

**MINED AREAS OF THE WEIR-PITTSBURG  
COAL BED**

**By**

**G. E. ABERNATHY**

**UNIVERSITY OF KANSAS PUBLICATIONS  
STATE GEOLOGICAL SURVEY OF KANSAS, BULLETIN 52, PART 5  
LAWRENCE, KANSAS**

6011.52. P15

## STATE OF KANSAS

ANDREW F. SCHOEPEL, *Governor*

### STATE BOARD OF REGENTS

LESTER MCCOY, *Chairman*

JERRY E. DRISCOLL

FRED M. HARRIS

MRS. ELIZABETH HAUGHEY

WILLIS N. KELLY

DREW McLAUGHLIN

GROVER POOLE

LA VERNE B. SPAKE

OSCAR STAUFFER

### MINERAL INDUSTRIES COUNCIL

JOHN ALLISON, *Chairman*

M. L. BREIDENTHAL

HOWARD CAREY

ANTHONY FOLGER

LESTER MCCOY

J. E. MISSIMER

BRIAN O'BRIAN, *Vice-Chairman*

J. A. SCHOWALTER

CHESTER SCOTT

K. A. SPENCER

W. L. STRYKER

B. O. WEAVER

### STATE GEOLOGICAL SURVEY OF KANSAS

DEANE W. MALOTT, M.B.A., LL.D., Chancellor of the University of Kansas, and  
ex officio Director of the Survey.

RAYMOND C. MOORE, Ph.D., Sc.D., Director and State Geologist†

JOHN C. FRYE, Ph.D., Asst. Director and Asst. State Geologist, in charge

EDITH HICKS LEWIS, Secretary

#### STRATIGRAPHY, PALEONTOLOGY, AND AREAL GEOLOGY:

Raymond C. Moore, Ph.D., Sc.D., Geol-

ogist†

John M. Jewett, Ph.D., Geologist

Walter H. Schoewe, Ph.D., Geologist

Arthur L. Bowsher, B.S., Geologist†

#### SUBSURFACE GEOLOGY:

M. L. Thompson, Ph.D., Geologist

Ada Swineford, M.S., Geologist

Philip Kaiser, A.B., Geologist

Eileen Martin, B.M., Stenographer

Ethelyn B. McDonald, M.A., Well

Sample Curator, Wichita Branch

Arden D. Brown, Assistant

#### Carrie Thurber, Assistant MINERAL RESOURCES:

George E. Abernathy, E.M., Ph.D.,  
Geologist

Robert M. Dreyer, Ph.D., Geologist†

Walter A. Ver Wiebe, Ph.D., Geologist

Norman Plummer, A.B., Ceramist

John I. Moore, M.S., Petroleum Engr.†

Frances L. Schloesser, Assistant Chemist

W. P. Ames, A.B., Laboratory Assistant

Ethel Owen, Assistant

#### PUBLICATIONS AND RECORDS:

Donald E. Dowers, Draftsman†

Robyn Ashby, Draftsman

Betty J. Hagerman, Bookkeeper

#### COOPERATIVE PROJECTS WITH UNITED STATES GEOLOGICAL SURVEY

##### GROUND-WATER RESOURCES:

Stanley W. Lohman, M.S., Geologist in  
charge

John C. Frye, Ph.D., Geologist

Thad G. McLaughlin, Ph.D., Geologist

Bruce Latta, A.B., Geologist

Charles C. Williams, M.A., Geologist

V. C. Fishel, B.S., Physicist

James B. Cooper, A.B., Well Driller†

Oscar S. Fent, B.S., Well Driller

Charles K. Bayne, A.B., Instrumentman

Fern H. Ashby, Stenographer

Betty Ann Ball, Stenographer

W. W. Wilson, Well Observer†

##### MINERAL FUELS RESOURCES:

Wallace Lee, E.M., Geologist in charge

Constance Leatherrock, B.S., Geologist

##### TOPOGRAPHIC SURVEYS:

C. L. Sadler, Division Engineer

Max J. Gleissner, Section Chief

J. P. Rydeen, Topographer

SPECIAL CONSULTANTS: Ray Q. Brewster, Ph.D., Chemistry; Claude W. Hibbard, Ph.D.,  
Vertebrate Paleontology; Eugene A. Stephenson, Ph.D., Petroleum Engineering.

COOPERATING STATE AGENCIES: *State Board of Agriculture, Division of Water Resources,*  
George S. Knapp, Chief Engineer; *Robert Smrha, Assistant Chief Engineer; State*  
*Board of Health, Division of Sanitation,* Paul D. Haney, Chief Engineer and Di-  
rector; *Ogden S. Jones, Geologist.*

† Absent on leave for military service.

---

## MINED AREAS OF THE WEIR-PITTSBURG COAL BED

By G. E. ABERNATHY

---

### CONTENTS

	PAGE
ABSTRACT .....	214
INTRODUCTION .....	214
Purpose of the report .....	214
Acknowledgments .....	214
Previous work .....	214
GEOGRAPHY .....	215
Location of the area .....	215
Topography .....	215
HISTORY OF MINING .....	215
STRATIGRAPHY .....	216
Position of the Cherokee shale in the stratigraphic column .....	216
The Cherokee shale .....	216
The position of the Weir-Pittsburg coal bed in the Cherokee shale .....	218
THE WEIR-PITTSBURG COAL BED .....	219
Erosional unconformities .....	220
Horsebacks .....	220
ANALYSES OF WEIR-PITTSBURG COAL .....	221
PRODUCTION OF WEIR-PITTSBURG COAL .....	221
REFERENCES .....	221
REGISTER OF MINES .....	222

---

### ILLUSTRATIONS

#### PLATE

1. Map of mined areas of the Weir-Pittsburg coal bed..... *in pocket*

#### FIGURE

1. Section of a mine map showing room and pillar system of mining..... 217

## ABSTRACT

The Weir-Pittsburg coal bed crops out in a narrow belt across the southeastern corner of Kansas. From the eastern limit of its outcrop it has been mined by stripping methods in areas where the overburden was less than 50 feet. The area of deep mines or shafts extends westward from the stripped areas for a distance of about 5 or 6 miles. The depth to the coal bed in the regions worked by the deep mines ranges from 25 to 285 feet. The Weir-Pittsburg coal bed lies near the middle of the Cherokee shale; however, the interval between the top of the Cherokee and the coal bed is not constant but ranges from 165 to 225 feet. The thickness of the coal bed ranges from 32 to 43 inches.

