production was less by 9,380 barrels than it was in 1952, each year since 1950 has showed an increase in production as well as in value (Table 11).

The number of oil-producing counties in the state increased from 59 in 1950 to 76 in 1954. The ten leading oil-producing counties in Kansas for each year of the 5-year period 1950 to 1954 are given in Table 12. Barton County held first place for each of the five years. Russell and Ellis ranked second and third respectively for the first four years but interchanged rank in 1954. Butler County replaced Rice County in fourth place in 1953. Rooks County has maintained sixth place throughout the period; Stafford and Greenwood Counties have interchanged seventh and eighth places several times. In 1954 Cowley County was ninth, although Ellsworth County had held ninth place from 1950 to 1953. McPherson County was continuously the tenth largest oil producer from 1950 to 1954. On the basis of cumulative production, thirteen counties have each produced more than 50,000,000 barrels of oil (Table 13). Butler County was the first important oil producing county in the state and still ranked fourth in annual production in 1954. In cumulative production it tops the list with a total production of 397,205,760 barrels of oil; Barton County is second, Russell third, and others as shown in Table 13.

TABLE 12.—*Ten leading oil-producing counties in Kansas, 1950 to 1954*

| County, by rank in 1954 | Production, bbl. | | | | |
|---|---|---|---|---|---|
| | 1950 | 1951 | 1952 | 1953 | 1954 |
| Barton | 19,424,231 | 18,956,122 | 16,959,379 | 17,075,634 | 16,353,520 |
| Ellis | 11,077,013 | 11,694,249 | 11,070,399 | 11,164,383 | 11,366,975 |
| Russell | 13,561,393 | 12,959,676 | 11,635,324 | 12,583,124 | 11,195,338 |
| Butler | 6,862,459 | 7,567,782 | 8,164,208 | 8,615,810 | 8,757,870 |
| Rice | 8,656,838 | 9,503,159 | 9,566,545 | 8,477,552 | 7,578,134 |
| Rooks | 5,759,190 | 7,088,170 | 7,287,132 | 7,016,581 | 7,190,986 |
| Stafford | 5,296,899 | 6,336,930 | 6,462,936 | 6,874,805 | 7,148,225 |
| Greenwood | 5,375,676 | 5,932,510 | 6,834,217 | 5,638,077 | 6,141,476 |
| Cowley | | | | | 4,363,797 |
| McPherson | 3,477,164 | 3,326,246 | 3,366,023 | 3,348,787 | 4,021,567 |
| Ellsworth | 4,149,448 | 4,135,395 | 3,856,505 | 3,539,273 | |

TABLE 13.—*Leading oil-producing counties in Kansas based upon recorded and estimated cumulative production (50 million barrels or more) to end of 1954*

| County | Cumulative production, bbl. |
|---|---|
| Butler | 397,205,760 |
| Barton | 267,139,672 |
| Russell | 258,111,792 |
| Rice | 198,343,888 |
| Greenwood | 196,323,700 |
| Ellis | 169,738,638 |
| McPherson | 128,010,085 |
| Stafford | 90,036,561 |
| Ellsworth | 81,025,055 |
| Cowley | 78,825,053 |
| Reno | 76,953,650 |
| Sedgwick | 56,463,102 |
| Rooks | 52,990,702 |

An important fact regarding oil production in Kansas is that, despite the ever-increasing rate of oil production, the proved oil reserves have steadily increased. In 1950 they amounted to 732.2 million barrels, in 1951 they were estimated at 791.9 million barrels, and by 1954 they had reached 978.5 million barrels, an increase of 32.2 percent over the reserves of 1950 (Table 14). The explanation for the increased oil reserves from year to year is to be found in the continued discovery of new oil pools. As listed in

TABLE 14.—*Kansas proved reserves of crude oil, natural gas liquids, and total liquid hydrocarbons, 1950 to 1954, and changes from prior years (American Petroleum Institute, 1950 to 1954)*

| | Crude oil reserves | | | Natural gas liquids reserves | | All liquid hydrocarbons reserves | |
|---|---|---|---|---|---|---|---|
| Year | Quantity, million bbl. | Percent change from previous year | New oil pools discovered | Quantity, million bbl. | Percent change from previous year | Quantity, million bbl. | Percent change from previous year |
| 1950 | 732.2 | .... | 118 | 163.6 | .... | 895.8 | .... |
| 1951 | 791.9 | + 8.1 | 147 | 159.6 | —2.4 | 951.5 | + 6.2 |
| 1952 | 916.0 | +15.6 | 157 | 168.2 | +5.4 | 1084.2 | +14.0 |
| 1953 | 913.3 | — 3.7 | 165 | 177.8 | +5.6 | 1091.1 | + 0.5 |
| 1954 | 978.5 | + 7.1 | 122 | 175.2 | —1.4 | 1153.6 | + 5.7 |

TABLE 15.—*Leading oil pools in Kansas, 1950 to 1954*

| Pool, by 1954 rank | County | Annual production, barrels | | | | |
|---|---|---|---|---|---|---|
| | | 1950 | 1951 | 1952 | 1953 | 1954 |
| Trapp | Russell-Barton | 7,802,835 | 7,340,325 | 6,279,833 | 5,881,840 | 5,409,869 |
| Kraft-Prusa | Barton-Ellsworth | 6,477,596 | 6,900,235 | 5,415,209 | 5,575,643 | 4,681,172 |
| Hall-Gurney | Russell-Barton | 3,128,230 | 3,662,430 | 4,199,197 | 4,569,899 | 4,547,924 |
| Chase-Silica | Rice, Barton, Stafford | 3,108,723 | 6,666,359 | 4,898,153 | 5,507,155 | 4,114,824 |
| El Dorado | Butler | 3,062,823 | 3,249,465 | 3,437,824 | 3,891,884 | 3,833,188 |
| Bemis-Shutts | Ellis | | 4,199,030 | 3,642,381 | 3,447,828 | 3,372,377 |

Table 14, the number of newly discovered oil pools ranged from 118 in 1950 to 165 in 1953, averaging approximately 142 new oil pools per year between 1950 and 1954.

Most of the largest oil pools are in western Kansas (Table 15). Of the six major oil pools only the El Dorado pool in Butler County lies east of the Sixth Principal Meridian, which is the division line between Eastern and Western Kansas insofar as oil and gas are concerned. The Trapp pool, in Russell and Barton Counties, which was discovered in 1936, is the largest oil pool in the state in annual production as of 1954. The Kraft-Prusa pool, in Barton and Ellsworth Counties, ranked second in importance throughout the 1950-1954 period. Other large oil pools include the Hall-Gurney pool, in Russell and Barton Counties, the Chase-Silica pool, in Rice, Barton, and Stafford Counties, the El Dorado pool, in Butler County, and the Bemis-Shutts pool, in Ellis County. Production of these large oil pools for each year of the 1950-1954 period is listed in Table 15.

Many major oil companies operate in Kansas, as do numerous independent oil companies and operators, whose number changes from year to year. For this reason no directory of oil companies is included in this report.*

The number of oil refineries, however, is less variable than the number of oil companies, so a directory of refineries is given in Table 16.

## Natural Gas

Second most valuable mineral resource produced in Kansas is natural gas. For many years Kansas has held fifth place among the states producing natural gas. Through 1954 Kansas had produced a recorded cumulative total of 3,423,854,990 thousand cubic feet of natural gas. Gas production increased from 360,874,912,000 cubic feet in 1950 to 405,841,987,000 cubic feet in 1954. Peak production was reached in 1953, when the amount produced was 420,588,383,000 cubic feet. Even though production in 1954 was 3.6 percent less than in 1953, the value of the gas in 1954 was $44,642,618 as compared to $37,680,408 in 1953, an increase of 18.4 percent, brought about by an advance of price from 9.5 cents per thousand

* For the names of oil companies, independent operators, and consulting geologists, see the Kansas Geological Society Directory published by the Society at 508 East Murdock Street, Wichita 5, Kansas, and the Morrison Petroleum Directory of Kansas published annually by John H. Morrison, Box 191, Wichita, Kansas.

TABLE 16.—*Directory of petroleum refineries in Kansas on record as of December 31, 1954*

| Refinery | Address | County |
|---|---|---|
| Anderson-Prichard Oil Corporation | Arkansas City | Cowley |
| Cooperative Refinery Assn. | Coffeyville | Montgomery |
| Cooperative Refinery Assn. | P.O. Box 570<br>Phillipsburg | Phillips |
| Derby Oil Company | 420 W. Douglas<br>Wichita | Sedgwick |
| El Dorado Refining Company | P.O. Box 551<br>El Dorado | Butler |
| Missouri Farmers Assn. (M.F.A.) | Chanute | Neosho |
| National Cooperative Refinery Assn. | P.O. Box 770<br>McPherson | McPherson |
| Phillips Petroleum Company | 2029 Fairfax Trafficway<br>Kansas City | Wyandotte |
| Shallow Water Refining Company | 114 W. Pine<br>Garden City* | Finney |
| Skelly Oil Company | 1401 S. Douglas Road<br>El Dorado | Butler |
| Socony-Vacuum Oil Company | P.O. Box 546<br>Augusta | Butler |
| Standard Oil Company | 1101 Illinois<br>Neodesha | Wilson |
| Vickers Petroleum Company | Wichita** | Sedgwick |

* Refinery at Shallow Water, Scott County (shut down 9-1-54)
** Refinery at Potwin, Butler County

TABLE 17.—*Natural gas production in Kansas, 1950 to 1954*

| Year | Production, M cu. ft. | Value | Price, cents per M cu. ft. | Percent change from previous year | |
|---|---|---|---|---|---|
| | | | | Quantity | Value |
| 1950 | 360,874,912[a] | $ 25,860,907 | 8 | | |
| 1951 | 407,192,252[a] | 29,099,451 | 8 | +12.8 | +12.8 |
| 1952 | 408,732,836[a] | 32,860,740 | 9 | + 0.3 | +12.9 |
| 1953 | 420,588,383[b] | 37,680,408 | 9.5 | + 2.8 | +14.6 |
| 1954 | 405,841,987[c] | 44,642,618 | 11 | — 3.6 | +18.4 |
| Total | 2,003,232,370 | 170,144,124 | | | |

[a] 16.4 psia
[b] 16.4 psia first 6 months, 14.65 second half
[c] 14.65 psia

TABLE 18.—*Production of natural gas in the Hugoton Gas Area, Kansas, 1950 to 1954*

| Year | Production, M cu. ft. (14.65 psia) | Value | Percent change | | Percent of state total |
|---|---|---|---|---|---|
| | | | Quantity | Value | |
| 1950 | 320,545,480 | $ 22,438,184 | | | 88 |
| 1951 | 371,002,475 | 25,970,173 | +15.7 | +15.7 | 91 |
| 1952 | 375,081,748 | 33,757,357 | + 1.1 | + 6.5 | 92 |
| 1953 | 387,635,243 | 36,825,148 | + 3.3 | + 9.1 | 92 |
| 1954 | 346,732,192 | 38,140,541 | −10.6 | + 3.6 | 85.4 |
| Total | 1,800,997,138 | 157,134,403 | | | |

cubic feet in 1953 to 11 cents per thousand cubic feet in 1954. Quantity and value of natural gas produced in Kansas from 1950 to 1954 are shown in Table 17.

Of the total amount of gas produced annually in the state between 1950 and 1954, 85 to 92 percent came from the Hugoton Gas

TABLE 19.—*Production of natural gas in Kansas counties producing 2 billion cubic feet or more annually, 1950 to 1954.*

| County | Production, M cu. ft.[a] | | | | | Rank in 1954 |
|---|---|---|---|---|---|---|
| | 1950 | 1951 | 1952 | 1953 | 1954 | |
| Barber | 10,483,580 | 9,574,988 | 6,407,405 | 6,644,619 | 8,970,191 | 9 |
| Barton | 3,980,091 | 3,302,662 | 2,687,303 | 2,530,856 | 2,170,509 | 13 |
| Finney | h | h | h | 30,784,079 | 28,048,734 | 5 |
| Grant | h | h | h | 84,403,364 | 75,765,639 | 2 |
| Hamilton | h | h | h | 5,367,827 | 4,436,105 | 10 |
| Haskell | h | h | h | 31,315,837 | 25,528,913 | 7 |
| Kearny | h | h | h | 71,955,888 | 61,466,542 | 3 |
| Meade | h | .... | .... | 2,987,016 | 3,482,797 | 12 |
| Morton | h | h | h | 24,357,419 | 47,822,615 | 4 |
| Pawnee | 6,120,589 | 4,068,784 | 2,986,948 | 3,146,047 | 3,934,660 | 11 |
| Pratt | .... | .... | 2,646,761 | 2,323,599 | .... | |
| Rush | 4,193,230 | 2,936,849 | .... | .... | .... | |
| Seward | h | h | h | 26,997,298 | 26,095,598 | 6 |
| Stanton | h | h | h | 16,018,254 | 13,780,190 | 8 |
| Stevens | h | h | h | 101,239,764 | 93,253,317 | 1 |

[a] Gas production is based on a 16.4 psia base except for the last six months of 1953 and for the entire year 1954, when the base used was 14.65 psia.
h=Hugoton Gas Area, production not segregated by counties.

