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STATE OF ARKANSAS  
ARKANSAS GEOLOGICAL SURVEY

ANNUAL ADMINISTRATIVE REPORT  
of the  
STATE GEOLOGIST

For the period from December 1, 1935  
to November 30, 1936



Little Rock  
1936

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## LETTER OF TRANSMITTAL



### ARKANSAS GEOLOGICAL SURVEY

LITTLE ROCK, ARK.

NOVEMBER 30, 1936

HON. J. M. FUTRELL,  
Governor of Arkansas,  
Little Rock, Arkansas.

SIR:

I hand you herewith my annual report for the twelve-month period December 1, 1935 to November 30, 1936 in accordance with the requirements of Act 573 of 1923.

The work of the Arkansas Geological Survey has been greatly facilitated during the period referred to by assistance received from the Works Progress Administration. As many as 70 persons per day and as few as 25 from that agency have been at work for the Survey from time to time on field and office projects.

The work done in the field has resulted in the completion of 241 miles of first order leveling and has provided the vertical control necessary for making accurate topographic maps in certain unmapped areas. The office work completed has resulted in the publication of seven reports totaling some 1976 pages of text, in the compilation of four reports totaling about 225 pages of text which will be ready for publication in about two months, in the computation of elevation data on 3200 miles of U. S. Coast and Geodetic Survey second order level lines in western and northwestern Arkansas.

It is of interest to note the increase in the value of mineral production and in the severance taxes collected as set forth in the figures for 1933, 1934 and 1935 below:

	Value of Minerals Produced	Severance Tax On Minerals Collected
1933	\$12,710,203	\$146,023.76
1934	16,081,642	228,389.26
1935 (est.)	18,726,000	235,323.98

Seventeen different minerals were produced in Arkansas in 1935 by 274 operators employing 8,025 persons in 51

counties. For your information a directory of the mineral industries of the state which were in active operation during 1935 is appended to this report.

The activities of the severance tax agent is a new administrative function of this department under the provisions of Act 286 of 1935. The total amount of back taxes collected by him for the Commissioner of Revenues on minerals and timber during the period July 1, 1935 to November 30, 1936 was \$31,905.63. Claims are outstanding against producers for delinquent severance taxes and sand and gravel sales in the amount of \$19,425.52.

Respectfully submitted,

GEORGE C. BRANNER,  
*State Geologist.*

**ANNUAL ADMINISTRATIVE REPORT**  
of the  
**STATE GEOLOGIST**  
for the period

**December 1, 1935 to November 30, 1936**

The activities of the Office of State Geologist for the period December 1, 1935 to November 30, 1936 are discussed under the following headings:

- I. Accomplishments
- II. Future Work
- III. Personnel
- IV. Finances
- V. Recommendations
- VI. Summary of Mineral Production and List of Producers in Arkansas, 1935.

**I. ACCOMPLISHMENTS**

The year's accomplishments are discussed under the following classifications:

- A. Publications issued
  - 1. Pertaining to geology and mineral resources
  - 2. Pertaining to topography
- B. Projects
  - 1. Geologic
  - 2. Topographic
  - 3. Stream gaging
- C. Office administration
- D. Activities of severance tax agent
- E. Cooperation with Federal relief agencies

**A. PUBLICATIONS ISSUED**

**1. GEOLOGY AND MINERAL RESOURCES**

- 1. Information Circular 7: "Directory of Arkansas Mineral Producers, 1935." Compiled from severance tax data and questionnaires by Mary L. Gibson. 42 pages, lithoprinted, cardboard covers.

2. Information Circular 8: "Geology of the Arkansas Bauxite Region," by M. N. Bramlette, Associate Geologist, U. S. Geological Survey. Sets forth results obtained from 155 test holes drilled in Pulaski and Saline counties in 1934. 68 pages, lithoprinted, cardboard covers.
3. Information Circular 9: "Mineral Production Statistics of Arkansas for the period 1880-1935." Compiled from all reliable sources by Mary L. Gibson. 135 pages, lithoprinted, cardboard covers.
4. Information Circular 10: "List of Oil and Gas Wells," compiled by W. P. A. personnel under the direction of Mary L. Gibson. Contains all available information as to locations, owners, leases, permit numbers, total depths, dates of beginning and completing operations of oil and gas wells drilled in Arkansas excepting in 198 sections of land in producing oil fields in Nevada, Columbia, Union and Ouachita counties. Records data on approximately 3000 wells and contains maps of each county showing well locations, 80 pages, lithoprinted, cardboard covers.
5. Paper: "Sandstone Porosities in the Paleozoic Region in Arkansas," by George C. Branner. This paper was delivered at the March, 1936 meeting of the Association of American Petroleum Geologists. It will appear in the January, 1937 issue of the Bulletin of the Association. Reprints will be on file for distribution.
6. Annual administrative report of the Office of State Geologist for period December 1, 1935 to November 30, 1936. 20 pages, printed, paper covers.

## 2. TOPOGRAPHY

1. Information Circular 6: "Elevations in Arkansas," compiled under the direction of the State Geologist from reliable sources. Contains the descriptions of 14,421 elevations of bench marks, cities, towns, community centers and mountains. 1,611 pages, mimeographed and published in nine volumes, cardboard covers.
2. Complete set of county maps (75), scale  $\frac{3}{8}$  inches to the mile. Maps show township, range, and section lines, highways, railroads, principal cities and towns, and drainage. Prints may be obtained from the original tracings or from van dyke negatives at cost.

## B. PROJECTS

### 1. Geologic

The geologic projects undertaken have been designed primarily to supply detailed information concerning mineral resources which offer definite possibilities for commercial development. Geologic projects are discussed under two heads:

- a. Incomplete projects continued from the last 12-month period
- b. New projects

#### a. Incomplete Projects

##### 1. WATER WELLS

Information Circular 11: "List of Water Wells in Arkansas," compiled under the direction of Lucy Crooks. Contains information obtained from available sources on water well locations, owners and drillers, depths of wells, chemical character of water, flow, use, pumping equipment, etc. Records are given of approximately 2,080 wells. This report will be lithoprinted and will contain 110 pages. An expandible card index of these wells is also being prepared by W. P. A. personnel.

##### 2. ARKANSAS, HER RESOURCES, PEOPLE AND PRODUCTS

In October, 1935, under the direction of the State Geologist, the preparation of material for an outline of the economic and social development of Arkansas was begun by William McComb. This is being prepared to meet a demand for basic information and is intended to show various facts important to the growth of the state, including physical features, climate, population, natural resources, industries, and other related data. The subjects are to be given broad treatment and will be presented graphically and with a minimum of text.

##### 3. SPRINGS IN ARKANSAS

The collection and classification of data on springs in Arkansas has been continued by W. P. A. personnel under the direction of Lucy Crooks. In addition to persons interested in the commercial use of water this information is often of interest to tourists and to those interested in parks or playground

development. The list when complete will contain descriptive data on approximately 350 springs including names, locations, owners, trade names of water, mineral contents, temperatures, flows and uses of water. The report will be lithoprinted.

#### 4. LAKES IN ARKANSAS

The collection and classification of data on lakes in Arkansas has been continued by W.P.A. personnel under the direction of Lucy Crooks. The list will contain descriptive data on approximately 330 lakes including names, locations, sizes, methods of formation and uses. The report will be lithoprinted.

#### 5. CAVES AND CAVERNS IN ARKANSAS

The assembly of data on caves and caverns in Arkansas has been continued by Mary L. Gibson. Data on 230 caves has been collected. Many, however, are of minor importance, although probably 30 or 40 are of interest to tourists and may prove worthy of commercial development. Many have never been thoroughly investigated. The report will be lithoprinted.

#### 6. THE COMMERCIAL MINERALS OF MAGNET COVE

Field work was continued on the commercial minerals of Magnet Cove, Hot Spring County, which was begun by Vernon E. Scheid. The primary object of the survey is to determine the extent and commercial possibilities of the various minerals unique to Magnet Cove. The minerals which occur in the Cove and which are discussed in the report include rutile, brookite, pyrite, and calcite.

Since there has been late development and production of placer rutile in Magnet Cove, Hot Spring County, the chapter on rutile will be brought down to date before the report is published.

#### 7. THE OIL SHALES OF NORTHERN ARKANSAS

Little progress has been made in this investigation during the year, and the text cannot be completed until additional field work and analyses are made.

## b. New Projects

### 1. LIMESTONE QUARRYING IN NORTHERN ARKANSAS

A paper on "Limestone Quarrying in Northern Arkansas" is being prepared by the State Geologist for presentation at the February, 1937 meeting of the American Institute of Mining and Metallurgical Engineers. Complete statistics have been compiled indicating the production in that area of an aggregate value of \$8,526,312 of limestone and marble from 1889 to 1936. The limestone and marble quarrying operations in the Boone formation, the Pitkin and Fayetteville formations, which contain black marble, and the quarrying of several variegated marbles in the Fernvale, Kimmswick and Plattin formations are described.

### 2. MINERAL RESOURCE DATA OF STATE BY COUNTIES

Information on the geology and mineral resources of each county in the state is being assembled under the direction of George A. Rogers, by W. P. A. personnel. After this material is checked and edited, separate county reports will be mimeographed for distribution.

### 3. SAND, GRAVEL AND STONE DEPOSITS

Data relating to sand, gravel and stone deposits in the state have been compiled and the locations of the deposits have been placed on county maps by W. P. A. personnel. The information has been obtained from the State Highway Department, severance tax records, sand and gravel sales records and from other sources. The report will be lithoprinted.

### 4. REVISION OF "OUTLINES OF ARKANSAS MINERAL RESOURCES"

A revision of this popular publication, the first edition of which has been exhausted, has been carried forward from time to time. Mary L. Gibson is now bringing all phases of the report down to date with the assistance of W. P. A. personnel. The material is to be published in three divisions: (1) fuels, (2) non-metallic minerals, and (3) metallic minerals. Publication will be undertaken at an early date.



## 5. MANGANESE CARBONATE ORES OF NORTHERN ARKANSAS

A report is now being prepared by H. D. Miser of the U. S. Geological Survey on the Manganese Carbonate Ores of the Batesville District. As soon as the text and maps are completed, it is anticipated that the report will be turned over to the Arkansas Geological Survey for publication.

## 2. Topographic

Topographic projects were all new projects and are considered separately below:

### 1. SMALL COUNTY MAPS

A complete set of county maps (75), scale  $\frac{3}{8}$  inches to the mile, have been drawn. Maps show township, range, and section lines, highways, railroads, principal cities and towns, and drainage. Prints may be obtained from the original tracings or from van dyke negatives at cost.

### 2. COUNTY BASE MAPS (SCALE 1:62,500)

In April, 1936 after a conference with representatives of the State Highway Department, State Forestry Commission, Education Department, State Planning Board and the State Geologist, a program was agreed upon for the joint completion of county base maps for each of the 75 counties in the state on a scale of 1:62,500 or about 1 mile to the inch. The counties were divided into three groups, each group assigned to the following departments for drafting:

#### Arkansas Geological Survey (26)

Arkansas, Ashley, Chicot, Craighead, Clay, Cleburne, Crittenden, Cross, Desha, Drew, Greene, Independence, Jackson, Jefferson, Lawrence, Lee, Lincoln, Mississippi, Monroe, Phillips, Poinsett, Prairie, Randolph, St. Francis, White, Woodruff.

#### Arkansas Forestry Commission (18)

Bradley, Calhoun, Clark, Cleveland, Columbia, Dallas, Grant, Hempstead, Hot Spring, Howard, Lafayette, Little River, Miller, Nevada, Ouachita, Pike, Sevier, Union.

#### Arkansas State Highway Commission (31)

Baxter, Benton, Boone, Carroll, Conway, Crawford, Faulkner, Franklin, Fulton, Garland, Izaard, Johnson,



Logan, Lonoke, Madison, Marion, Montgomery, Newton, Perry, Polk, Pope, Pulaski, Saline, Searcy, Sebastian, Scott, Sharp, Stone, Van Buren, Washington, Yell.

The maps assigned to the Arkansas Geological Survey are being prepared. The program has been designed so that a set of standard county maps will be available for general use to set forth any kind of areal data. William H. Moore, W. P. A. supervisor, is the draftsman. Two sets of tracings are being made, the first to show only the county, township, range and section lines; the second to show the lines referred to and, in addition, highways, railroads, cities, towns, community centers, rivers, streams and levees.

Of the maps allotted to the Arkansas Geological Survey the first set of tracings of eleven counties has been completed: Clay, Crittenden, Cross, Chicot, Desha, Lee, Mississippi, Phillips, Poinsett, St. Francis, Woodruff. Of the final tracings, one county, Poinsett, has been partially completed.