Large areas of coal have not yet been worked, but in most cases the unworked coal is in the deeper part of the field.

## INTRODUCTION

*Purpose of the report.*—During the fuel shortage of 1942, numerous inquiries concerning the unmined areas of coal in the Weir-Pittsburg coal bed were directed to the Geological Survey. At the request of officials of the coal-mining companies, a map showing location of the active mines and the old mine workings was prepared. This map was used in a report to the Federal Government to indicate favorable locations for deep mechanized mines. Mine regions worked since 1942 and some corrections and additions to the original map have been incorporated in the map of the worked areas of the Weir-Pittsburg coal bed that accompanies this report.

*Acknowledgments.*—This opportunity is taken to thank officials of coal-mining companies that have operated or are operating in the field, particularly those of the Pittsburg and Midway Coal Mining Company, the Central Coal and Coke Company, and the Western Coal and Mining Company for access to their drill records and mine maps. The Mackie-Clemens Coal Company, the Commercial Fuel Company, and the Klaner Coal Company also furnished valuable information. The St. Louis-San Francisco Railway Company furnished a number of maps. Data and maps in the State Mine Inspector's office were used freely in compiling the map of the worked areas of the Weir-Pittsburg coal bed. The manuscript was critically read by John C. Frye, Acting State Geologist.

*Previous work.*—The first detailed report published on Kansas coal is by Haworth and Crane (1898). A large part of this report

deals with the Weir-Pittsburg bed in southeastern Kansas. More recent reports which contain information on the Weir-Pittsburg coal bed are by Young and Allen (1925), Moore and Landes (1927), and Pierce and Courtier (1937). In 1936 Abernathy, in a thesis submitted to the University of Kansas, discussed the Cherokee rocks in southeastern Kansas and the relation of the Weir-Pittsburg and other beds to the cyclothem in the Cherokee section. A chapter on coal is included in a report on "Kansas mineral resources for wartime industries" (Jewett and Schoewe, 1942, pp. 77-88).

### GEOGRAPHY

*Location of the area.*—The location of the worked area of the Weir-Pittsburg coal bed is shown in Plate 1. The area that has been worked in southeastern Kansas is an irregularly shaped, elliptical area extending from northeast to southwest from the vicinity of Arcadia through eastern Crawford and northern Cherokee counties. The line of outcrop of the coal bed passes from a point near Arcadia southward along the Kansas-Missouri boundary to a point east of Pittsburg, then westward to the southeastern area of Pittsburg, and then southwestward through a point about 5 miles south of Scammon.

*Topography.*—The area of active mining and the mined-out areas of the Weir-Pittsburg coal bed comprise a broad, relatively level erosional plane that truncates the outcropping edges of the soft easily eroded beds of sand, sandy shale, and coal of the Cherokee shale. The surface of the ground slopes to the west at an average rate of about 10 feet to the mile in the worked areas of the Weir-Pittsburg coal bed. Farther west the surface rises to the escarpment of the resistant members of the Fort Scott limestone.

### HISTORY OF MINING

The early history of the development of the Weir-Pittsburg coal bed is not well recorded. The earliest record of its mining (Haworth, 1898) indicates that coal was mined sometime between 1850 and 1860. In 1866, coal was obtained from the outcrop of the Weir-Pittsburg bed in Cherokee county and hauled by wagon to Granby, Missouri, where it was used as blacksmith coal.

The earliest operations were in strip mines or wagon-pit mines along the banks of creeks. Strip mining was done in this district

before the Civil War. The thin overburden was removed by horses and scrapers, and the coal was loaded by hand into wagons. The first railroad to be built in the district was the Missouri River, Fort Scott and Gulf Railroad (later the Kansas City, Fort Scott and Memphis and now the Saint Louis and San Francisco), which was completed to Baxter Springs in 1870. Four years later the first shaft mine was opened by Scammon Brothers near the present town of Scammon. In the early history of the district, coal was hoisted from the mines by a horse "whim." Later, steam hoists were used in the larger mines, and gasoline engines were used in the smaller mines. More recently, electric hoists have replaced all of the steam hoists and most of the gasoline hoists. The room and pillar system is used in the deep mines. Figure 1 illustrates this system of mining, and shows the average size of mine workings and room pillars.

Railroad contractors soon became interested in the problem of removing the overburden by mechanical means. In 1877, the Hoges-Armil Coal Company began using a steam shovel to remove the overburden from the Weir-Pittsburg coal bed near Pittsburg. This was the first use of a steam shovel in strip coal mining in the United States. The first revolving shovel in this area was used in 1905; it had a 2-yard dipper and was designed to remove 15 feet of overburden. Larger shovels with 3-yard dippers were used in this field in 1911. Shovels having a boom 75 feet long and a dipper of 6 cubic yards capacity were in common use in 1915. There has been a gradual increase in the size of shovels between 1920 and the present time. The largest shovel now in operation has a boom 90 feet long and is capable of stripping to a depth of 50 feet or more; the capacity of the dipper is 30 cubic yards.

## STRATIGRAPHY

*Position of the Cherokee shale in the stratigraphic column.*—The Cherokee shale is the lowest division of the Pennsylvanian system in Crawford and Cherokee counties, Kansas. It rests unconformably upon the uneven surface of rocks belonging to the Mississippian system.