Area comprising all or part of Finney, Grant, Hamilton, Haskell, Kearny, Morton, Seward, Stanton, and Stevens Counties, all in southwestern Kansas. The contribution of the Hugoton area in thousands of cubic feet of gas and in percent of the state's total is shown in Table 18. Natural gas was produced in 44 counties in 1950, 48 in 1951, 52 in 1952, 46 in 1953, and 48 in 1954. Each of fifteen gas-producing counties produced annually two billion cubic feet of gas or more between 1950 and 1954, and are listed in Table 19. Stevens County leads with a cumulative production of 1,267,573,081,000 cubic feet. Grant and Kearny Counties follow in the order named. Other counties are listed with Stevens, Grant, and Kearny in Table 20, which shows the cumulative gas production of leading Kansas counties.

The reserves of natural gas, like those of oil, have steadily increased year after year, owing to the continued discovery of new gas fields. New gas pools numbered 4 in 1950, 7 in 1951, 10 in 1952, and 22 each in 1953 and 1954. Gas reserves increased from 13,790,834 million cubic feet in 1950 to 15,758,332 million cubic feet in 1954, an increase of 14.2 percent. Gas reserves in 1951 were less than they were in 1950, and likewise reserves in 1954 were slightly

TABLE 20.—*Leading gas-producing counties in Kansas based on estimated and recorded cumulative production to end of 1954*

| Rank | County | Production, M cu. ft. |
|---|---|---|
| 1 | Stevens[a] | 1,267,573,081 |
| 2 | Grant[a] | 612,768,003 |
| 3 | Kearny[a] | 408,030,430 |
| 4 | Barber | 229,476,298 |
| 5 | Haskell[a] | 218,379,750 |
| 6 | Morton[a,b] | 208,328,298 |
| 7 | Finney[a] | 179,796,813 |
| 8 | Seward[a] | 152,916,211 |
| 9 | Stanton[a] | 74,870,444 |
| 10 | Rice | 31,912,258 |
| 11 | Pawnee | 22,459,930 |
| 12 | Barton | 20,897,764 |
| 13 | Pratt | 14,656,523 |
| 14 | Hamilton[a] | 12,785,932 |

[a] Hugoton Gas Area counties.
[b] Not all the gas produced in Morton County is from the Hugoton Gas Area.

TABLE 21.—*Natural gas reserves and new gas pools discovered in Kansas, 1950 to 1954*
*(American Gas Association, 1950 to 1954)*

| Year | Reserves | | New gas pools |
|---|---|---|---|
| | Million cu. ft. | Percent change from previous year | |
| 1950 | 13,790,834 | | 4 |
| 1951 | 13,457,498 | — 4.5 | 7 |
| 1952 | 14,193,565 | + 5.4 | 10 |
| 1953 | 15,787,602 | +11.2 | 22 |
| 1954 | 15,758,332 | — 1.2 | 22 |

less (0.2 percent) than they were in 1953. Gas reserves and the number of new gas pools discovered in each year from 1950 to 1954 are presented in Table 21.

Consumption of natural gas in Kansas is increasing. In 1954 Kansas consumed 269.3 billion cubic feet of gas, which was 66.4 percent of the gas produced in the state, an increase of 6 percent over 1953 (Table 22). In 1951, the year of least gas consumption, 59.8 percent of 243.4 billion cubic feet of gas produced in Kansas was consumed within the state. The remaining gas produced in the state was exported plus an additional quantity imported from neighboring states. The greatest amount of Kansas-produced gas was exported in 1953, but the largest amount of gas was imported and the largest total exported in 1952. Imports and exports of natural gas in 1954 were respectively 65.5 and 202 billion cubic feet. Data on production, consumption, percent consumed, imports, and exports of natural gas in Kansas for 1950 to 1954 are presented in Table 22.

TABLE 22.—*Production, consumption, imports, and exports of natural gas in Kansas, 1950 to 1954*

| Year | Production, billion cu. ft. | Imports, billion cu. ft. | Total quantity, billion cu. ft. | Consumption | | Exports, billion cu. ft. |
|---|---|---|---|---|---|---|
| | | | | Quantity, billion cu. ft. | Percent of total | |
| 1950 | 362.1 | 59.6 | 421.7 | 226.4 | 62.5 | 195.3 |
| 1951 | 407.1 | 47.8 | 454.9 | 243.4 | 59.8 | 211.5 |
| 1952 | 408.7 | 67.2 | 475.9 | 256.4 | 62.7 | 219.5 |
| 1953 | 420.6 | 48.2 | 468.8 | 253.9 | 60.4 | 214.9 |
| 1954 | 405.8 | 65.5 | 471.3 | 269.3 | 66.4 | 202.0 |

## Natural Gas Liquids

In the 5-year period 1950 to 1954 Kansas produced 22,201,238 barrels of natural gas liquids, consisting of natural gasoline, propane, butane, and LPG (liquefied petroleum gases) valued at $57,244,735. Except in 1954, production and value of the natural gas liquids increased year by year. Percent increase in quantity ranged from 7.7 percent in 1953 to 12.8 percent in 1951; percent increase in value ranged from 8.5 percent in 1953 to 12.7 percent in 1951. In 1954 production decreased 9.5 and value 9.9 percent compared to 1953 (Table 23). A decrease of 14.4 percent in quantity

Table 23.—*Production of natural gas liquids in Kansas, 1950 to 1954, and changes from prior years*

| Year | Production | | Percent change from previous year | |
|---|---|---|---|---|
| | Quantity, bbl. | Value | Quantity | Value |
| 1950 | 3,698,022 | $ 9,581,576 | | |
| 1951 | 4,172,241 | 10,806,977 | +12.8 | +12.7 |
| 1952 | 4,677,662 | 12,023,205 | +12.1 | +11.2 |
| 1953 | 5,039,444 | 13,047,307 | + 7.7 | + 8.5 |
| 1954 | 4,613,869 | 11,765,670 | − 9.5 | − 9.9 |
| Total | 22,201,238 | 57,224,735 | | |

and value of natural gasoline accounted for most of the reduction in the 1954 production and value of natural gas liquids. Although production and value of the LP gases decreased slightly in 1954, the decrease in production and value in 1953 had been notable. The 1954 quantity and value of the LP gases was 65.3 percent less than it was in the peak year of 1951. Data on the production and value of natural gasoline, propane, butane, and LP gases are presented in Table 24.

Natural gasoline and liquefied petroleum gases were processed by 14 companies in 16 plants located in 12 counties; 3 plants are close to Ulysses in Grant County. Plants on record as of December 31, 1954, are listed in Table 25.

TABLE 24.—*Production and value of natural gasoline, propane, butane, and other LP gases in Kansas, 1950 to 1954*

| Year | Natural gasoline[a] | | Propane[b] | | Butane[b] | | Other LPG[c] | |
|---|---|---|---|---|---|---|---|---|
| | Quantity, bbl. | Value | Quantity, bbl. | Value | Quantity, bbl. | Value | Quantity, bbl. | Value |
| 1950 | 2,478,715 | $ 7,312,209 | 335,559 | $ 704,674 | 190,466 | $ 399,979 | 693,282 | $1,164,714 |
| 1951 | 2,632,433 | 7,765,677 | 373,561 | 784,478 | 250,550 | 526,155 | 915,697 | 1,730,667 |
| 1952 | 2,802,105 | 8,266,210 | 676,077 | 1,419,762 | 334,358 | 702,152 | 865,122 | 1,635,081 |
| 1953 | 2,978,066 | 8,785,295 | 897,862 | 1,885,510 | 845,031 | 1,774,565 | 318,485 | 601,937 |
| 1954 | 2,521,598 | 7,438,714 | 904,543 | 1,899,540 | 869,573 | 1,826,103 | 318,155 | 601,313 |
| Total | 13,412,897 | 13,568,105 | 3,187,602 | 6,693,964 | 2,489,978 | 5,228,954 | 3,110,741 | 5,733,712 |

[a] Estimated average price $2.95 per barrel.
[b] Estimated average price $2.10 per barrel.
[c] Estimated average price $1.89 per barrel.

TABLE 25.—*Directory of Kansas plants producing natural gasoline and liquefied petroleum gas on record as of December 31, 1954*

| Plant location | | |
|---|---|---|
| County | Town | Company |
| Barber | Medicine Lodge | Kansas Power & Light Company |
| Barton | Pawnee Rock | A. R. Jones Oil & Operating Company |
| Cowley | Atlanta | The Texas Company |
| Finney | Holcomb | Northern Natural Gas Company |
| Grant | Ulysses | Hugoton Production Company |
| do | do | Magnolia Petroleum Company |
| do | do | Stanolind Oil and Gas Company |
| Haskell | Sublette | Northern Natural Gas Company |
| Kearny | Lakin | Colorado Interstate Gas Company |
| do | Deerfield | Deerfield Petroleum, Inc. |
| Kingman | Cunningham | Skelly Oil Company |
| Reno | Burrton | Cities Service Oil Company |
| Rush | Otis | Dunn-Mar Oil and Gas Company |
| Sedgwick | Wichita | Cities Service Oil Company |
| do | Cheney | Drillers Gas Company |
| Seward | Liberal | Panhandle Eastern Pipe Line Company |

## HELIUM

Helium, first discovered in natural gas at Dexter, Cowley County, Kansas, in 1905, was produced at the United States Bureau of Mines plant at Otis in Rush County in 1951 to 1954. In 1950 the plant was idle but on a stand-by basis. The helium is extracted from helium-bearing natural gas from more than 80 wells in the Otis-Albert, Ryan, Pawnee Rock, Behrens, Unruh, Dundee, Bergtal, and Ash Creek gas fields. The Kansas natural gas that supplies the helium contains approximately 1.4 percent helium. The production and price of helium are controlled by the Federal Government. In addition to Federal agencies, such as the Army, Navy, Air Force, and Weather Bureau, which purchase and use most of the helium produced, other customers of the United States Bureau of Mines, which sells the helium, include commercial concerns that distribute the gas for use in arc welding, the practice of medicine, and many types of research work. Federal agencies pay $12.00 per thousand cubic feet of helium gas at the production plants. Other

users pay $13.50 at the plant and an additional charge of $2.00 per thousand cubic feet for helium delivered in standard cylinders.

Helium production in Kansas ranged from 26,280,000 cubic feet valued at $327,000 (1951) to 42,782,800 cubic feet valued at $563,923 (1953). In 1954 production amounted to 37,530,000 cubic feet valued at $593,162. Data on helium production in Kansas for 1950 to 1954 are presented in Table 26.

TABLE 26.—*Quantity and value of helium produced in Kansas, 1950 to 1954*

| Year | Quantity, cu. ft. | Value |
|---|---|---|
| 1950 | (Stand-by basis) | .... |
| 1951 | 26,280,000 | $ 327,000 |
| 1952 | 38,509,000 | 491,000 |
| 1953 | 42,782,800 | 563,923 |
| 1954 | 37,530,000 | 593,162 |
| Total | 145,121,800 | $1,975,085 |

## CARBON BLACK

Carbon black has been produced in Kansas since 1937. It is used in the manufacture of rubber and as a pigment in paints and inks. The quantity produced between 1950 and 1954 is estimated at 401 million pounds, valued at approximately $19,000,000. Production of carbon black in Kansas is declining. In 1954 Kansas produced 54,328,515 pounds, valued at $3,014,326, a decrease of 22.5 percent in quantity and 6.1 percent in value from 1953 figures. Data on carbon black production and value in Kansas for 1950 to 1954 are presented in Table 27.

Carbon black was produced in Kansas by the Columbian Carbon Company and the Peerless Carbon Black Division, Columbian Carbon Company of Ulysses, Grant County, and by the United Carbon Company, P.O. Box 122, Satanta, Haskell County, (plant at Ryus, Grant County).

