

The Southern industrial development conference, held under the auspices of the Southern Division of the American Mining Congress, brought to Arkansas a body of "outsiders" who were probably more familiar with conditions in this state than any delegates who have ever attended a convention in the state. *Democrat 3-12-30*

It is of the nature of the mining engineer that he knows the actualities and potentialities of his industry in every part of the world. A mining engineer must have such knowledge for upon his decision depends the investment of billions of dollars. Employed to make a survey of a mining field, say, in Arkansas, he must know how many such fields there are in every other state; in fact, every other nation, their actual and probable production and other such facts.

We call attention to this to stress the further fact that the development conference brought to Arkansas men who are thoroughly competent to advise us in our efforts to profit from the natural resources of which we say so much and about which we do so little.

Typical of such an engineer was E. M. McGary, consulting engineer, Marquette Steel & Iron Company of St. Louis. Because his address expressed what we believe was the sentiment of all engineers who attended the conference, we refer to some of his statements specifically. No sounder advice was given our business men than that of Mr. McGary. Reminding us that the center of population of the United States is gradually moving westward, he declared that Arkansas is closer to that center than any mining state in the Union. The significance of that statement is not difficult to grasp.

Further reminding us that Arkansas, like other Southern states, has "passed by" its mining deposits, he said:

"To my mind it is due entirely to the apathy of the individual citizens of the Southern states. The old saying that 'A prophet is never without honor save in his own country' is certainly true in these states when mining is considered. Of the present development in the South, 95 per cent is controlled and owned by Northern and Western capital, and the only interest held by the native citizens in all these projects, the small royalty received from oil, or the very inadequate sums received from the sale of the acreage originally owned. . . . There is no reason why the natural wealth of the Southern states should not remain at home. There is no reason why the development should be left to citizens of other states."

There is nothing to add to those statements. If Mr. McGary's address is heeded by Southern capitalists the hoped-for results of the industrial conference undoubtedly will be realized.

ANOTHER FRAGMENT OF METEOR FOUND

Special to the Gazette. *3-25-30*
Paragould, March 24.—Another portion of the meteor which appeared over this territory at 4:15 the morning of February 17, was believed found yesterday by Bill Hodges, on the farm of Joe H. Fletcher, 11 miles southwest of here. The meteorite, weighing 820 pounds, was found within a mile of where another fragment weighing 85 pounds was discovered the day after the meteor was seen. The piece found yesterday was buried nine feet in the earth and was dug out by farmers in the vicinity. It is not known what disposition will be made of it.

Fragment of Meteorite May Be Retained at Paragould.

Special to the Gazette.
Paragould, April 15.—The 820-pound fragment of the meteorite found near here several weeks ago and which has since been on display at a local newspaper office, is attracting many people from the surrounding communities as well as scientists from all parts of the United States. At first it was intended to donate the meteorite to some museum, but a move just started expected to result in the purchase of the fragment by local people to be kept permanently on display here.

The meteorite was found on the farm of Joe Fletcher of the Finch-Lorado community, 14 miles southwest of here. It fell on February 15 when a large meteoric display was observed by many local people as well as far away as St. Louis. A smaller fragment, weighing 85 pounds, was found on another farm two miles from the Fletcher home the day the meteorite was seen.

VALUABLE RELICS LOST TO ARKANSAS

State Suffers From Lack of Funds, Says Professor Dellinger. *4-2-30*

Arkansas has lost to other states many valuable collections of Indian relics, largely because of the lack of funds for locating and preserving them, S. C. Dellinger, professor of zoology at the University of Arkansas, told members of the Kiwanis Club at its luncheon meeting yesterday.

The museum of Indian relics in Philadelphia contains a magnificent collection portraying Indian life in Arkansas, Professor Dellinger said. The Heye Foundation Museum of the American Indian in New York, the Peabody Museum at Harvard and the Oklahoma Historical Society also have collections representing the life of early Indians in Arkansas, he added.

"Through the generosity of the Arkansas Power and Light Company, more than 1,000 pieces of Indian pottery have been recovered, permitting not only a study of the habits, character and religion of these early inhabitants of America, but affording a valuable insight in the development of ceramic art," Professor Dellinger said.

"No state is richer in clay and kaolin than Arkansas, and the work of Indians in discovering the value of these clays should not be overlooked. I am glad our state university is giving more attention to this important subject.

"I am anxious that Arkansas should not do as the Carolinas did in allowing the records of Indian history to pass into the possession of Eastern states.

"It is said that the Indian migrated from Asia to northwest America perhaps 6,000 years B. C., after the glacial period. He moved slowly southward.

At Buckville evidence has been found of the manner in which these early Indians built their houses. Traces of early agricultural methods and of pottery made by the Caddo Indians have been discovered near Texarkana. Specimens of Indian pottery unearthed in the Ouachita valley are said to be better than specimens found in any other state."

The book being written by Fred W. Allsopp, business manager of the Arkansas Gazette, will be of great interest to students of Arkansas history and Indian lore, Professor Dellinger said.

TWO SEISMOGRAPH MACHINES RECEIVED

Earthquake Registers to Be Installed at Little Rock College. *4-27-30*

Two seismographs, or earthquake registers, have been received at Little Rock College and will be installed within the next two or three weeks, officials of the college said yesterday.

The instruments were provided by the National Geographic Society. A representative of the society will come here from Washington soon to install them. Excavations to solid rock were made in the basement of one of the college buildings several weeks ago, and a dark enclosure was provided to house the delicate photographic mechanism which records vibrations resulting from earthquakes. One of the instruments will record east and west movements and the other north and south movements.

St. Louis University will co-operate with Little Rock College and the National Geographic Society in an effort to record the minor quakes which occur more or less frequently in the Mississippi valley between St. Louis and New Orleans.

Many Bidders for Meteorite Found Near Paragould.

Special to the Gazette. *4-30-30*
Paragould, April 29.—Museums, astronomers, curio seekers and side-show men are bidding for the 820-pound meteorite which fell near here in the early morning of February 17 and was found a month later on the farm of Joe T. Fletcher. The meteorite is on display in a newspaper office where bids are received and posted. The price offered has reached \$3,100 but the meteorite has not been sold.

Paragould Big Meteorite Sold for \$3,600.

Special to the Gazette. *5-2-30*
Paragould, May 1.—Paragould's famous meteorite was sold yesterday to H. H. Ninninger of McPherson, Kan., for \$3,600. The meteorite, weighing 820 pounds, was found several weeks ago on the farm of Joe H. Fletcher, 14 miles southwest of here. Fletcher and his neighbors dug the stone out of nine feet of earth where it had buried itself when it crashed to earth with loud detonations on the early morning of February 17. It has been on display here.

Thousands of visitors have come here during the past month to view the strange formation, which appears to be constituted largely of iron. Some time ago the Field Museum of Natural History, Chicago, made a bid of \$2,500 for the meteorite. It is reported that it will be given to a college in McPherson.

Scientific Reference Library Opened at Capitol.

Gazette 5-7-30
The Arkansas Geological Survey has established a scientific reference library in the survey offices on the fourth floor of the capitol. Nearly 3,000 volumes which had accumulated during a period of years have been cataloged and arranged by a trained librarian. The library is open to the public during office hours, and is being

used freely by persons seeking technical information on various scientific questions. In addition to several hundred textbooks and reference works on general scientific subjects, the library contains many volumes of reports and bulletins issued by the United States Geological Survey and various state surveys, as well as many unpublished professional papers and current magazines. It contains a complete set of Arkansas geological reports published by Dr. George Branner more than 30 years ago, when he was state geologist. He was the father of G. C. Branner, present geologist. Several of the volumes are out of print.

Newton County Times --
April 26, 1930

An article appeared in this issue of the Times in which it was stated that the name of Monte Ne had been changed to Silver Springs by the U. S. Post-office Department effective May 1, 1930

CHICAGO RECEIVES BIGGEST METEORITE

820-Pound Stone From Paragould, Ark., in Field Museum. *Gazette 6-4-30*

(Chicago Tribune-Arkansas Gazette Special.)

Chicago, June 3.—The largest single meteoric stone ever known to fall has just arrived at Field Museum of Natural History, it was announced today by Stephen C. Simms, director of the museum. It was purchased and presented to the museum by Stanley Field, the institution's president.

The new messenger from space, called the Paragould meteorite, arrived on earth February 17, 1930, at 4:05 a. m., according to Dr. Oliver C. Farrington, curator of geology. It fell near Paragould, Ark., on a farm owned by Joe H. Fletcher. The stone weighs 820 pounds, 175 pounds heavier than any previously recorded. It penetrated hard clay to a depth of nine feet.

The largest stone previously known which was seen to fall from a meteor, weighs 646 pounds, Dr. Farrington says. This fell at Knyahinya, Hungary, June 9, 1866, and penetrated the earth to a depth of 11 feet. It now is in the Vienna museum.

"The meteor which dropped the Paragould stone, now in Field Museum, attracted attention in three states—Missouri, Illinois and Arkansas," Dr. Farrington says. "Its light was so bright that persons in St. Louis who saw it believed it was an airplane coming down in flames. It burst with detonations which were heard as far north as Poplar Bluff, Mo., and as far east as Covington, Tenn. The meteor came from a southwestern direction. At Paragould nearly everyone in the town was awakened by the detonation, and livestock stampeded.

"A smaller stone, weighing 80 pounds, which fell at the same time, was discovered about three miles from Paragould by a farmer who noticed earth freshly thrown for a distance of 30 feet. The stone had also made a furrow in a northeast direction. It was found at a depth of 34 inches. Discovery of this stone led to a search for others, and a month later, on March 16, the large mass weighing 820 pounds, now at the museum, was discovered."

Exhibits of State's Resources Being Rearranged.

Gazette 6-11-30
A score of old wood and glass show cases containing mineral, timber and other exhibits of Arkansas products, have been moved from the first floor rotunda of the capitol and have been replaced by four modern upright steel and glass display cases. Earl Page, state commissioner of mines, manufactures and agriculture, and G. C. Branner, state geologist, will handle the display co-operatively. A well arranged commercial mineral exhibit will be placed in the cases, which contain enough shelf room to hold a display equal to the one which formerly was scattered over a much larger space. No products will be displayed except those now being produced in the state on a commercial basis, it was said.

Mr. Branner said he is investigating several reports concerning meteoric rock or iron and that if a meteorite is identified, an effort will be made to obtain it to be placed on exhibition at the capitol. One of the reports being investigated was called to the attention of the state geologist by B. F. Watson, former surveyor of Perry county, who said a large meteoric rock is partially buried about six miles from Perryville. Mr. Watson said he sent a sample to the assayer of the smelter at Murray, Ut., several years ago and that it was identified as meteoric iron.

Arkansas' Resources Discussed at Conference.

Special to the Gazette. *6-14-30*
Morrilton, June 13.—In an address here tonight before the Industrial Conference of the state Y. M. C. A. on Petit Jean mountain, J. B. Carter of Pine Bluff, secretary of the Associated Industries of Arkansas, discussed the resources of the state and declared that the greatest factor working against progress is the small per capita income.