### 3 AND 4. COMPUTATION AND RUNNING OF LEVEL AND TRAVERSE LINES

Works Progress Administration project (Project No. 1957-3, Triangulation and Surveys), employing 31 persons including three non-relief supervisors has been carried on since January 27, 1936. Sibley Ward, R. L. Pemberton and Palmer Taylor have been non-relief supervisors. Ensign Charles W. Clark of the U. S. Coast and Geodetic Survey also has been assigned to the project by that Survey since April, 1936 to direct computation in accordance with the standards of the Coast Survey. A new project, No. 3334-3, was approved to begin on November 9, 1936 for the continuation of this work which has permitted the employment of two additional supervisors, Marvin Ray and A. C. McCutchen. The accomplishments between January 27, 1936 and November 30, 1936 have been as follows:

#### *Project 3. Office computation*

Computations on approximately 3,200 miles of 7½ mile interval network of second order level lines run by the U. S. Coast and Geodetic Survey in western and northwestern Arkansas in 1934-1935, have been completed and transmitted to that survey for final adjustment. The area covered by this network includes about 10,000 square miles.

*Project 4. Field Work*

241 miles of level lines have been run, principally in unmapped areas in Grant, Cleveland, Hot Spring, Dallas, Jefferson, Lonoke, Pulaski and Faulkner counties; 195 miles of Civil Works Administration local control survey lines recovered which involved the establishment of 199 bench mark elevations; 175 additional bench mark elevations have also been established.

An agreement has been entered into with the U. S. Geological Survey for the period November 1, 1936 to June 30, 1937 to map cooperatively two 15-minute quadrangles east of Little Rock referred to as the Blakemore and Lonoke quadrangles with areas of about 250 square miles each. The scale is to be 1:48,000, the contour interval five feet. In addition to the non-relief personnel heretofore employed, the Works Progress Administration has furnished one non-relief supervisor, A. C. McCutchen, formerly with the U. S. Geological Survey, who is directing the traverse survey and it has been arranged that C. C. Juhre, now with the U. S. Geological Survey, is to be employed later on the same basis to direct the plane table work. All other employees on the project are either W. P. A. non-relief or relief workers.

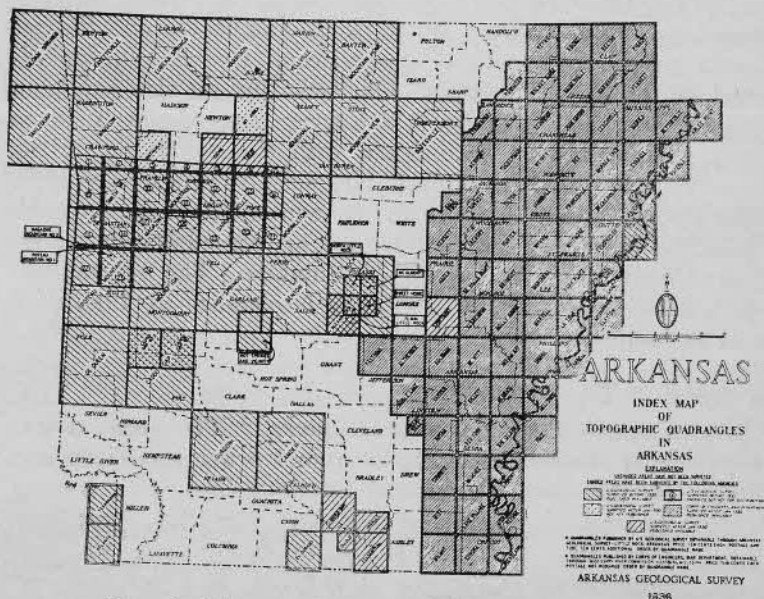


Figure 1. Index map of topographic quadrangles in Arkansas.

The Arkansas Geological Survey has agreed to cooperate with the U. S. Geological Survey to the maximum extent of \$1,000 for both cooperative and non-cooperative expense for each quadrangle. The mapping done is to be inspected by a representative of the U. S. Geological Survey and the maps will eventually be lithographed by that survey.

The topographic quadrangle maps available are shown in Figure 1.

### 3. STREAM GAGING

The important and basic work of continuing the stream gaging program of the state has been supported by the Arkansas Geological Survey during the past year so far as funds have permitted.

During the fiscal year 1935-36, 17 stream gaging stations were maintained cooperatively by the U. S. Geological Survey, the Arkansas Geological Survey and other interested agencies. The total cost of this program was approximately \$7,500 per year with the Arkansas Geological Survey contributing \$800 per year. During the fiscal year 1936-37 the same amount is being contributed.

Recommendation has been made by John H. Gardiner, District Engineer, U. S. Geological Survey, that 28 additional stations be installed and maintained in order to supply needed data on the more important streams in Arkansas. The total cost of the maintenance of these additional stations is estimated to be \$13,000 per year.

The following statement dated November 5, 1936 was received from John H. Gardiner, District Engineer, U. S. Geological Survey, with reference to stream gaging work in Arkansas. The figures on costs were given by Mr. Gardiner in a letter dated December 7, 1936.

"Stream-flow investigations have been carried on in Arkansas by the U. S. Geological Survey, in cooperation with the State of Arkansas in the fiscal years 1928 to 1933, and 1936 and 1937. Funds provided during those years were inadequate to conduct a state-wide program productive of required results in data needed.

"Certain stations financed entirely by the Federal Government have been maintained since 1934 on main streams at related points in connection with a coordinated study of the entire Mississippi Basin by Federal agencies. At present,

there are seven stations of this type plus five operated for the Federal Power Commission—a total of twelve. With this program are five maintained in cooperation with the State of Arkansas on small streams for specific studies and purpose.

"The basic principle established by the Congress of the United States for the operation of gaging stations is one where State cooperation is secured. Thus, since Federal funds match State funds on a dollar for dollar basis, the State appropriation determines the amount of work accomplished. Since continuity and long time records are the only ones of value and desired for use, not only should means be provided for the continuance of the twelve Federal stations mentioned, and the five State cooperative stations mentioned, but sufficient funds should be provided for the establishment of at least 28 additional stations.

"Figure 2 shows 17 existing stream measurement stations requiring funds for continuance, and 28 proposed stations, a total of 45. This number is probably the minimum



Figure 2. Map of Arkansas showing location of stream gaging stations now in operation and stations recommended for installation.

required and is not presumed to cover all sites now needed for an investigation of the surface waters of Arkansas, one of the leading water problem states of the Union but whose data on these resources are inferior in quantity and scope. On this map, stations are numbered to show with the following listing.

"It should be understood that the following list of proposed stations is not final in actual definite location, but does represent requirements and demand for records in the vicinity shown, and can be taken as representative of the present minimum need.

**LIST OF STREAM GAGING STATIONS**  
(Downstream Order)

No.	Station	Basin	Type
In operation, continuance required			
1	St. Francis River—Marked Tree.....	St. Francis	Recorder
2	St. Francis River Floodway—Marked Tree.....	St. Francis	Staff
3	White River—Flippin.....	White	Staff
4	White River—De Valls Bluff.....	White	Recorder
5	Buffalo River—Rush.....	White	Staff
6	North Fork White River—Henderson.....	White	Staff
7	Lagru Bayou—Stuttgart.....	White	Staff
8	Little Lagru Bayou—Stuttgart.....	White	Staff
9	Arkansas River—Van Buren.....	Arkansas	Recorder
10	Arkansas River—Little Rock.....	Arkansas	Recorder
11	Lee Creek—Van Buren.....	Arkansas	Staff
12	Jones Fork—Mountainburg.....	Arkansas	Staff
13	Bayou Meto—Stuttgart.....	Arkansas	Staff
14	Red River—Garland.....	Red	Recorder
15	Little River—Horatio.....	Red	Recorder
16	Ouachita—Mountain Pine.....	Red	Recorder
17	Ouachita—Rommel Dam.....	Red	Recorder
Additional stations needed, minimum			
18	White River—Busch.....	White	
19	Black River at Black Rock.....	White	
20	White River at Newport.....	White	
21	West Fork of White River near Fayetteville.....	White	
22	Eleven Point River near Eleven Point.....	White	
23	Spring River at Ravenden.....	White	
24	Strawberry River near Evening Shade.....	White	
25	Little Red River near Shirley.....	White	
26	Little Red River near Heber Springs.....	White	
27	Arkansas River at Dardanelle.....	Arkansas	



28	Frog Bayou near Chester.....	Arkansas
29	Mulberry River near Mulberry.....	Arkansas
30	Piney Creek near Knoxville.....	Arkansas
31	Petit Jean Creek near Danville.....	Arkansas
32	Fourche La Fave River near Nimrod.....	Arkansas
33	Fourche La Fave River near Perryville.....	Arkansas
34	Cossatot River near Lockesburg.....	Red
35	Saline River near Lockesburg.....	Red
36	Ouachita River at Arkadelphia.....	Ouachita
37	Caddo River near Glenwood.....	Ouachita
38	Caddo River near Bismark.....	Ouachita
39	Little Missouri River near Murfreesboro.....	Ouachita
40	Little Missouri River—Reader.....	Ouachita
41	Moro Creek—Banks.....	Ouachita
42	Saline River near Benton.....	Ouachita
43	Saline River near Warren.....	Ouachita
44	Alum Fork near Benton.....	Ouachita
45	Bayou Bartholomew—Tillar.....	Ouachita

"Costs are as follows:

Maintenance cost, 17 stations per annum at \$440 per station.....	\$ 7,500.00
Maintenance cost, 28 stations per annum estimated at \$465 per station .....	13,000.00
Total maintenance cost of 45 stations per annum.....	\$20,500.00
Installation cost the 28 stations referred to will be between \$200 and \$1,000 per station depending on equipment required. If an average station installation costs \$500, it is assumed the total installation cost of 28 stations would be.....	
	\$14,000.00"

### C. OFFICE ADMINISTRATION

The office administration is discussed under two divisions:

1. Work of the State Geologist
2. Services maintained

#### 1. WORK OF THE STATE GEOLOGIST

In addition to handling the routine correspondence and consulting work of the office during the past year, the State Geologist has spent much time in the field collecting data for reports and examining mineral properties which appear worthy of attention.

The State Geologist has written the following papers:

Sandstone Porosities in the Paleozoic Region in Arkansas

Limestone Quarrying in Northern Arkansas

He has also directed or supervised the completion or partial compilation of the following reports:

- Elevations in Arkansas
- Directory of Arkansas Mineral Producers, 1935
- Statistical History of Mineral Production in Arkansas
- List of Oil and Gas Wells
- List of Water Wells in Arkansas
- Arkansas, Her Resources, People and Products
- Springs in Arkansas
- Lakes in Arkansas
- Commercial Minerals of Magnet Cove
- Sand, Gravel and Stone Deposits

The State Geologist also directed two W.P.A. projects: (1) a project for the collection, classification, and compilation of data on oil and gas wells, water wells, and mineral production; (2) a project for the running of levels and establishing elevations in central Arkansas.

Detailed reports of these are included in the section, "Cooperation with Federal Relief Agencies."

The State Geologist consulted with R. E. Overman, Mayor of Little Rock, and others connected officially with the construction of Alum Fork dam for the impounding of water for the municipal water supply of Little Rock. The original recommendation as to the suitability of the North Alum Fork basin for the creation of a reservoir for the water supply for Little Rock was contained in a requested report of the State Geologist to Mayor Horace A. Knowlton dated August 7, 1934. This was followed by a more detailed study of the Little Rock water supply problem by a committee of the Little Rock Chamber of Commerce of which the State Geologist was a member. The final recommendation of the Alum Fork site was contained in the report on this study and this eventually resulted in the final selection of the site at which the Alum Fork dam is now being constructed with Public Works funds as a result of the efforts of Mayor Overman and associates.

On February 21, 1936, the State Geologist for the third time was elected President of the Association of American State Geologists, the national organization of all state geologists.

The State Geologist also has served as a member of the State Planning Board, and as its vice chairman, as chairman of the Executive Committee, as Disbursing Officer, and as chairman of the Water Resources Committee.

The State Geologist served a tour of active duty training in the Office of the Assistant Secretary of War, Washington, D. C., during the ten day period from November 12 to November 21, 1935 as Major in the Quartermaster Corps Reserve, U. S. Army. The study undertaken pertained largely to the distribution of the strategic minerals in the United States. Following this training a detailed report on the distribution of 17 raw mineral materials in the United States was prepared during the summer of 1936 by the State Geologist for the Office of the Assistant Secretary of War, Planning Branch, Commodities Division. The utilization of such minerals in time of war has a definite place in planning for the development of the mineral resources of Arkansas.

Meetings attended by the State Geologist were:

- |  |   |
|--|---|
| December 11-14, 1935<br>Chicago, Ill                             | Conference of State Planning Officials.   |
| December 25-30, 1935<br>New York, N. Y.                          | Meetings of Association of American State Geologists and the Geological Society of America.   |
| February 12-13, 1936<br>Fort Smith, Ark.                         | Meeting of the Arkansas River Valley Association to represent the State of Arkansas at the request of Governor J. M. Futrell.   |
| February 15-23, 1936<br>New York, N. Y. and<br>Washington, D. C. | Meeting of the American Institute of Mining and Metallurgical Engineers and the Association of American State Geologists.   |
| March 19-21, 1936<br>Tulsa, Okla.                                | Meeting of the Association of American Petroleum Geologists to deliver paper on "Porosities of Sandstones in Northern Arkansas."  |
| April 21-30, 1936<br>Washington, D. C.                           | Meeting of the National Rivers and Harbors Congress to represent State of Arkansas at the request of Governor J. M. Futrell.  |
| August 16-20, 1936<br>Washington, D. C.                          | Conference with representatives of the American Engineering Council relative to nation-wide topographic mapping program.  |
| October 14-16, 1936<br>Fort Smith, Ark.                          | Conference of American Water Works Association to deliver a paper on "Ground Waters in the Southwest."  |
| October 22-26, 1936<br>Washington, D. C.                         | Conference with American Engineering Council on nation-wide mapping program. Appointed to Steering Committee of Council in connection with passage of legislation bearing on mapping. |



## 2. SERVICES MAINTAINED

*Requests for information:* During the past year the office has replied to approximately 4,000 requests for geological, mineralogical, and industrial information, and has distributed approximately 2,500 publications, reports, and maps.