## NONMETALLIC MINERALS

Between 1950 and 1954 the value of the annual production of nonmetallic minerals—cement, clay, gypsum, pumicite (volcanic ash), salt, sand and gravel, and stone averaged $53,028,109, and for the five years totaled $265,140,545. In the 5-year period, 1954

TABLE 27.—*Quantity and value of carbon black produced in Kansas, 1950 to 1954*

| Year | Quantity, lb. | Value | Gas consumed, million M cu. ft. at 14.65 psia. |
|---|---|---|---|
| 1950 | 82,508,506[a] | $ 3,992,268[a] | 15.7 |
| 1951 | 112,205,669[a] | 5,334,126[a] | 17.4 |
| 1952 | 82,000,000[b] | 3,900,000[b] | 15.6 |
| 1953 | 69,985,475[c] | 3,207,600 | 10.9 |
| 1954 | 54,328,515[d] | 3,014,326 | 8.9 |
| Total | 401,028,168 | $19,448,380 | |

[a] Pfister, 1953, p. 51.
[b] Estimate.
[c] Ver Wiebe and others, 1954, table 9, p. 30.
[d] Ver Wiebe and others, 1955, table 9, p. 28.

was the peak year; total value was $59,804,735, or $12,536,215 more than the value in 1950, a gain of 26.7 percent. Between 1950 and 1954 the nonmetals annual contribution to the mineral wealth of the state ranged from $47,612,644 to $59,250,573 or 11.7 to 13.1 percent of the total. Total value of nonmetallic minerals produced in Kansas from 1950 to 1954 is given in Table 1.

## CEMENT

Kansas produces portland and natural cement. Portland cement is produced by six companies and natural cement by one company, all in the eastern part of the state. The portland cement industry showed a sharp advance in the 1950-1954 period compared to the previous 5-year period, 1945-1949. Average annual production and shipments increased more than 30 percent, and value of the shipments, which averaged $20,983,449 annually between 1950 and 1954, showed an increase of $8,419,706, or 67.1 percent, compared to the 1945-1949 period. The average price per barrel of portland cement increased from $1.86 (1945-1949) to $2.42 (1950-1954), or slightly more than 30 percent (Table 28). It will be noted from Table 28 that annual shipments of portland cement in 1951 and 1953 were less than shipments in each of the other three years but that the total value of the shipments increased annually from 1950 to 1954. Production increased from 8,616,357 barrels in 1950 to 8,803,007 barrels in 1954, a gain of 2.1 percent. Shipments in the same five years increased from 8,759,103 barrels in 1950 to 9,075,995 barrels in 1954, a gain of 3.6 percent.

TABLE 28.—*Production and shipments of portland cement in Kansas, 1945 to 1949 average and 1950 to 1954, and changes from prior years*

| Year | Production, 376-lb. bbl. | Shipments | | | Percent change from previous year | |
|---|---|---|---|---|---|---|
| | | Quantity, bbl. | Value | Av. price per bbl. | Quantity | Value |
| 1945-49 average | 6,449,060 | 6,594,600 | $12,563,743 | $1.86 | | |
| 1950 | 8,616,357 | 8,759,103 | 19,400,068 | 2.21 | | |
| 1951 | 8,514,521 | 8,163,916 | 19,413,144 | 2.38 | −6.8 | + 0.5 |
| 1952 | 8,672,883 | 8,811,762 | 20,956,886 | 2.38 | +7.9 | + 7.9 |
| 1953 | 8,766,206 | 8,546,250 | 21,428,536 | 2.51 | −3.1 | + 2.2 |
| 1954 | 8,803,007 | 9,075,995 | 23,718,609 | 2.61 | +6.1 | +10.6 |
| 1950-54 average | 8,674,595 | 8,671,405 | 20,983,449 | 2.42 | | |
| Percent increase | 34.5 | 31.4 | 67.1 | 30.1 | | |

and in value from $19,400,068 to $23,718,609, a gain of 22.2 percent (Table 28).

All the cement produced in Kansas is made from limestone and shale of Pennsylvanian age. Natural gas is used as fuel in most cement kilns in Kansas, but powdered coal is also used to some extent. One company, the Fort Scott Hydraulic Cement Company, Fort Scott, Bourbon County, produced natural cement. Its production is included under the "undistributed" minerals.

Portland cement producers on record as of December 31, 1954, are listed in Table 29.

TABLE 29.—*Directory of portland cement producers in Kansas, 1954*

| County | Company | Address | Quarry |
|---|---|---|---|
| Allen | Lehigh Portland Cement Co. | Young Building 718 Hamilton St. Allentown, Pa. | Iola |
| do | Monarch Cement Co. | Humboldt | Humboldt |
| Montgomery | Universal Atlas Cement Co. | 100 Park Ave. New York 17, New York | Independence |
| Neosho | Ash Grove Lime & Portland Cement Co. | 101 W. 11th Kansas City 6, Mo. | Chanute |
| Wilson | Consolidated Cement Corp. | Fredonia | Fredonia |
| Wyandotte | Lone Star Cement Corp. | 1650 Dierks Bldg. Kansas City 6, Mo. | Bonner Springs |

## Clay or Shale

Clay or shale has been produced commercially in Kansas at least since 1890. Average annual production and value in the 5-year period 1950 to 1954 increased by 45.1 and 113.1 percent respectively, compared to the 5-year period 1945 to 1949 (Table 30). Average quantity of shale produced annually between 1950 and 1954 amounted to 711,999 tons valued at $756,968, whereas in the previous period the average annual production was 490,984 tons valued at $355,276. Quantity of shale produced in 1952 and 1953 was less than it was in 1950 and 1951, but the value was greater. Greatest quantity and value were produced in 1954, when the amount was 766,476 tons of shale having a value of $916,035. Amount of all types of clay or shale produced annually increased 5.5 percent between 1950 and 1954, and value increased 52.4 percent. Kansas clay is classified as fire clay and miscellaneous clay, the latter including shale used for cement. Annual production of fire clay increased by 270 percent in quantity and value between 1950 and 1954, whereas production of miscellaneous clay in the same period decreased 1.3 percent in tonnage but increased 38 percent in value. Clay or shale used for cement decreased 12 per-

TABLE 30.—*Clay or shale sold or used by producers in Kansas, 1950 to 1954, and changes from prior years*

| Year | Production | | Percent change from previous year | |
|---|---|---|---|---|
| | Quantity, short tons | Value | Quantity | Value |
| 1945-49 average | 490,984 | $355,276 | | |
| 1950 | 725,282 | 601,014 | .... | .... |
| 1951 | 731,960 | 728,921 | + 0.9 | +21.2 |
| 1952 | 665,582 | 789,293 | — 0.9 | + 8.2 |
| 1953 | 670,694 | 749,579 | + 0.7 | — 5.1 |
| 1954 | 766,476 | 916,035 | +14.2 | +22.2 |
| 1950-54 average | 711,999 | 756,968 | | |
| Percent change in 5-year average | +45.1 | +113.1 | | |
| Percent increase 1954 vs 1950 | 5.5 | 52.4 | | |

cent in quantity from 1950 to 1954 but increased 17.3 percent in value. Quantity and value of all clays produced in Kansas from 1950 to 1954 are given in Table 30. Value of clay products, such as brick, tile, and lightweight aggregate, increased from about $5,600,000 in 1950 to approximately $8,500,000 in 1954, an increase of 51.8 percent (Table 31).

TABLE 31.—*Value of clay or shale and products in Kansas, 1950 to 1954, and changes from prior years*

| Year | Value | Percent change from previous year |
|---|---|---|
| 1950 | $5,600,000 | .... |
| 1951 | 7,000,000 | +25.0 |
| 1952 | 8,500,000 | +21.4 |
| 1953 | 8,500,000 | 0 |
| 1954 | 8,500,000 | 0 |

Eleven companies operating in eight counties produced clay or shale in Kansas in 1954, compared to thirteen companies in 1953. The Dryden Pottery at Ellsworth, Ellsworth County, purchased all its raw materials, and the Saline Brick and Tile Company of Saline County went out of business in 1954. All clay or shale produced was used by the companies themselves for the manufacture of brick, tile, cement, and lightweight aggregate. Fireclay was produced in Barton and Cloud Counties, whereas miscellaneous clays were produced in Allen, Cherokee, Crawford, Franklin, Montgomery, and Wilson Counties. Crawford and Franklin Counties led all others in clay or shale production in 1954. Raw clay or shale ranked 12th among mineral commodities produced in 1954, and 6th if clay products are included. Producers of clay or shale in Kansas in 1954 are listed in Table 32.

## PUMICITE OR VOLCANIC ASH

Three to four operators produced pumicite or volcanic ash in Kansas from 1950 to 1954. Total quantity and value for the 5-year period amounted to 37,394 tons and $179,397 respectively. Of this tonnage the larger part, 23,433 tons, was mined in 1954; the amount was 9,472 tons more than the cumulative production of the preceding four years. In value the 1954 production was $92,899, or $16,401 more than the combined value of volcanic ash

TABLE 32.—*Directory of clay or shale producers in Kansas in 1954*

| County | Company | Address | Pit location | Type of plant[a] |
|---|---|---|---|---|
| Allen | Humboldt Brick & Tile Co. | Humboldt | Humboldt | B |
| do | United Brick & Tile Co. | 207 Pickwick Bldg., Kansas City 6, Mo. | Iola | B |
| Barton | Great Bend Brick & Tile Co. | Great Bend | Great Bend | B |
| Cherokee | United Brick & Tile Co. | 207 Pickwick Bldg., Kansas City 6, Mo. | Weir | B |
| Cloud | Cloud Ceramics | Concordia | Concordia | B |
| Crawford | W. S. Dickey Clay Mfg. Co. | 607-617 Commerce Trust Bldg., Kansas City 6, Mo. | Pittsburg | B |
| Ellsworth | Dryden Pottery | Ellsworth | Ellsworth | P |
| Franklin | Buildex, Inc. | 312 Globe Bldg., Pittsburg, Kansas | Ottawa | A |
| Montgomery | United Brick & Tile Co. | 207 Pickwick Bldg., Kansas City 6, Mo. | Coffeyville | B |
| do | Ludowici-Celadon Co. | 75 East Wacker Drive, Chicago 1, Illinois | Coffeyville | B |
| Saline | Saline Brick & Tile Co. | P.O. Box 491, Salina | Salina | B |
| Wilson | Acme Brick Co. | Fort Worth, Texas | Buffalo | B |
| do | Excelsior Brick Co. | P.O. Box 32, Fredonia | Fredonia | B |

[a] A, aggregate; B, brick, tile; P, pottery.

TABLE 33.—*Quantity and value of pumicite or volcanic ash produced in Kansas, 1950 to 1954*

| Year | Quantity, tons | Value | Percent change from previous year | |
|---|---|---|---|---|
| | | | Quantity | Value |
| 1950 | 3,852 | $ 12,060 | .... | .... |
| 1951 | 3,688 | 11,801 | — 4.3 | — 2.2 |
| 1952 | 3,218 | 26,069 | — 12.8 | +120.9 |
| 1953 | 3,203 | 36,568 | — 0.5 | + 40.2 |
| 1954 | 23,433 | 92,899 | +631.5 | +154.4 |
| Total | 37,394 | 179,397 | | |
| Average | 7,479 | 35,879 | | |

produced from 1950 to 1953. When compared to the years 1920 to 1939, when Kansas ranked first in the United States as producer of pumicite or volcanic ash, annuar production and value in the 1950's are insignificant. Quantity and value of annual production for the period 1950 to 1954 are presented in Table 33. Producers on record in 1954 are listed in Table 34.