*The Cherokee shale.*—The Cherokee shale includes all of the strata between the base of the Fort Scott limestone and the upper uneven surface of the Mississippian rocks; it consists of shales,

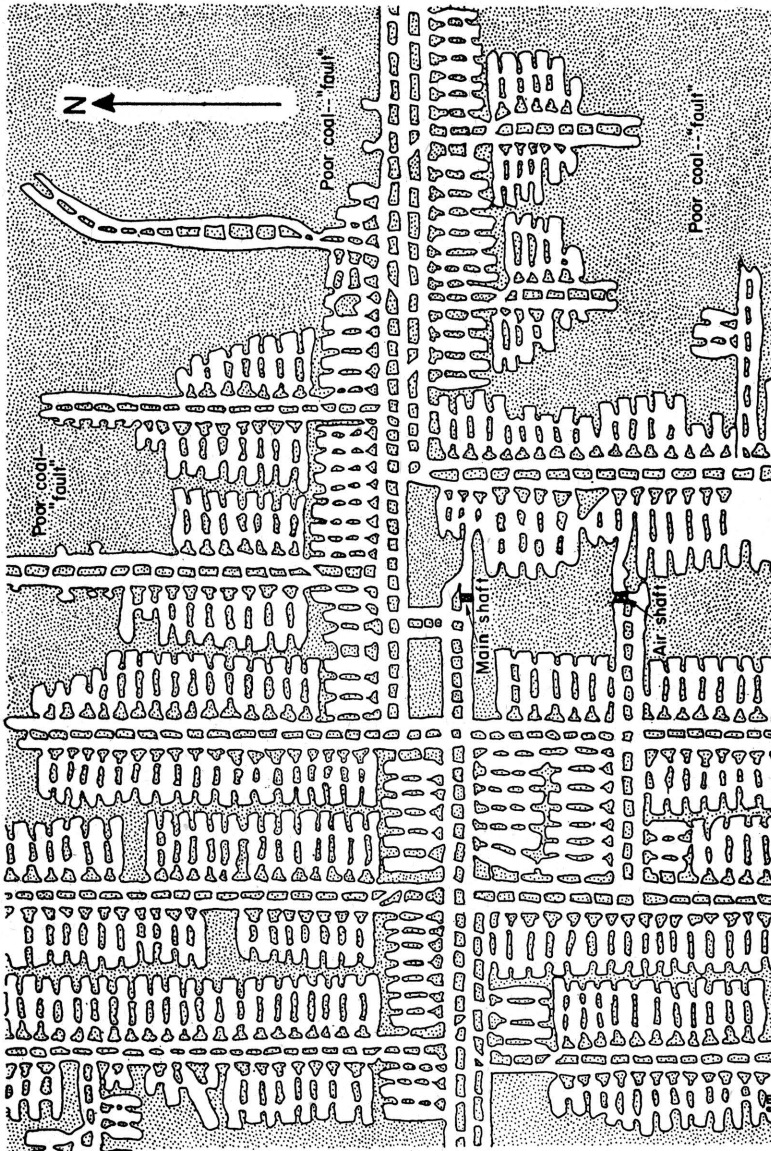


FIG. 1. Section of a mine map showing room and pillar system of mining and ratio of faulty coal areas to mined areas.

sandstones, sandy shales, a few thin beds of limestone, and 14 beds of coal. Nine of these coal beds are being mined at the present time. The average thickness of the Cherokee shale, where the complete section is present and is overlain by the Fort Scott limestone, in Crawford and Cherokee counties is about 450 feet. The Cherokee is absent in the southeastern part of Cherokee county where it has been removed by erosion. In other parts of the area its thickness ranges from a fraction of an inch near the outcrop of the Mississippian limestone to 455 feet near the outcrop of the Fort Scott limestone.

The character of the rocks and the kind of fossils contained indicate that the Cherokee shale was deposited in a basin in which the sea advanced and retreated a number of times. During the periods of time when the sea covered the basin, marine limestone, sandstone, and shale were deposited; while the sea was absent from the basin, nonmarine sandstone and beds of coal accumulated. Each advance and withdrawal of the sea is indicated by a definite sequence of beds. The members of this sequence, beginning at the bottom, are sandstone, underclay, coal, black shale, gray shale, limestone, and calcareous shale.

The Cherokee shale crops out in a northeast-southwest belt across southeastern Kansas. Its outcrop area covers the southeastern part of Crawford county and all of Cherokee county excepting the extreme southeastern corner and the extreme northwestern corner.

*The position of the Weir-Pittsburg coal bed in the Cherokee shale.*—The Weir-Pittsburg coal bed lies about 250 feet above the base of the Cherokee shale and about 200 feet below the top where the complete section of the Cherokee is present. The coal beds of commercial importance in the Cherokee shale are, in ascending order, the Riverton, which lies at the base of the Cherokee; the Columbus, which lies about 150 feet above the base of the Cherokee and just beneath the Bluejacket sandstone; the Knifeton, which lies about 25 feet above the Bluejacket sandstone; the Weir-Pittsburg, which occurs about 25 feet above the Knifeton; the Mineral coal bed, which lies about 80 feet above the Weir-Pittsburg; and the Fleming, Croweburg, Bevier, and Mulky (Fort Scott), which lie above the Mineral coal.



### THE WEIR-PITTSBURG COAL BED

The Weir-Pittsburg coal bed was first known as the "Pittsburg lower" (Haworth, 1895). It was also called "Weir-Pittsburg lower" by Haworth (1895) and by Greene and Pond (1926). For a number of years the bed has been known as the Weir-Pittsburg coal bed and also as the Cherokee coal bed. In 1936 at a conference on the nomenclature of the beds in the Cherokee shale, staff members of the State Geological Survey of Kansas and a representative from the Missouri Bureau of Geology and Water Resources considered names that were in common usage. Weir-Pittsburg was adopted as the name to be used in Survey publications.

The mined-out areas of the Weir-Pittsburg coal bed are shown on plate 1. On this map the areas in which coal has been mined from shafts (or deep mines) are differentiated from the areas that have been stripped. This map was prepared from the best information now available, but it probably does not completely show the mined-out areas. Some mines may have been worked that are not recorded on this map, and the areas of many mine workings may have been extended after the most recent mine map was made. All of the mined-out areas shown on this map were drawn from individual mine maps obtained from the offices of the State Mine Inspection Department, the major coal-mining companies, the Missouri-Kansas-Texas Railroad Company, and the Saint Louis-San Francisco Railway Company.