Undeveloped resources he classed as clays, marble, waterways. Only two of the 68 known minerals have been developed, he said. The state's major industry, he said, is wood working and 20,000 persons are employed in wood-working industries in Arkansas.

Gas and oil production has reached a high figure, he said, and bauxite has made the state famous. Activity in brick, tile, pottery products and in paper manufacturing, he said, can be increased.

Meteorite Lands Near Heber Springs

Sky Visitor Causes Alarm —Is Dug From Earth by Farmers. *7-14-30*

Heber Springs, July 14.—(Special.)
—A 37-pound black meteorite, which evidently was in a fused state at the time of, or shortly before, it struck the earth, 10 miles southwest of here Sunday morning, is now in the home of Julian Bailey, farmer, on whose property it fell. Bailey's small son, probably the nearest person to the Meteor, saw it from the front porch of his home, as it fell with a great crash and threw up a cloud of dust. The boy rushed into the house and told his mother that an airplane had fallen.

Others heard the report, like an explosion of dynamite, that accompanied the fall of the meteorite, but not knowing the character of the visitor, it was nearly two hours, it is said, before anyone ventured to make a close inspection.

A number of farmers finally gathered, and with shovels, dug the strange object from the earth. It was buried about 30 inches in hard ground. Later crowds of curious people gathered to view the meteorite and the place where it fell.

The meteor fell about 9 a. m. and was seen here, causing much excitement and many telephone calls. The report was heard for many miles.

What Bailey will do with the object is not known. It is small compared to the meteorite which fell near Paragould some months ago and weighed over 800 pounds. This meteorite was sold to a scientific institution, bringing \$3,000, it was said.

Seen by Searcy Man.
Searcy, July 14.—(Special.)—L. J. Connell of Connell Bros., this city, saw a meteor Sunday morning, as it flew through space about 9 o'clock. A white light which looked like the flame from a magnesium wire, covering one-fourth of the distance from earth to sky was accompanied by a dark mass encircled by the flame.

Mr. Connell was at Doniphan lake, four miles east of Searcy.

Several minutes after he saw this light he heard the thunderous report. The distance from where he was to where the meteor fell is about 50 miles.

SECRETARIES HOLD CONVENTION HERE

State Commercial Body Selects E. W. Hogan, Russellville, President.

E. W. Hogan, secretary of the Russellville Chamber of Commerce, was elected president of the Arkansas Association of Commercial Organization Secretaries at the association's annual meeting, at the Hotel Marion yesterday. Mr. Hogan succeeds W. M. Graham of Warren.

G. T. Cross of Batesville and W. S. Campbell of Fayetteville were elected vice presidents. E. J. Novak of Fort Smith was chosen as secretary.

Mr. Novak, Morgan Hite, research architect of the Southern Oak Flooring Industries, and R. W. Sisson, state adjutant of the American Legion, were the speakers yesterday afternoon. Mr. Novak's subject was "Industries" and Mr. Hite's was "Hardwoods." Mr. Sisson spoke on plans of the Legion to advertise Arkansas during the 1931 national convention of the war veterans' organization at Detroit, as was done last fall in connection with the convention at Boston.

Dr. George C. Branner, state geologist, discussed mineral resources of Arkansas during the morning session. H. C. Stumfph of Stuttgart spoke on "Rice" and C. D. Hyten of the Niloak Pottery, Benton, spoke on "Clays and Pottery."

Dr. Henry Mace Payne, consulting engineer to the American Mining Congress and secretary of the Southern Division of that organization, told of the industrial survey that the Congress is conducting in Arkansas.

SPEAKER CRITICIZES ARKANSAS' LAWS

State's Prosperity Restricted, Says Dr. Henry M. Payne, Noted Engineer.

"No economic law operates more ruthlessly than the law of diminishing returns; no one factor serves to stagnate industrial development so effectively as misdirected and unscientific taxation," Dr. Henry Mace Payne of Washington, D. C. told members of the Little Rock Rotary Club yesterday. Dr. Payne, who is secretary of the Southern Division of the American Mining Congress and consulting engineer to the congress, was the principal speaker at the weekly Rotary luncheon, at the Hotel LaFayette.

"Concerted effort in the development of industry will create the necessary values as a basis for sound taxation," Dr. Payne said. "Avoidance of legislative interference with industry will promote harmonious relations between men of capital and holders of natural resources."

Public Debt Mounting.

"In a recent conference of 500 mayors and city managers at Cleveland it was shown that 20 years ago the average per capita state indebtedness in the United States was \$1.74. It now is \$20 and is mounting steadily. This increase of 725 per cent is in part due to our standard of living, but more largely to the financial orgy whereby we relegate duties of duly elected officials to useless commissions and tax spending agencies."

Prosperity is a state of equilibrium between production and consumption, and neither reformer nor demagogue, statistician nor legislator can create prosperity by legislation.

"This state, rich in natural resources, should be creating new opportunities of employment instead of passing laws which restrict prosperity."

Industry and prosperity arrive together, the speaker said. One-half of every payroll is spent in the retail stores of the town where that payroll is distributed, and the retail dollar turns over five times a year, he said.

Payrolls Aid Merchants.

He pointed out that it doesn't take much of a plant to carry a payroll of \$1,000 a month. But that payroll means that the merchants of the town will sell \$30,000 worth of goods annually that they would not sell if the payroll was elsewhere, he said.

"The other 50 per cent goes into savings banks and to pay for life insurance, automobiles, radios and luxuries," Dr. Payne said. "In the case of public works, road building, etc., another 30 per cent goes into the indirect payrolls of the men who made the cement, the steel beams, the wheel barrows, the picks and shovels, the men who mined the coal or quarried the limestone and the railroads that hauled it."

"The average Chamber of Commerce thinks of new industry in terms of hundreds of men and thousands of dollars, yet there are in America less than 1,000 establishments with as many as 1,000 employees each. The general average for the United States is 44 per plant."

Dr. Payne is supervising an industrial and flow-of-goods survey of Arkansas that is being made by the Mining Congress in co-operation with the state Chamber of Commerce. A similar survey has been started in Louisiana.

Dr. Payne will go to Hope today by airplane to fill a speaking engagement.

Delegates to Mining Congress Named by Governor.

Appointment of 32 delegates to the annual conference of the American Mining Congress, Southern Division, which will be held at Louisville, Ky., March 16-18, was announced by Governor Parnell yesterday as follows: G. C. Branner, state geologist; Earl Page, commissioner of mines, manufactures and agriculture; Fred I. Brown, C. J. Griffith, Robert E. Watt, D. Hodson Lewis, Dr. Charles H. Brough, Little Rock; J. H. Hand, Yellville; Col. John R. Fordyce, Hot Springs; C. D. Hyten, Benton; Dr. J. A. Dickey, Fayetteville; Jack Carnes, Camden; C. H. Harding, Fort Smith; Harry E. Kelley, Fort Smith; L. R. Branting, Bauxite; Joe P. Cargile, Batesville; Lon Peterson, Cushman; W. G. Rinehart, Batesville; L. L. Brown, Malvern; E. W. Gates, Crossett; C. G. Fulbright, Pine Bluff; T. H. Barton, El Dorado; A. B. Cook, Malvern; George T. Weigart, Batesville; D. D. Dunkin, Gulon; P. E. Stewart, Fort Smith; W. E. Bann, Texarkana, and Robert H. Young, Fort Smith.

FORESEES BARGES ON THE ARKANSAS

Col. Douglas Expects River Traffic Here Within Five Years.

"Within the next five years I expect to see freight barges operating on the Arkansas river, connecting Little Rock, and perhaps towns above it, with all the inland water ports in the country and, through them, with the seaports," Col. Clarence B. Douglas said last night.

Prospects are bright, he said, for action by Congress to construct a waterway on the Arkansas river from its mouth to Tulsa, as sought originally by the Arkansas River Association and by the Mississippi Valley Association since the former organization affiliated with the latter. The results, he said, will be more important than anything else in bringing industrial development and wealth to Arkansas.

Colonel Douglas served as president of the Arkansas River Association from the time of its formation in the fall of 1929 to January 1, 1931. He resigned to accept a position as special representative of the Inland Waterways Corporation, the organization that operates the barge lines on all waterways constructed by the government.

Colonel Douglas arrived in Little Rock yesterday and visited the legislature. He delivered a short address in the Senate upon invitation of Lieutenant Governor Wilson and Senator Quarles, telling the legislators of the progress made toward building the waterway and of the benefits it would bring to this section. Last night in his room at the Hotel Marion he discussed the same subject with a Gazette reporter.

U. S. Committed to Policy. "The federal administration is committed to the waterway policy," he said. "President Hoover has shown the greatest interest in it and Secretary of War Hurley, under whose jurisdiction flood control and navigation come, is enthusiastic about the possibilities and Congress has been liberal in its appropriations for the work."

Colonel Douglas told of the development of the Mississippi-Warrior waterway, the Ohio river waterway and various other projects that are being carried out on the Missouri, Mississippi and Illinois rivers. The Rivers and Harbors Committee of Congress has promised to act as soon as possible on the Arkansas, Red, Cumberland and Tennessee river projects.

Once the work on the Arkansas river is begun, there will be no waiting for private capital to start the barge line, Colonel Douglas said. The Inland Waterways Corporation, a government organization under the direction of the secretary of war, will do that. Maj. Gen. T. Q. Ashburn, a regular army officer, serves as head of the corporation. General Ashburn visited Little Rock more than a year ago when plans for the Arkansas work first got under way.

In determining its action on the Arkansas project, the Rivers and Harbors Committee will hear reports of government engineers on the cost of constructing a nine-foot channel. It also will take into consideration the report on a traffic survey conducted by a New Orleans engineer.

Justifies Large Expenditures. The traffic survey shows, Colonel Douglas said, that the volume of freight that a barge line on the river would carry would justify expenditure of \$100,000,000 by the government and that the saving in freight rates would pay five per cent on the investment. The engineers' estimate of cost will be high, he said, but he expressed confidence that the traffic survey would show that the necessary expenditure would be practical.

"Water transportation in Arkansas will bring in countless new industries, just as it has done elsewhere," he said. "The great natural resources of the state will be developed, the population will increase mightily. The average farmer will be able to sell his crops at a much greater profit, because of the cheaper freight rates and the things that he has to buy will cost less for the same reason."

Colonel Douglas served as president of the Arkansas River Flood Control Association, which took in seven states. He now is vice president of the Rivers and Harbors Congress and vice president of the Mississippi Valley Association.

He expressed hearty appreciation of the courtesy shown him by the Senate yesterday. Last week he made a similar appearance before the Oklahoma legislature upon invitation of Governor Murray. On each occasion, he said, he found his audience intensely interested in the waterways subject.

Colonel Douglas will remain here today and tomorrow and then will go to Memphis. He will return to Arkansas next week.

MAP OF ARKANSAS PRESENTED HOOVER

Prepared by State Geologist Branner for Assistant to His Father.