*Examination and analyses of minerals:* Examination and partial analyses of approximately 300 mineral specimens submitted were made during the year.

*Mineral property and market index:* Names of the owners of mineral properties and those who report the existence of the mineral deposits are kept in an indexed file. Names of mining companies, manufacturers, and buyers who inquire concerning the existence of mineral deposits are also indexed for reference. The office thus acts as a clearing house for information affecting the development of new mineral industries.

*Exhibit:* A permanent exhibit of the economic minerals and mineral products of Arkansas is maintained on the ground floor of the Capitol. This exhibit was established in cooperation with the State Commissioner of Mines, Manufactures and Agriculture in 1930.

*Compilation of mineral production figures from tax reports:* Monthly severance tax statistics pertaining to mineral production are abstracted and kept up to date. These statistics provide information on the production of petroleum, natural gas, natural gas gasoline, coal, bauxite, clay, lime, manganese ore, sand, stone, gravel, diamonds, chalk, zinc and lead. Production figures from the monthly sales reports on sand and gravel removed from state-owned stream beds are also kept on file.

*Miscellaneous production statistics:* Other statistics relative to state mineral production are compiled from the records of the U. S. Geological Survey, U. S. Bureau of Mines, U. S. Bureau of the Census, U. S. Department of Commerce and American Petroleum Institute.

*Well log file:* A file of about 2,500 oil, gas and water well logs, filed by counties, is kept. The principal part of these logs are of wells drilled prior to March 23, 1923 when the law providing that logs be filed with the State Department of Conservation and Inspection became effective.

*Library of geological and mineralogical literature:* A department library has been assembled and is being maintained

for office reference and for public use. This contains approximately 5,000 books and pamphlets relating to the natural resources of Arkansas and other states.

*Mineral collections:* A collection of over 400 specimens of minerals of the state is arranged for inspection.

*Representative core collections:* A collection of about 800 feet of cores and cuttings from wells drilled in Arkansas is kept for reference.

*Distribution of publications:* The publications listed below are on hand in the Office of State Geologist for distribution:

	Number on Hand
1. Annual Report, 1890, Vol. IV, Marbles and other Limestones, by T. C. Hopkins.....	238
2. Annual Report, 1891, Vol II, Miscellaneous Report.....	307
3. Annual report, 1892, Vol. II, Tertiary Geology of Southern Arkansas, by G. D. Harris.....	337
4. Publication of 1909, Slates of Arkansas, by A. H. Purdue, with a bibliography of the geology of Arkansas, by J. C. Branner.....	507
5. Publication of 1910, Coal Mining in Arkansas, by A. A. Steel.....	28
6. Publication of 1927, An Outline of the Physical Features of Arkansas, by George C. Branner.....	150
7. Advance reprint from Bulletin 2, Upper Cretaceous Ostracoda of Arkansas, by M. C. Israelsky.....	1,359
8. Bulletin 1, 1929, Upper Cretaceous Formations of Southwestern Arkansas, by Carle H. Dane.....	Cloth 324 Paper 1,242
9. Bulletin 3, 1930, The Geology of the Arkansas Paleozoic Area, by Carey Croneis.....	2,636
10. Bulletin 4, 1930, St. Peter and Older Ordovician Sandstones of Northern Arkansas, by A. W. Giles.....	600
11. Bulletin 5, 1930, a Geomagnetic Survey of the Bauxite Region in Central Arkansas, by N. H. Stearn.....	1,480
12. Stream Gaging Report 1, 1930, Stream Gaging in Arkansas from 1859 to 1928, by W. S. Frame.....	Cloth 884 Paper 1,048
13. Geologic Map of Arkansas, 1930, scale 1:500,000.....	3,570
14. Topographic Map of Arkansas, 1930, scale 1:500,000, Contour interval, 250 feet.....	5,846
15. Topographic Map of Coastal Plain of Arkansas, 1930, scale 1:500,000, contour interval, 100 feet.....	1,969
16. Topographic map of Arkansas, 1930, scale of 1:500,000 showing national forests.....	492
17. Topographic map of Arkansas, 1930, scale 1:500,000 showing national forests and roads.....	983
18. Topographic map of Arkansas, 1930, scale 1:500,000 showing national forests and power transmission lines.....	234

19. Topographic map of Arkansas, 1930, scale 1:500,000 showing national forests, oil and gas fields, oil and gas pipe lines	295
20. Information Circular 1, 1932, A Barite deposit in Hot Spring County, Arkansas, by Bryan Parks	106
21. Information Circular 2, 1932, Cinnabar in Southwestern Arkansas, by George C. Branner	33
22. Information Circular 3, 1932, Black Marbles of Northern Arkansas, by Bryan Parks and J. M. Hansell	341
23. Information Circular 4, 1933, Earthquake Risks in Arkansas, by George C. Branner and J. M. Hansell	5
24. Information Circular 6, 1936, Elevations in Arkansas,	
Volume I	150
Volume II	150
Volume III	150
Volume IV	150
Volume V	150
Volume VI	150
Volume VII	150
Volume VIII	150
Volume IX	150

#### D. ACTIVITIES OF SEVERANCE TAX AGENT

The activities of the severance tax agent, J. Fred Brown, for the period July 15, 1935 to November 30, 1936 were as follows:

Mr. Brown was appointed by the State Geologist as severance tax agent, effective July 15, 1935 under authority of Act 286, 1935. The first six weeks of his service were spent in preparatory work, in the study of severance laws of this and other states and of the judicial decisions pertaining thereto.

The results of Mr. Brown's work were as follows:

##### Five-year Audits Completed.

Oil producers and purchasers:

J. D. Reynolds Corporation, Simms Company, Atlantic Oil Producing Company, Magnolia Petroleum Company, Hollyfield and McFarlane.

Bauxite producers:

The Republic Mining and Manufacturing Co., Dixie Bauxite Company, American Cyanamid & Chemical Company, Crouch Mining Company and Arkansas Bauxite Corporation.

Stone producers:

Batesville White Lime Company, Big Rock Stone and Material Company.

Sand producers:

Big Rock Stone & Material Company, Pine Bluff Sand & Gravel Company and Mississippi River Gravel Company.

## Timber producers:

T. L. Shannon & Brother, Dacus Lumber Company, Foster-Grayson Lumber Company.

## Natural gas gasoline extraction plants:

Gulf Refining Company of Louisiana, Standard Oil Company of Louisiana, Magnolia Petroleum Company, The Henderson Company, Rainbow Gasoline Corporation, Simms Oil Company, Reserve Development Company, Louisiana Iron and Supply Company, Arkansas Natural Gas Company.

Up to November 30, 1936 the following sums in back taxes were collected for the Commissioner of Revenues as a result of these audits:

Natural (casinghead) gas .....	\$18,106.86
Bauxite .....	4,979.94
Stone .....	568.39
Timber .....	1,327.70
Sand and gravel sales (state owned streams) .....	6,922.74
	<hr/>
	\$31,905.63

In addition to the collections made the following claims are outstanding:

Natural (casinghead) gas .....	\$ 626.42
Stone .....	1,299.10
Sand and gravel sales (state owned streams) .....	17,500.00
(This figure represents law suits pending on which approximately \$3,500 should be recovered.)	
	<hr/>
	\$19,425.52

In his report of November 3, 1936, Mr. Brown makes the following statement:

"Total severance tax collections for the fiscal year 1935-1936 totaled \$346,065.51 as compared to \$277,128.19 for the fiscal year 1934-1935. This represents a gain of \$68,937.32 or 25% which is due to a return of more favorable economic conditions as well as more careful and rigid supervision."

## E. COOPERATION WITH FEDERAL RELIEF AGENCIES

1. FEDERAL EMERGENCY RELIEF ADMINISTRATION  
PROJECT 60-F2-26

The Federal Emergency Relief Administration project begun in 1934-1935 was continued into 1935-1936. Only two stenographers were assigned to this project from July through November, 1935 and the amount paid out by the Federal Emergency Relief Administration during that period was \$412.80.

## 2. WORKS PROGRESS ADMINISTRATION PROJECT 2421-3 "GEOLOGICAL SURVEY PROJECT"

On October 4, 1935 an application was made by the Survey, as sponsor, for a Works Progress Administration project for 33 workers, including three non-relief supervisors. The project was approved and work began on December 4, 1935. The purpose of the project was as follows:

"To complete for publication the texts of geological, mineralogical, and water resources reports bearing on the natural resources of Arkansas. These include a list of oil and gas wells, a list of water wells, a list of elevations, report on economic minerals of Magnet Cove, an outline of Arkansas' Mineral Resources, drafting a set of accurate county maps (75), the classification of office records, mineral specimens, well cores, etc., cataloging the library of the Arkansas Geological Survey and for the construction of shelving for storage of records."

The personnel supplied was:

1 Carpenter	10 Stenographers or typists
4 Editors	4 Engineers
6 Statisticians	4 Draftsmen
3 Supervisors	1 Librarian

The maximum number of employees assigned at any one time was 34.

Non-relief supervisors assigned, (maximum of three at one time): Carroll Allison, George A. Rogers, Ted Q. Medearis, Wm. H. Moore.

Funds cooperatively expended by the Works Progress Administration and the Arkansas Geological Survey on this project are set forth in the section under "Finances."

### WORK ACCOMPLISHED

Completion of report on "Elevations in Arkansas." 9 volumes. Work involved assembly of data on 14,421 elevations, cutting of stencils for 1611 pages of mimeographing, drafting of 78 maps and assembly for binding.

Completion of report on "Statistical History of Mineral Production in Arkansas." 135 pages. Work involved compilation and checking of statistics, and typing of material for lithoprinting.

Completion of report on "Geology of the Arkansas Bauxite Region." 68 pages. Work involved typing of copy for lithoprinting.

Completion of "List of Water Wells in Arkansas." 110 pages. Work involved assembly of data on 2080 water wells and checking and typing forms for lithoprinting. All available data were also located on county maps. A complete card index of the wells containing essential data has also been prepared.

Completion of "List of Oil and Gas Wells in Arkansas." Work involved compilation of data on 3000 oil and gas wells, placing on index cards and typing of forms for lithoprinting. Locations of wells were placed on county maps.

Preparation of lists of lakes and springs. Work involved compilation and typing of data.

Preparations of lists of sand and gravel and stone deposits. Work involved partial compilation of data.

Completion of 75 county base maps, scale  $\frac{3}{8}$  inches to the mile. Work involved the drafting of 75 tracings.



Construction of cabinets and filing equipment and furniture by the carpenter.

Application has been made with the Works Progress Administration for the continuation of this project for the four-month period January 1, 1937 to April 30, 1937.

WORKS PROGRESS ADMINISTRATION PROJECT 1957-3  
"TRIANGULATION AND SURVEY PROJECT"

On September 7, 1935 an application was made to the W. P. A. for a field and office project which would furnish employment for 31 persons including two supervisors. The project was approved and the work began on January 27, 1936. The purpose of the project was as follows:

"Completion of the triangulation map in central part of the state to provide permanent base control lines and sea level elevations that will constitute accurate control for the completion of geological and topographical surveys in the most densely populated areas of the state. Nine months work for 31 men running lines between Beebe, Little Rock, Roland and Conway, Little Rock and Conway, Little Rock and Roland, England and Stuttgart and Benton to Sheridan, DeVall's Bluff to Stuttgart."

The personnel requested was:

8 Chainmen	4 Junior engineers
8 Statisticians	9 Rodmen
2 Supervisors	

The maximum number of employees assigned to this project at any one time was 36.

Supervisors assigned: Sibley L. Ward, R. L. Pemberton.

Funds cooperatively expended by the Works Progress Administration and the Arkansas Geological Survey on this project are set forth in the section under "Finances."

Work accomplished by this project from January 27 to November 30, 1936, is summarized as follows:

Computations completed on approximately 3,200 miles covering an area of about 10,000 square miles on level lines run by the U. S. Coast and Geodetic Survey in Arkansas in 1934-1935; level lines run, 241 miles; monuments established, 175; C. W. A. local control survey lines recovered, 195 miles; elevations established, 199.

This project is of a continuing nature and a new project, No. 3334-3, was approved which supersedes the control project now in operation. The new project began operations on November 9, 1936. The new project also provides for the establishment of magnetic stations (which gives the angle of declination) in each county seat of the state.

Under the new project, the U. S. Geological Survey will also cooperate with the W. P. A. by lending men and material.

## II. FUTURE WORK

The program for the future work of the Survey is discussed under the following headings:

- A. Geologic
- B. Topographic
- C. Stream gaging

### A. GEOLOGIC

Plans for geologic work for the year beginning December 1, 1936 involve the publication of reports, manuscripts of which are now on hand or which may be assembled before November 30, and the undertaking of field work so far as funds permit.