The Weir-Pittsburg coal bed dips with the other beds of the Cherokee shale to the north of west at an average rate of 20 feet to the mile. The worked area extends from the outcrop for a distance of about 6 miles in a direction north of west. The western limit of the known workable area in Crawford and Cherokee counties is defined by the presence of a channel sandstone replacing the coal or thin discontinuous sandstone and shale lenses separating the coal bed into thin bands. The width of this sandy facies is unknown. However, in the southern part of the coal field, the coal is known to be of workable grade in a large part of Labette county. A coal bed about 3 feet thick has been mined in the McCune area in western Crawford county. This thickness is comparable to the average thickness of the Weir-Pittsburg coal bed in the mined areas. The coal in these western areas has not been

mined extensively, however, because of the higher mining costs at greater depth.

The average depth of the coal bed in the areas mined by deep shafts is about 150 feet. The depths of the shafts range from 25 feet to a maximum of 285 feet at the Sheridan Mine No. 21, located about 2 miles west of Arma, Kansas, and operated by the Quality Coal Company.

The Weir-Pittsburg coal bed is more uniform in thickness than any other coal bed in the Cherokee shale of southeastern Kansas. The average thickness of the bed in the northern part of the field is 32 inches. The bed thickens toward the south where the average thickness is about 43 inches. In Labette county some well logs record a maximum thickness of 58 inches of Weir-Pittsburg coal at a depth of about 600 feet.

*Erosional unconformities.*—The top of the Weir-Pittsburg bed is characterized by small areas where sandstone or sandy shale is in contact with the top of the coal bed. Commonly a black shale is in contact with the top of the coal. These sandstone areas have a very irregular pattern but are more or less connected. They probably represent sections of stream channels that were filled with sand or sandy shale when the coal bed was near the surface. The bases of these old stream channels, or the bases of the present sandstone lenses, are above the top of the Weir-Pittsburg coal bed in most areas. In many areas the bases of the old stream channels have been cut down into the coal bed, or in some areas the coal bed has been cut out completely. In mines where the coal bed is overlain by a lens of sandstone or sandy shale, the roof of the mine workings requires some kind of support; the miners' term for this condition is a "fault." The coal miners' "fault" has no relation to a geological fault, but it indicates that conditions for mining the coal are faulty. The Weir-Pittsburg coal bed is the only bed of coal in the Cherokee shale which is characterized by "faults." From 10 to 15 percent of the coal in the mined-out areas is unmined because of the presence of "faults."

*Horsebacks.*—Horsebacks are nearly vertical fractures or fissures that have cut across the coal bed and have been filled with clay material which resembles fire clay or soapstone. The width of the horsebacks ranges from a few inches to several feet. These fractures are probably due to regional crustal disturbances and to differential compaction of the sediments above the irregular

and warped Mississippian limestone surface. Horsebacks are common in the Weir-Pittsburg coal bed.

### ANALYSES OF WEIR-PITTSBURG COAL

Coal from the Weir-Pittsburg bed is of high quality. Analyses made at the University of Kansas (Young and Allen, 1925) indicate that the moisture content ranges from 2.01 to 3.83 percent. The ash content ranges from 6.43 to 12.34 percent, and the heating value ranges from 12,870 to 14,080 B.t.u.

### PRODUCTION OF WEIR-PITTSBURG COAL

The exact total production of coal from the Weir-Pittsburg bed is not known. The total production of coal from 1885 to 1943 from the shaft mines of Crawford and Cherokee counties, all of which produce from the Weir-Pittsburg bed, is 175,750,014 tons. The coal that has been mined by strip mining from the Weir-Pittsburg bed in Kansas is probably several million tons, which would bring the total production of coal from the Weir-Pittsburg bed to approximately 200,000,000 tons.

### REFERENCES

- ABERNATHY, G. E., 1937, The Cherokee group of southeastern Kansas: Kansas Geol. Soc., Guidebook 11th Ann. Field Conference, pp. 18-23, figs. 5, 6.
- , 1938, Cyclical sedimentation of the Cherokee: Kansas Acad. Sci. Trans., vol. 41, pp. 193-197.
- GREENE, F. C., and POND, W. F., 1926, The geology of Vernon county, Missouri: Missouri Bur. Geology and Mines, 2d ser., vol. 19, pp. 1-152, figs. 1-14, pls. 1-14.
- HAWORTH, ERASMUS, 1895, The coal fields of Kansas: Kansas Univ. Quart., vol. 3, no. 4, pp. 297-309.
- , and CRANE, W. R., 1898, Special report on coal: Kansas Univ. Geol. Survey, vol. 3, pp. 1-347, figs. 1-54, pls. 1-70.
- JEWETT, J. M., and SCHOEWE, W. H., 1942, Kansas mineral resources for war-time industries: Kansas Geol. Survey, Bull. 41, pt. 3, pp. 69-180, figs. 1-13.
- LANDES, K. K., 1937, Mineral resources of Kansas counties: Kansas Geol. Survey, Min. Resources Circ. 6, pp. 1-110.
- MOORE, R. C., 1929, Kansas coal fields: U. S. Bur. Mines, Tech. Paper 445, pp. 3-7, figs. 1, 2.
- PIERCE, W. G., and COURTIER, W. H., 1937, Geology and coal resources of the southeastern Kansas coal field in Crawford, Cherokee and Labette counties: Kansas Geol. Survey, Bull. 24, pp. 1-122, pls. 1-12, figs. 1-13.
- YOUNG, C. M., and ALLEN, H. C., 1925, Kansas coal: Kansas Univ. Bull., vol. 26, no. 5, pp. 1-202; Kansas Univ. Eng. Bull. 13 and Chem. Research Div. Bull. 4.