(From the Gazette's Correspondent.) Washington, D. C., Feb. 26.—President Hoover today engaged in reminiscences of the time when, a youth seeking to make his way through Leland Stanford University, he worked as a member of a surveying party in Arkansas.

The occasion was furnished when Mrs. Otis Wingo, Heartsill Ragon and Tillman B. Parks, members of the Arkansas Congressional delegation, called on the president to present a geological and topographical map specially prepared for Mr. Hoover by George C. Branner, Arkansas state geologist. Dr. Branner's father, Dr. John C. Branner, was a noted geologist in Arkansas at the time young "Bert" Hoover worked in the state.

The maps were presented by Mrs. Wingo. Her late husband, Representative Otis Wingo, had suggested to Mr. Branner at a White House conference attended by Mr. Ragon and Mr. Parks that these papers would form pleasing souvenirs.

In a letter to Mrs. Wingo, Mr. Branner says: "The only specific mention of Mr. Hoover in Arkansas Geological Survey reports is contained in a report on marbles and limestones made by T. C. Hopkins. In the preface to this volume, John C. Branner states: 'Mr. Bert Hoover aided in locating the Fayetteville shale on the headwaters of Big Buffalo and on the headwaters of Big Creek, above Mount Judea.' I assume from this, and from the fact that Mr. Hoover was identified with the marble survey, that his work was confined principally to northeast Arkansas."

Mr. Hoover's eighteenth birthday was spent in Arkansas, Dr. Branner believes.

GIVES ADDRESS AT MINING CONGRESS

Dudley V. Haddock Discusses Industrial Development of South.

Louisville, Ky., March 16.—(P)—Delegates attending the industrial development conference of the Southern division, American Mining Congress, expressed confidence the South would soon enter on an era of great industrial expansion. The conference opened today and will continue through Wednesday.

Dudley V. Haddock, Little Rock, manager of the Arkansas Chamber of Commerce, in his address, sounded the keynote of the conference, declaring "the future industrial development of the South is merely a matter of ascertaining our needs as consumers, the extent of our resources and the putting of our greatest natural resource, our brains, to work."

Progress in the Birmingham iron district was detailed by Clarence E. Abbott. John L. Yikes told of Florida's accomplishments in citrus fruit distribution, and R. F. Montsalvage described Georgia's efforts to attract new industries.

"Brains are not lacking in the South," Mr. Haddock said, "but the difficulty seemingly lies in our failure to make proper use of them. Time and again we have been accused of laziness, but, knowing the capacity of the Southerner to do things, one is inclined to believe the trouble lies largely in a lack of information rather than inertia."

Huge Foreign Investment. The speaker brought out that \$1,043,442,000 of American capital was invested outside the United States in 1930, in foreign owned activities, and expressed the opinion that the major portion of that sum could have been invested profitably in the South without doing more than scratching the surface of the opportunities. An investment in this country is surrounded with many more safeguards than one in Europe, Asia, Africa or South America, he said, adding that "there is more assurance of a profitable return, even though we do have to contend with a demagogic Congress and a half hundred asinine state legislatures."

Mr. Haddock decried the practice of shipping raw materials from the South to manufacturing plants in the North and East and then buying them back in the shape of finished products.

Aid Other Sections.

"We are forging ahead, it is true," he said, "but we are creating wealth in other sections that should be created at home, because we send to them the cream of our possessions and reserve to ourselves only the skimmed milk. There are cities in the North and East grown rich on Arkansas and Louisiana hardwoods, upon Texas leather, wool and mohair, upon Florida phosphate, Mississippi cotton and scores of products peculiar to their sister states."

"Seemingly we are satisfied with the dollars received in exchange for our raw material, not realizing that we turn around and immediately send them back whence they came. In the last analysis, the country, when it purchases Southern raw material, simply places in our hands a few dollars to be held in trust for only so long as is required to fabricate it into something that can be sold to us over the counter. We never have awakened to the realization that in the end it has both its money and our material, and that the latter, to all intents and purposes, has cost it nothing. This appears to be a far fetched assertion, but it is not so

unsound, after all, when one analyzes it."

The speaker cited the case of Arkansas novaculite, sold to a concern in New Hampshire at \$75 to \$80 a ton, and purchased back in the shape of razor hones and oil stones for \$10,000 to \$15,000 a ton. Texas produces more leather than any other state in the Union, he said, but it sends approximately \$60,000,000 a year to Brocton, Mass., and St. Louis for shoes. Census figures show that the South is the most rapidly growing market in the country, assuring industrial enterprises in this section an outlet for their manufactured commodities, he said.

Many Opportunities Here.

"Those of us who were in Florida during the boom and who witnessed its collapse were confident nothing like it ever would occur again in this country," Mr. Haddock said, "but a better and more sound opportunity for investment is available today, not only in Florida but in every other Southern state. Capital can be invested almost blindly in industry and business in the South at this moment with far more assurance of a profitable return than Florida real estate offered during the rosiest days of the boom."

He urged that greater encouragement be given to small factories than has been the case, pointing out that every large industry in the country began on a small scale unless it was established as a branch of a great enterprise already active in another locality. The number of industrial units in the country that employ as many as 1,000 workers is less than 1,000, and the average plant has only 44 workers on its payroll, he said.

Smaller communities are coming into their own as factory sites, he said, mentioning the world's largest publishing plant at Kingsport, Tenn.; one of the two largest ticket printing plants in the world at Fort Smith, Ark.; the largest bottle washing machinery plant located at Bainbridge, Ga., and the largest complete rice mill at Lake Charles, La.

"The little city of Anniston, Ala., with some assistance from Birmingham, produces nearly half of the country's output of cast iron pipe," he said. McComb, Miss., operates the largest single unit ice plant in the world and the plant at Columbus, Ga., which manufactured the world's first commercial ice machine, is still producing that equipment. One of the largest clay tile and clay products plants in the country is at Texarkana, Tex."

Arkansas Renamed on Mining Congress Board.

Louisville, Ky., March 17.—(P)—The sixth annual meeting of the Southern division of the American Mining Congress industrial development conference closed here tonight with an informal dinner meeting after John L. Wilkey, Jacksonville, Fla., had been elected chairman of the Board of Governors at a previous session.

Dr. Henry Mace Payne, Washington, was re-elected secretary. J. H. Hand, Yellville, Ark., was elected a member of the board.

FAVORS PLATES OF ARKANSAS METAL

Mr. Hand Believes State Should Encourage Its Mining Industry.

Aug. 2, 1931 Gazette

By J. H. HAND.

Special to the Gazette.

Yellville, Aug. 1.—A recent dispatch from Phoenix that automobile license plates for Arizona are to be made of copper, a native metal of that state, also editorial comment by the Arkansas Gazette in that connection, led to the suggestion that the Arkansas Highway Commission might consistently adopt the policy of Arizona, in having license plates made of metal that is native of this state.

As is well known, copper production is one of the chief industries of Arizona. While the amount of copper required for making license plates to be used in that state will be small, as compared with general supply and consumption of that metal, yet it will do its part toward helping to stabilize the copper market. However, that will be the least measure of benefit to result to the state and its industry. Loyalty to home resources and industry in the making of products for home use, from home material, while placing official emphasis upon the fact that Arizona has wealth of metal resources, upon which mining industry may be sustained, are factors that will pay most in the long run from the policy thus adopted.

Mineral Resources Undeveloped. While Arkansas is more fortunate

than Arizona, in the fact that this state has a vast agricultural industry to engage attention of her people, yet in comparison of natural mineral resources, the two states are perhaps equal in wealth. In Arizona, the mining industry is developed to a high state because that is about all its people have to depend on for a livelihood. In Arkansas, the mineral resources are barely scratched, having been obscured by agriculture and other pursuits in which this state affords an inviting field. Even though still dormant, the variety of mineral wealth in Arkansas is known to extend into some 50 counties, while the value of minerals produced in this state has fluctuated from \$40,000,000 to \$80,000,000 annually in recent years.

Among the staple mineral resources that Arkansas has in known abundance are aluminum, manganese and zinc, which are equally, if not better suited than copper for automobile license plates. Plates from those metals would be less expensive than copper, while the natural color of aluminum and zinc metals presents a more pleasing appearance.

Arkansas Leads in Bauxite.

It is a matter of state pride that Arkansas supplies more aluminum metal from its bauxite mines near Little Rock than all the rest of the states combined. That is a present, going industry that affords employment to hundreds of men who spend their wages in the channels of local trade. According to recent surveys by the American Mining Congress on undeveloped mineral resources, Arkansas leads all states in the South, if not in the Union, in undeveloped wealth of zinc and manganese, which fact the mining fraternity of the nation is beginning to recognize. In the course of development enterprises, those minerals alone have returned around \$10,000,000 to operators in this state, and were supporting large payrolls when

the slump in ore prices after the war forced the mines to close down. That might well be termed, natural growth which took place without official encouragement from the state, or support from its business interests to stimulate mining industry.

Then would it not be fitting and consistent for Arkansas to lend a gesture of official encouragement to a great potential industry of the state, in adopting the policy of Arizona to have its automobile license plates made of a metal which is doubtless as plentiful in this state as copper is in that state. The very fact that mining industry here is yet undeveloped, affords a stronger reason in support of such a policy.

Manganese being a vital element in the composition of steel, and zinc being essential to the preservation of steel, both manganese and zinc might be combined into the picture by using zinc coated steel sheet for license plates, in case aluminum plate should not be adopted. In naming Arkansas metals that are deemed suitable for license plate material, there is no disposition to urge one over another; that being left for official determination upon points of merit and economy. But let license plates to be used in Arkansas be made of some metal that is common to this state.

Would Emphasize Home Emblems.

By thus placing official emphasis upon home materials, as has been done in highway construction, more attention and encouragement of people in the state toward industrial development along those lines, would become awakened. At the same time, it would serve as the best type of advertising to outside capital that might become interested in mining enterprises. To whatever extent the use of home metals might be thus enlarged, the demand for same would be increased and de-

velopment of home resources thereby stimulated.

In view of these considerations, it is believed that Arkansas and her potential industry of mining would materially profit in the long run, if the state Highway Commission will adopt and carry out a policy to have automobile license tags in the future, made of metal such as this state is abundantly able to supply.

It has been suggested that since Arkansas is a leading cotton state, panels made of cotton might be appropriately adopted as license plate material. Since Arkansas has these metals that are awaiting development industry, while our sister states of the South have no such materials to draw from, why not be generous and let them capitalize their cotton in case such should be found feasible for paneling into license tags?

Dr. Dellinger, on a previous expedition, found a child burial in which the skull and most of the skeleton was almost intact, with the arm bones clothed in the sleeves of a skin jacket and the leg bones encircled with leggings. He also found a feather garment woven with down, presumably from small turkey feathers, and fine hemp cordage.

Finds Ancient Robe.

Dr. Harrington also found a feather robe, woven in the same manner, in the vicinity of the present explorations. Dr. Harrington pronounced the specimens he found as being at least 500 years old, and perhaps a thousand years or more, older than any object in the Heye Foundation museum at that time.