*Reports which will be ready for publication during the next 12 months:*

1. List of water wells in Arkansas (Information Circular 11)
2. Manganese carbonate ores of northern Arkansas
3. Revised Edition of "Outlines of Arkansas' Mineral Resources:" Fuels, Non-metallic and Metallic minerals (three sections)
4. Commercial minerals of Magnet Cove
5. Springs in Arkansas
6. Lakes in Arkansas
7. Sand, gravel and stone deposits in Arkansas.
8. Caves and caverns in Arkansas

*Office projects to be completed during the next 12 months:*

1. Twenty-six county maps, scale 1:62,500
2. Card system of elevations in Arkansas
3. Card system of water wells in Arkansas
4. Oil and gas well log file with individual county maps
5. Mineral resource data of the state, by counties

*Field projects to be continued or begun:*

At such time as the funds of the department will permit, it is planned to begin or continue field studies on the following mineral resources in Arkansas:

*Fuel minerals*

Petroleum  
Natural gas

Lignite  
Oil shales

*Non-metallic minerals*

Clays  
Building stones  
Mineral waters  
Tripoli  
Phosphate-bearing rocks  
Brines

Sand and gravel  
Fullers earth and bentonite  
Limestone suitable for rock  
wool manufacture  
Greensand (potash-bearing  
sand)

*Metallic minerals*

Cinnabar  
Rutile

Antimony  
Iron ore  
Manganese carbonate

The locations of these mineral deposits are shown in Figure 3.

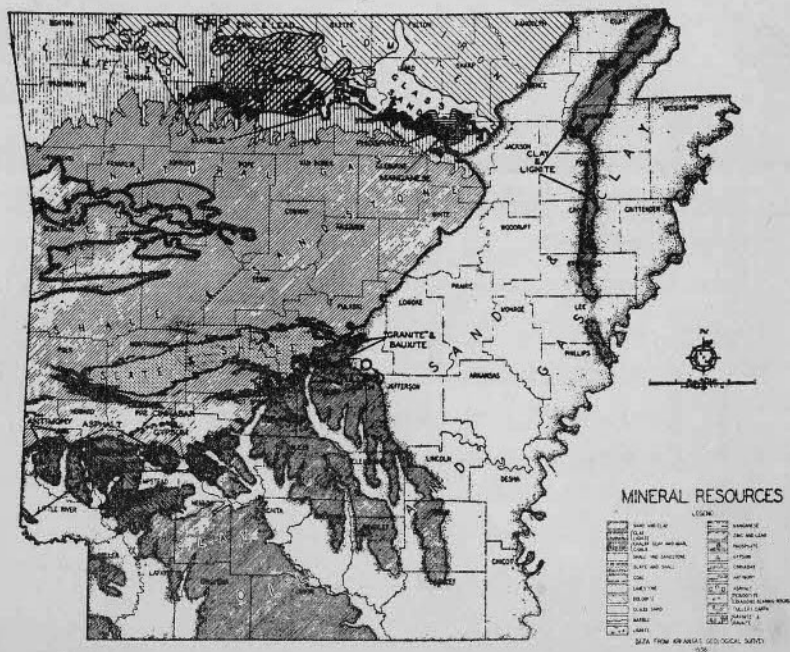


Figure 3. Map of Arkansas showing distribution of mineral resources.  
(Courtesy State Planning Board)



## B. TOPOGRAPHIC

During the period November 9, 1936 to June 30, 1937 a cooperative topographic mapping program is being planned to be carried on with the U. S. Geological Survey, U. S. Coast and Geodetic Survey, the Works Progress Administration and this Survey. Two 15-minute quadrangles (about 250 square miles each) immediately east of Little Rock, the Blakemore and Lonoke quadrangles, will be mapped with a five foot contour interval and a scale of 1:48,000. After the mapping is completed, the lithographed sheets will be published by the U. S. Geological Survey. (See description of W. P. A. Project 1957-3.)

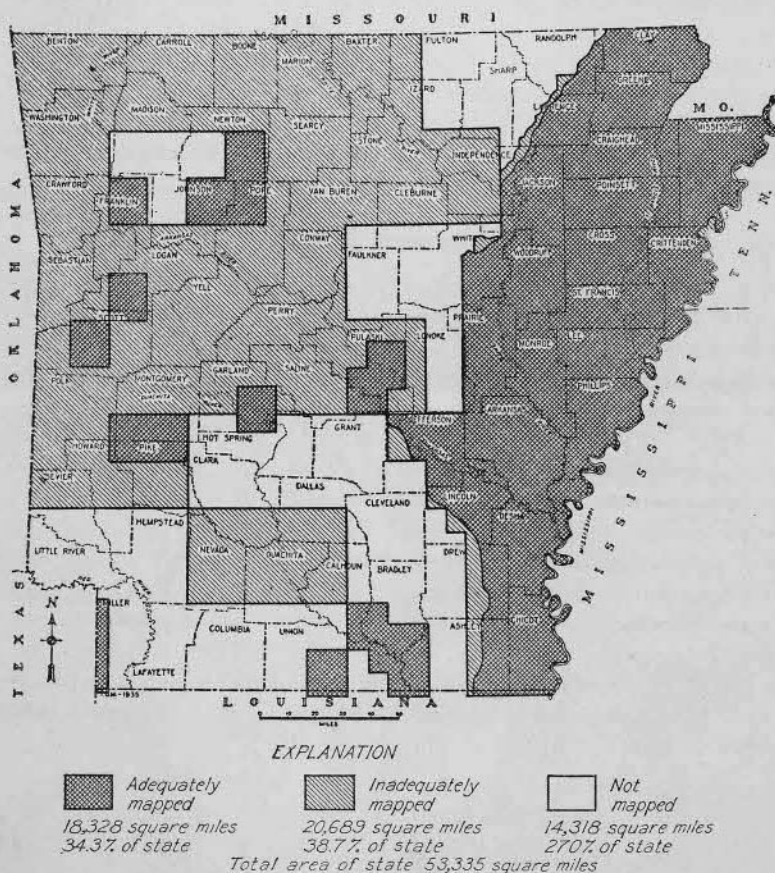


Figure 4. Map of Arkansas showing unmapped areas, and areas adequately and inadequately mapped.

No systematic plan for the completion of the topographic mapping of the unmapped area in Arkansas now exists due to lack of funds for that purpose. The following table shows the status of the mapping within the state:

	Square miles	Per cent
Area adequately mapped .....	18,328	34.3
Area inadequately mapped .....	20,689	38.7
Total area mapped .....	39,017	73.0
Area not mapped .....	14,318	27.0
Total area of state .....	53,335	100.0

In view of the fact that only 27 per cent of the state is not mapped (see Fig. 4), it seems highly advisable that a systematic program for the mapping of the unmapped areas cooperatively with the U. S. Geological Survey on a 50-50 basis be followed. An appropriation of \$15,000 per year would permit the cooperative mapping of all unmapped areas in about 17 years. Request was made to the State Comptroller on November 17, 1936, for submission to the Budget Committee of the General Assembly of 1937, for an allocation of this amount for each fiscal year of the biennium 1937-1939.

### C. STREAM GAGING

For the fiscal year 1936-1937 the stream gaging program, in cooperation with the U. S. Geological Survey, will be continued on the basis of this survey contribution \$800. Request was made to the State Comptroller on November 17, 1936, for submission to the Budget Committee of the General Assembly of 1937, that an appropriation of \$7,500 be allotted to this useful and valuable work. This sum, with an equal amount contributed by the U. S. Geological Survey, will provide for the maintenance of the 17 stations now in operation, the installation and maintenance of approximately eight new stations for the fiscal year 1937-1938, and the installation and maintenance of approximately five additional stations during the fiscal year 1938-1939. If this program is carried forward, a total of 25 stations will be in operation during the fiscal year 1937-1938 and a total of 30 stations during the fiscal year 1938-1939.

### III. PERSONNEL

The personnel of the Office of State Geologist during the period December 1, 1935 to November 30, 1936 was as follows:

*Administration:*

George C. Branner, State Geologist  
Lucy C. Marion, Secretary  
Mary L. Gibson, Stenographer and Statistician  
Lucy Crooks, Librarian  
Elizabeth Poe, Statistician

*Drafting:*

Ted O. Medearis, Draftsman  
Pearl L. Blackman, Draftsman  
Sibyl Thomas, Draftsman

*Auditing of Severance Tax Accounts*

J. Fred Brown, Severance Tax Agent

*Non-relief Supervisors Supplied by Federal Relief Agencies  
Office Project (W. P. A. Project 2421-3)*

Carroll Allison (Resigned June 5, 1936)  
Ted O. Medearis  
William H. Moore  
George A. Rogers

*Field Project (W. P. A. Project 1957-3)*

Sibley L. Ward  
A. C. McCutchen  
R. L. Pemberton  
Marvin Ray  
Palmer Taylor

Relief personnel in numbers varying from 25 to 70 has been furnished on W. P. A. Projects 2421-3 and 1957-3.

## IV. FINANCES

The finances of the department during the year ending November 30, 1936 are discussed under the following headings:

- A. Appropriations
- B. Receipts
- C. Expenditures
- D. Sinking Fund
- E. Cooperative Funds

## A. APPROPRIATIONS

For the fiscal years July 1, 1935 to June 30, 1937, the appropriations for the support of the Office of State Geologist are summarized as follows:

	Fiscal year 1935-1936	Fiscal year 1936-1937
<b>Act 286, 1935—</b>		
Administrative salaries, salaries for part time field workers, chemists, clerks, etc., salary for severance tax agent, and travel field work and severance tax agent .....	19,740.00	19,740.00
Publication of reports and maps, engraving, communication, office supplies and equipment.....	9,180.00	9,180.00
Topographic mapping, co-operative with the U. S. Geological Survey.....	500.00	500.00
Claims on file against the office of State Geologist (to be paid from sinking fund).....	2,000.00	2,000.00
<b>Act 200, 1935—</b>		
For stream measurements.....	1,500.00	1,500.00
	<u>\$32,920.00</u>	<u>\$32,920.00</u>

## B. RECEIPTS

For the fiscal years July 1, 1935 to June 30, 1937 the receipts for the current support of the Office of State Geologist are summarized as follows:

	Fiscal year 1935-1936	Fiscal year 1936-1937 (estimated)
Severance tax .....	\$ 9,023.33	\$ 8,540.00
Sand and gravel tax.....	7,706.70	12,250.00
Sale of publications.....	514.18	560.00
Severance tax agent's fund transferred from the "Un-apportioned Fund" of the Revenue Department	3,575.00	3,900.00
	<u>\$20,819.21</u>	<u>\$25,250.00</u>

Less one-tenth of receipts from severance tax, sand and gravel sales, and other sources for deposit in sinking fund .....	1,610.91	2,135.00
	<u>\$19,208.30</u>	<u>\$23,115.00</u>
Amount carried forward from preceding fiscal year..	1,776.03	670.88
Total amount received for current support .....	<u>\$20,984.33</u>	<u>\$23,785.88</u>

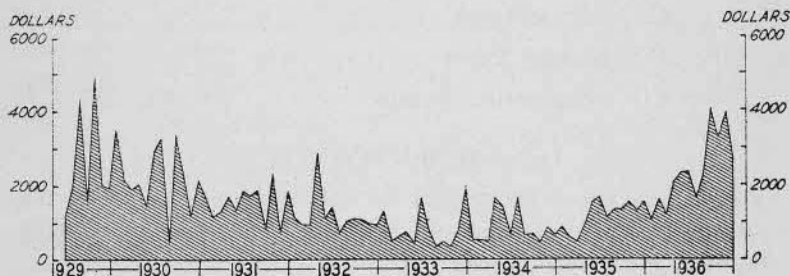


Figure 5. Chart showing monthly tax receipts for the support of the Arkansas Geological Survey for the period July 1, 1929 through December 31, 1936.

### C. EXPENDITURES

The expenditures of the office of state geologist for the years 1935-1936 and 1936-1937 are summarized as follows:

	Fiscal year 1935-1936	Fiscal year 1936-1937 (estimated)
Geologic projects which includes wages and travel expenses incidental to the compilation of data and preparation of texts on the reports described in this report .....	\$ 3,939.39	\$ 6,335.88
Topographic projects including construction of relief maps, leveling work in connection with W. P. A. project 1957-3, topographic mapping of Lonoke and Blakemore quadrangles and list of elevations in Arkansas .....	1,007.49	1,600.00
Co-operative stream gauging with the U. S. Geological Survey .....	800.00	800.00
Administration, including salaries and wages, office maintenance, equipment, stationery, printing, travel and communication .....	11,269.74	11,150.00
Expenses of severance tax agent including salary and travel .....	3,296.83	3,900.00
	<u>\$20,313.45</u>	<u>\$23,785.88</u>

### D. SINKING FUND

For the fiscal years July 1, 1935 to June 30, 1937 the receipts and disbursements from the State Geologist Sinking Fund are summarized as follows:

	Fiscal year 1935-1936	Fiscal year 1936-1937 (estimated)
Balance on hand July 1, 1935.....	\$ 26.40	\$ .....
Receipts .....	1,610.91	2,135.00
Total available .....	1,637.31	2,135.00
Expenditures .....	1,637.31	*2,000.00
Balance .....	\$ 000.00	\$ 135.00

\* Amount of appropriation per year.