## REGISTER OF MINES

No. ON MAP	COMPANY	MINE No.	LOCATION		
			Sec.	T.S.	R.E.
8	Arcadia Coal Co. ....	1	12	28	25
261	Atkinson Coal Co. ....	4	13	32	23
247	B and B Coal Co. ....		1	32	23
23	Barnum Coal Co. ....	1	26	28	25
225	Barrett Coal Co. ....	1	23	31	24
196	Barrett Coal Co. ....	6	11	31	24
234	Beinhart and Hardester .....		28	31	24
236	Bennett Coal Co. ....	1	29	31	24
31	Black Crown Coal Co. ....		34	28	25
82	Black Crown (Active) .....	2	31	29	25
276	Boyd Coal Co. (Slope) .....	1	24	32	23
167	Broadhurst Coal Co. ....	2	29	30	25
182	Broadhurst & Coughenour .....		1	31	24
64	Burgess Coal Co. (Slope) .....	1	12	29	25
72	Burnett Coal Co. ....	1	22	29	25
114	Canal Fuel Co. (Central Coal & Coke) .....	14	36	30	24
147	Central Coal & Coke Co. ....	2	15	30	25
149	Central Coal & Coke Co. ....	3	15	30	25
150	Central Coal & Coke Co. ....	4	15	30	25
151	Central Coal & Coke Co. ....	5	15	30	25
152	Central Coal & Coke Co. ....	6	15	30	25
280	Central Coal & Coke Co. ....	7	6	32	24
153	Central Coal & Coke Co. ....	8	15	30	25
85	Central Coal & Coke Co. ....	9	34	29	25
154	Central Coal & Coke Co. ....	11	15	30	25
244	Central Coal & Coke Co. ....	11	32	31	24
195	Central Coal & Coke Co. ....	15	11	31	24
259	Central Coal & Coke Co. ....	16	12	32	23
79	Central Coal & Coke Co. ....	17	28	29	25
219	Central Coal & Coke Co. ....	18	22	31	24
148	Central Coal & Coke Co. ....	30	15	30	25
120	Central Coal & Coke Co. ....	31	2	30	25
122	Central Coal & Coke Co. ....	37	3	30	25
73	Central Coal & Coke Co. ....	38	23	29	25
216	Central Coal & Coke Co. ....	39	20	31	24
211	Central Coal & Coke Co. ....	41	16	31	24
272	Central Coal & Coke Co. ....	42	24	32	23
277	Central Coal & Coke Co. ....	43	25	32	23
41	Central Coal & Coke Co. ....	45	23	29	24
40	Central Coal & Coke Co. ....	48	14	29	24
78	Central Coal & Coke Co. ....	49	27	29	25
38	Central Coal & Coke Co. ....	50	12	29	24
37	Central Coal & Coke Co. ....	51	11	29	24

No. ON MAP	COMPANY	MINE No.	LOCATION		
			SEC.	T.S.	R.E.
21	Chambers Coal Co. ....	1	26	28	25
117	Chapin and Westerlin Coal Co. ....		36	30	24
203	Chapin and Westerlin Coal Co. ....	1	14	31	24
253	Cherokee-Crescent Coal Co. ....	1	6	32	23
249	Cherokee-Crescent Coal Co. ....	2	2	32	23
214	Cherokee Line Coal Co. ....		19	31	24
135	Cherokee-Pittsburg Coal & Mining Co. ....	1	9	30	25
126	Cherokee-Pittsburg Coal & Mining Co. ....	2	4	30	25
124	Cherokee-Pittsburg Coal & Mining Co. ....	3	3	30	25
113	Cherokee-Pittsburg Coal & Mining Co. ....	4	36	30	24
111	Cherokee-Pittsburg Coal & Mining Co. ....	5	35	30	24
127	Cherokee-Pittsburg Coal & Mining Co. ....	6	5	30	25
136	Cherokee-Pittsburg Coal & Mining Co. ....	7	9	30	25
186	Cherokee-Pittsburg Coal & Mining Co. ....	8	2	31	24
125	Cherokee-Pittsburg Coal & Mining Co. ....	9	4	30	25
84	Cherokee-Pittsburg Coal & Mining Co. ....	12	32	29	25
105	Clemens Coal Co. ....	3	25	30	24
36	Clemens Coal Co. ....	4	36	28	25
159	Clemens Coal Co. ....	6	18	30	25
103	Clemens Coal Co. ....	7	24	30	24
271	Clemens Coal Co. ....	9	23	32	23
137	Clemens Coal Co. ....	10	9	30	25
33	Clemens Coal Co. ....	11	35	28	25
95	Clemens Coal Co. ....	15	13	30	24
179	Clemens Coal Co. ....	17	35	31	23
109	Clemens Coal Co. ....	18	27	30	24
7	Clemens Coal Co. ....	19	10	28	25
269	Columbus Coal Co. ....	8	23	32	23
270	Columbus Coal Co. ....	8½	23	32	23
17	Cox Creek Coal Co. ....	1	22	28	25
241	Crowe Coal & Mining Co. ....	2	32	31	24
242	Crowe Coal & Mining Co. ....	3	32	31	24
215	Crowe Coal & Mining Co. ....	7	20	31	24
273	Crowe Coal & Mining Co. ....	8	24	32	23
262	Crowe Coal & Mining Co. ....	10	13	32	23
284	Crowe Coal & Mining Co. ....	10	19	32	24
264	Crowe Coal & Mining Co. ....	10½	13	32	23
206	Crowe Coal & Mining Co. ....	11	15	31	24
202	Crowe Coal & Mining Co. ....	11½	14	31	24
208	Crowe Coal & Mining Co. ....	12	15	31	24
207	Crowe Coal & Mining Co. ....	12½	15	31	24
30	Crowe Coal & Mining Co. ....	14	34	28	25
53	Crowe Coal & Mining Co. ....	15	3	29	25
29	Crowe Coal & Mining Co. ....	16	33	28	25