Dr. Harrington and Dr. Dellinger, from their findings, have been able to reconstruct the method used in weaving garments, bags or other pieces of hemp cloth. The primitive loom was nothing more than a smooth bit of ground into which pegs were driven close together in two lines. The hemp thread or fine cords then were stretched back and forth between the two lines of pegs to provide the warp, and the woof was woven in by means of a bone shuttle or weaving tool with an eye or hook in one end. When feather garments were made, probably for use

as ceremonial robes, the down first was twisted into warp, and after the cloth was woven the ends of the down were brushed out to provide a long nap.

One of the rarest and most interesting of the finds includes several fragments and one almost perfect grass sandal. The complete sandal has a thick sole of woven grass, with a rolled edge and projecting pieces on the sides and back to which thongs were fastened.

The sandal still has mud on it and this mud will be used in an effort to determine the age of the object, as well as the general culture of which it is a part.

In this effort to determine age of objects Dr. Dellinger is working with Dr. Paul Sears, professor of botany at the University of Oklahoma. Dr. Sears has been provided with samples of peat taken from different depths in the Arkansas river valley, and from an analysis of this peat will be able to determine the kind of trees which grew in Arkansas at various periods. By analyzing the mud from the sandal, or dirt from other objects, and separating the pollen grains from the mud, he will be able to classify the pollen according to the flora of the period, and thus arrive at the age of the object with comparative accuracy.

The university party started its expedition this summer under a series of bluffs near Cave creek on the Calvin C. Thompson farm, about three miles north of Bass. It was in these recessions, referred to in that neighborhood as caves, that the three complete and four fragmentary skeletons were found. Many arrowheads, spears, flint knives and some stone hatchets also were found there.

Find Weaving Tools.

Nearby is a large cave now used by Mr. Thompson as a stable for sheep and other domestic animals, and for the storage of baled hay. The floor of this cave at one time was covered to a depth of several feet with bat guano, rich in fertilizer, and during the Civil war, when an attempt was made to manufacture powder from the niter content of the guano, the ground was so disturbed that it has not been productive of much in the way of Indian relics.

From the Thompson farm the party proceeded downstream about three miles to what is known as Hale cave. There several hundred bone needles and weaving tools were discovered. The weaving tools, Dr. Dellinger has determined, were made from the ulna of deer, while the needles were from shin bones. In this cave also were found several bird points of flint and a large collection of flint awls—fine, sharp implements four to six inches long. The awls, it is believed, were used in working skins and leather.

The party next went to Bender and Red Rock on Big creek, west of Cave creek, and found many flint and other stone weapons and implements. A total of 83 manos and hammerstones were found at one place near Red Rock.

Some of the flint objects are of a color and kind not native to the Ozarks, which leads to the belief that they were used as a medium of exchange between tribes living perhaps hundreds of miles apart.

The party also discovered a charm of highly polished stone, amber in color, which apparently was worn from a thong around the neck. In the same area was discovered several small pottery disks, pierced through the center, which Dr. Dellinger said probably were used in playing some game.

Last week the expedition moved into the Deer neighborhood and from here probably will move still farther west to the vicinity of Boxley and Ponca.

Ozark Products to Be Displayed At Mining Congress.

Special to the Gazette.

Yellville, Sept. 7.—The Ozark Landowners League met here Saturday to develop plans for an exhibit of mineral products from this district at the American Mining Congress, Western Division, convention in Joplin, Mo., September 28-30.

Specimens of Ozark black marble and of copper deposits, which are being opened in this territory, will be featured along with zinc and lead. A large delegation of mine owners in Marion county plan to attend. J. H. Hand, member of the board for Arkansas in the Southern Division of the Mining Congress, and Arkansas Power & Light Company officials are co-operating to feature the newly discovered deposits of cinnabar in this state at a meeting of the American Institute of Mining Engineers, which is to be held in conjunction with the Joplin mining convention.

Two Mysterious Explosions at Rogers Unexplained.

Special to the Gazette.

Rogers, Oct. 6.—Two mysterious explosions about midnight Saturday mystified residents of Rogers and a large area southwest of the city, and yesterday only one had been explained. The most terrific of the blasts occurred about midnight and yesterday it was found that a large hole had been blown in the old route of Highway 71, three miles southwest of Rogers. There was some belief that a meteor might have fallen but no traces of one could be found.

ENCOURAGING DATA ON ARKANSAS GIVEN

Realtor, Insurance Man and Farm Expert Cite Favorable Statistics.

Arkansas is in good condition, and has as sound a basis for potential development as any state in the Union, facts gathered from official sources indicate.

Approximately \$9,500,000 was loaned in the state this year by the Federal Farm Board for feed, seed and fertilizer purchases and for agricultural rehabilitation. Loans of a similar nature were made to farmers throughout the nation during the past year by the Federal Farm Board, and included wheat, corn, grape and many other branches of husbandry beside cotton. From the national total, 49 per cent of all loans which had been repaid to October 15 were repaid to the Memphis office of the Federal Farm Board. The Memphis office handled the loans in four Southern states. Of the 49 per cent total, Arkansas had repaid 17 per cent.

"Facts About Arkansas" was the title of a paper, W. S. Daniel, member of the Little Rock Real Estate Board, read to the board at a recent meeting.

"I have made no attempt to draw any conclusions from this list of facts based on government and state statistics," Mr. Daniel said. "I merely listed many of these facts for reference in my daily business."

The list was:

The Facts Recited.

"The United States census of 1930 shows Arkansas' population is 1,854,482 of which 472,220 are Negroes.

"The area of Arkansas is 53,335 square miles.

"The per capita wealth of Arkansas is \$1,557.

"There were 243,216 farms in Arkansas in 1930, containing 7,137,000 acres.

"The value of Arkansas' agricultural products, including crops and livestock, in 1929 was estimated at \$292,351,000. The same products in 1930 were estimated at \$130,000,000, or a loss from 1929 as a result of the drought and price decline, of \$162,351,000.

"Arkansas is recognized as an agricultural state, yet its manufactured products in 1929 totaled \$208,897,000 in value.

"The estimated value of all property in Arkansas in 1929 was \$2,876,000,000. The assessed value of this property for 1930 was \$615,414,000.

Highest Price in 1919.

"The highest average price for cotton was in 1919—an average of 35.6 cents per pound.

"The largest production of cotton in the United States from 1910 to 1930 was in 1926, when the crop was 17,978,000 bales and brought an average price of 10.9 cents per pound.

"Production does not always govern the price of cotton, for in 1921 the United States produced only 7,953,000 bales and the average price was 16.2 cents per pound, while in 1925 the production was 16,103,000 bales and the price was 18.2 cents per pound.

"There are 4,839 miles of main line railroad trackage in Arkansas.

"As of June 30, 1930, the total individual deposits of all banks in Arkansas was \$182,690,000.

"There was in force in 1929, \$619,612,000 in life insurance in Arkansas and the new business written the same year was \$145,677,000.

"The bonded debt of Arkansas on June 30, 1930, was \$64,387,000.

"There are nine cities in Arkansas with a population of more than 10,000. They are: Blytheville, 10,098; El Dorado, 16,421; Fort Smith, 31,429; Hot Springs, 20,238; Jonesboro, 10,326; Little Rock, 81,679; North Little Rock, 19,418; Pine Bluff, 20,760; and Texarkana, 10,764. The population of Texarkana, Tex., is 16,602, which gives a total of 27,366.

"The value of lumber and timber products of Arkansas in 1929 was \$58,060,000. These were produced in 624 establishments employing a total average of 21,522 persons.

"Furniture manufacture is one of the major industries of Arkansas as is shown by the production in 1929. The value of furniture manufactured was \$6,117,000.

"In 1929 Arkansas produced 19,923,000,000 cubic feet of natural gas and consumed 39,758,000,000. Production was 20,000,000,000 cubic feet less than the consumption. The value of the gas produced at the well was \$1,303,000 and the value of the gas consumed at points of distribution was \$7,587,000.

"The total motor vehicle registration in Arkansas for 1930 was 220,000, which produced a revenue of \$4,243,000. The gasoline tax for 1930 produced a revenue of \$6,427,000.

Value of Dairy Products.

"Arkansas produced 8,928,000 pounds of dairy products, exclusive of ice cream production in 1929. Ice cream production totaled 581,000 gallons for that year.

"Texarkana has the largest wood treating plant in the United States.

"Arkansas produced 12,650 tons of grapes in 1930, leading every state in the South by a large margin. This crop was valued at \$632,000.

"In spite of the drought in 1930, Arkansas produced 11,169,000 quarts of strawberries valued at \$1,675,000.

"The estimated value of Arkansas' principal mineral products in 1929 was \$41,325,000, according to the state Bureau of Mines.

"In 1929 Arkansas shipped 96 per cent of the new bauxite produced in the United States. This ore was valued at \$2,181,000.

"Arkansas produced in 1929, 18,082 tons of manganese valued at \$193,222. This was more than was produced by all other Southern states combined.

"The average farm price for cotton in the United States from 1910 to 1930, inclusive, was 18.67 cents per pound. The lowest during this period was in 1914 when the average was 6.8 cents per pound and the next lowest was in 1930 when the price averaged 9.5 cents per pound.

"In 1930 Arkansas produced 910,000 bales of cotton and consumed only 23,060 bales in the manufacture of cotton products, while North Carolina produced 795,000 bales and consumed 1,434,312 bales in manufacture.

"In 1930 Arkansas produced 404,000 tons of cottonseed, valued at \$8,484,000 yet the value of crude cottonseed products manufactured in Arkansas for the year ending July 31, 1930, was \$19,778,000.

"In 1910 there were 1,519,000 swine in Arkansas. In 1930 there were only 531,000.

"This may be the motor age but there are 110,000 more mules in Arkansas now than there were in 1910.

"The value of Arkansas dairy cows in 1930 was estimated at \$10,422,000.

"Maryland and Texas were the only Southern states producing more cantaloupes than Arkansas in 1930. Arkansas' crop was 184,000 crates valued at \$166,000.

"Arkansas, Louisiana and Texas produced 81 per cent of the total rice crop of the United States in 1930. While Arkansas ranked third in total production, she ranked first in production per acre. The value of the rice crop in



(Second of a series of articles by Mr. Hull on the discoveries of two expeditions of scientists studying cultures of ancient Bluff Dwellers in the Ozarks.)

By RALPH HULL.

The bluffs under which the party is digging are 200 feet or more high, with so great an overhang that rainfall never reaches the base. No water seeps through the stone faces of these bluffs and the ashes and dust are absolutely devoid of moisture. The bluffs are in a semi-circle, with a small stream pouring over the top in the center of the arc, and winding down to Limestone creek a mile or so away through the center of the glen.

It provided an ideal habitat for the bluff dwellers and many arrowheads, spear heads, flint tomahawks and hatchets have been found in the open along the floor of the valley. Near the stream Mr. Paxton first, and later the students of the party, found several granite mauls seven or eight inches long and four or five inches in diameter. These mauls, Dr. Dellinger said, are similar to implements used by the plains Indians in driving tepee pegs and crushing bones for marrow, and lead to the belief that some of the plains tribes may have moved into the region after the close of the basket era.