### E. COOPERATIVE FUNDS

During the fiscal year 1935-1936 the following amounts were spent by various agencies on projects carried on in co-operation with the Survey.

	Stream Gaglag	Geological Survey W.P.A. Project 2421-3	Triangulation and Survey, W.P.A. Project 1957-3	Total
Works Progress Administration				
Salaries .....	\$13,479.31	\$7,675.31		\$21,154.62
Equipment and supplies .....		55.25		55.25
U. S. Coast and Geodetic Survey				
Salaries .....			500.00	500.00
Equipment and supplies .....			925.00**	925.00
U. S. Geological Survey .....	\$6,700.00*			6,700.00
	\$6,700.00	\$13,479.31	\$9,155.56	\$29,334.87
Contribution of Arkansas Geolog- ical Survey—Salaries .....	720.00	187.45		907.45
Equipment and supplies .....	80.00	1,277.50	80.00	1,437.50
Travel .....			300.00	300.00
	800.00	1,464.95	380.00	2,644.95
Total funds spent cooperatively ..	\$7,500.00	\$14,944.26	\$9,535.56	\$31,979.82

\* Includes cooperation of other departments and interested individuals.

\*\* Estimate on basis of rentals of instruments and calculating machines which are loaned by the U. S. Coast and Geodetic Survey.

It is estimated that during the fiscal year 1936-1937 cooperation for work in Arkansas with the agencies listed will be maintained as follows:

	Stream Gaging	W. P. A. Project 2421-3 Geol. Survey Proj. (Office)	W. P. A. Project 1957-3, Triangu- lation and Survey	Topographic Mapping	Total
Works Progress					
Administration .....		\$20,000.00	\$13,000.00	\$ 9,000.00	\$42,000.00
U. S. Coast and Geo- detic Survey .....			3,800.00		3,800.00
U. S. Geological Survey .....	6,700.00*				6,700.00
	<u>\$6,700.00</u>	<u>\$20,000.00</u>	<u>\$16,800.00</u>	<u>\$ 9,000.00</u>	<u>\$52,500.00</u>
Contributions made and to be made by Arkansas Geological Survey .....	800.00	2,500.00	800.00	1,000.00	5,100.00
	<u>800.00</u>	<u>2,500.00</u>	<u>800.00</u>	<u>1,000.00</u>	<u>5,100.00</u>
Total funds to be spent cooperatively .....	\$7,500.00	\$22,500.00	\$17,600.00	\$10,000.00	\$57,600.00

\* Includes cooperation of other departments and interested individuals.



## V. RECOMMENDATIONS

In order that the work of the Office of State Geologist as required by Act 573 of 1923 can be carried forward vigorously and efficiently, it is recommended that adequate funds for that purpose be provided by the General Assembly of 1937. The determination of what constitutes adequate funds, the use of which can be justified from the standpoint of sound investment policy, has been made the subject of careful study and the result of such study was transmitted as a request for funds for the fiscal years ending June 30, 1938 and June 30, 1939 to the State Comptroller on November 17, 1936 for transmittal to the Budget Committee of the General Assembly. The request for each one of the fiscal years referred to is summarized as follows:

Administration salaries and routine office service expense, including salary and travel and office expense of severance tax agent .....	\$26,000.00
Field work including salaries of field men and field expenses .....	22,000.00
Publication of reports and miscellaneous items .....	13,000.00
Topographic mapping (co-operative with the U. S. Geological Survey on a 50-50 basis) .....	15,000.00
Stream gaging (co-operative with the U. S. Geological Survey on a 50-50 basis) .....	7,500.00
Sinking fund .....	1,000.00
	<hr/>
	\$84,500.00

Provision for these items will permit the carrying forward of the geologic, topographic and stream gaging work program as outlined under Section II of this report, "Future Work," which will make possible:

1. The employment of an assistant to the State Geologist, which has not been possible under any previous appropriation for the present Survey;
2. The maintenance of three geological parties in the field;
3. Adequate office assistance to prepare and publish reports and to maintain routine services required;
4. An adequate continuing cooperation with the U. S. Geological Survey on a 17-year plan to complete the topographic mapping of the state; and
5. An adequate continuing cooperation with the U. S. Geological Survey in a comprehensive stream measurement program.



**VI. SUMMARY OF MINERAL PRODUCTION AND  
LIST OF PRODUCERS IN ARKANSAS  
1935**

### QUANTITY AND VALUE OF AND SEVERANCE TAX COLLECTED ON MINERALS PRODUCED IN ARKANSAS, 1935.

Mineral Produced	County	No. of Prod. Cos. <sup>1</sup>	Quantity Produced	Value	Severance Tax Paid <sup>2</sup>
Bauxite.....	Pulaski	4	55,036.37 Lg. T.	\$ 399,068.72	\$ 2,961.18
"	Saline	4	278,455.13 Lg. T.	2,019,078.14	14,757.83
			333,491.50 Lg. T.	2,418,146.86	17,719.01
Bentonite.....	Hot Spring	1	450.15 Sh. T.	3,601.20	5.85
"	Saline	1	673.93 Sh. T.	5,391.44	17.52
			1,124.08 Sh. T.	8,992.64	23.37
Cement.....	Howard	1	223,000.00 Lg. T.	1,740,069.00	289.90
Clay.....	Craighead	1	6,293.09 Sh. T.	26,151.63	2.76
"	Hempstead	1	21,369.38 Sh. T.	88,813.72	1.21
"	Hot Spring	2	92,537.74 Sh. T.	384,891.86	74.76
"	Miller	1	18,560.34 Sh. T.	21,715.60	41.03
"	Saline	1	649.72 Sh. T.	1,150.00	1.25
"	Sebastian	1	8,751.00 Sh. T.	36,365.00	11.38
			148,161.27 Sh. T.	559,087.81	132.39
Coal.....	Franklin	18	163,684.31 Sh. T.	343,737.05	1,636.00
"	Johnson	25	146,939.61 Sh. T.	308,573.19	1,469.38
"	Logan	30	340,462.16 Sh. T.	714,970.55	3,404.61
"	Pope	2	47,782.68 Sh. T.	100,343.63	477.83
"	Scott	1	12.00 Sh. T.	25.20	.12
"	Sebastian	31	385,612.20 Sh. T.	809,785.64	3,856.12
"	Washington	4	112.00 Sh. T.	235.20	1.12
			1,084,604.96 Sh. T.	2,277,670.46	10,845.18

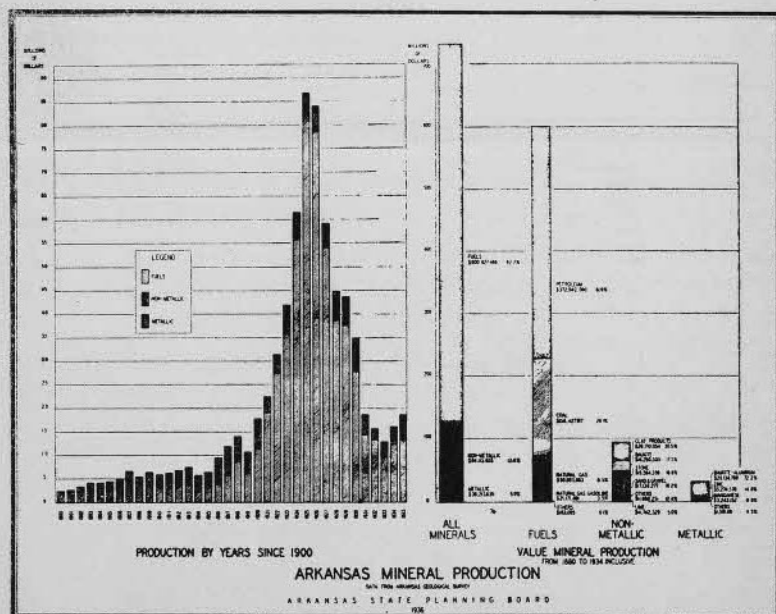


Figure 6. Graph showing the value of Arkansas mineral production by years during the period 1900-1935 and the value of the several classes of minerals during the 55-year period 1880-1934 inclusive.

Mineral Produced	County	No. of Prod. Cos. <sup>1</sup>	Quantity Produced	Value	Severance Tax Paid <sup>2</sup>
Glass Sand	Boone	1	320.75 Sh. T.	542.07	10.16
"	Izard	1	46,463.15 Sh. T.	78,522.72	60.39
			46,783.90 Sh. T.	79,064.79	70.55
Gravel <sup>3</sup>	Baxter	1	55.00 Cu. Yds.	38.77	2.85
"	Bradley	3	1,168.00 Cu. Yds.	823.44	3.03
"	Clark	5	89,034.25 Cu. Yds.	62,769.15	133.10
"	Clay	4	10,124.06 Cu. Yds.	7,137.46	13.57
"	Cleveland	6	36,986.05 Cu. Yds.	26,075.17	48.11
"	Columbia	1	6,903.50 Cu. Yds.	4,866.97	8.96
"	Craighead	5	105,330.59 Cu. Yds.	74,258.07	102.43
"	Crawford	2	9,985.20 Cu. Yds.	7,039.57	499.24
"	Cross	1	11,013.54 Cu. Yds.	7,764.55	14.32
"	Dallas	5	3,605.00 Cu. Yds.	2,541.53	4.92
"	Drew	4	26,372.00 Cu. Yds.	18,592.26	34.49
"	Greene	6	8,088.10 Cu. Yds.	5,702.11	15.29
"	Hot Spring	1	34,627.55 Cu. Yds.	24,412.42	41.82
"	Independence	5	20,200.52 Cu. Yds.	14,241.36	132.44
"	Izard	2	7,929.00 Cu. Yds.	5,589.95	11.85
"	Jackson	2	27,133.93 Cu. Yds.	19,129.42	1,356.61
"	Lafayette	2	74,968.16 Cu. Yds.	52,852.55	186.53
"	Lawrence	1	30,523.00 Cu. Yds.	21,518.72	
"	Lincoln	1	4,995.30 Cu. Yds.	3,521.69	5.12
"	Little River	1	102,671.35 Cu. Yds.	72,383.30	133.47
"	Logan	1	14.00 Cu. Yds.	9.87	.70
"	Marion	1	4,460.60 Cu. Yds.	3,144.72	34.79
"	Montgomery	1	1,427.61 Cu. Yds.	1,006.47	1.14
"	Nevada	3	3,136.33 Cu. Yds.	2,211.11	3.92
"	Ouachita	2	32,920.20 Cu. Yds.	23,208.74	1,042.80
"	Phillips	1	3,200.00 Cu. Yds.	2,256.00	4.04
"	Pike	1	3,038.20 Cu. Yds.	2,141.93	3.95
"	Polk	3	5,898.40 Cu. Yds.	4,158.37	7.67
"	Randolph	2	299.00 Cu. Yds.	210.79	.81
"	Saline	2	15,234.37 Cu. Yds.	10,740.23	19.78
"	St. Francis	1	40,599.12 Cu. Yds.	28,622.38	16.80
"	Sebastian	3	7,934.81 Cu. Yds.	5,594.04	396.72
"	Sevier	3	13,049.00 Cu. Yds.	9,199.54	16.94
"	Yell	1	12,719.15 Cu. Yds.	8,967.00	635.89
			755,644.89 Cu. Yds.	532,729.65	4,934.10

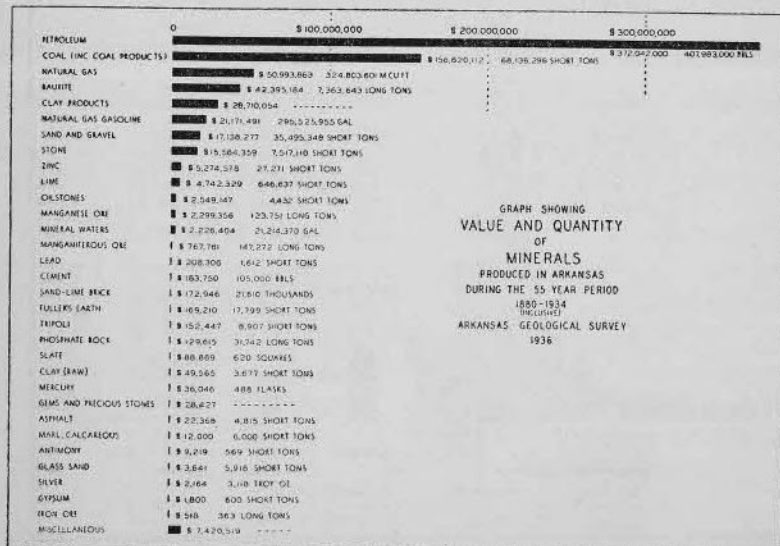


Figure 7. Graph showing value and quantity of minerals produced in Arkansas during the 55-year period 1880-1934 inclusive.