224 *Geological Survey of Kansas—1944 Reports of Studies*

No. ON MAP	COMPANY	MINE No.	LOCATION		
			Sec.	T.S.	R.E.
237	Crowe Coal & Mining Co. ....	18	29	31	24
263	Crowe Coal & Mining Co. ....	19	13	32	23
265	Crowe Coal & Mining Co. ....	20	14	32	23
52	Crowe Coal & Mining Co. ....	21	3	29	25
288	Cunningham Coal Co. ....		30	32	24
98	DeGasperi Coal Co. (Active) .....		22	30	24
61	Dickason Coal Co. ....	6	10	29	25
128	Dittman & Wachter Coal Co. ....	1	6	30	25
92	Dittman & Wachter Coal Co. ....	2	11	30	24
205	Dixon Coal Co. ....		14	31	24
11	Domestic Fuel Co. ....	2	12	28	25
6	Domestic Fuel Co. ....	3	10	28	25
13	Doubleday Coal Co. ....	1	14	28	25
14	Doubleday Coal Co. ....	6	14	28	25
88	D. S. and L. Coal Co. ....	1	36	29	25
123	D. S. and L. Coal Co. ....	2	3	30	25
16	Faulkner Coal Co. ....	12	22	28	25
27	Faulkner Coal Co. ....	14	28	28	25
287	Fleming Coal Co. ....	3	19	32	24
279	Fleming Coal Co. ....	4	25	32	23
278	Fleming Coal Co. ....	5	25	32	23
275	Fleming Coal Co. ....	6	24	32	23
9	Forest Coal Co. (Slope) .....	1	12	28	25
166	Four Coal Co. ....		21	30	25
130	Frontenac Coal Co. .... (Ozark)	6	30	25	
81	Gaskill (Gubio) Coal Co. (Active) .....	1	29	29	25
56	Girard Coal Co. ....	9	6	29	25
44	Girard Fuel Co. ....	7	34	29	24
18	Gray & Wolfe Coal Co. ....	1	23	28	25
189	Hamilton Coal Co. ....		6	31	24
231	Hamilton Coal Co. ....	1	28	31	24
232	Hamilton Coal Co. ....	2	28	31	24
217	Hamilton Coal Co. ....	3	21	31	24
213	Hamilton Coal Co. ....	6	18	31	24
46	Hamilton Coal Co. ....	7	35	29	24
54	Hamilton Coal Co. ....	8	4	29	25
209	Hamilton & Grant Coal Co. ....	1	15	31	24
286	Hisle (Ed) Coal Co. ....		19	32	24
282	Hisle (L. H.) .....	1	7	32	24
169	House Coal Co. ....		29	30	25
34	Howe Coal Co. ....	9	36	28	25
80	Jackson & Walker Coal Co. ....	11	29	29	25
89	Jackson & Walker Coal Co. ....	14	1	30	24
93	Jackson & Walker Coal Co. ....	15	12	30	24

No. ON MAP	COMPANY	MINE No.	LOCATION		
			SEC.	T.S.	R.E.
83	Jackson & Walker Coal Co. ....	16	31	29	25
70	Jackson & Walker Coal Co. ....	17	20	29	25
133	Jones and Davis Coal Co. ....	1	7	30	25
146	Kansas and Texas Coal Co. ....	2	15	30	25
260	Kansas and Texas Coal Co. ....	3	12	32	23
139	Kansas and Texas Coal Co. ....	9	10	30	25
145	Kansas and Texas Coal Co. ....	11	15	30	25
230	Kansas and Texas Coal Co. ....	16	27	31	24
140	Kansas and Texas Coal Co. ....	17	11	30	25
222	Kansas and Texas Coal Co. ....	18	22	31	24
104	Kansas and Texas Coal Co. ....	20	25	30	24
142	Kansas and Texas Coal Co. ....	22	11	30	25
221	Kansas and Texas Coal Co. ....	23	22	31	24
201	Kansas and Texas Coal Co. ....	26	12	31	24
184	Kansas and Texas Coal Co. ....	27	1	31	24
116	Kansas and Texas Coal Co. ....	28	36	30	24
223	Kansas and Texas Coal Co. ....	40	22	31	24
224	Kansas and Texas Coal Co. ....	40 <sup>1/2</sup>	23	31	24
240	Kansas and Texas Coal Co. ....	44	30	31	24
107	Kansas and Texas Coal Co. ....	46	26	30	24
220	Kansas and Texas Coal Co. ....	47	22	31	24
227	Kansas and Texas Coal Co. ....	49	27	31	24
233	Keith and Perry Coal Co., (Bouvard & Dixon) .....	2	28	31	24
243	Keith and Perry Coal Co. ....	2	32	31	24
228	Keith and Perry Coal Co. ....	3	27	31	24
281	Keith and Perry Coal Co. ....	4	7	32	24
235	Keith and Perry Coal Co. ....	5	28	31	24
245	Keith and Perry Coal Co. ....	6	33	31	24
229	Keith and Perry Coal Co. ....	7	27	31	24
246	Keith and Perry Coal Co. ....	8	33	31	24
190	Kruger Coal Co. (Active) .....	1	7	31	24
157	Lafayette Coal Co. ....	1	17	30	25
132	Lavery Coal Co. ....		6	30	25
289	Leggett Coal Co. ....		30	32	24
100	Machine Coal Co. ....	1	23	30	24
178	Geo. K. Mackie Coal Co. ....	(H)	35	31	23
171	Geo. K. Mackie Coal Co. ....	(J)	13	31	23
162	Malle Coal Co. ....		18	30	25
176	Mayer Coal Co. ....	1	33	31	23
255	Mayer Coal Co. ....	1	9	32	23
90	Mayer Coal Co. ....	2	Katy 2	30	24
174	Mayer Coal Co. (Slope) .....	2	32	31	23
239	Mayer Coal Co. ....	2	30	31	24