There is no evidence that the Indians of the earlier culture used any shelter other than the bluffs. No signs of teepees have been found, although several leather garments or fragments of garments, including leggings, have been found wonderfully well preserved under the bluffs.

Would Protect Relics.

Dr. Dellinger said that one of the chief concerns now of students of the cultures of the early inhabitants of the Ozarks, is the prevention of vandalism or the careless destruction of valuable objects that will throw more light on the customs and mode of living of these primitive people. The University of Arkansas, he pointed out, is bending every effort with the means at hand to collect these specimens, and to study them before they are disturbed. The relation of the objects to each other, the depth at which they are discovered and many other factors are vital in correctly reading their story, and he urges that persons who have knowledge of any promising bluffs notify him at the university that they

may be investigated by competent research workers.

Commercialism has handicapped exploration in the last few years, Dr. Dellinger said, in that persons who have discovered burial places or bluff dwellings, want pay for permitting exploration, or for the objects taken out. He emphasized that the university cannot buy objects, but that it seeks to preserve them for future students at the institution and for all visitors to the museum.

Legends of buried treasure also have hindered work in many instances. Almost every neighborhood has its buried treasure tradition, and practically all of them have the same story, localized of course, of the Indians who had returned to the country with a map, drawn on buckskin, who stealthily dug under a cliff or in a cave and then disappeared, presumably with a hoard of gold.

Dr. Dellinger pointed out that no gold ever has been found in the Ozarks, that the only Indians with known descendants who ever lived in the region were the Cherokees who sojourned in the mountains for perhaps 25 years slightly more than a century ago, and that the Cherokees notoriously were poor when they were forced to make their trek from the Southeastern seaboard states across Arkansas and into the old Indian Territory.

Dr. Dellinger promises that any persons who think treasure is buried where his party is digging are welcome to sit by at all times, and further pledges that if any gold or other treasure is found, it will be turned over to the owner of the land.

The University of Arkansas museum contains by far the largest number of specimens of the cultures of the early inhabitants of the Ozarks in existence, as well as many of the most rare relics. There are between 5,000 and 6,000 specimens of pottery alone, and many more thousands of flint weapons, tools and implements, besides numerous less common articles of domestic use found in the bluff dwellings.

Dr. Dellinger pointed out that while there are large numbers of the various kinds of utensils, implements, weapons, etc., in the university collection, the fact that they are all hand-made prevents exact duplication and that new

specimens constantly are sought with a view to finding something enough different to throw new light on the habits and customs of the early Indians.

Plans provide for giving the museum enlarged space on the first floor of the new university library building to be erected next fall and winter. The specimens are used in teaching archeology, history, art and anthropology.

Dr. Dellinger was accompanied on his visit to the party at Deer by Mrs. Dellinger and their little daughter, Martha Ellen, aged five, the latter of whom is learning her archeology before her A. B. C's. On her jaunts with her father she frequently picks up bits of flint, fossils, etc., and has quite a collection of her own.

Clays and Sands Brn Its Ores

From 1900 to 1929, Inclusive, Sauxite Brought \$66,169,704, Half Again Period.

Steadily Mounting Income Rises From \$750,000 to \$5,211,854 in 1929

By WILLIAM JOHNSON.

Maybe Emerson was right about that mouse trap business—though some cynic said that if you see people beating a path these days to a home in the wilderness, they probably aren't going there to buy better mouse traps. But to the point here of Emerson's remark, the country certainly is beating a commercial trail to Arkansas for more and more of our superior mineral wealth. Dr. George C. Branner, state geologist, has figures on that subject which are uplifting—and surprising. For instance, we don't usually think of our clays and sands and rocky bluffs as representing outstanding mineral riches. Writers and speakers on the state's endowment in this field are likely to picture far-flung beds of various ores as being the main part of our mineral treasure. Yet Dr. Branner's figures reveal that the "non-metallic" minerals—the clays, sands, rocks and the like are, far ahead of the ores in contributing to Arkansas' purse.

Thus, from 1900 to 1929 inclusive, the state's non-metallic minerals, not including fuels or bauxite, paid a total income of \$66,169,704. That was half again as much as Arkansas got from its great ore deposits over the same 30-year period. And the indications are that the state will reap increasing revenue from its non-metallic minerals through the years to come. They have returned a steadily mounting income during the past three decades—rising from only about \$750,000 in 1900 to \$5,211,854 in 1929, nearly a seven-fold gain. There is every prospect of enlarging demand when the current business depression takes its claws off the throat of national business. Dr. Branner has a sheaf of letters from industrial concerns throughout the United States making inquiry of Arkansas' resources in valuable earths, rocks, clays and other such necessities to the expanding needs of modern manufacture.

The state geologist's office overlooks no opportunity to tell the country what a rich treasure chest of minerals old Mother Nature packed in Arkansas' soil. It sends out descriptive bulletins to mining engineers, and corresponds with concerns likely to be interested in developing mineral prospects. Occasional articles to the same point are written for trade publications which go to the mining and metallurgical professions. Just recently Dr. Branner was the author of a contribution in the "Pit and Quarry" magazine, entitled "The Nonmetallic Mineral Resources of Arkansas," which filled seven pages. This discussion surveys the subject so thoroughly, yet briefly, that it is reproduced, somewhat condensed:

Value Increasing.

"During the 30-year period, 1900 to 1929, the value of the nonmetallic minerals increased at a slow but fairly constant rate, the value of the 1929 production being the maximum for the period. During the same 30-year period the value of the nonmetallic minerals was 53.7 per cent greater than that of the metallic minerals (\$43,766,317), and during only four years of this period did the value of the metals exceed that of the non-metals to any appreciable extent. These years were 1915, 1916, 1917 and 1918, which were during the war period and a time of high metal prices.

"The principal nonmetallic-mineral products of Arkansas in the order of their relative values are: Clay products, sand and gravel, bauxite, stone, lime, cement, oilstones, tripoli, and glass sand.

Clay and Clay Products.

"Clays are widely distributed over the state. Those of the lowland or Gulf Coastal Plain region are the better grade clays and are used in the manufacture of brick, tile, refractories, stoneware, sewer-pipe and pottery. The clays in the Arkansas River valley and Ouachita mountain areas of the Paleozoic region are, for the most part, shales and mudstones and are used to a limited extent in the manufacture of brick and tile. Relatively small quantities of clays suitable for the manufacture of clay products are found in the limestone and dolomite areas of northern Arkansas.

"Cheap natural gas and the proximity to important railroad trunk lines in central and southern Arkansas have been vital factors in the development and operation of the brick, tile and pottery plants.

"The value of the clay products (excepting pottery) manufactured in Arkansas during 1929 was \$1,961,283. According to the state severance tax records, nine companies, including two potteries, were engaged in the clay-products industry in 1929, and eight companies, including two potteries, operated in 1930. The plants now operating in this state have a combined estimated annual capacity of 193,000,000 brick and 600,000 pieces of pottery.

Sand and Gravel.

"During 1930, 139 firms and individuals reported production of sand and gravel. The major portion of the producers (124 or 89.2 per cent) obtained their material from the terrace gravel deposits of the gulf coastal plain and 15 (10.8 per cent) secured their material from the beds and bars of streams. During 1929, 3,992,336 short tons of sand and gravel were produced with a value of \$1,851,755. During 1930, the estimated production of sand and gravel was 2,821,955 short tons with an estimated value of \$1,567,836.

"The greater part of the sand and gravel produced was used for state-highway construction and the future production will be controlled largely by the highway building and maintenance program. The reserves are, to practical purposes, unlimited. The location of the pits are shown on the accompanying map.

Bauxite.

"The Arkansas bauxite deposits are unique in that they are the source of nearly all this material produced in the United States. In 1929 the state production was 351,054 long tons or 95.9 per cent of the amount produced in the United States (365,777 long tons) or 47 per cent of the total tonnage consumed in the United States (7,464,589 long tons).

Dr. Branner's article then shows that slightly more than half the bauxite is used in manufacturing nonmetallic products—in chemicals, abrasives, refractories and cement. The value of this part of the tonnage in 1929 was \$1,149,470, which added to returns from other nonmetallic minerals, would lift the income from that group of minerals above the figure stated previously, to \$6,361,324. Dr. Branner's article continues:

Crushed Stone.

"Stone-crushing operations are limited to the upland portion of central, northern and western Arkansas, indicated on the accompanying map as

"Highland". Throughout practically this entire region are adequate supplies of hard rock for crushing. In the Arkansas valley region sandstone and quartzite are the principal hard rock; in the Ouachita mountains are sandstone, quartzite and novaculite; and in the Ozark region are limestones, dolomite, chert and sandstone.

"The Big Rock Stone and Material Co. plant near Little Rock is one of the largest stone-crushing plants in the South. It is equipped with crushers, dredges, steam shovels, tow boats and barges and has a daily capacity of 50 car loads of crushed stone or "blue trap." This company also dredges sand from the bed of the Arkansas river and has a daily capacity of 30 car loads. It also operates a ready-mixed concrete plant.

"The Kelly & Evans plant at Fort Smith, equipped with a steam shovel and three crushers, has a daily capacity of 500 tons and produces crushed sandstone.

"The Williford Crushed Stone Co., Williford, produces crushed dolomite, agricultural limestone, and rip rap. This plant is equipped with five crushers, a pulverizing mill, two steam shovels, and has an annual capacity of 500,000 tons.

"The Red River Crushed Stone Co. plant near Heber Springs on Little Red river is equipped for crushing, screening and grading 15 car loads of "blue trap" (hard sandstone) daily.

"The Chicago, Rock Island and Pacific railroad has a plant equipped for crushing novaculite at Butterfield, Hot Spring county. The capacity of this plant is 320 cubic yards per day.

"The Anderson Stone Co., Inc., plant at Johnson, Arkansas, is equipped to crush 400 tons of Boone limestone every 10 hours.

"The Batesville White Lime Co. plant at Limerdale has a capacity of 500 tons of crushed lime stone daily. This is used principally for railroad ballast and is produced in connection with lime-burning operations.

"Other plants in the state equipped for crushing stone, but which were not reported as active during 1930, are:

"The Little Rock Stone Co. plant two miles northwest of Little Rock on the Rock Island railroad which is equipped with three crushers and has a daily capacity of 300 tons of rip rap and 100 tons of crushed rock.

"The Mississippi River Commission sandstone quarry near Bee Rock on Little Red river. Sandstone from this quarry is used for revetment work on Mississippi river.

"The Arkansas Lime and Stone Co. plant near Mercer was destroyed by fire in the summer of 1931 and has not been rebuilt.

"The Little Rock Granite Company plant south of Little Rock is equipped for crushing 80,000 tons of granite for railroad ballast annually.

"The S. G. Cazorl plant at Lamar, Johnson county, is equipped to crush 5,000 tons of sandstone annually.

"The Pinnacle Stone Company at Pinnacle, Pulaski county, is equipped to produce rip rap and building stone.

Building Stone.