TABLE 34.—*Directory of Kansas producers of pumicite or volcanic ash in 1954*

| County | Company | Address | Pit location |
|---|---|---|---|
| Lincoln | Ernest Hanzlicek | Wilson | Wilson |
| Meade | The Cudahy Packing Co. | Union Stock Yards Omaha 7, Nebraska | Meade |
| do | San Ore Construction Co. | McPherson | Meade |
| McPherson | San Ore Construction Co. | McPherson | Lindsborg |
| Norton | Wyandotte Chemical Corp. | Wyandotte, Michigan | Calvert |
| Seward | San Ore Construction Co. | McPherson | Liberal |

## SALT

Salt was produced by five companies operating in three counties in Kansas, Ellsworth, Reno, and Rice. Annual production for the 5-year period 1950 to 1954 averaged 888,386 tons valued at approximately $6,932,569. Production of salt ranged from 846,374

TABLE 35.—*Salt produced and sold or used by producers in Kansas, 1950 to 1954, and changes from prior years*

| Year | Evaporated salt | | Rock salt | | Total salt | | Percent change from previous year | |
|---|---|---|---|---|---|---|---|---|
| | Quantity, tons | Value | Quantity, tons | Value | Quantity, tons | Value | Total tons | Total value |
| 1945-49 average | 335,566 | $ 3,067,723 | 512,318 | $ 1,445,452 | 847,882 | $ 4,633,169 | | |
| 1950 | 344,751 | 4,066,310 | 501,623 | 1,848,204 | 846,374 | 5,914,514 | +6.4 | +12.2 |
| 1951 | 360,785 | 4,659,036 | 540,132 | 1,980,307 | 900,917 | 6,639,343 | +1.2 | + 3.1 |
| 1952 | 358,887 | 4,775,741 | 552,857 | 2,074,286 | 911,744 | 6,850,027 | −0.8 | + 9.2 |
| 1953 | 370,569 | 5,285,805 | 534,658 | 2,194,751 | 905,227 | 7,480,556 | −3.1 | + 3.9 |
| 1954 | 357,045 | 5,474,150 | 520,622 | 2,304,255 | 877,667 | 7,778,405 | +0.9 | + 7.1 |
| Total 1950-54 | 1,792,037 | 24,261,042 | 2,649,892 | 10,401,803 | 4,441,929 | 34,662,845 | | |
| 1950-54 average | 358,407 | 4,852,208 | 529,978 | 2,080,361 | 888,386 | 6,932,569 | | |
| Percent change in 5-year average | +6.7 | +58.1 | +44 | +4.7 | +49.6 | | | |

tons in 1950 to 877,667 tons in 1954, reaching a peak of 911, 744 tons in 1952 (Table 35). Even though production declined through 1953 and 1954 by 3.7 percent, the value of the salt produced increased each year from 1950 to 1954. As compared to the average annual tonnage and value of salt produced from 1945 to 1949, the average annual tonnage and value for the period 1950 to 1954 shows a decided gain in all types of production. Whereas the average amount of salt produced in the later period shows only a 4.7 percent gain over the average production from 1945 to 1949, the average value of the salt produced in the 1950's was approximately 50 percent greater than it was in the 5-year period before 1950 (Table 35). In 1950 Kansas produced salt worth $5,914,514 and 1954 production was valued at $7,778,405 (Table 35). The quantity of salt produced in 1954 was 3.7 percent greater than in 1950, but the increase in value during the same period was 31.5 percent. As a salt-producing state Kansas ranked seventh in tonnage and fourth in dollar value. Among mineral commodities produced in the state, salt ranked seventh in 1954.

In Kansas, salt is extracted by shaft mining and also by means of wells, the brine from which is evaporated by the open and vacuum-pan methods. Most of the salt (59.3 percent in 1954) was obtained by shaft mining, but the value of the salt produced by evaporation was more than double that of the shaft-mined product. Data on quantity and value of salt sold or used by the producers, based upon the type of salt, for the years 1950 to 1954 are presented in Table 35.

Kansas salt is obtained from the Wellington formation, of Permian age. The salt lies at a depth of 645 feet at Hutchinson, Reno County, at 1,000 to 1,065 feet at Lyons, Rice County, and at 800 to 850 feet at Kanopolis, Ellsworth County (Taft, 1946, p. 244). Kansas salt is used for many purposes, chief of which are meat packing, livestock feed supplement, and treatment of hides and leather. Kansas salt is shipped to 36 other states and to Canada. The five salt companies that operated in Kansas in 1950 to 1954 are listed in Table 36.

## Sand and Gravel

Of all the non-fuel mineral resources exploited in Kansas, sand and gravel are the most widespread. At least 75 counties list sand and gravel production. Some of the material is dredged or pumped directly from stream beds or adjacent flood plains or terrace depos-

TABLE 36.—*Directory of salt-producing companies in Kansas, 1950 to 1954*

| County | Company | Address | Location of mine or well | Type of plant |
|---|---|---|---|---|
| Ellsworth | Independent Salt Co. | 4115 Packers Ave. Chicago 9, Illinois | Kanopolis | Rock |
| Reno | The Barton Salt Co. | Hutchinson | Hutchinson | Evaporated |
| do | The Carey Salt Co. | Hutchinson | Hutchinson | do |
| do | do | do | do | Rock |
| do | Morton Salt Co. | 120 S. La Salle Chicago 3, Illinois | do | Evaporated |
| Rice | American Salt Co. | 630 New York Life Building, Kansas City 6, Missouri | Lyons | Evaporated and rock |
| do | The Carey Salt Co. | Hutchinson | do* | Evaporated and rock |

*Shut down permanently.

its, and some is obtained from dry pits located on high terraces remote from present-day streams. Average quantity and value of sand and gravel produced annually between 1950 and 1954, both commercial and noncommercial, were almost twice as great as in the preceding 5-year period (1945 to 1949)—9,197,608 tons, or 98.6 percent greater quantity, and $5,883,224, or 113.6 percent more value (Table 37). The total quantity of sand and gravel produced in the peak year of 1950 amounted to 9,781,123 tons valued at $6,782,285. This peak in production and value was due primarily to the unusually large production of noncommercial sand and gravel for use in the expanded road-building program. Subsequently noncommercial production and value declined greatly. Commercial production increased greatly between 1950 and 1954. Quantity increased from 4,987,710 tons in 1950 to 8,341,068 tons in 1954, an increase of 67.2 percent. Value increased $3,118,914 or 99.4 percent. Between 1951 and 1953 quantity and value showed a steady, but not unusual, advance. Quantity and value of sand and gravel produced in 1954, however, showed a decided increase over 1953. In 1954, quantity was 10,421,673 tons, valued at $7,194,390, a gain of 19.4 and 26.7 percent respectively. Data on quantity and value of sand and gravel sold or used are presented in Table 37.

TABLE 37.—*Sand and gravel sold or used in Kansas by commercial, government, and contractor producers, 1945 to 1949 average and 1950 to 1954, and changes from prior years*

| Year | Commercial | | Noncommercial | | Total sand and gravel | | Av. price per ton | Percent change from previous year | |
|---|---|---|---|---|---|---|---|---|---|
| | Quantity, short tons | Value | Quantity, short tons | Value | Quantity, short tons | Value | | Quantity, | Value |
| 1945-49 average | 3,646,780 | $2,196,585 | 982,600 | $ 320,952 | 4,629,440 | $2,517,537 | $ .54 | .... | .... |
| 1950 | 4,987,710 | 3,246,970 | 4,793,413 | 3,535,315 | 9,781,123 | 6,782,285 | .69 | .... | .... |
| 1951 | 6,167,690 | 4,234,173 | 1,509,198 | 513,371 | 7,676,888 | 4,747,544 | .62 | —21.6 | —29.9 |
| 1952 | 6,797,975 | 4,675,216 | 1,582,090 | 348,377 | 8,380,065 | 5,023,593 | .60 | + 9.1 | + 5.8 |
| 1953 | 6,678,241 | 4,946,934 | 2,050,050 | 721,374 | 8,728,291 | 5,668,308 | .65 | + 4.1 | +12.8 |
| 1954 | 8,341,068 | 6,365,884 | 2,080,605 | 828,506 | 10,421,673 | 7,194,390 | .69 | +19.4 | +26.9 |
| 1950-54 average | 6,594,549 | 4,693,835 | 2,403,071 | 1,189,387 | 9,197,608 | 5,883,224 | .65 | | |
| Percent change in 5-year average | +80.9 | +113.6 | +154.7 | +270.5 | +98.6 | +133.6 | +20.3 | | |

TABLE 38.—*Production of sand in Kansas, 1950 to 1954, by uses*

| Use | | Annual production | | | | |
|---|---|---|---|---|---|---|
| | | 1950 | 1951 | 1952 | 1953 | 1954 |
| Glass | Tons | .... | .... | .... | 50,687 | 141,226 |
| | Value | .... | .... | .... | $ 37,063 | 308,224 |
| Molding | Tons | * | * | * | 2,600 | 102,000 |
| | Value | * | * | * | $ 2,210 | 51,080 |
| Structural | Tons | 2,335,306 | 2,638,341 | 2,845,738 | 3,009,548 | 3,260,548 |
| | Value | $1,495,199 | 1,821,707 | 1,997,223 | 2,203,269 | 2,205,510 |
| Paving | Tons | 1,472,971 | 2,100,642 | 1,954,584 | 2,248,350 | 2,556,240 |
| | Value | $ 775,451 | 1,313,182 | 1,113,565 | 1,476,624 | 1,648,511 |
| Grinding, polishing | Tons | * | * | * | .... | .... |
| | Value | * | * | * | .... | .... |
| Fire, furnace | Tons | .... | * | .... | 2,200 | .... |
| | Value | .... | * | .... | $ 1,416 | .... |
| Engine | Tons | 82,659 | 136,275 | 94,175 | 96,151 | 124,047 |
| | Value | $ 71,838 | 102,356 | 69,348 | 81,315 | 110,180 |
| Filter | Tons | 7,653 | * | 34,719 | 21,413 | 50,404 |
| | Value | $ 7,209 | * | 81,764 | 40,891 | 125,004 |
| Railroad ballast | Tons | 79,761 | 240,185 | 238,655 | 216,872 | 191,612 |
| | Value | $ 42,750 | 77,416 | 70,487 | 120,657 | 116,379 |
| Other | Tons | 70,426 | 82,989 | 328,682 | 111,375 | 596,116 |
| | Value | $ 29,052 | 32,786 | 118,874 | 92,961 | 293,139 |

*Undistributed.

TABLE 39.—*Production of gravel in Kansas, 1950 to 1954, by uses*

| Use | | Annual production | | | | |
|---|---|---|---|---|---|---|
| | | 1950 | 1951 | 1952 | 1953 | 1954 |
| Structural | Tons | 166,277 | 170,913 | 222,306 | 268,860 | 726,095 |
| | Value | $ 139,349 | 146,711 | 181,742 | 223,010 | 759,955 |
| Paving | Tons | 5,550,042 | 2,252,718 | 2,647,114 | 2,649,381 | 2,517,421 |
| | Value | $4,205,563 | 1,192,696 | 1,372,117 | 1,457,291 | 1,431,955 |
| Railroad ballast | Tons | 780 | * | 63 | 20,164 | 9,700 |
| | Value | $ 1,170 | * | 19 | 6,356 | 5,596 |
| Other | Tons | * | 2,371 | 9,810 | 30,190 | 146,264 |
| | Value | * | $ 6,310 | 15,111 | 25,245 | 138,857 |

*Undistributed.

Among Kansas minerals, sand and gravel ranked 9th in value. Kansas ranked variously 14th to 25th in the United States as a producer of sand and gravel. In 1954 at least 100 commercial producers and more than 55 noncommercial producers were operating in Kansas. Wyandotte and Sedgwick Counties led all others in production of sand and gravel. Most of the sand produced was used for construction and paving, but some was used for railroad ballast, glass making, filtering, molding, engine sand, and other miscellaneous purposes (Table 38). Gravel was used chiefly in concrete (Table 39).

Sand and gravel producers that operated in 1954 are listed in Table 40.