No. ON MAP	COMPANY	MINE No.	LOCATION		
			SEC.	T.S.	R.E.
45	Mayer Coal Co. ....	3	34	29	24
172	Mayer Coal Co. ....	4	25	31	23
267	Mayer Coal Co. ....	5	17	32	23
170	Mayer Coal Co. ....	6	36	31	22
180	Mayer Coal Co. ....	7	36	31	23
175	Mayer Coal Co. (Fidelity) ....	8	32	31	23
173	Mayer Coal Co. ....	9	28	31	23
177	Mayer Coal Co. ....	11	33	31	23
32	McCormick Coal Co. ....	4	35	28	25
94	McGrath Coal Co. (Active) ....		13	30	24
198	McGrath Coal Co. ....	1	12	31	24
181	McGrath Coal Co. ....	2	1	31	24
204	Mertz & Westerlin Coal Co. ....	1	14	31	24
35	Miller Coal Co. ....	1	36	28	25
251	Missouri-Kansas-Texas Railroad Co. ....	6	5	32	23
163	Missouri-Kansas-Texas Railroad Co. ....	6½	18	30	25
257	Missouri-Kansas-Texas Railroad Co. ....	7	9	32	23
254	Missouri-Kansas-Texas Railroad Co. ....	8	8	32	23
252	Missouri-Kansas-Texas Railroad Co. ....	11	8	32	23
161	Missouri-Kansas-Texas Railroad Co. ....	13	18	30	25
250	Missouri-Kansas-Texas Railroad Co. ....	15	4	32	23
256	Missouri-Kansas-Texas Railroad Co. ....	16	9	32	23
266	Missouri-Kansas-Texas Railroad Co. ....	18	17	32	23
160	Missouri-Kansas-Texas Railroad Co. ....	28	18	30	25
164	Mohawk Coal Co. ....		18	30	25
112	Moore Brothers Coal Co. ....	1	36	30	24
115	Morgan and Hupperfelt Coal Co. ....		36	30	24
226	Moslams and Halstead ....		27	31	24
19	Mulberry-Cherokee Coal Co. ....	1	25	28	25
106	Nevius Coal Co. ....	1	26	30	24
194	Nevius Coal Co. ....	4	11	31	24
102	Nevius Coal Co. ....	5	24	30	24
47	Nevius Coal Co. ....	6	35	29	24
108	Nevius Coal Co. ....	7	26	30	24
285	Newcastle Coal Co. ....		19	32	24
91	Newlands & Heinie Coal Co. ....	1	11	30	24
1	Patton Coal Co. ....	5	25	28	24
158	Pittsburg Coal Co. ....		13	30	25
129	Pittsburg Coal Co. ....	1	6	30	25
238	Pittsburg Coal Co. ....	4	30	31	24
197	Pittsburg Coal & Coke Co. ....	1	12	31	24
199	Pittsburg Coal & Coke Co. ....	2	12	31	24
119	Pittsburg & Midway Coal Mining Co. ....	4	2	30	25
118	Pittsburg & Midway Coal Mining Co. ....	5	1	30	25



Mined Areas of the Weir-Pittsburg Coal Bed

227

No. ON MAP	COMPANY	MINE No.	LOCATION		
			SEC.	T.S.	R.E.
143	Pittsburg & Midway Coal Mining Co. ....	7	11	30	25
144	Pittsburg & Midway Coal Mining Co. ....	9	11	30	25
67	Pittsburg-Northwestern Coal Co. ....	8	16	29	25
4	Poll Coal Co. ....		1	28	25
268	Quality Coal Co. ....	1	21	32	23
3	Quality (Sheridan) Coal Co. (Active).....	21	36	28	24
165	Ratcliff Coal Co. ....		19	30	25
22	Rich Hill Coal Co. ....	1	26	28	25
168	Robson Brothers Coal Co. ....		29	30	25
74	Sheridan Coal Co. ....	1	23	29	25
65	Sheridan Coal Co. ....	2	13	29	25
62	Sheridan Coal Co. ....	3	11	29	25
25	Sheridan Coal Co. ....	4	27	28	25
63	Sheridan Coal Co. ....	5	12	29	25
60	Sheridan Coal Co. ....	7	9	29	25
66	Sheridan Coal Co. ....	8	14	29	25
51	Sheridan Coal Co. ....	10	2	29	25
15	Sheridan Coal Co. ....	11	15	28	25
2	Sheridan Coal Co. ....	12	25	28	24
26	Sheridan Coal Co. ....	15	27	28	25
5	Sheridan Coal Co. ....	16	9	28	25
28	Sheridan Coal Co. ....	18	31	28	25
20	Sheridan Coal Co. ....	19	25	28	25
97	Simone Coal Co. (Active) ....		14	30	24
141	Simone Coal Co. ....	2	11	30	25
50	Spencer-Newlands Coal Co. ....	7	1	29	25
49	Spencer-Newlands Coal Co. ....	9	1	29	25
121	Standard Coal Co. ....		3	30	25
134	Starr Coal Co. ....	1	7	30	25
24	T. R. & G. Coal Co. ....	2	27	28	25
10	Umbria Coal Co. ....	2	12	28	25
12	Umbria Coal Co. ....	5	13	28	25
274	Union Coal Co. (Slope) ....		24	32	23
48	Victor Fuel Co. ....	1	36	29	24
200	Victory Coal Co. ....	26	12	31	24
185	Wear Coal Co. ....	2	1	31	24
156	Wear Coal Co. ....	5	5	30	25
43	Wear Coal Co. ....	17	25	29	24
138	Wear Coal Co. ....	7	10	30	25
183	Wear Coal Co. ....	9	1	31	24
101	Wear Coal Co. ....	11	24	30	24
99	Wear Coal Co. ....	12	23	30	24
155	Wear Coal Co. ....	12½	15	30	25
193	Wear Coal Co. ....	16	11	31	24

No. ON MAP	COMPANY	MINE No.	LOCATION		
			Sec.	T.S.	R.E.
42	Wear Coal Co. ....	19	24	29	24
96	Wear Coal Co. ....	20	14	30	24
39	Wear Coal Co. ....	21	13	29	24
191	Western Coal & Mining Co. ....	2	9	31	24
187	Western Coal & Mining Co. ....	3	3	31	24
75	Western Coal & Mining Co. ....	4	25	29	25
87	Western Coal & Mining Co. ....	5	35	29	25
76	Western Coal & Mining Co. ....	6	26	29	25
192	Western Coal & Mining Co. ....	7	10	31	24
212	Western Coal & Mining Co. ....	10	17	31	24
86	Western Coal & Mining Co. ....	11	34	29	25
258	Western Coal & Mining Co. ....	12	10	32	23
77	Western Coal & Mining Co. ....	13	26	29	25
188	Western Coal & Mining Co. ....	14	4	31	24
58	Western Coal & Mining Co. ....	15	8	29	25
69	Western Coal & Mining Co. ....	16	18	29	25
68	Western Coal & Mining Co. ....	18	17	29	25
59	Western Coal & Mining Co. ....	19	9	29	25
57	Western Coal & Mining Co. ....	20	7	29	25
248	Western Coal & Mining Co. ....	21	1	32	23
55	Western Coal & Mining Co. ....	22	5	29	25
71	Western Coal & Mining Co. ....	24	22	29	25
110	Wilbert and Schreeb Coal Co. ....	3	33	30	24
131	Wilson Labelle Coal Co. ....	7	6	30	25
210	Weir Junction Coal Co. ....	1	16	31	24
283	(Wildcat) .....		7	32	24
218	Young Coal Co. ....	1	21	31	24