ARKANSAS MINERAL PRODUCTION - 1935		
<b>PETROLEUM</b>		
		\$ 7,570,883.98 - 10,610,806.94 Bbls.
<b>BAUXITE</b>		\$2,418,146.86 - 333,491.50 Lg. T.
<b>COAL</b>		\$2,277,670.46 - 1,084,604.96 Sh. T.
<b>CEMENT</b>		\$1,740,069.00 - 223,000.00 Lg. T.
<b>CLAY</b>		\$559,087.81 - 148,161.27 Sh. T.
<b>GRAVEL</b>		\$532,729.65 - 755,644.89 Cu. Yds.
<b>STONE</b>		\$267,919.60 - 231,372.98 Sh. T.
<b>NATURAL GAS</b>		\$253,976.57 - 6,699,94 M. Cu. Ft.
<b>SAND</b>		\$153,446.26 - 200,583.36 Cu. Yds.
<b>GLASS SAND</b>		\$79,064.79 - 46,783.90 Sh. T.
<b>MANGANESE</b>		\$44,285.93 - 3,495.54 Lg. T.
<b>TRIPOLI</b>		\$22,993.74 - 2,079.00 Sh. T.
<b>RUTILE - BENTONITE - ZINC - LEAD &amp; MERCURY</b>		\$31,079.41

Figure 8. Chart showing quantity and value of minerals produced in Arkansas in 1935.  
Aggregate value \$15,951,354.06.

Mineral Produced	County	No. of Prod. Cos. <sup>1</sup>	Quantity Produced	Value	Severance Tax Paid <sup>2</sup>
Lead	Newton	1	31.41 Sh. T.	1,297.98	33.75
Manganese	Independence	2	3,495.54 Lg. T.	44,285.93	352.04
Mercury	Pike	3	335.25 Flasks (76-lb.)	637.91	4.36
Natural Gas	Crawford	1	1,028,613 M. Cu. Ft.	50,449.89	1,311.56
"	Franklin	1	49,219 M. Cu. Ft.	2,460.95	64.00
"	Johnson	2	1,378,818 M. Cu. Ft.	55,464.54	1,442.09
"	Nevada	1	14,732 M. Cu. Ft.	441.96	11.48
"	Ouachita	8	698,321 M. Cu. Ft.	14,464.46	375.77
"	Sebastian	3	609,322 M. Cu. Ft.	29,995.93	779.98
"	Union	11	2,920,889 M. Cu. Ft.	100,698.84	2,618.08
			6,699,914 M. Cu. Ft.	253,976.57	6,602.96
Petroleum	Columbia	2	98,670.67 Bbls.	49,127.16	1,277.34
"	Miller	5	433,943.27 Bbls.	367,127.16	9,549.43
"	Nevada	2	283,897.00 Bbls.	169,508.81	4,407.24
"	Ouachita	26	4,225,817.93 Bbls.	2,952,917.90	76,771.33
"	Union	24	5,568,478.07 Bbls.	4,032,202.95	104,921.36
			10,610,806.94 Bbls.	7,570,883.98	196,926.70
Rutile	Hot Spring	1	1,740.80 Sh. T.	11,822.00	45.27
Sand <sup>3</sup>	Baxter	1	36.00 Cu. Yds.	27.54	.90
"	Clark	1	12,768.00 Cu. Yds.	9,767.53	27.81
"	Crawford	2	22,533.80 Cu. Yds.	17,238.36	563.45
"	Hot Spring	1	5,840.60 Cu. Yds.	4,468.06	7.61
"	Independence	1	1,763.04 Cu. Yds.	1,348.73	44.18
"	Jackson	2	16,891.26 Cu. Yds.	12,921.81	415.27
"	Jefferson	1	21,402.92 Cu. Yds.	16,373.23	535.06
"	Lawrence	1	5,018.00 Cu. Yds.	3,838.77	
"	Little River	1	26,049.21 Cu. Yds.	19,927.64	33.85
"	Logan	2	56.50 Cu. Yds.	43.22	1.39

Mineral Produced	County	No. of Prod. Cos. <sup>1</sup>	Quantity Produced	Value	Severance Tax Paid <sup>2</sup>
Sand <sup>3</sup>	Marion	1	6,204.50 Cu. Yds.	4,746.44	48.39
"	Montgomery	1	381.26 Cu. Yds.	291.66	.08
"	Pulaski	1	49,045.13 Cu. Yds.	37,519.52	1,226.20
"	Sebastian	4	20,937.09 Cu. Yds.	16,016.87	523.42
"	Yell	1 20	11,656.05 Cu. Yds.	8,916.88	291.34
			200,583.36 Cu. Yds.	153,446.26	3,718.95
Stone	Baxter	1	110.89 Sh. T.	2,889.90	1.63
"	Clark	1	228.00 Sh. T.	296.40	.30
"	Conway	1	608.00 Sh. T.	790.40	.79
"	Crawford	1	1,407.43 Sh. T.	1,829.66	1.89
"	Faulkner	1	4,636.86 Sh. T.	6,027.92	6.07
"	Garland	1	988.00 Sh. T.	1,284.40	1.28
"	Hot Spring	1	4,029.50 Sh. T.	12,088.50	10.19
"	Independence	4	81,998.04 Sh. T.	87,658.18	743.30
"	Izard	1	1,140.00 Sh. T.	1,482.00	1.48
"	Johnson	1	912.00 Sh. T.	1,185.60	1.18
"	Marion	1	456.00 Sh. T.	592.80	.58
"	Pike	1	152.00 Sh. T.	197.60	.20
"	Pope	1	456.00 Sh. T.	592.80	.59
"	Pulaski	1	122,917.69 Sh. T.	137,667.81	271.62
"	Sebastian	1	6,159.57 Sh. T.	8,007.44	8.17
"	Washington	1 8	5,173.00 Sh. T.	5,328.19	7.39
			231,372.98 Sh. T.	267,919.60	1,056.66
Tripoli	Benton	1 1	2,079.00 Sh. T.	22,993.74	2.88
Zinc	Marion	2	216.98 Sh. T.	6,458.10	9.06
"	Newton	1 2	65.93 Sh. T.	1,870.78	11.56
			282.91 Sh. T.	8,328.88	20.62
TOTALS	51 Counties	274 producing companies		\$15,951,354.06	\$242,778.69

<sup>1</sup> When the same company produces in more than one county the total shows only the actual producing companies.

<sup>2</sup> Includes royalty on sand and gravel taken from state owned streams.

<sup>3</sup> Includes production and selling value of sand and gravel taken from state owned streams.

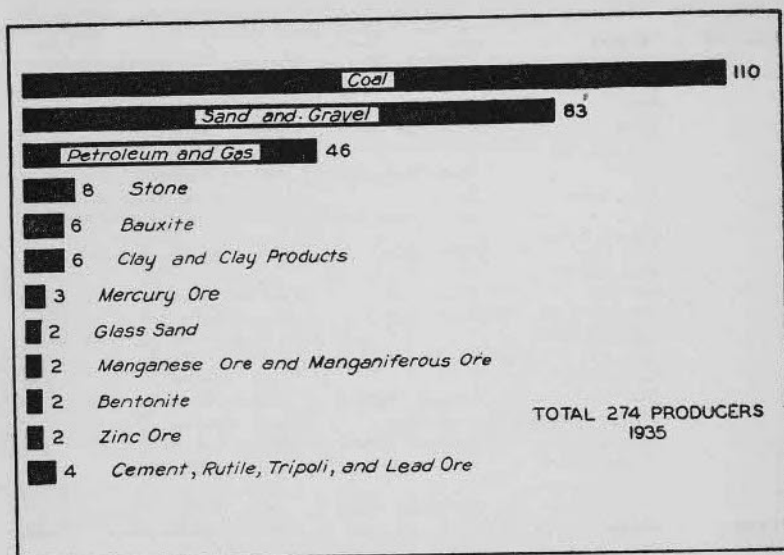


Figure 9. Chart showing number of mineral producers by classes in Arkansas in 1935.

### LIST OF MINERAL PRODUCERS IN 1935 GROUPED BY MINERALS.

Mineral	Company	Address	Location of Mine or Plant
Bauxite	American Cyanamid & Chemical Corp.	Route 4, Box 41, Bauxite, Ark.	Mount Olive Mine in Saline County; Rauch lease mine in Pulaski County.
	Arkansas Bauxite Corp.	West Bauxite, Ark.	Swampoodle, Saline County (on property of Standard Bauxite & Chemical Co.)
	Crawford Bauxite Co.	741 Donaghey Bldg., Little Rock, Ark.	About 2½ miles southeast of town of Bauxite, Saline County.
	Crouch Mining Co., Inc.	RFD 4, Box 342 Little Rock, Ark.	Berger, Pulaski County.
	Dixie Bauxite Co.	Sweet Home, Ark.	2½ miles from Sweet Home, Pulaski County.
	Republic Mining & Manufacturing Co.	Bauxite, Ark.	Ratcliff lease ½ mile southeast of city limits of Little Rock, Pulaski County; Bauxite mine at Bauxite, Saline County.
Bentonite	Ada Brick Co.	Ada, Okla.	Near Malvern, Hot Spring County.
	West, Robert V.	218 Cole Bldg., Tulsa, Okla.	NE¼ NE¼ Sec. 23, T. 2 S., R. 13 W., Saline County (about 15 miles south of Little Rock, Pulaski County.)
Cement	Arkansas Portland Cement Co.	Okay, Arkansas	Okay, Howard County.
Clay	Acme Brick Co.	Fort Worth, Tex.	Malvern, Hot Spring County; Perla, Hot Spring County; Little Rock, Pulaski County (idle in 1935); and Greenwood Road, Sebastian County.
	Dickey, W. S., Clay Mfg. Co.	Texarkana, Tex.	Clay pit at Texarkana, Miller County, Ark., (plant in Texas.)
	Hope Brick Works	Hope, Ark.	Hope, Hempstead County.
	Jonesboro Brick Co.	Jonesboro, Ark.	Jonesboro, Craighead County.



Mineral	Company	Address	Location of Mine or Plant
Clay	Malvern Brick & Tile Co.	Malvern, Ark.	Malvern, Hot Spring County.
	Niloak Pottery & Tile Co.	Benton, Ark.	Benton, Saline County.
Coal	Acme Coal Co.	Coal Hill, Ark.	Johnson County.
	Alexander & Griffith	Huntington, Ark.	$\frac{1}{2}$ mile west of Huntington, Sebastian County.
	Allen Bros.	Route 4, Springdale, Ark.	$5\frac{1}{2}$ miles southeast of Springdale, Washington County.
	Altus Supreme Coal Co.	Altus, Ark.	Franklin County.
	Altus Valley Coal Co.	Altus, Ark.	Franklin County.
	Argo Coal Co.	Paris, Ark.	Logan County.
	Ark. Anthracite Coal Co.	Clarksville, Ark.	4 miles west of Clarksville, Johnson County.
	Aurora Coal Co.	Paris, Ark.	Logan County.
	Barr Coal Co.	Hackett, Ark.	Hackett, Sebastian County.
	Bartsch, Johnnie	Paris, Ark.	Logan County.
	Becker, Fred	Hartman, Ark.	Johnson County.
	Benson, H. C.	Ratcliff, Ark.	Logan County.
	Bernice Anthracite Coal Co.	McAlester, Okla.	2 miles south of Russellville, Pope County.
	Black Diamond Coal Co.	Altus, Ark.	2 miles west of Altus, Franklin County.
	Blue Ribbon Coal Corp.	Paris, Ark.	2 miles northeast of Paris, Logan County.
	Blue Star Coal Co.	Alix, Ark.	Denning, Franklin County.
	Boyd Excelsior Fuel Co.	P. O. Box 258, Ft. Smith, Ark.	Excelsior, Sebastian County.
	Brandon, W. J.	Paris, Ark.	Logan County.
	Brookshire Coal Co.	Charleston, Ark.	Franklin County.
	Brown, A., Coal Co.	Ozark, Ark.	Franklin County.
	Burch Coal Co.	Box 75, Midland, Ark.	Montreal, Sebastian County.
	Burns & Smith Coal Co.	Denning, Ark.	Franklin County.
	Butler & Hice	Paris, Ark.	Logan County.
	Carbon Coal Co.	Paris, Ark.	5 miles west of Paris, Logan County.
	Charleston Coal Co.	500 South 19th St., Fort Smith, Ark.	3 miles northeast of Charleston, Franklin County.
	Clark Coal Co.	Clarksville, Ark.	3 miles south of Clarksville, Johnson County.
	Clark-McWilliams Coal Co.	Clarksville, Ark.	3 miles west of Spadra, Johnson County.
	Cline Bros. Coal Co.	Spadra, Ark.	Johnson County.
	Coleman Coal Co.	Charleston, Ark.	Charleston, Franklin County.
	Collier-Dunlap Coal Co.	Clarksville, Ark.	$1\frac{1}{2}$ miles east of Hartman, Johnson County.
	Crescent-Philpot Coal Co.	Clarksville, Ark.	Johnson County.
	Diamond Anthracite Coal Co.	Clarksville, Ark.	3 miles north of Spadra, Johnson County.
	Dickerson, N. B.	Ozark, Ark.	Johnson County.
	Dixie Fuel Co.	Paris, Ark.	$3\frac{1}{2}$ miles northwest of Paris, Logan County.
	Economy Coal Co.	Paris, Ark.	Logan County.
	Eureka Coal Co.	Paris, Ark.	$2\frac{1}{2}$ miles west of Paris, Logan County.
	Evans & Leding	Denning, Ark.	Franklin County.
	Excelsior Coal Co.	RFD 2, Greenwood, Ark.	$\frac{1}{2}$ mile north of Excelsior, Sebastian County.
	Excelsior Coal Co.	Hackett, Ark.	4 miles west of Excelsior, Sebastian County.