TABLE 40.—*Directory of sand and gravel producers on record as of December 31, 1954*

| County | Company or operator | Address |
|---|---|---|
| Allen | Allen Co. Highway Dept. | Iola |
| Anderson | Anderson Co. Highway Dept. | Garnett |
| Atchison | G. W. Kerford Quarry Co. | Atchison |
| Barber | Barber Co. Highway Dept. | Medicine Lodge |
| Barton | Barton Co. Highway Dept. | P.O. Box 747<br>Great Bend |
| do | Arkansas Sand & Gravel Co. | 1423 Second St.<br>Great Bend |
| do | Du Bois Sand Co. | P.O. Box 172<br>Great Bend |
| do | Gruber Sand Plant | 918 Stone St.<br>Great Bend |
| do | Charles Hardesty | Ellinwood |
| do | Moos Brothers Sand Co. | Great Bend |
| do | Savely Sand Co. | Ellinwood St.<br>Ellinwood |
| Bourbon | Fort Scott Hydraulic Cement Co. | Fort Scott |
| Brown | Brown Co. Highway Dept. | Hiawatha |
| do | Ralph Mitchell | Hiawatha |
| Butler | Butler Co. Highway Dept. | El Dorado |
| do | George M. Meyers | El Dorado |
| Chase | Chase Co. Highway Dept. | P.O. Box 176<br>Cottonwood Falls |
| Chautauqua | Chautauqua Co. Highway Dept. | Sedan |
| Cherokee | Cherokee Co. Highway Dept. | Columbus |
| do | Eagle-Picher Mining & Smelting Co. | Miami, Oklahoma |

| County | Company or operator | Address |
|---|---|---|
| Cheyenne | New Era Sand & Gravel Co. | St. Francis |
| Clark | Clark Co. Highway Dept. | Ashland |
| Clay | Clay Co. Highway Dept. | Clay Center |
| do | John H. Aslop | Wakefield |
| do | John H. Aslop—Ernest R. Fyfe | Wakefield |
| do | Clay Center Concrete-Sand Co. | Clay Center |
| Cloud | Cloud Co. Commissioners | Concordia |
| do | Earl Beaver Sand Co. | Glasco |
| do | Huncousky Sand & Gravel Co. | Clyde |
| do | Ross Sand Co. | P.O. Box 461, Concordia |
| Coffey | Coffey Co. Highway Dept. | Burlington |
| Comanche | Comanche Co. Road Dept. | Coldwater |
| Cowley | Cowley Co. Highway Dept. | Winfield |
| do | A-C Sand & Gravel Co. | Arkansas City |
| do | Arkansas City Sand & Gravel Co. | P.O. Box 166 Arkansas City |
| do | McFarland Gravel Co. | Arkansas City |
| do | West Madison Sand Co. | Arkansas City |
| do | Oxford Sand & Gravel Co. | Oxford |
| do | Phillips & Son Construction Co. | Winfield |
| do | Wilson Brothers | Route 3, P.O. Box 59 Arkansas City |
| do | Winfield Sand & Gravel Co. | Winfield |
| Crawford | Freeto Asphalt Co. | Pittsburg |
| Decatur | Decatur Co. Highway Dept. | Oberlin |
| Dickinson | Oscar R. Gowing | Route 3, Abilene |
| do | Las Brothers | Chapman |
| do | Putnam Sand & Building Co. | P.O. Box 26, Salina |
| do | Shoffner Sand & Gravel Co. | 134 E. Jewell, Salina |
| do | C. Smith Sand & Gravel Co. | 1200 N. Kuney |
| Doniphan | Doniphan Co. Highway Dept. | Troy |
| Douglas | Bowersock Mills Power Co. | 546 Massachusetts St. Lawrence |
| Edwards | Dave Showalter | Garfield |
| do | Meneh Sand & Gravel Co. | Kinsley |
| Elk | Elk Co. Highway Dept. | Howard |
| do | Concrete Materials Co. | Moline |
| Ellis | Lewis C. Schmidtberger | Victoria |
| Ellsworth | Ellsworth Co. Highway Dept. | Ellsworth |
| do | Lowell Johannes | 148 S. Clark, Salina |
| do | Henry Millberger | Wilson |

| County | Company or operator | Address |
|---|---|---|
| Finney | Finney Co. Highway Dept. | Garden City |
| do | Sam Alsop Construction Co. | 1207 Pinecrest<br>Garden City |
| do | Smith Sand Co. | Burnside Drive, Box 2<br>Garden City |
| Ford | Davis Sand Co. | Dodge City |
| do | Dodge City Sand Co. | P.O. Box 430<br>Dodge City |
| do | Miller Sand & Gravel Co. | Dodge City |
| Franklin | Franklin Co. Highway Dept. | Ottawa |
| do | Harry Henry | Ottawa |
| Geary | Junction City Sand & Gravel Co. | Route 3, Junction City |
| do | More Sand Co. | 626 W. 6th St.<br>Junction City |
| Gove | Gove Co. Highway Dept. | Gove |
| do | Ray Bigsby | Grinnel |
| do | Carl Kaiser | Grainfield |
| Grant | Grant Co. Highway Dept. | Ulysses |
| do | Glen Popejoy | Ulysses |
| Gray | Gray Co. Highway Dept. | Cimarron |
| do | Kerr Sand Co. | Cimarron |
| Greenwood | Greenwood Co. Highway Dept. | Eureka |
| do | A. C. Houston Lumber Co. | Eureka |
| do | Medley Brothers Construction Co. | Eureka |
| Hamilton | Hamilton Co. Highway Dept. | Syracuse |
| do | Syracuse Sand & Gravel Co. | 107 N. Elizabeth St.<br>Syracuse |
| Harper | Harper Co. Highway Dept. | Anthony |
| Harvey | Howard R. Thach | Route 1, Burrton |
| Haskell | Haskell Co. Highway Dept. | Sublette |
| do | Howard Mitchell | Hugoton |
| Jackson | Jackson Co. Highway Dept. | Holton |
| do | Anderson-Oxandale | Holton |
| Jewell | Jewell Co. Highway Dept. | Mankato |
| Kearny | Kearny Co. Highway Dept. | Lakin |
| Kingman | Roy Wells | Route 1, Kingman |
| Kiowa | Kiowa Co. Highway Dept. | Greensburg |
| do | Seacot Sand Co. | Greensburg |
| Lane | Southwest Sand & Gravel Co. | Alamota |
| Leavenworth | Leavenworth Co. Highway Dept. | Leavenworth |

| County | Company or operator | Address |
|---|---|---|
| Leavenworth | Geiger Ready Mix Co. | 2nd & Poplar<br>Leavenworth |
| do | Missouri Valley Sand Co. | P.O. Box 822<br>Leavenworth |
| Linn | Linn Co. Highway Dept. | Mound City |
| Logan | Logan Co. Highway Dept. | Russell Springs |
| do | D. G. Hansen | Logan |
| Lyon | Lyon Co. Highway Dept. | Emporia |
| do | Center Township Highway Dept. | Olpe |
| do | Pike Township Highway Dept. | Emporia |
| do | Lynn Ormsby | Emporia |
| do | Wesley Parks | 648 Oak Street<br>Emporia |
| do | Henry Waterman | 1 Congress Street<br>Emporia |
| McPherson | McPherson Co. Highway Dept. | McPherson |
| do | A. N. Colburn | Route 1, McPherson |
| do | San Ore Construction Co. | McPherson |
| do | Train Construction Co. | Lindsborg |
| Marion | Virgil Metcalf | Route 5, Council Grove |
| do | J. L. Wilson | El Dorado |
| Marshall | Marshall Co. Highway Dept. | Marysville |
| do | Blue River Sand & Gravel Co. | Blue Rapids |
| do | C. C. Garrett | Blue Rapids |
| do | Kenneth Grippe | Oketo |
| do | Grossmans-Petersen | Marysville |
| do | Hall Brothers | 204 Calhoun, Marysville |
| do | Heizelman Construction Co. | Marysville |
| do | Hugo P. Vogler | Waterville |
| Miami | Miami Co. Highway Dept. | Paola |
| Montgomery | Montgomery Co. Highway Dept. | Independence |
| Morris | Morris Co. Highway Dept. | Council Grove |
| do | Lynn Ormsby | Emporia |
| Morton | Morton Co. Highway Dept. | Richfield |
| do | Leo Doolittle | 104 Case Ave., Morton |
| do | Ralph Morgan | Rolla |
| Ness | Cecil Knoy | Route 1, Ness City |
| Norton | Norton Co. Highway Dept. | Norton |
| Osborne | Osborne Co. Highway Dept. | Osborne |
| Ottawa | Ottawa Co. Highway Dept. | Minneapolis |
| Pawnee | Pawnee Co. Highway Dept. | Larned |

| County | Company or operator | Address |
|---|---|---|
| Pawnee | Willis Eakin, Johnson Sand and Gravel Co. | P.O. Box 545, Larned |
| do | Johnson Sand & Gravel Co. | Larned |
| do | Larned Sand & Gravel Co. | P.O. Box 227, Larned |
| do | River Sand Co. | P.O. Box 233, Topeka |
| do | Dave Showalter | Garfield |
| Phillips | Phillips Co. Highway Dept. | Phillipsburg |
| do | Construction Engineer, Kirwin Construction Field Division, Bureau of Reclamation | P.O. Box 317, Kirwin |
| do | D. G. Hansen | Logan |
| Pottawatomie | Pottawatomie Co. Highway Dept. | Westmoreland |
| do | Anderson-Oxandale | Holton |
| do | Wamego Sand Co. | Wamego |
| Pratt | Pratt Co. Highway Dept. | Pratt |
| do | C. D. Hogard | Pratt |
| do | Miller Sand & Gravel Co. | Route 2, Pratt |
| do | Jim Tillery | St. John |
| Reno | City Manager | Hutchinson |
| do | Fountain Sand Pit | Arlington |
| do | Haven Sand Co. | Haven |
| do | Henderson Sand and Gravel Co. | Route 2, Hutchinson |
| do | J. A. Mummy | Nickerson |
| do | J. H. Shears & Sons | P.O. Box 227, Hutchinson |
| do | J. E. Steele Sand & Gravel Co. | Route 4, Hutchinson |
| Republic | Republic Co. Highway Dept. | Belleville |
| Rice | Rice Co. Highway Dept. | Lyons |
| do | Aversman Sand & Gravel Co. | Bushton |
| do | Rock Hill Stone & Gravel Co. | P.O. Box 412, Sterling |
| do | A. L. Stapleton | 307 S. Garfield, Lyons |
| do | Sterling Sand & Gravel Co. | P.O. Box 431, Sterling |
| do | A. Tobais W. Wright | Lyons |
| Riley | Riley Co. Highway Dept. | Manhattan |
| do | Blue River Sand & Gravel Co. | Blue Rapids |
| do | Walters Sand Co. | P.O. Box 30, Manhattan |
| Rooks | Construction Engineer, Webster Construction, Bureau of Reclamation | P.O. Box 841, Stockton |
| Russell | Russell Co. Highway Dept. | Russell |
| Saline | Saline Co. Highway Dept. | Salina |
| do | Salina Sand Co. | 113 W. Minneapolis Salina |

| County | Company or operator | Address |
|---|---|---|
| Sedgwick | Sedgwick Co. Highway Dept. | 1015 Still Well Ave. Wichita 12 |
| do | City Engineer | Wichita 2 |
| do | John Beagley | Mount Hope |
| do | Bentley Sand Co. | Bentley |
| do | Big Three Sand & Gravel Co. | 2204 N. West Wichita 15 |
| do | Black Cat Sand Co. | 661 No. Meridian Wichita 12 |
| do | John E. Blair | 4155 N. Arkansas Wichita 4 |
| do | Bob Sand & Gravel Co. | 21st St. & Meridian Wichita |
| do | H. E. Cochran & Son | 1738 E. 24th St. Wichita |
| do | Dolese Brothers Co. | 13 N.W. 13th St. Okla. City, Oklahoma |
| do | Dusenberry & Son | 371 N. Elizabeth Wichita |
| do | L. C. House | Route 2, Bentley |
| do | Inland Construction Co. | P.O. Box 1993, Wichita |
| do | Walt Keeler Co. | P.O. Box 1972 Wichita 1 |
| do | McKinster-Gove Sand Co. | Route 6, Box 408 Wichita |
| do | Miles Sand Co. | Route 1, Wichita |
| do | Miles Sand Service | Valley Center |
| do | R. R. Provence Sand & Gravel Co. | Route 1, P.O. Box 988 Wichita |
| do | Sand, Inc. | 1313 West 31 South Wichita 2 |
| do | Southwest Sand & Gravel Co. | Route 8, Wichita 15 |
| do | Superior Sand Co. | 1800 W. 18th, Wichita 3 |
| do | Vics Sand & Gravel Co. | 1806 Garland, Wichita |
| do | Wichita Big River Sand Co. | 623 W. 27th, Wichita |
| do | P. R. York | P.O. Box 61, Sedgwick |
| Shawnee | State Highway Commission, Engineer of Maintenance | Topeka |
| do | Shawnee Co. Engineers Office | Topeka |
| do | City Engineer, Topeka | Topeka |
| do | Consumers Sand Co. | Topeka |
| do | Inland Construction Co. | P.O. Box 1993, Wichita |
| do | Kansas Sand Co. | 531 N. Taylor, Topeka |

| County | Company or operator | Address |
|---|---|---|
| Shawnee | Schoffner Sand Co. | Solomon |
| do | Schoffner Sand Co. | 134 E. Jewell, Salina |
| do | Victory Sand & Stone Co. | Foot of Waite, Topeka |
| do | M. W. Watson | 1004 National Bank of Topeka Building Topeka |
| Sheridan | Sheridan Co. Highway Dept. | Hoxie |
| Sherman | Sherman Co. Highway Dept. | P.O. Box 22, Goodland |
| do | J. R. Hahn | Goodland |
| do | Tom Ramsey | 802 Center, Goodland |
| do | Forrest Seigal | 216 Main, Goodland |
| Smith | Smith Co. Highway Dept. | Smith Center |
| Stafford | County Engineer, Stafford County | St. John |
| do | Partin Sand & Gravel Co. | P.O. Box 274, Stafford |
| Sumner | Sumner Co. Highway Dept. | Wellington |
| do | Mulvane Sand Co. | Mulvane |
| Thomas | Thomas Co. Highway Dept. | Colby |
| do | Earl Carpenter | Colby |
| do | Joe Hubbard | Colby |
| do | Ed Purma | 975 2nd Street Colby |
| Trego | Trego Co. Highway Dept. | WaKeeney |
| do | Ruth O. Wiles | 1621 Fairview, Wichita |
| Wabaunsee | Wabaunsee Co. Highway Dept. | Alma |
| Wallace | Wallace Co. Highway Dept. | Sharon Springs |
| do | Lacey Gravel Co. | Sharon Springs |
| do | Holliday Sand & Gravel Co. | 728 Railway Exchange Building Kansas City 6, Mo. |
| Washington | Washington Co. Highway Dept. | Washington |
| do | Mueller Sand & Gravel Co. | Hanover |
| do | Finlayson Gravel Co. | Barnes |
| Wilson | Wilson Co. Highway Dept. | Fredonia |
| Woodson | Nelson Quarry | Piqua |
| Wyandotte | American Sand Co. | Turner |
| do | Builders Sand Co. | Morris |
| do | Dreyer Sand Co. | Turner |
| do | Ebb Rees | 1228 Homer St. Kansas City |
| do | Happe Sand Co. | Muncie |

| County | Company or operator | Address |
|---|---|---|
| Wyandotte | Holliday Sand & Gravel Co. | 728 Railway Exchange Building<br>Kansas City 6, Mo. |
| do | Kaw Sand Associates | Route 2, Kansas City 3 |
| do | Kaw Valley Sand Co. | 42nd & Speaker Road<br>Kansas City |
| do | Stewart Sand Material Co. | 1805 Grand Ave.<br>Kansas City 8, Mo. |
| do | Thompson-Strauss Quarry | Morris |
| do | Peck Woolf Sand & Material Co. | 1920 Paseo Blvd.<br>Kansas City 8, Mo. |
| Various | Atchison, Topeka, and Santa Fe Railway | Chicago 4, Illinois |