## STATE GEOLOGICAL SURVEY OF KANSAS

### *Recent Publications*

- BULLETIN 32.** Coal Resources of Kansas: Post-Cherokee Deposits, by R. E. Whitla, 64 pages, 1940. Mailing charge, 20 cents.
- BULLETIN 33.** Subsurface Mississippian Rocks of Kansas, by Wallace Lee, 114 pages, 1940. Mailing charges, 25 cents.
- BULLETIN 34.** Geologic Studies in Southwestern Kansas, by H. T. U. Smith, 244 pages, 1940. Mailing charge, 25 cents.
- BULLETIN 36.** Exploration for Oil and Gas in Western Kansas during 1940, by Walter A. Ver Wiebe, 109 pages, 1941. Mailing charge, 25 cents.
- BULLETIN 37.** Geology and Ground-Water Resources of Stanton County, Kansas, by Bruce F. Latta, 119 pages, 1941. Mailing charge, 25 cents.
- BULLETIN 38.** 1941 Reports of Studies (Parts issued separately). Mailing charge, 10 cents each part.
- BULLETIN 39.** The Geology of Riley and Geary Counties, Kansas, by J. M. Jewett, 164 pages, 1941. Mailing charge, 25 cents.
- BULLETIN 40.** Geology and Ground-Water Resources of Morton County, Kansas, by Thad G. McLaughlin, 126 pages, 1942. Mailing charge, 25 cents.
- BULLETIN 41.** 1942 Reports of Studies (Ten parts issued separately). Mailing charge, 10 cents each part.
- BULLETIN 42.** Exploration for Oil and Gas in Western Kansas During 1941, by Walter A. Ver Wiebe, 123 pages, 1942. Mailing charge, 25 cents.
- BULLETIN 43.** Geology and Ground-Water Resources of Ford County, Kansas, by Herbert A. Waite, 250 pages, 1942. Mailing charge, 25 cents.
- BULLETIN 44.** Geophysical Investigations in the Tri-State Zinc and Lead Mining District, by J. J. Jakosky, R. M. Dreyer, and C. H. Wilson, 151 pages, 1942. Mailing charge, 25 cents.
- BULLETIN 45.** Geology and Ground-Water Resources of Meade County, Kansas, by John C. Frye, 162 pages, 1942. Mailing charge, 25 cents.
- BULLETIN 46.** Coal Resources of the Douglas Group in East-Central Kansas, by Arthur L. Bowsler and John M. Jewett, 94 pages, 1943. Mailing charge, 25 cents.
- BULLETIN 48.** Exploration for Oil and Gas in Western Kansas During 1942, by Walter A. Ver Wiebe, 88 pages, 1943. Mailing charge, 25 cents.
- BULLETIN 49.** Geology and Ground-Water Resources of Hamilton and Kearny Counties, Kansas, by Thad G. McLaughlin, 220 pages, 1943. Mailing charge, 25 cents.
- BULLETIN 50.** Ground Water in the Oil-Field Areas of Ellis and Russell Counties, Kansas, by John C. Frye and James J. Brazil, 104 pages, 1943. Mailing charge, 25 cents.
- BULLETIN 51.** The Stratigraphy and Structural Development of the Forest City Basin in Kansas, by Wallace Lee, 142 pages, 1943. Mailing charge, 25 cents.
- BULLETIN 53.** McLouth Gas and Oil Field, Jefferson and Leavenworth Counties, Kansas, by Wallace Lee and Thomas G. Payne, 193 pages, 1944. Mailing charge, 25 cents.
- BULLETIN 54.** Exploration for Oil and Gas in Western Kansas During 1943, by Walter A. Ver Wiebe, 104 pages, 1944. Mailing charge 25 cents.
- RESOURCE-FULL KANSAS,** Kenneth K. Landes and Oren R. Bingham, 65 pages. Mailing charge, 10 cents.

## STATE GEOLOGICAL SURVEY OF KANSAS

### BULLETIN 47

#### 1943 REPORTS OF STUDIES

- PART 1. NEW CARBONIFEROUS AND PERMIAN SPONGES**, by Ralph H. King, pp. 1-36, pls. 1-3, figs. 1-2, February 27, 1943.
- PART 2. KANSAS OIL FIELD BRINES AND THEIR MAGNESIUM CONTENT**, by Walter H. Schoewe, pp. 37-76, figs. 1-3, June 30, 1943.
- PART 3. DEEP WATER WELL AT THE JAYHAWK ORDNANCE WORKS IN CHEROKEE COUNTY KANSAS**, by G. E. Abernathy, pp. 77-112, figs. 1-4, September 10, 1943.
- PART 4. A PROCESS FOR EXTRACTING ALUMINA FROM KANSAS CLAY**, by E. D. Kinney, pp. 113-136, December 10, 1943.

### BULLETIN 52

#### 1944 REPORTS OF STUDIES

- PART 1. RECONNAISSANCE OF PLEISTOCENE DEPOSITS IN NORTH-CENTRAL KANSAS**, by Claude W. Hibbard, John C. Frye, and A. Byron Leonard, pp. 1-28, pls. 1, 2, figs. 1, 2, February 20, 1944.
- PART 2. GROUND-WATER CONDITIONS IN THE NEOSHO RIVER VALLEY IN THE VICINITY OF PARSONS, KANSAS**, by Charles C. Williams, pp. 29-80, pls. 1-3, figs. 1-9, March 15, 1944.
- PART 3. COAL RESOURCES OF THE KANSAS CITY GROUP, THAYER BED, IN EASTERN KANSAS**, by Walter H. Schoewe, pp. 81-136, pls. 1-5, figs. 1-8, July 25, 1944.
- PART 4. TABULAR DESCRIPTION OF OUTCROPPING ROCKS IN KANSAS**, by Raymond C. Moore, John C. Frye, and John Mark Jewett, pp. 137-212, figs. 1-9, October 25, 1944.
- PART 5. MINED AREAS OF THE WEIR-PITTSBURG COAL BED**, by G. E. Abernathy, pp. 213-228, pl. 1, fig. 1, October 25, 1944.