Mineral	Company	Address	Location of Mine or Plant
Coal	Excelsior Coal Corp.	Box 226, Greenwood, Ark.	Excelsior, Sebastian County.
	Excelsior Red Ash Coal Co.	Greenwood, Ark.	Sebastian County.
	Excelsior Thin Vein Coal Co., Inc.	Hackett, Ark.	$\frac{1}{4}$ mile east of Hackett, Sebastian County.
	Fork, Jim, Coal Co.	Hartford, Ark.	3 miles northeast of Hartford, Sebastian County.
	Fort Smith-Bonanza Coal Co.	Room 7, Kelley Trust Bldg., Ft. Smith, Ark.	$\frac{1}{2}$ mile from Bonanza, Sebastian County.
	Fort Smith Coal Co.	Jenny Lind, Ark.	Sebastian County.
	Gage, Dee, Coal Co.	Coal Hill, Ark.	Johnson County.
	Goldsworthy, John	Paris, Ark.	Logan County.
	Goldsworthy, Opie	Paris, Ark.	Logan County.
	Graham-Henson Coal Co.	Fort Smith, Ark.	Jenny Lind, Sebastian County.
	Great Western Coal Co.	Bonanza, Ark.	Bonanza, Sebastian County.
	Green, D. S.	Ozark, Ark.	Franklin County.
	Groeber, P. M.	Charleston, Ark.	Franklin County.
	Hanshaw, S. V.	Clarksville, Ark.	Johnson County.
	Harding Coal Co.	Clarksville, Ark.	Spadra, Johnson County.
	Holmes, Fuller	Ozark, Ark.	Franklin County.
	Ideal Coal Co.	Paris, Ark.	6 miles west of Paris, Logan County.
	Jackson Coal Co.	Midland, Ark.	Sebastian County.
	Jacobs, E. L., Mine	Hartman, Ark.	$\frac{3}{4}$ mile east of Hartman, Johnson County.
	Jewel Mining Co.	L. B. 248, Paris, Ark.	$1\frac{1}{2}$ miles north of Paris, Logan County.
	Kuykendall, E. L.	Paris, Ark.	Logan County.
	Lewis Coal Co.	Alix, Ark.	Johnson County.
	Liberty Coal Co.	Altus, Ark.	$2\frac{1}{2}$ miles west of Denning, Franklin County.
	Little Ben Coal Corp., The	Midland, Ark.	Midland, Sebastian County.
	Long & Couch Coal Co.	Hartford, Ark.	Scott County.
	Looper Coal Co.	Huntington, Ark.	1 mile north of Huntington, Sebastian County.
	Mack Coal Co.	Paris, Ark.	Logan County.
	Majestic Coal Mining Co.	Midland, Ark.	$1\frac{1}{2}$ miles north of Midland, Sebastian County.
	McAdoo, S. A.	R. F. D. 1, Barling, Ark.	3 miles south of Central City, Sebastian County.
	McKinney, D. A., Coal Co.	Clarksville, Ark.	4 miles west of Clarksville, Johnson County.
	Melton Coal Co.	Alix, Ark.	Alix and Denning, Franklin County.
	Melton Excelsior Coal Co.	Greenwood, Ark.	Sebastian County.
	Midland Coal Mining Co.	Midland, Ark.	Midland, Sebastian County.
	Miners Coal Co.	Clarksville, Ark.	$8\frac{1}{2}$ miles southwest of Clarksville, Johnson County.
	Mumey, John B., Coal Co.	Jenny Lind, Ark.	Jenny Lind, Sebastian County.
	Napier, G. C.	Cane Hill, Ark.	Sec. 33, T. 14 N., R. 32 W., Washington County.
	New Deal Coal Co.	Paris, Ark.	Logan County.
	New Deal Coal Co.	Prairie View, Ark.	Logan County.
	New Shockley Coal Co.	Paris, Ark.	4 miles west of Paris, Logan County.
	New Superfuel Coal Co.	Paris, Ark.	4 miles west of Paris, Logan County.

Mineral	Company	Address	Location of Mine or Plant
Coal	Nichols, Ray, Coal Co.	Ozark, Ark.	Johnson County.
	Paris Purity Coal Co.	Amer. Bank Bldg., Paris, Ark.	About 4½ miles northwest of Paris, Logan County.
	Quality Coal Co.	Ozark, Ark.	Near Altus, Franklin County.
	Ra-Ja-Da Anthracite Co.	Clarksville, Ark.	Johnson County.
	Red Glow Coal Corp.	Paris, Ark.	Logan County.
	Red Rock Coal Co.	Midland, Ark.	Sebastian County.
	Reinhard-Barr Coal Co.	Fort Smith, Ark.	2½ miles east of Bonanza, Sebastian County.
	Robertson Coal Co.	Coal Hill, Ark.	Johnson County.
	Rowland, H. I.	Paris, Ark.	Logan County.
	Ruttle Coal Co.	Fort Smith, Ark.	Sebastian County.
	Schmalz Bros. & Gack	Paris, Ark.	3½ miles west of Paris, Logan County.
	Sebastian Coal Co.	Greenwood, Ark.	Sebastian County.
	Sewell & Foster	Paris, Ark.	Logan County.
	Smith Coal Co.	Russellville, Ark.	Pope County.
	Smith, R. H., Coal Co.	Ozark, Ark.	Franklin County.
	Smokeless Coal Co.	Clarksville, Ark.	Spadra, Johnson County.
	Smrekar, Frank	Huntington, Ark.	Huntington, Sebastian County.
	Spadra Coal Co.	Clarksville, Ark.	2 miles north of Spadra, Johnson County.
	Stansberry, J. R.	Fayetteville, Ark.	Washington County.
	Sterling Coal Co.	Clarksville, Ark.	Johnson County.
	Stewart Coal Co.	Denning, Ark.	Franklin County.
	Sullivan Coal Co.	Paris, Ark.	1½ miles west of Paris, Logan County.
	Sunshine Anthracite Coal Co.	Clarksville, Ark.	Spadra, Johnson County.
	Sun Smokeless Coal Co.	20½ S. 6th St., Ft. Smith, Ark.	1.8 miles west of Excelsior, Sebastian County.
	Turner, M. B.	Winslow, Ark.	Washington County.
	Turner, R. B.	Paris, Ark.	Logan County.
	Vandermuely, Jules	Fort Smith, Ark.	Sebastian County.
	Victor Coal Co.	Amer. Bank Bldg., Paris, Ark.	1½ miles northeast of Paris, Logan County.
	Watson & Sons Coal Co.	Paris, Ark.	(1) Paris, Logan County. (2) 3½ miles northwest of Paris, Logan County.
	Wiley, E. D.	Hartman, Ark.	Johnson County.
	Young, R. A. & Son	405 Merchants Bank Bldg., Fort Smith, Ark.	3½ miles west of Jenny Lind, Sebastian County.
Glass Sand	Everton Silica Sand Co., Inc.	Harrison, Ark.	Everton, Boone County.
	Silica Products Co., Inc.	Guion, Ark.	Guion, Izard County.
Gravel	Abraham, J. T.	Arkadelphia, Ark.	Clark County.
	Arkadelphia Sand & Gravel Co.	P. O. Box 517, Arkadelphia, Ark.	½ mile east of Arkadelphia, Clark County.
	Arkholia Sand & Gravel Co.	South 7th & B Sts., Fort Smith, Ark.	Van Buren, Crawford County.
	Ashcraft, C. V.	Rye, Ark.	Cleveland County.
	Ballard, G. W.	Sparkman, Ark.	SE SW Sec. 16, T. 8S., R. 16W, Dallas County.
	Barnett, J. F. & C. A.	Batesville, Ark.	1½ miles northeast of Post Office Rosie, Independence County.
	Batten, Albert	Paragould, Ark.	Greene County.
	Bearden Gravel Co.	Box 735, Pine Bluff, Ark.	1½ miles west of Millville, Ouachita County.
	Benton Gravel Co.	Box 735, Pine Bluff, Ark.	Edge of town of Benton, Saline County.

Mineral	Company	Address	Location of Mine or Plant
Gravel	Benton, Hugh	Fordyce, Ark.	Dallas County.
	Blissenbach, Peter	Pocahontas, Ark.	Randolph County.
	Byrum & Mann	Van Buren, Ark.	Van Buren, Sebastian County.
	Clift, M. H.	Melbourne, Ark.	Sec. 26, T. 17N., R. 9W., 2½ miles from Melbourne, Izard County.
	Cline, Dr. A. G.	Paragould, Ark.	N½ Sec. 22, T. 16N., R. 5E., 5 miles from Paragould, Greene County.
	Consolidated Gravel Co.	Jonesboro, Ark.	Jonesboro, Craighead County.
	Cook, C. W.	Bono, Ark.	NW SW Sec. 21, T. 15N., R. 3E., 1½ miles from Bono, Craighead County.
	Cotton Belt Gravel Co., The	Box 735, Pine Bluff, Ark.	3 miles west of Jonesboro, Craighead County.
	Cross County Gravel Co.	Box 735, Pine Bluff, Ark.	(1) 1 mile from Cherry Valley, Cross County. (2) 3 miles east of Wynne, on Coppers Creek, Cross County.
	Crow Creek Gravel & Sand Co.	Box 4, Forrest City, Ark.	1 mile west of Madison, St. Francis County.
	Cunningham, E.	Mountain Home, Ark.	Near Cotter, Baxter County.
	Curlee, Florence	DeQueen, Ark.	Sevier County.
	Drummond, Marvin	Sparkman, Ark.	Dallas County.
	Emerson, W. D.	Prescott, Ark.	Nevada County.
	Friar, C. C.	Paris, Ark.	Logan County.
	Gantt Gravel & Sand Co.	Magnolia, Ark.	7 miles west of Magnolia, Columbia County.
	Harper and James	Fort Smith, Ark.	Sebastian County.
	Helton, Ed.	Pollard, Ark.	Clay County.
	Hope Brick Works	Hope, Ark.	1½ miles north of Glenwood, Pike County.
	Howard, J. W.	Hatfield, Ark.	NW NE Sec. 7, T. 3S., R. 31 W., 2½ miles from Hatfield, Polk County.
	Hudson Sand & Gravel Co.	Batesville, Ark.	Sec. 16, T. 13N., R. 6W., 1 mile northwest of Batesville, Independence County.
	Jacobs, Mrs. Josie	Delight, Ark.	Pike County.
	Jansen, Will	Pocahontas, Ark.	SW NW Sec. 21, T. 19N., R. 1E., 1 mile from Pocahontas, Randolph County.
	Johnson, C. W.	Helena, Ark.	Phillips County.
	Johnson, Ira	Monticello, Ark.	Drew County.
	King, Jessie	Charlotte, Ark.	Independence County.
	King, Miss M. D.	Jonesboro, Ark.	SE SW Sec. 5, T. 13N., R. 4E., Craighead County.
	Lawson, A. R.	Warren, Ark.	Bradley County.
	Lewis, Paul	Ladelle, Ark.	Drew County.
	Lincoln Gravel Co.	Star City, Ark.	1 mile southwest of Star City, Lincoln County.
	Linke, Louis	Paragould, Ark.	Sec. 36, T. 18N., R. 5E., 6 miles north of Paragould, Greene County.
	Lotta & Gossett	Pollard, Ark.	2 miles northeast of Pollard, Clay County.
	Lutesville Sand & Gravel Co.	Black Rock, Ark.	In town of Black Rock, Lawrence County.
	Lynch, Mrs. J. T.	Lewisville, Ark.	Sec. 10, T. 16S., R. 24W., 2 miles from Lewisville, Lafayette County.
	Lyon, J. D.	Rt. 1, Warren, Ark.	W½ Sec. 10, T. 16S., R. 10W., 4 miles from Warren, Bradley County.