## Stone

Stone ranks 5th in value among the minerals produced in Kansas. The average annual production between 1950 and 1954 exceeded the average between 1945 and 1949 by 67.1 percent in quantity and by 104.7 percent in value. In 1952 Kansas produced 8,830,871 tons of stone valued at $12,051,740. Production declined to 7,096,057 tons valued at $10,597,540 in 1954 (Table 41). Data on quantity and value of stone produced are not strictly comparable year by year, however, because in some years certain types of stone are assigned to the "undistributed" category. This procedure is followed whenever fewer than three operators produce a mineral or mineral product during the year. Hence an exact tabulation of tonnage and value of stone is not always possible. Stone produced in Kansas consists chiefly of limestone, but includes some sandstone and chat, the latter being classified under "miscellaneous" stone.

Most of the stone produced was crushed and used for concrete and road metal. Quantity ranged from 4,102,290 tons in 1950 to 6,044,265 tons in 1952 (Table 42). Value of the crushed product ranged from $5,233,341 in 1950 to $8,085,491 in 1952. In 1950, value of crushed stone comprised 58.6 percent of the total value of all stone produced; in 1953 it was 72.1 percent; it averaged 67.2 percent for the period 1950 to 1954.

TABLE 41.—*Production of stone in Kansas, 1950 to 1954, by kinds, and changes from prior years*

| Year | Limestone | | Sandstone | | Miscellaneous | | Total stone | | Percent change from previous year | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity, short tons | Value | Quantity, short tons | Value | Quantity, short tons | Value | Quantity, short tons | Value | Quantity | Value |
| 1945-49 average | 2,890,676 | $ 4,239,838 | 150,804 | $208,431 | 1,634,786 | $483,661 | 4,681,318 | $ 5,011,251 | .... | .... |
| 1950 | 5,594,790 | 7,673,016 | 612,220 | 793,331 | 1,423,290 | 453,860 | 7,630,300 | 8,920,207 | .... | .... |
| 1951 | 5,824,103 | 8,284,559 | 277,446 | 444,108 | 1,089,934 | 329,845 | 7,191,483 | 9,058,512 | — 5.8 | + 1.5 |
| 1952 | 7,551,061 | 11,204,877 | 295,246 | 485,871 | 984,564 | 360,992 | 8,830,871 | 12,051,740 | +22.7 | +33.0 |
| 1953 | 7,026,871 | 10,045,111 | 274,150[a] | 260,045 | 1,084,357[b] | 376,581 | 8,385,378 | 10,681,378 | — 5.1 | —11.5 |
| 1954 | 6,744,398 | 9,934,116 | 351,659[c] | 663,424 | [d] | | 7,096,057 | 10,597,540 | —15.4 | — 0.9 |
| 1950-54 average | 6,548,245 | 9,428,336 | 362,142 | 529,356 | 920,536 | 380,319 | 7,826,818 | 10,261,947 | | |
| Percent change in 5-year average | +126.5 | +122.3 | +140.1 | +153.9 | —43.7[c] | —21.4[c] | +67.1 | +104.7 | | |
| Percent change 1954 vs 1950 | + 20.5 | + 29.4 | — 42.6 | — 33.3 | —23.9 | —17.1 | — 7 | + 18.8 | | |

[a] Excludes crushed sandstone for 1953.
[b] Excludes noncommercial miscellaneous stone for 1953.
[c] Excludes dimension sandstone.
[d] Miscellaneous stone "crushed granite" and chat, included under "undistributed" values
[e] Computed on 4-year basis.

TABLE 42.—*Summary of stone production in Kansas, 1950 to 1954, by uses*

| Use | | Annual production | | | | |
|---|---|---|---|---|---|---|
| | | 1950 | 1951 | 1952 | 1953 | 1954 |
| Concrete, road metal | Tons | 4,102,290 | 4,707,711 | 6,044,265 | 5,867,966 | 5,661,627 |
| | Value | $5,233,341 | 6,059,887 | 8,085,491 | 7,680,028 | 7,595,952 |
| Railroad ballast | Tons | 1,508,500 | 1,304,674 | 189,268 | 1,311,789 | 1,017,909 |
| | Value | $ 683,167 | 680,785 | 270,141 | 780,321 | 540,271 |
| Riprap | Tons | 953,150 | 530,118 | 936,653 | 907,849 | 511,925 |
| | Value | $ 949,265 | 689,318 | 1,175,541 | 1,077,767 | 686,368 |
| Agriculture | Tons | 736,000 | 562,368 | 770,314 | 528,363 | 518,415 |
| | Value | $1,014,965 | 755,673 | 1,160,917 | 827,016 | 764,325 |
| Dimension stone | Tons | 44,690 | 37,630 | 51,063 | 18,009 | 39,022 |
| | Value | $ 685,554 | 678,038 | 825,853 | 626,232 | 764,427 |
| Miscellaneous | Tons | 180,650 | 48,982 | 77,669 | 146,647 | 189,915 |
| | Value | $ 215,549 | 194,811 | 283,574 | 331,486 | 402,502 |
| Total | Tons | 7,630,300 | 7,191,483 | 8,830,871 | 8,385,378 | 7,096,057 |
| | Value | $8,920,207 | 9,058,512 | 12,051,740 | 10,681,737 | 10,597,540 |

Other products, in order of value, include agricultural limestone, riprap, dimension stone, and railroad ballast (Table 42). A summary of Kansas stone production by kinds and uses for the period 1950 to 1954 is presented in Table 43. Chat, a waste product from the lead and zinc mines in Cherokee County, is included under miscellaneous stone. Dimension sandstone produced by fewer than three producers is included among the "undistributed" minerals.

Stone is produced in Kansas by approximately 100 commercial companies and by 85 noncommercial operators, principally county highway departments. A directory of stone producers in Kansas on record as of December 31, 1954, is given in Table 44.

| Rock | Use | Tons | Value | Tons | Value | Tons | Value | Tons | Value | Tons | Value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Limestone | Agriculture | 736,000 | $1,014,965 | 562,368 | $ 755,673 | 770,314 | $1,160,917 | 528,363 | $ 827,016 | 518,415 | $ 764,325 |
| | Crushed—concrete, road metal | 3,928,890 | 4,983,936 | 4,580,960 | 5,882,748 | 5,681,267 | 7,719,886 | 5,521,202 | 7,210,478 | 5,474,890 | 7,283,276 |
| | Crushed—railroad ballast | 138,010 | 148,869 | 87,242 | 95,031 | 40,268 | 46,641 | 220,482 | 291,628 | 186,129 | 249,657 |
| | Dimension | 44,220 | 685,075 | 37,067 | 677,588 | 50,913 | 825,665 | 18,009 | 626,232 | 38,626 | 763,355 |
| | Miscellaneous | 38,590 | 154,783 | 26,598 | 184,451 | 72,946 | 277,307 | 91,417 | 303,086 | 148,401 | 310,006 |
| | Riprap | 709,080 | 685,388 | 529,868 | 689,068 | 935,853 | 1,174.461 | 625,389 | 786,671 | 330,300 | 379,668 |
| Sandstone | Crushed—concrete, road metal | 134,640 | 231,863 | 86,961 | 161,154 | 140,073 | 254,836 | 197,724 | 363,293 | 120,753 | 246,578 |
| | Crushed—railroad ballast | 128,020 | 158,746 | 189,672 | 282,254 | 149,000 | 223,500 | 104,550 | 146,370 | 7,767 | 11,650 |
| | Dimension | 470 | 479 | 563 | 450 | 150 | 188 | .... | .... | * | * |
| | Riprap | 244,070 | 263,877 | 250 | 250 | 800 | 1,080 | 270,400 | 280,845 | 181,625 | 306,700 |
| | Other | .... | .... | .... | .... | 5,223 | 6,267 | 18,750 | 9,500 | 4,514 | 92,496 |
| Miscellaneous | Crushed—concrete, road metal | 38,760 | 17,542 | 39,790 | 15,985 | 222,925 | 110,769 | 149,040 | 106,257 | 75,984 | 66,098 |
| | Crushed—railroad ballast | 1,242,470 | 375,552 | 1,027,760 | 303,500 | * | * | 989,757 | 342,323 | 824,013 | 278,964 |
| | Dimension | .... | .... | .... | .... | .... | .... | .... | .... | 396 | 1,072 |
| | Riprap | .... | .... | .... | .... | .... | .... | 12,060 | 10,251 | .... | .... |
| | Other | 142,060 | 60,766 | 22,384 | 10,360 | .... | .... | .... | .... | 36,480 | 18,900 |

*Value included under "undistributed."

TABLE 44.—*Directory of stone producers on record as of December 31, 1954*

| County | Company or operator | Address |
|---|---|---|
| Allen | Allen Co. Highway Dept. | Iola |
| do | Monarch Cement Co. | Humboldt |
| do | Nelson Brothers Quarries | La Harpe |
| do | Anderson Co. Highway Dept. | Garnett |
| Anderson | Garnett Rock Co. | Garnett |
| do | Lee Giles | Greeley |
| Atchison | Atchison Co. Highway Dept. | Atchison |
| do | District Engineer, Corps of Engineers | 601 Davidson Bldg.<br>10 E. 17th St.<br>Kansas City 8, Mo. |
| do | Ralph Bromley | Atchison |
| do | George W. Kerford Quarry Co. | Atchison |
| Barton | Barton Co. Highway Dept. | Great Bend |
| Bourbon | Bourbon Co. Highway Dept. | Fort Scott |
| do | Anderson-Oxandale | P.O. Box 425, Herington |
| do | Bandera Stone Quarry* | 222 W. 72nd St.<br>Kansas City, Mo. |
| do | Cullor Limestone Co. | Route 1, Fort Scott |
| do | Fort Scott Hydraulic Cement Co. | P.O. Box 267, Fort Scott |
| do | Paul Fusch | Route 4, Fort Scott |
| do | Harold Morrell | Fulton |
| do | Otto Womekdorf | Mapleton |
| Butler | County Engineer, Butler County | El Dorado |
| do | City of El Dorado | El Dorado |
| do | G. W. Baker | Holton |
| do | Concrete Materials Construction Co. | Moline |
| do | Walt Keeler | 1101 S. Mosley Place<br>Wichita |
| do | George M. Meyers | P.O. Box 669<br>El Dorado |
| Chautauqua | Chautauqua Co. Highway Dept. | Sedan |
| do | Sedan Limestone Co. | Sedan |
| Cherokee | Cherokee Co. Highway Dept. | Columbus |
| do | Baxter Chat Co.* | Baxter Springs |
| do | Eagle-Picher Mining & Smelting Co. | Miami, Oklahoma |
| do | Frances Reeves Limestone Co. | P.O. Box 36, Columbus |
| do | S. A. Jones† | 135 W. 11th St.<br>Baxter Springs |
| do | C. Y. Semple | Baxter Springs |
| do | James L. Smith | Baxter Springs |