"The building stones quarried in Arkansas are, for the most part, marbles. A relatively small amount of sandstone is used both from bedded deposits and that occurring as country rock in the Highland district of northern Arkansas. Limestone and dolomite are used to some extent locally for building.

Marble.

"During 1930, marble was quarried in Arkansas by the following firms:

"The Batesville Marble Quarries, Inc., which produced gray marble at its quarry near Batesville. The plant is equipped with four marble-sawing gangs and a tile plant, is electrically operated, and has a capacity of one carload of marble slabs each 30 hours. The marble quarried by this firm is known as 'Batesville' and is widely used in the United States and Canada, both as an interior and exterior stone. It is quarried from the Boone limestone.

"The Independence County Marble Company operates a small quarry near Limerdale, in the Boone limestone. The stone is sold in quarry blocks.

"The St. Clair Marble Company produces what are known to the trade as 'Fernvale,' 'Kimmiswick' and 'Plattin' marbles at its quarry about one and one-half miles south of Guion, Izard county.

"These marbles differ in appearance from other Arkansas marbles now on the market and are mottled dark and light gray, brown and pink. The gray marble closely resembles the Tennessee gray marble.

"The relatively recent discovery of black marble or limestone in north Arkansas is of considerable interest, as it is to some degree a competitor of Belgian black marble as an interior-decorating stone. The thickness of Belgian black marble as an interior-decorating stone, varies from six inches to 56 inches, and has been traced for about 100 miles from near Marshall, Searcy county, to near Oil Trough, Independence county.

"The Batesville Black Marble Company operated three black-marble quarries in Independence county during 1930. . . . S. O. Benton has opened a black-marble quarry at Leslie, in Searcy county, on the M. & N. A. railroad.

Limestone.

"Generally speaking, there are two areas of lime-bearing rocks in Arkansas: (1) the Ozark region of north Arkansas, and (2) a triangular section in the gulf coastal plain of southwestern Arkansas. . . . Limestone beds (Tertiary) also occur in the western edge of the coastal plain beds at a few points. At the present time, however, no commercial use has been found for the lime lying

outside the Ozark region or the Cretaceous region of southwestern Arkansas. . . .

Cement.

"During 1930 the Portland cement plant at Okay, Howard county, operated by the Arkansas Portland Cement Company, produced cement by the wet process. . . . This company owns a 300-acre deposit of chalk with a thin overburden. . . . The gypsum is obtained from Oklahoma. The capacity of this plant is between 2,500 and 3,000 barrels daily.

"Another Portland-cement plant and also a lime-burning plant near Foreman, Little River county, with an estimated capacity of 600,000 barrels per year, have been under construction by the American Portland Cement Co. for some time.

Oilstones.

"Novaculite is distributed through west-central Arkansas and has been most actively quarried in Hot Spring, Garland and Montgomery counties. Two types of novaculite or oilstones are produced. These are the "soft" or Ouachita stone and the "hard" or Arkansas stone. The Pike Mfg. Co. of Hot Springs, ships both the Ouachita and Arkansas stone. The Garland Whetstone Co. of Hot Springs is operating one quarry near Hot Springs and ships the "hard" Arkansas stone.

Tripoli.

"The only deposit of tripoli being worked at present is near Rogers. This mine is being operated by the Corona Products, Inc., which has a wide market for its material. * * *

Chalk.

"The Annona chalk is quarried by the Arkansas Lime Products Co., located at White Cliffs, Little River county, which markets agriculture lime, road ballast and whiting.

Glass Sand.

"Two formations, the St. Peter and Calico Rock sandstones (Ordovician age), have wide distribution in north Arkansas. One plant is producing glass sand at Guion, Izard county. This has a 400-ton daily capacity and is operated by the Silica Products Co. Another plant will probably be built near Everton, Izard county, by D. D. Dunkin.

"The glass-sand deposits of north Arkansas are now being used for glass and foundry sand only but, with cheap natural gas now available, it is possible that further utilization of the sandstone deposits will prove profitable. * * *

Barite.

"The recent discovery of a deposit of bedded barite in Section 10, T. 3 S., R. 17 W., Hot Spring county, about 14 miles east of Hot Springs, is of considerable interest. The thickness of the deposit at the point where openings have been made vary from 28 feet to 46 feet. The material is minable by open-pit methods. Analyses made of samples show from 65 per cent to 85 per cent barium sulphate. The results of recent drill tests indicate that the deposit is of sufficient size to merit commercial development.

Fullers' Earth.

"Fullers' earth in Arkansas is of two types, decomposed basaltic dike material and bentonite. The first type was mined near Olsen Switch, Saline county, from 1894 to 1919. The mining was by shaft and the decomposed basalt was crushed, dried, sifted and sacked. It has been used for bleach-

ing animal and vegetable oils and fats.

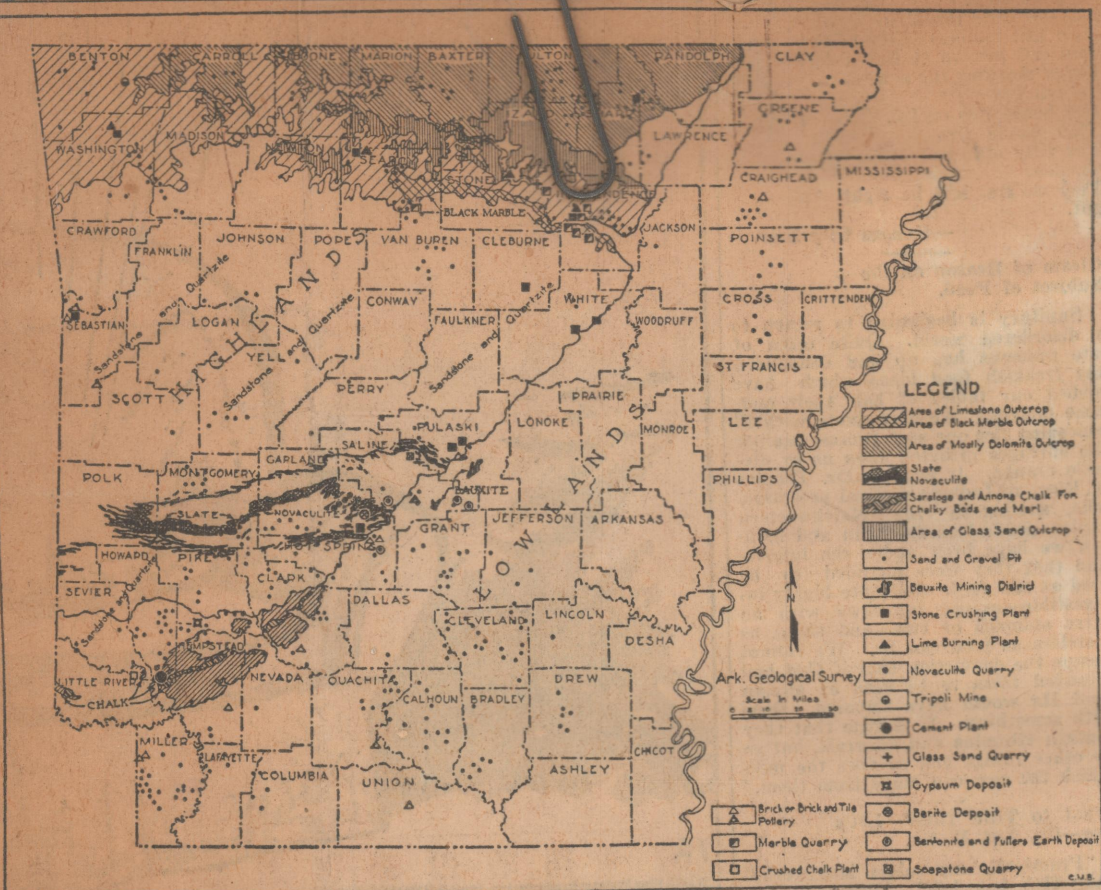
"Three deposits of bentonite having possible commercial value have been found in southern Arkansas. Two of these are in Saline county and one in Hot Spring county. One of the Saline county deposits, which is located in Section 13, T. 2 S., R. 13 W., covers at least one acre and varies in thickness from nothing to about 12 feet. The overburden varies from nothing to 10 feet. The second deposit is located about 12 miles south of Little Rock and was found by the Root Refineries of El Dorado. No material, however, has yet been shipped from this deposit.

"The Hot Spring county deposit as exposed in a road cut shows a thickness of three feet.

Soapstone.

"A fairly good grade of soapstone has been known for many years to be located in Section 15, T. 1 N., R. 15 W., Saline county. New prospecting has recently been active and production may result."

See next page for charts



Map shows distribution of non-metallic minerals and location of plants, pits and quarries in Arkansas.

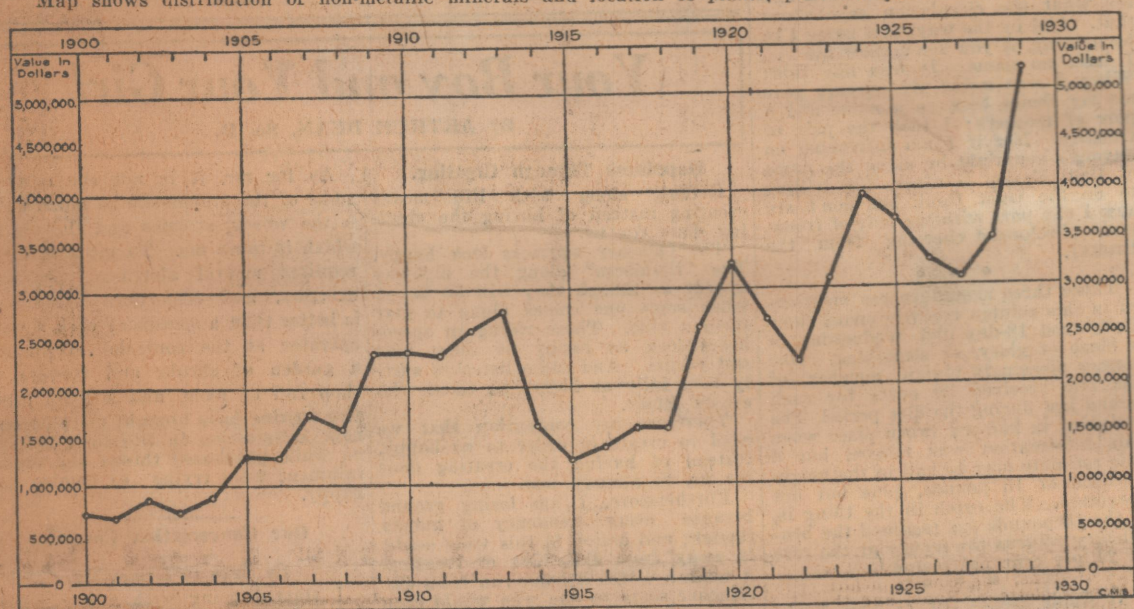


Chart shows annual value of non-metallic mineral products of Arkansas from 1900 to 1929, inclusive. Values do not include fuels or bauxite.

GEOLOGISTS STUDY ARKANSAS MINERALS

Inspect Cinnabar, Diamond, Bauxite Deposits and Magnet Cove Formation.