Mineral	Company	Address	Location of Mine or Plant
Gravel	McCauley, Henry E.	Wickes, Ark.	Sec. 19, T. 5S., R. 31W., 1¼ miles from Wickes, Polk County.
	Malvern Gravel Co.	Malvern, Ark.	Sec. 16, 17, 20, T. 4S., R. 17W., 2 miles from Malvern, Hot Spring County.
	Meriwether Sand & Gravel Co., Inc.	Box 1365, Shreveport, La.	2 miles northeast of Lewisville, Lafayette County.
	Miller, F. J.	Bono, Ark.	S½ SE Sec. 20 and SW SW Sec. 21, T. 15N., R. 3E., 1 mile east of Bono, Craighead County.
	Miller, J. A.	New Edinburg, Ark.	Cleveland County.
	Mitchell, D. F.	Monticello, Ark.	Drew County.
	Mobley Construction Co.	Morrilton, Ark.	(1) North of Dardanelle, Yell County. (2) Newport, Jackson County.
	Nelson, J. P.	Cushman, Ark.	NE NW Sec. 9, T. 14N., R. 7W., ½ mile north of Cushman, Independence County.
	Newark Sand & Gravel Co., Inc.	Box 735, Pine Bluff, Ark.	Near city limits of Newark, Independence County.
	Nowlin, E.	Arkadelphia, Ark.	Sec. 21, T. 7S, R. 19W., Clark County, joining MP RR and City of Arkadelphia.
	Oliver, Dolan	Rector, Ark.	Clay County.
	Painter, Nora	Batesville, Ark.	Independence County.
	Pearl City Packet Co.	Newport, Ark.	On White River, near city limits of Newport, Jackson County.
	Penny, Tom	Lockesburg, Ark.	Sevier County.
	Pine Bluff Sand & Gravel Co.	Box 735, Pine Bluff, Ark.	SE SE Sec. 22 and E½ Sec. 27, T. 9S., R. 11W., near Rison, Cleveland County.
	Pollard, O. J.	Piggott, Ark.	Sec. 35, T. 21N., R. 8E., 2 miles from Piggott, Clay County.
	Porter, T. L.	Sparkman, Ark.	Dallas County.
	Producers Gravel & Sand Co., Inc., The	P. O. Box 1615, Shreveport, La.	Wilton, Little River County.
	Reader Gravel Co.	Reader, Ark.	½ mile northwest of Reader, Ouachita County.
	Reynolds, Chas. W.	Warren, Ark.	NE SW Sec. 10, T. 13S., R. 10W., 3 miles from Warren, Bradley County.
	Roberts, Fred	Gainesville, Ark.	Greene County.
	Rowe, O. B.	Hatfield, Ark.	Polk County.
	Simmons, Arthur	Prescott, Ark.	Nevada County.
	Shoemaker, Glover L.	Beech Grove, Ark.	Sec. 17, T. 16N., R. 4E., 12 miles from Paragould, Greene County.
	Smith, G. W.	Van Buren, Ark.	Sec. 25, T. 9N., R. 32W., Sebastian County.
	Smith, Rufus	Kingsland, Ark.	Cleveland County.
	Smith & Russell	Fordyce, Ark.	SE SE Sec. 25, T. 10S., R. 14W., 4½ miles from Fordyce, Dallas County.
	Southwest Sand & Gravel Co.	302 Holland Bldg., Springfield, Mo.	Marion County.
	Taylor, Ed	Stella, Ark.	Izard County.
	Union Church	Rye, Ark.	Cleveland County.
	Van Buren Sand & Gravel Co.	Fort Smith, Ark.	Crawford County.
	Walker, J. C.	Ben Lomond, Ark.	Sevier County.
	West, A. W.	Kingsland, Ark.	Cleveland County.
	Whelen Springs Gravel Co.	Whelen Springs, Ark.	Whelen Springs, Clark County.

## ANNUAL REPORT OF STATE GEOLOGIST

Mineral	Company	Address	Location of Mine or Plant
Gravel	Williams, C. F. & Sons	Route 3, Paragould, Ark.	SE Sec. 10, T. 16N., R. 5E., 4 miles from Paragould, Greene County.
	Wilson, George	Monticello, Ark.	Drew County.
Lead	Urschel Lead & Zinc Mines, Inc.	Rush, Ark.	Ponca, Newton County.
Manganese	Denison, Walter H.	Cushman, Ark.	(1) near Cushman, Independence County.
			(2) near Penters Bluff, Izard County.
			(3) near Pfeiffer, Independence County.
Mercury	Reither, A. B.	Cushman, Ark.	Cushman, Independence County.
	Isbell, Fletcher F.	DeQueen, Ark.	Pike County.
	Mid-Continent Quicksilver Co.	Amity, Ark.	Sec. 28, 29, 32, 33, T. 6S., R. 23W., Pike County.
	Robens Mining Co.	Kirby, Ark.	Pike County.

Mineral	Company	Address	Location of Oil and Gas Wells
Natural Gas	Arkansas-Louisiana Gas Co.	Box 1734, Shreveport, La.	Johnson County.
	GRC Oil Co., Inc. (Successor to I. Rauch)	Esperson Bldg., Houston, Tex.	Ouachita and Union Counties.
	Greeson, M. W.	Prescott, Ark.	Franklin County.
	Gulf Refg. Co. of Louisiana	Houston, Tex.	Ouachita and Union Counties.
	Henderson Co., The	Box 609, El Dorado, Ark.	Union County.
	Hunt, H. L., Inc.	El Dorado, Ark.	Union County.
	Industrial Oil & Gas Co.	23 North 8th St., Fort Smith, Ark.	Crawford County.
	Lion Oil Refg. Co.	Exchange Bldg., El Dorado, Ark.	Ouachita and Union Counties.
	Magnolia Pe- troleum Corp.	El Dorado, Ark.	Ouachita and Union Counties.
	Mansfield Gas Co.	13 North 7th St., Fort Smith, Ark.	Sebastian County.
	Ohio Oil Co., The	Smackover, Ark.	Ouachita and Union Counties.
	Ozark Natural Gas Co.	23 North 8th St., Ft. Smith, Ark.	Sebastian County.
	River Valley Gas Co.	Paris, Ark.	Johnson County.
	Root Petroleum Co.	El Dorado, Ark.	Union County.
	Skelly Oil Co.	202 Armstrong Bldg., El Dorado, Ark.	Ouachita and Union Counties.
	Southern Gas Prod. Co.	23 North 8th St., Ft. Smith, Ark.	Sebastian County.
	Standard Oil Co. of Louisiana	2134 St. Charles Avenue, New Orleans, La.	Nevada, Ouachita and Union Counties.
	Texas Co., The	Box 2332, Houston, Tex.	Ouachita and Union Counties.
Petroleum	Arkansas Fuel Oil Co.	El Dorado, Ark.	Union County.
	Berry Asphalt Co.	Waterloo, Ark.	Nevada County.
	Clark, H. E.	414 Exchange Bldg., El Dorado, Ark.	Ouachita and Union Counties.
	Continental Oil Co.	1000 South Pine St. Ponca City, Okla.	Ouachita County.
	Crosbie, J. E., Inc.	Smackover, Ark.	Ouachita and Union Counties.
	Cumberland Petroleum Co.	Louann, Ark.	Ouachita County.
	Duluth-Arkansas Oil Co.	c-o J. T. Craig, Foreman, Route 4, Box 246, Texarkana, Ark.	Miller County.



Mineral	Company	Address	Location of Oil and Gas Wells
Petroleum	Empire Oil & Refg. Co.	Box D, Smackover, Ark.	Ouachita County.
	Federal Oil Marketing Corp.	c-o Ben Brown, Smackover, Ark.	Ouachita and Union Counties.
	GRC Oil Co., Inc. (Successor to I. Rauch)	Esperson Bldg., Houston, Tex.	Ouachita and Union Counties.
	Gulf Refg. of La.	Houston, Tex.	Ouachita and Union Counties.
	Helena O. & G. Co.	El Dorado, Ark.	Ouachita and Union Counties.
	Henderson Co., The	Box 609, El Dorado, Ark.	Union County.
	Hollyfield & McFarlane	309 Armstrong Bldg., El Dorado, Ark.	Ouachita and Union Counties.
	Hunt, H. L., Inc.	El Dorado, Ark.	Union County.
	Invaders Syndicate	Box 763, Smackover, Ark.	Ouachita County.
	Liberty Oil Co., (Successor to Simms Oil Co.)	Smackover, Ark.	Ouachita and Union Counties.
	Lion Oil Refg. Co.	Exchange Bldg., El Dorado, Ark.	Ouachita and Union Counties.
	Louisiana Oil Refg. Corp.	El Dorado, Ark.	Columbia, Ouachita and Union Counties.
	M. & W. Oil Corp. (Successor to Imperial Oil & Gas Products Co.)	El Dorado, Ark.	Ouachita and Union Counties.
	Magnolia Petroleum Corp.	El Dorado, Ark.	Miller, Ouachita and Union Counties.
	Marine Oil Co.	El Dorado, Ark.	Ouachita and Union Counties.
	Nadel, I., (Successor to Reserve Petroleum Co.)	c-o Eckenrode, Box 9, Louann, Ark.	Ouachita County?
	Ohio Oil Co.	Smackover, Ark.	Columbia, Ouachita, and Union Counties.
	Phillips Petroleum Co.	Drawer T, Smackover, Ark.	Ouachita and Union Counties.
	Ramage, S. Y.	Box 187, Rt. 1, Louann, Ark.	Ouachita County.
	Reynolds, Dave, Corp.	Camden, Ark.	Ouachita County.
	Root Petroleum Co.	El Dorado, Ark.	Union County.
	SHA Oil Corp.	First Nat'l. Bank Building, El Dorado, Ark.	Union County.
	Skelly Oil Co.	202 Armstrong Bldg., El Dorado, Ark.	Ouachita and Union Counties.
	Standard Oil Co. of Louisiana	2134 St. Charles Avenue, New Orleans, La.	Miller, Nevada, Ouachita and Union Counties.
	Texarkana Oil Corp.	East Ninth St. Road, Texarkana, Ark.	Miller County.
	Texas Co., The	Box 2332, Houston, Texas.	Ouachita and Union Counties.
	Thorntree Oil Corp.	Route 4, Box 123, Texarkana, Ark.	Miller County.
	Turman Oil Co.	c-o Ben Brown, Smackover, Ark.	Union County.
	Woodley Petroleum Co.	Box C C, Smackover, Ark.	Ouachita County.
Mineral	Company	Address	Location of Mine or Plant
Rutile	The Titanium Corp.	Box 1565, Tulsa, Okla.	At Magnet Cove, 9 miles west of Malvern, Hot Spring County.
Sand	Arkadelphia Sand & Gravel Co.	P. O. Box 517, Arkadelphia, Ark.	1/2 mile east of Arkadelphia, Clark County.
	Arkholia Sand & Gravel Co.	South 7th & B Sts., Fort Smith, Ark.	Van Buren, Crawford County.

Mineral	Company	Address	Location of Mine or Plant
Sand	Big Rock Stone & Material Co.	Little Rock, Ark.	Foot of Ashley St., Little Rock, Pulaski County.
	Byrum and Mann	Van Buren, Ark.	Van Buren, Sebastian County.
	Cunningham, E.	Mountain Home, Arkansas	Near Cotter, Baxter County.
	Friar, C. C.	Paris, Ark.	Logan County.
	Harper & James	Ft. Smith, Ark.	Sebastian County.
	Hope Brick Works	Hope, Ark.	1½ miles north of Glenwood, Pike County.
	Hudson Sand & Gravel Co.	Batesville, Ark.	1 mile northwest of Batesville Independence County, Sec. 16, T. 13 N., R. 6 W.
	Lutesville Sand & Gravel Co.	Black Rock, Ark.	In town of Black Rock, Lawrence County.
	Malvern Gravel Co.	Malvern, Ark.	Sec. 16, 17, 20, T. 4 S., R. 17 W., 2 miles from Malvern, Hot Spring County.
	Mobley Const. Co.	Morrilton, Ark.	(1) north of Dardanelle, Yell County. (2) Newport, Jackson County.
	Nelson, Charles	Paris, Ark.	Logan County.
	Pearl City Packet Co.	Newport, Ark.	On White River, near city limits of Newport, Jackson County.
	Pine Bluff Sand & Gravel Co.	Box 735, Pine Bluff, Ark.	Upper plant, 1 mile east of Pine Bluff. Lower plant, 1½ miles east of Pine Bluff, Jefferson County.
	Producers Gravel & Sand Co., Inc., The	P. O. Box 1615, Shreveport, La.	Wilton, Little River County.
	Smith, G. W.	Van Buren, Ark.	Sec. 25, T. 9 N., R. 32 W., Sebastian County.
Stone	Southwest Sand & Gravel Co.	302 Holland Bldg., Springfield, Mo.	Marion County.
	Twin City Lumber & Supply Co.	723 S. 9th St., Ft. Smith, Ark.	Sebastian County.
	Van Buren Sand & Gravel Co.	Ft. Smith, Ark.	Crawford County.
	Arkansas Black Marble Co.	South Main St., Batesville, Ark.	2 miles south of Locust Grove, Independence County.
	Batesville White Lime Co.	Batesville, Ark.	Quarry and 6 kilns at Limesdale, Independence County. Quarry and 6 kilns at Ruddells, Izard County.
	Big Rock Stone & Mat'l. Co.	Little Rock, Ark.	At foot of Big Rock, Pulaski County.
	Independence County Marble Co.	Batesville, Ark.	Near Limesdale, Independence County.
	Kimzey, Joe W.	Magnet, Ark.	Magnet Cove, Hot Spring County.
	Ozark White Lime Co.	Fayetteville, Ark.	Johnson, Washington County.
	White River Marble and Building Co.	Cartney, Ark.	Cartney, Baxter County.
	Womble, W. E., & Sons	Ft. Smith, Ark.	Various Counties.
	Tripoli	Corona Products, Inc.	Rogers, Benton County.
	Zinc	Hicks, R. A.	Rush, Marion County.
		Urschel Lead & Zinc Mines, Inc.	Ponca, Newton County, and Rush, Marion County.