| County | Company or operator | Address |
|---|---|---|
| Cherokee | Southwest Chat Co.† | Baxter Springs |
| do | Youngman Mining Co.† | P.O. Box 166<br>Baxter Springs |
| Clark | Clark Co. Highway Dept.* | Ashland |
| Clay | Clay Co. Highway Dept. | Clay Center |
| Cloud | Cloud Co. Highway Dept. | Concordia |
| Coffey | Coffey Co. Highway Dept. | Burlington |
| do | Baxter Chat Company† | Baxter Springs |
| do | Neosho Valley Rock Co. | Burlington |
| Cowley | Cowley Co. Highway Dept. | Winfield |
| do | Arkansas City Highway Dept. | Arkansas City |
| do | C. L. Daniels Stone Co. | Winfield |
| do | John V. Elam | Winfield |
| do | San Ore Construction Co. | McPherson |
| do | Silverdale Cut Stone Co. | Silverdale |
| do | Silverdale Limestone Co. | Route 3, Box 180<br>Arkansas City |
| Crawford | Crawford Co. Highway Dept. | Girard |
| do | John J. Stark | P.O. Box 7, Girard |
| Decatur | Decatur Co. Highway Dept.‡ | Oberlin |
| Dickinson | Dickinson Co. Highway Dept. | Abilene |
| Doniphan | County Engineer, Doniphan County | Troy |
| do | District Engineer, Corps of Engineers | 601 Davidson Bldg.<br>10th E. 17th St.<br>Kansas City 8, Mo. |
| do | City of Troy Highway Dept. | Troy |
| do | Everett Quarries | Plattsburg, Mo. |
| do | Wolf River Limestone Quarry | Troy |
| Douglas | Douglas Co. Highway Dept. | Lawrence |
| do | Palmyra Township Highway Dept. | Baldwin |
| do | Clark Rock Quarry | Overbrook |
| do | Howard Henry Quarries | Lecompton |
| do | Killough Construction Co. | 1414 Cedar St., Ottawa |
| Elk | Elk Co. Highway Dept. | Howard |
| do | Concrete Materials Construction Co. | Moline |
| Ellis | Ellis Co. Highway Dept.* | Hays |
| do | City of Ellis Highway Dept. | Ellis |
| Ellsworth | Ellsworth Co. Highway Dept. | Ellsworth |
| do | District Engineer, Corps of Engineers* | 601 Davidson Bldg.<br>East 17th St.<br>Kansas City 8, Mo. |

| County | Company or operator | Address |
|---|---|---|
| Franklin | Franklin Co. Highway Dept. | Ottawa |
| do | Dan Fogle | Ottawa |
| do | Bert Ross | 634 S. Oak St., Ottawa |
| Geary | Fort Riley Reservation, Quartermaster | Fort Riley |
| do | City Engineer, Junction City | Junction City |
| do | W. O. Homer Construction Co. | Grand Ave. Junction City |
| do | Walker Cut Stone Co. | P.O. Box 269 Junction City |
| Graham | Graham Co. Highway Dept.* | Hill City |
| Gray | County Engineer, Gray County | Cimarron |
| Greenwood | Greenwood Co. Highway Dept. | Eureka |
| Hamilton | County Engineer, Hamilton County* | Syracuse |
| Jackson | Jackson Co. Highway Dept. | Holton |
| do | City of Holton, Street—Alley Dept. | Holton |
| do | G. W. Baker | Holton |
| Jefferson | County Engineer, Jefferson County | Oskaloosa |
| do | Roy Baker | Valley Falls |
| do | H. R. Hamm Quarry | Perry |
| Jewell | County Engineer, Jewell County | Mankato |
| Johnson | Johnson Co. Highway Dept. | Olathe |
| do | Deitz Hill Development Co. | 28 Southwest Blvd. Kansas City 10, Mo. |
| do | Holliday Sand & Gravel Co. | Holliday |
| do | Reno Construction Co. | Overland Park |
| do | Southwest Quarries | 89th & State Line Kansas City, Mo. |
| do | Thompson Quarries | Holliday |
| Labette | Labette Co. Highway Dept. | Oswego |
| do | City of Parsons, Street Dept., City Engineer | Parsons |
| do | Home Lumber & Supply Co. | 310-S 17th St., Parsons |
| do | John J. Stark | P.O. Box 7, Girard |
| Leavenworth | Leavenworth Co. Highway Dept. | Leavenworth |
| do | City of Leavenworth, Street Dept. | Leavenworth |
| do | Kansas State Penitentiary | Lansing |
| do | J. C. Haigwood | Tonganoxie |
| do | Peerless Stone Products | Kansas City |
| do | Loring Quarries | P.O. Box 174 Bonner Springs |

| County | Company or operator | Address |
|---|---|---|
| Lincoln | G. W. Baker* | Holton |
| do | Roy Baker* | Valley Falls |
| do | Baker Construction Co.* | Holton |
| do | Quartzite Stone Co. | Lincoln |
| Linn | Linn Co. Highway Dept. | Mound City |
| do | Blacktop Construction Co. | Emporia |
| do | Freeto Asphalt Co. | Pittsburg |
| do | Lee Giles | Greeley |
| do | Murray Limestone Production Co. | Centerville |
| do | Martin A. Wolten | Garnett |
| Lyon | Lyon Co. Highway Dept. | Emporia |
| do | Center Township Highway Dept. | Olpe |
| do | City of Emporia Highway Dept. | Emporia |
| McPherson | Engineer, McPherson County* | McPherson |
| do | Riddle Quarries | Windom |
| Marion | Marion Co. Highway Dept. | Marion |
| do | Anderson-Oxandale | P.O. Box 425, Herington |
| do | Baxter Chat Co. | Baxter Springs |
| do | Riddle Quarries | National Bank of America Bldg., Salina |
| Marshall | Marshall County Engineer | Marysville |
| Miami | Miami Co. Highway Dept. | Paola |
| do | City of Osawatomie | Osawatomie |
| do | A. J. Forster | Paola |
| do | L. W. Hayes, Hayes Quarries | 4550 Main St. Kansas City 2, Mo. |
| do | Hays Transit Mix | Paola |
| do | Killough Construction Co. | 1414 Cedar St., Ottawa |
| Mitchell | Mitchell Co. Highway Dept. | Beloir |
| Montgomery | County Engineer, Montgomery County | Independence |
| do | City of Caney Highway Dept. | Caney |
| do | City of Coffeyville, City Engineer | Coffeyville |
| do | Anderson-Oxandale | P.O. Box 425, Herington |
| do | Peerless Stone Co. | Coffeyville |
| do | Universal Atlas Cement Co. | 100 Parke Ave. New York 17, N.Y. |
| Morris | County Engineer, Morris County | Council Grove |
| do | H. H. Oxandale | Holton |
| Nemaha | County Engineer, Nemaha County | Seneca |
| Neosho | County Engineer, Neosho County | Erie |
| do | City of Chanute | Chanute |

| County | Company or operator | Address |
|---|---|---|
| Neosho | Anderson-Oxandale | Box 425, Herington |
| do | Ash Grove Lime & Portland Cement Co. | 101 W. 11th St. Kansas City, Mo. |
| do | Harry Byers | 500 N. Plummer, Chanute |
| do | Joe O'Brian | St. Paul |
| Norton | County Engineer, Norton County | Norton |
| Osage | County Engineer, Osage County | Lyndon |
| do | Anderson-Oxandale* | Holton |
| do | Weldon Baker | Holton |
| do | A. B. Coal Co.* | Burlingame |
| do | K. S. Dusenburg | P.O. Box 224 Melvern |
| do | Jones Construction Co.* | Emporia |
| do | Perry Jones | Carbondale |
| do | John T. Stark* | Girard |
| Osborne | Osborne Co. Highway Dept. | Osborne |
| Ottawa | Ottawa Co. Highway Dept. | Minneapolis |
| Phillips | Phillips Co. Highway Dept. | Phillipsburg |
| do | Construction Engineer, Kirwin Construction, Field Division, Bureau of Reclamation | P.O. Box 317, Kirwin |
| Pottawatomie | Pottawatomie Co. Highway Dept. | Westmoreland |
| Republic | County Engineer, Republic County | Belleville |
| Rice | Riddle Quarries | National Bank of America Bldg., Salina |
| Riley | Riley Co. Highway Dept. | Manhattan |
| do | Concrete Materials Construction Co. | Moline |
| do | Grosshaus-Peterson | Wathena |
| do | Manhattan Cut Stone Co.‡ | P.O. Box 855, Manhattan |
| do | Manhattan Stone Co. | 414 S. 5th St., Manhattan |
| do | Riddle Quarries | National Bank of America Bldg., Salina |
| Rooks | Construction Engineer, Webster Construction, Field Division, Bureau of Reclamation | P.O. Box 641, Stockton |
| Rush | Rush Co. Highway Dept. | La Cross |
| Salina | Saline Co. Highway Dept. | Salina |

| County | Company or operator | Address |
|---|---|---|
| Sedgwick | County Engineer, Sedgwick County | 1015 Stillwell |
| do | City of Wichita Highway Dept. | Wichita 12<br>City Building, Wichita 2 |
| Shawnee | County Engineer, Shawnee County | Court House, Topeka |
| do | Henry Howard Quarries | Lecompton |
| do | Henry C. Luttjohaun | 2001 James St., Topeka |
| do | Netherland Construction Co. | 1315 MacVicar, Topeka |
| do | Pattons Crushed Stone Co. | Pauline |
| do | Storms-Green Construction Co. | 6601 E. 37th St.<br>Kansas City, Mo. |
| Sheridan | County Engineer, Sheridan County | Hoxie |
| Sherman | Sherman Co. Highway Dept. | Goodland |
| do | Brown Bros. Contractor, c/o DeLore Division, National Lead Co. | 2808 Carondelet, Station |
| Smith | Smith Co. Highway Commission, County Engineer* | Smith Center |
| Sumner | County Engineer, Sumner County | Wellington |
| Wabaunsee | County Engineer, Wabaunsee County | Alma |
| do | G. W. Baker | Holton |
| Washington | County Engineer, Washington County | Washington |
| do | Acme Barite Co.* | Mineral Point, Mo. |
| Wilson | Wilson Co. Highway Dept. County Engineer | Fredonia |
| do | Benedict Rock-Lime Co. | Benedict |
| do | Carr Rock Products Co. | P.O. Box 117, Neodesha |
| Woodson | County Engineer, Woodson County | Yates Center |
| Wyandotte | County Engineer, Wyandotte County | Kansas City |
| do | City of Kansas City, Dept. of Streets and Parks | Kansas City |
| do | American Rock Crusher Co. | 3700 Rainbow Blvd.,<br>Rosedale, Kansas City |
| do | Joe Gregor | 836 Bunker St.<br>Kansas City |
| do | Mike Gregor | 4514 Cambridge St.<br>Kansas City |
| do | Lone Star Cement Corp. | 1651 Dierks Bldg.<br>Kansas City 6 |
| do | Peerless Quarries | Turner |

| County | Company or operator | Address |
|---|---|---|
| Wyandotte | Thompson-Strauss Quarries | Route 2, Kansas City |
| do | John Wear | Route 1, Kansas City |
| Various | Union Pacific Railway Co., W. C. Perkins, Chief Engineer‡ | 1416 Dodge St. Omaha 2, Nebraska |

*Sandstone
† Chat
‡ Miscellaneous
All others limestone

## METALS

The only metals mined in Kansas are lead and zinc. The mines are all located in Cherokee County in the southeast corner of the state. The Kansas lead and zinc area is part of the Tri-State district, which comprises parts of Missouri, Oklahoma, and Kansas. The Tri-State district produces more zinc than any other area in the United States, and ranks third in the production of lead. In 1950 Kansas produced lead and zinc worth $10,279,474. Peak production for the 5-year period was reached in 1951, when metals mined were valued at $13,616,718. By 1954, production had declined appreciably, and was valued at $5,232,802. Average value of metals mined annually between 1950 and 1954 was $8,787,867; cumulative value amounted to $43,939,334 for the 5-year period.