1-3-32

A group of 16 nationally known geologists yesterday completed a two-day tour of central and southwestern Arkansas, during which they inspected cinnabar deposits and diamond mines in Pike county, Bauxite deposits in Pulaski and Saline counties and the unusual group of geological formations around Magnet Cove in Hot Spring county.

The geologists accompanied G. C. Branner, state geologist, from Tulsa, where the Geological Society of America and the American Association of Petroleum Geologists held their annual meetings Tuesday, Wednesday and Thursday. About 700 persons attended that convention.

Members of the Little Rock Engineers Club, including C. S. Christian, Fred A. Lund, Robert A. Kern, M. J. Bair and Mr. Branner and Bryan Parks of the state Geological Survey, provided cars and accompanied the visitors to Pike, Saline and Hot Spring counties.

Among the visiting geologists were: Prof. Frank R. Van Horn of the case School of Science, Cleveland; Prof. L. C. Graton, head of the Geological Department of Harvard University; Prof. Heinrich Ries of Cornell University; Prof. Allen Bateman of Yale University; Prof. P. S. Kerr of Columbia University; Prof. W. S. Hunt of the University of Michigan; Prof. J. H. Jenney of Columbia University; Prof. W. S. Bailey of the University of Illinois; M. M. Leighton, Illinois state geologist; Arthur Bevans, Virginia state geologist; C. H. Behre of Northwestern University; Edward Sampson of Princeton University; H. H. Hedd of Princeton University; C. S. Gwynne of Iowa University; N. E. Chute of the University of Michigan and Hugh M. Roberts of Duluth, Minn.

STUDY OLD PLAN OF FLOOD CONTROL

Army Engineers Consider Eliminating Mississippi River Bends.

ABANDON FUSE PLUG IDEA

Proposal Is to Make Big Stream Flow Straight Between the Arkansas and the Red.

By PAUL YATES.

(Special Correspondent of the Gazette.)

Washington, Feb. 8.—Through one of those shifts of viewpoint for which it is hard to ascribe an explanation, the War Department has at last decided to study on its merits the oldest and simplest of all known plans for controlling flood waters of the world's largest river.

Under authority of a resolution adopted by the House Flood Control Committee, Maj. Gen. Lytle Brown, chief of engineers, will conduct a survey of the feasibility of straightening the bends in the Mississippi river between the mouths of the Arkansas and Red rivers.

The committee resolution, approved by General Brown, goes further and authorizes a study and report upon any other modifications in the Jadwin plan which may be deemed worthy of investigation.

Inspection of the record of early flood control hearings reveals that the proposal to control Mississippi floods by means of straightening the bends in the river was advanced many years ago.

Agitation for this method of flood control was reinforced by the growth of the side-packet commerce. Captains of the river's golden age festooned every crook and bend of the Mississippi with choice profanity.

The army engineering authorities, however, contended that the plan was impracticable.

The biggest unsolved problem now before General Brown and his staff of engineering experts has to do with the disposition of peak loads of water between the mouth of the Arkansas and the mouth of the Red.

Fuse Plug Idea Abandoned.

The Jadwin proposal to dispose of part of these peak loads by diversion through fuse plug levees into uncontrolled floodways virtually has been

abandoned, partly on account of federal court decisions holding the government liable for damages, and partly because of the strong opposition manifested in Congress.

An alternative plan, construction of reservoirs on the Arkansas and White rivers to withhold flood waters from the Mississippi, was reported adversely by army engineers on the allegation that the cost would outweigh the benefits involved.

A preliminary investigation, General Brown told the Flood Control Committee, has revealed that the proposed easing of bends in the main river would lower the flood height at Arkansas City by 10 feet.

The main problem remaining to be worked out is the effect of the straightening program upon the flood height below the mouth of the Red. In this connection, General Brown requested and received authority from the committee to make a further study of the Atchafalaya outlet to determine whether its natural flow into the Gulf can be increased materially.

It is perhaps not incorrect to say that the army engineers are giving serious study to the old plan of flood control on the Mississippi by easing the bends only because they have been driven into a corner. Yet they probably have been impressed by the ease and relative cheapness with which the great diversion spillway further toward the Gulf was constructed. Modern machinery has made it an easy and fairly inexpensive task to cut a deep and wide ditch through the alluvial dirt of the valley.

Should the chief of engineers favorably report the project to straighten the river between the points mentioned, the results easily might change the underlying theory on which the fight to prevent disastrous Mississippi overflows has for several decades been based.

The army engineers have pinned their faith on stronger and higher levees. It is safe to say that levees always will form one bulwark against floods, but an increasing bulk of expert engineering opinion leans to the belief that too much reliance has been placed upon them and too little effort devoted to the working out of plans which rest on a more scientific basis.

MISSISSIPPI RISING, TRIBUTARIES FALL

War Department Allots Funds for Emergency Flood Protection.

Gazette 2-9-32

Alexandria, La., Feb. 8.—(P)—River levels are falling in some sections of the flood area and rising in others. The Mississippi river is rising gradually from St. Louis to New Orleans, with exception of 2-10 foot decline in the past 24 hours at Arkansas City, Ark.

The big river today stood nearly three feet above flood stage at Baton Rouge, La., and nearly four feet above at Vicksburg, Miss., but at other points the excess was not that great.

The Cumberland river through Nashville, Tenn., gauged 8.3 feet above flood stage with a 3-10 foot rise in 24 hours.

The Red river, in record flood stage here along with the Ouachita at Monroe, La., dropped gradually during the period from Fulton, Ark., to Alexandria. The Ouachita fell one foot at Camden, Ark., and 1-10 of a foot at Monroe.

All levees were reported holding in the Alexandria district. The recent crevasse reported to have been intentionally cut below here has widened to 1,000 feet and is spilling the excess Red river flood to a lake outlet through southern Concordia and Catahoula parishes.

At Monroe 1,500 men are still working on the Ouachita river levees and patrolling for weak spots.

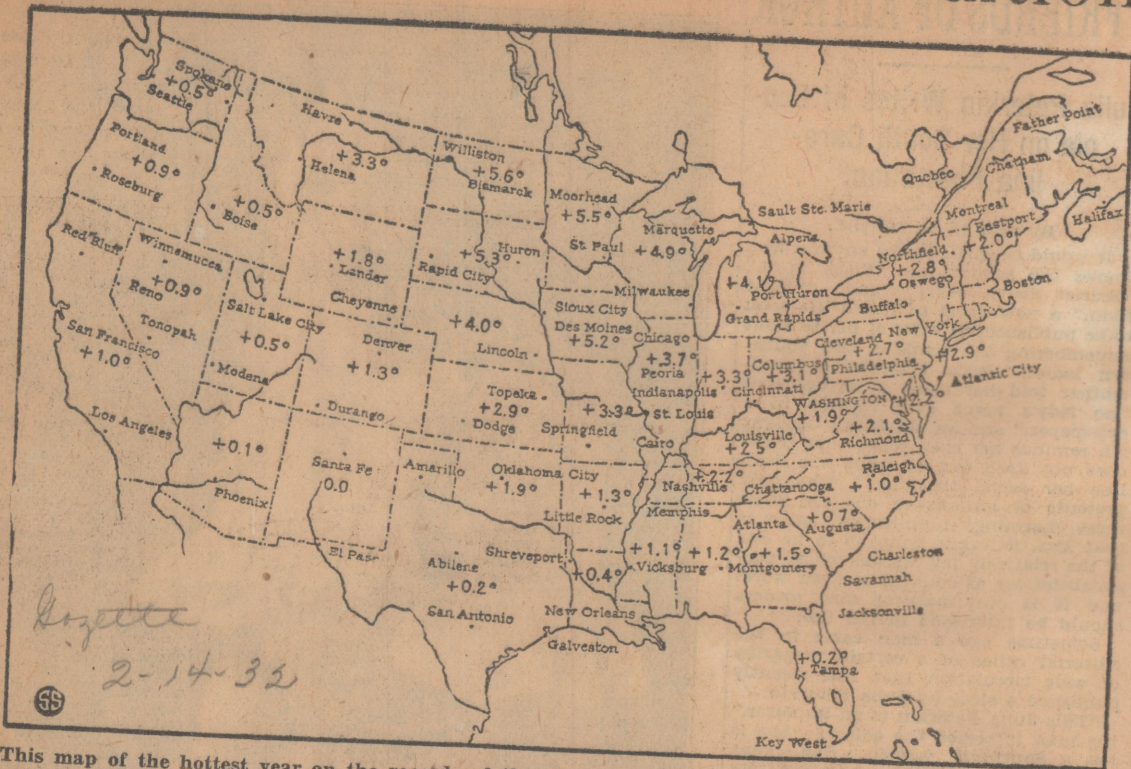
Backwaters from the Mississippi river flood will prolong the high water from the Tallahatchie flood in Yazoo, Sharkey and Issaquena counties of Mississippi, but the general flood situation in Mississippi has improved. The Coast Guard relief and rescue fleet working in the delta is about ready to depart.

Maj. Gen. Lytle Brown, chief of army engineers at Washington, has authorized Gen. Thomas H. Jackson, president of the Mississippi River Commission, to keep in close touch with the flood situation and to employ any facilities required to control the situation.

The War Department has allotted \$200,000 for emergency flood protection on the Ouachita river at Monroe and West Monroe, La., \$25,000 for general flood protection uses along the Ouachita, Black and Red rivers; \$50,000 for Red river between Sandy Bayou and Long Lake in Louisiana; \$20,000 for the Atchafalaya sugar bowl of Louisiana and \$15,000 for repairs or breaks in the lower Mississippi basin at Porter's ferry and at Asa in Panola county, Mississippi.

The high water situation in the White and St. Francis levee systems in Arkansas was left to Maj. Brehon Somervill, district engineer at Memphis.

The Whys and Wherefores of Our Freakish Weather Conditions



This map of the hottest year on the records of the U. S. Weather Bureau shows the average departure above normal for 1931 in different sections of the country. Weather Bureau records are fairly complete for about 60 years, while some of the records are as much as 100 years old.

(Science Service)

Washington. — Why all this freak weather?

First, the driest year on record in the United States—1930. Then the hottest—1931.

And just recently high temperatures that split on the continental divide to bring states east of the Rockies their warmest winter weather and the Pacific coast unusual cold during December and January.

Finally a mass of high pressure atmosphere which, sweeping swiftly through the McKenzie river valley, brought upon the central and eastern parts of the country the winds of the Arctic before they had a chance to warm up. Thus came normal winter weather for the first time during the present season.

Only One State Normal.