### Lead

Lead production declined steadily from 1950 to 1953, when the quantity produced was 3,347 short tons. In 1954, however, production increased to 4,033 tons, an increase of 686 tons, or 12.4 percent. The value of lead produced in 1954 was $228,128, or 26 percent greater than in 1953. In the 5-year period 1950 to 1954, greatest value was attained in 1951 while subsidies were still in effect. Though lead production in 1951 was less by 540 tons than in 1950, its value was $534,172, or 20.8 percent greater than in 1950. Quantity and value of lead produced in the period are presented in Table 45. A decrease in the price of lead, and the lifting of restrictions on production and importation of lead resulted in a general decline in the lead-mining industry in Kansas. According to the Kansas State Metal Mine Inspector the number of lead mines

TABLE 45.—*Quantity and value of lead produced in Kansas, 1950 to 1954, and changes from prior years*

| Year | Production | | Percent change from previous year | | Number[1] of mines | Number[1] of employees |
|---|---|---|---|---|---|---|
| | Quantity, tons[2] | Value | Amount | Value | | |
| 1950 | 9,487 | $2,561,490 | .... | .... | 46 | 683 |
| 1951 | 8,947 | 3,095,662 | — 5.7 | +20.8 | 34 | 653 |
| 1952 | 5,916 | 1,904,952 | —33.9 | —39.5 | 32 | 628 |
| 1953 | 3,347 | 876,914 | —43.5 | — 5.4 | 23 | 423 |
| 1954 | 4,033 | 1,105,042 | +12.4 | +26 | 13 | 242 |

[1] Data from reports of mine inspection section, Labor Department, Kansas.
[2] Production based upon recoverable content of ores, concentrates, tailings.

decreased from 46 mines (employing 683 persons) in 1950 to 23 mines (employing 423 persons) in 1953 (Delplace, 1952, p. 50; 1954, p. 81). The only lead smelter operated in Kansas was the Eagle-Picher Company smelter at Galena, Cherokee County. This smelter treated ores not only from Kansas but also from the entire Tri-State district and some from Illinois. Two pigment plants, both in Montgomery County, were active from 1950 to 1954, one at Coffeyville, operated by the Ozark Smelting and Mining Company, and one at Cherryvale, operated by the National Zinc Company.

Lead and zinc mines that operated in Kansas in 1954 are listed in Table 46.

TABLE 46.—*Directory of lead and zinc producers in Kansas on record as of December 31, 1954*

| Operator or Company | Address | Mine* |
|---|---|---|
| B. & I. Mining Co. | Picher, Okla. | Hartley |
| B. P. e Y Mining Co. | Baxter Springs | Lindsey, Muncie |
| Ora Black | Picher, Okla. | Boulders |
| Bonanza Mining Co. | Picher, Okla. | Semple |
| Jim Burke | Treece | Foley, Fox |
| Discard Mining Co. | Baxter Springs | Discard |
| Harley Drane | Treece | Boulders, Muncie |
| Eagle-Picher Co. | Miami, Okla. | Big John, Grace B unit, Lucky Jew, Webber, West Side #2 |
| Cecil Gibson | Baxter Springs | Hartley |
| Harris Mining Co. | Baxter Springs | Golden Rod |
| Helen H. Mining Co. | Baxter Springs | Stebbins, Karcher |

| Operator or Company | Address | Mine* |
|---|---|---|
| John Henderson | Commerce, Okla. | Northern |
| Jim Jennings | Quapaw, Okla. | Robinson |
| Linda Lou Mining Co. | Miami, Okla. | Northern |
| Carey McCoy Mining Co. | Treece | Sonny Boy |
| J. C. McDonald | Treece | Foley, Mullen |
| Robert Mason | Baxter Springs | Brewster #6 |
| Mid Century Mining Co. | Cardin, Okla. | Bendelari |
| Mid Continent Lead & Zinc Co. | Baxter Springs | Tulsa, Quapaw |
| National Lead Co. | Fredericktown, Mo. | Ballard group |
| Frank Poole | Picher, Okla. | Lindsey |
| A. R. Rowden | Baxter Springs | Robinson |
| Clarence Shipmen | Baxter Springs | Thomas, Boulders |
| Tiger Mining Co. | Picher, Okla. | Fox |
| Treece Milling Co. | Treece | Webber |
| Mark Twain Mining Co. | Picher, Okla. | Jarrett |
| Wilbur Mining Co. | Picher, Okla. | Wilbur |

*All lead and zinc mines in Kansas are situated in Cherokee County.

## Zinc

From 1950 to 1954 the zinc industry paralleled the lead industry in Kansas, in production and value. Greatest quantity and value of zinc were produced in 1951, when 28,904 tons of recoverable zinc was obtained having a value of $10,521,056. In 1954, production amounted to 19,110 tons, which was 9,794 tons, or 33.9 percent, less than in 1951, the peak year. In 1954, the zinc produced was valued at $4,127,760, which is $6,393,296, or 60.8 percent, less than in 1951.

TABLE 47.—*Quantity and value of zinc produced in Kansas, 1950 to 1954, and changes from prior years*

| Year | Production | | Percent change from previous year | | Number[1] of mines | Number[1] of employees |
|---|---|---|---|---|---|---|
| | Quantity, tons[2] | Value | Amount | Value | | |
| 1950 | 27,176 | $ 7,717,984 | .... | .... | 46 | 683 |
| 1951 | 28,904 | 10,521,056 | + 6.3 | +36.3 | 34 | 653 |
| 1952 | 25,482 | 8,460,024 | −11.9 | −19.6 | 32 | 628 |
| 1953 | 15,515 | 3,568,450 | −39.2 | −57.9 | 23 | 423 |
| 1954 | 19,110 | 4,127,760 | +23.1 | +15.6 | 13 | 242 |

[1] Data from reports of mine inspection section, Labor Department, Kansas.
[2] Production based upon recoverable content of ores, concentrates, tailings.

Data on quantity and value of zinc production are given in Table 47. Table 46 gives names and addresses of zinc mines that operated in 1954.

## UNDISTRIBUTED MINERALS

Kansas produced several minerals that are classified as "undistributed". Undistributed mineral commodities are those that are produced by fewer than three companies and also those produced almost exclusively by one company, so that the total quantity and value cannot be revealed. Such minerals include diatomaceous marl, gypsum, natural cement, and in some years certain stone commodities. In addition, perlite and expanded vermiculite were processed within recent years from material shipped into Kansas from outside sources.

### Diatomaceous Marl

Diatomaceous marl, discovered in Wallace and Logan Counties by the State Geological Survey of Kansas about 1929, has been produced by the DeLore Division of the National Lead Company of St. Louis, Missouri. The material is mined in sec. 10, T. 11 S., R. 28 W., in Wallace County, and trucked to the company's processing plant at Edson in Sherman County about 17 miles from the mine. Mining of the marl started in 1949 but it was not until midsummer of 1953 that the company opened its plant at Edson for processing and shipping. Production increased yearly until 1954, when the quantity mined was slightly less than in 1953. Value of the diatomaceous marl is included in the total listed under "undistributed" in Table 3.

### Gypsum

Gypsum was produced near Medicine Lodge in Barber County by the National Gypsum Company of Buffalo, New York, and at Blue Rapids in Marshall County by the Certain-teed Products Corporation, Ardmore, Pennsylvania. Quantity and value of both crude and calcined gypsum produced have been increasing for several years. Quantity of crude gypsum produced between 1950 and 1954 was 82.7 percent greater than it was in the preceding five years, and its value was 57.1 percent greater. Calcined gypsum

increased still more; the quantity produced between 1950 and 1954 was double that of the preceding 5-year period, and the value increased more than 90 percent. Value of gypsum produced is included in the total listed under "undistributed" in Table 3.

### Natural Cement

Natural cement was produced by only one company, the Fort Scott Hydraulic Cement Company of Fort Scott in Bourbon County. The cement rock is obtained from the lower portion of the Fort Scott limestone formation, which overlies the coal-bearing Cherokee shale, all of Pennsylvanian age. Production, shipments, and value of shipments have been increasing for several years. Shipments and value of shipments of natural cement in 1954 exceeded shipments and value of shipments in 1950 by 104.2 and 67.3 percent respectively. When compared to the annual production, shipments, and value of shipments of the preceding 5-year period, annual production, shipments, and value of shipments between 1950 and 1954 show still greater increases. Value of natural cement shipments is included in the total listed under "undistributed" in Table 3.

### Dimension Sandstone

Dimension sandstone was produced by one company, the Bandera Stone Quarry Company of 222 W. 72nd Street, Kansas City, Missouri. The quarry is located near Redfield in Bourbon County, Kansas. Production has been increasing in recent years. Value of dimension sandstone is included in the total listed under "undistributed" in Table 3.

### Perlite and Expanded Vermiculite

Expanded perlite and expanded vermiculite were processed by the Panacalite Perlite Company of Kansas City, Wyandotte County, and expanded vermiculite by the Dodson Manufacturing Company of Wichita, Sedgwick County, from raw materials imported from other states. Both industries show annual increases in value of their production since they started operations. Values of perlite and expanded vermiculite are included in the total listed under "undistributed" in Table 3.

## UNEVALUATED MINERAL RESOURCES

### Water and Soil

Two of the most important mineral resources of Kansas are water, both surface and underground, and soil. Water and soil are truly mineral commodities, but because of their nature and universal usage, are difficult to evaluate as to quantity and value. Water, to a considerable extent, is a replenishable resource, in that water supplies may be completely replenished in some geologic situations, and partly replenished in others. Soil lost by erosion is replaced only by slow soil-building processes. No data are at hand at present in regard to the actual quantity of soil that exists in Kansas. Without the soil that covers the 82,113 square miles of land surface (total area including water surface is 82,276 square miles), Kansas could not have produced $1 billion to $1.5 billion dollars of agricultural products including livestock each year since 1950. The amount of available water and the quantity used or consumed in the state in 1953 were estimated by the Kansas Water Resources Fact-Finding and Research Committee in 1954. According to the survey, a total of 1,898 mgd (million gallons a day) was withdrawn from the available water resources, but the amount consumed and removed from the supply for all purposes amounted to 652 mgd, or 237,980 million gallons per year. The actual value of the 237,980 million gallons consumed per year is not known. It is estimated (Foley, Smrha, and Metzler, 1955, p. 1) that city dwellers pay an average of only about $5 a year each for water, and rural residents somewhat less. On the assumption that 51 percent of the population is urban and 49 percent rural, the minimum value of water consumed is computed to be about $9,000,000 a year. This sum, however, does not include the value of water consumed by industry, which is estimated to pay an additional $27,000,000 a year, or about three-fourths of the state's water bill. The figures cited are not intended to be exact, but they do suggest the magnitude of the value of water consumed in Kansas each year.

## UNEXPLOITED MINERALS

In addition to the minerals produced there are other mineral commodities in Kansas that either have never been exploited or are not at present being produced on a commercial scale. Such minerals include aluminum from clays (Kinney, 1943, 1952), ben-

tonite (Kinney, 1942), chalk (Runnels and Dubins, 1949) of which the state has virtually unlimited supplies, iron (Jewett and Schoewe, 1942, p. 103), magnesium (Schoewe, 1943; Jeffords, 1948), mineral waters (Schoewe, 1953, p. 133), oil shale (Runnels and others, 1952), phosphatic nodules (Runnels, 1949; Runnels and others, 1953), pyrite (Jewett and Schoewe, 1942, p. 168), rock asphalt (Jewett, 1940), and tripoli (Jewett and Schoewe, 1942, p. 168). Still other minerals are known to occur in Kansas, such as germanium (Schleicher and Hambleton, 1954), and uranium (Runnels, Schleicher, and Van Nortwick, 1953), but these have not been investigated sufficiently to show whether they exist in commercial quantities. Further study of these unexploited minerals in Kansas coupled with favorable economic conditions may eventually result in the production of some, if not all, of these mineral commodities.

## ESTIMATE OF MINERAL PRODUCTION IN 1955

At the end of each year the State Geological Survey of Kansas estimates the value of mineral production for the year just concluded. These estimates are based upon figures and trends obtained from producers. In the past, State and Federal government agencies have proved to be correct within 1 percent of the final figures. For 1955 the estimated value of mineral production is $474,500,000, or about $10,000,000 more than in 1954. Estimated values of minerals produced in 1955 are given in Table 48.

TABLE 48.—*Estimated values of minerals produced in Kansas in 1955*

| Mineral commodity | Value |
|---|---|
| Cement (portland) | $ 24,000,000 |
| Clay and clay products | 10,000,000 |
| Coal | 3,000,000 |
| Lead | 1,500,000 |
| Natural gas | 49,000,000 |
| Natural gasoline and LPG | 13,000,000 |
| Petroleum, crude | 339,000,000 |
| Salt | 8,000,000 |
| Sand and gravel | 7,500,000 |
| Stone (building stone, crushed rock, ag. lime, etc.) | 11,000,000 |
| Zinc | 6,500,000 |
| Miscellaneous (gypsum, volcanic ash, natural cement, helium, diatomaceous marl, etc.) | 2,000,000 |
| | $474,500,000 |

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