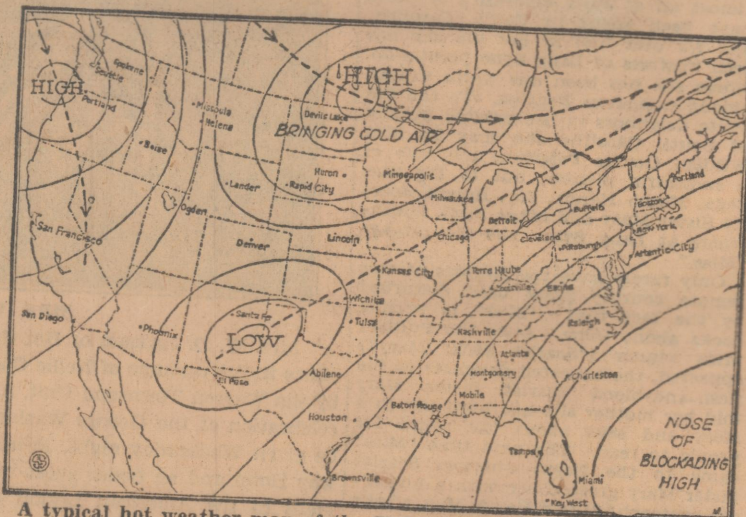
Such weather behavior is explained by scientists of the U. S. Weather Bureau in terms of the shifting areas of high and low pressure that move across the continent. Just what these air currents and pressure areas must account for has just been summarized by J. B. Kincer, chief of the Division of Agricultural Meteorology of the U. S. Weather Bureau, from about 5,000 records taken in different parts of the country. He said:

"As 1930 is distinguished in the climatological history of the United States for dryness, so 1931 will stand out in the future as a year of abnormal warmth. The year was warmer than normal in practically all sections of the country. New Mexico is the only state that did not show an excess in temperature.

Two-Year Heat Spell.

"The warmth was the greatest ever known at many places in the Middle Atlantic area, the lake region and from the middle Mississippi valley and central plains states northward. In the central northern area the average yearly excess ranged from five to six and one-half degrees Fahrenheit, making 1931 much the warmest year of record in that part of the country. For example, at Huron, S. D., and Moorhead, Minn., the accumulated excess of temperature for the year was some 900 degrees higher than for the previous warmest year of record; and at Williston, N. D., it was more than 1,000 degrees higher than ever known before.

"The outstanding warm months of 1931 were January and February, June and July, and September, October, November and December. In fact, warm weather has persisted for two years, since 17 of the past 24 months have been abnormally warm. Prior to 1931, the warmest year in the United States was 1921."



A typical hot weather map of the United States showing how huge high pressure areas to the southeast have been damming up oncoming "highs," which bring cold air from the north, and have been diverting them to the east over Canada.

Map Shifted South.

Mr. Kincer's summary means that the whole country was lifted from the map and moved several hundred miles farther South. People in central Indiana enjoyed Tennessee weather; those living at Des Moines found out how much warmer it is at St. Louis, and people at St. Louis sweltered under temperatures of Meridian, Miss., 400 miles farther south. New Englanders lived in a Pennsylvania climate and Pennsylvanians experience Virginia weather.

Records for the single hottest day were broken at six weather stations well scattered throughout the country. They are Ithaca, N. Y.; Minneapolis, Minn.; Pierre, S. D.; Salt Lake City, Utah; Reno, Nev.; Spokane, Wash., and San Jose, Cal.

With the beginning of winter the most freakish change began. The abnormal warmth in the Eastern part of the country even increased while the Far West entered winter with unusual cold weather. While snow heaped up in orange groves of California, fruit buds as far north as Michigan became dangerously swollen. Eastern cattle ate green grass in pastures that normally would have been barren and frozen, while stock on some Western ranges hungered and died where the animals should have found plenty.

Winter Air Follows Valley.

The blame for most of the abnormal conditions can largely be placed upon hot air. Great masses of high pressure atmosphere have been hovering persistently over the Gulf of Mexico and adjoining Southern waters, it appears from explanations given by Charles L. Mitchell, forecaster for the Weather

Bureau. These masses of air have sent warm breezes up over the country and have blocked the coming of normal cold weather from the Arctic.

The country's chief supply of cold winter air comes from the Arctic as great high pressure masses by way of a natural groove in the earth, the McKenzie river valley, Mr. Mitchell said. Most of them sweep over the central part of the United States and then curve back to the northeast to cover a portion of the Atlantic coast before going out to sea.

No Time to Warm Up.

Ordinarily the "highs" bring their Arctic air so fast that it does not have time to warm before it reaches the United States and plunges its chief cities into winter temperatures. They come fastest and bring coldest weather when pulled by a low pressure area along the southeastern coast.

But during the past two years these lows have been scarce. A huge high pressure area has been hovering where the lows were often found; and this "high" forms a barricade in the path of other "highs" coming down from the North to bring cold weather. The oncoming cold air is dammed up and diverted over Canada. Or the "highs" make such slow progress that by the time they reach the central part of the United States their cold air has lost its Arctic tang.

Why "highs" have persisted over the South Atlantic area, Mr. Mitchell does not attempt to explain. This cannot be done until behavior of air currents that swirl around the earth from its surface to a height of several miles are observed and studied more fully.

GEOLOGISTS WILL DISCUSS ARKANSAS

G. C. Branner Expected to Attend American Association Convention.

Geology of Arkansas will be discussed by several petroleum geologists at the annual meeting of the American Association of Petroleum Geologists at Oklahoma City, March 24 to 26, it was indicated in a copy of the program received here yesterday.

Several hundred geologists, representing practically all the petroleum producing countries of the world, will attend the conference. G. C. Branner, state geologist, probably will attend the meeting, but will take no part in the official proceedings.

"The Ouachita Epeiroplain" will be discussed by J. W. Bede of Indiana, and "Notes on the Salt at Smackover" will be the subject of W. C. Spooner of Shreveport, who has done considerable work for the Arkansas Geological Survey.

"Igneous Rocks of Central Mississippi Embayment Area," "Buried and Resurrected Hills of Central Ozarks" and "Arenaceous Foraminifera of Pre-Pennsylvanian Age of Western Ozark and Arbuckle Regions" are among the subjects assigned to other speakers.

PETRIFIED FOREST FOUND UNDERGROUND

Piggott, March 29.—(P)—A petrified forest has been discovered near here. The only disadvantage for sightseers is that most of it is underground.

A number of the logs, two feet in diameter and about 20 feet long, have been excavated. They are beautiful specimens of hickory trees in cream colored crystallized limestone. One of these petrified stumps, about six feet high, has been placed in the courthouse square.

Several petrified trees have been found on the surface, but most of them were encountered at a depth of from five to 90 feet underground. They were found in the digging of wells.

The petrified forest's known area includes a section two miles wide and 12 miles long.

A. F. ANNEN NAMED MINERAL SURVEYOR

Hot Springs City Engineer to Have Charge of State.

Hot Springs, April 12.—Albert F. Annen, city engineer, today was informed of his appointment as United States mineral surveyor for the district of Arkansas. The appointment was made by Frank M. Johnson, supervisor of surveyors, and was based on Annen's experience and the favorable report of the chief of the Field Service.

Annen has been city engineer for about two years and previously served as assistant city engineer for six years. He served as mineral surveyor in 1924.

Mineral Lease Taken on Club Property at Fayetteville.

Special to the Gazette, 2-27-32. Fayetteville, Feb. 26.—A lease granting mining privileges on Fayetteville Country Club property to Johnson & Lady of Minneapolis has been signed by W. N. Gladson, president of the club, and Col. C. S. Arnstead, secretary. It is said the company also has obtained mineral rights on the H. H. Taylor property adjoining the Country Club on South mountain, and on the old Hunt-Yell farm and also on other properties nearby.

The Country Club lease stipulates that no prospecting for minerals shall be done on the golf course and that no water mains be laid on the course so that club privileges are not affected. The reported finding of gold and other ore at mines near Fayetteville, particularly at Farmington, six miles west of here, has stimulated interest of mining companies in this section.

Arkansas to Turn to Minerals

Plan to Be Launched in Little Rock This Week

Committee on Resources Expects

Geological Survey Receives Many Inquiries Showing Interest in Products

By WILLIAM JOHNSON.

Arkansas, to an extent, is like a big general store operated in a busy community by a merchant not familiar with the quantity and kind of goods in his stock. He has never made a complete inventory, if you can imagine a merchant of that type. Maybe he could supply folks with just the kind of calico, paint, crockery and hatchets, say, that they want, and at alluring prices. In fact, he has sound reasons for believing that the store was furnished generously with those items before he got it. But he isn't sure—never really investigated all the back rooms. And so he can't advertise such goods nor give people who inquire about them exact information. Obviously that merchant would have an uphill career. Yet Arkansas is trying to prosper by using similar tactics in an important field of its commercial affairs. The state may be regarded as a kind of store which competes with other states in selling the products of its soil. Minerals constitute one of the largest and finest "lines" it has to offer the nation. And of this rich portion of its stock, the state has only fragmentary knowledge.

Happily, however, a plan aimed at correcting that situation is now in sight. It will be launched Monday by the Arkansas Industries' Association. This body has set up a committee on mineral resources which is to meet in Little Rock as the week opens, and formulate ways and means for merchandising the riches that old Mother Nature hid out in the state's broad acres. The leaders do not look for immediate and spectacular results, it should be said. On the contrary, they recognize that a long campaign is before them.

National markets for minerals, like most other markets, are now being bountifully supplied from the country's far-flung reserves. But the markets will expand in the future, with returning prosperity, increasing population and the development of new uses for oil, ores, clays, sands and the like. At least, that is the pointing of past experience. And if Arkansas gets her mineral opportunities into the show window, so to speak, she ought to receive a fair share of the business.

Dudley V. Haddock, secretary of the Arkansas Industries' Association, stated the matter thus:

"Indications are that Arkansas must look to its minerals as the chief hope of acquiring more industries. The state's resources in that line stand out above those of most others. Naturally, therefore, our minerals should be given the best publicity we can devote to them. We intend at the Monday meeting, to discuss ways and means of exploiting this wealth—what may be done with it, where it can be used, and how to sell it. One of our main purposes will be to get Arkansas people themselves better informed on their mineral reserves and more appreciative of the potential payrolls and profits these holdings represent."

Not Easy to Sell Minerals.

Dr. George C. Branner, state geologist, explained further:

"It isn't easy to sell minerals in the present competitive status of the markets. Arkansas people haven't been asleep at the switch. They have tried repeatedly to develop their opportunities in this field, and while achieving a good deal of success, they have often encountered obstacles that defeated their efforts. We need to learn what the obstacles are, and particularly we must discover as exactly as may be done, the nature and extent of our mineral holdings. In other words, we should inventory this wealth and be in position to offer definite values to the prospective investors and buyers who are constantly asking for data on the state's mineral reserves."

And so, not with a fanfare of oratorical trumpets, but with a practical view to rounding up facts and sowing them where they will do the most good, the committee on mineral resources of the Arkansas Industries' Association, will meet Monday. The members are as follows: Elbert S. Smith, Pine Bluff, Arkansas Power and Light Company, chairman; Dr. George C. Branner, state geologist, Little Rock; Leigh Kelley, Kelley Trust Company, Fort Smith; M. L. Sigman, Monticello; Paul Mattocks, B. H. and M. Oil Company, El Dorado; J. E. Shatford, Ouachita Valley Refining Company, El Dorado; O. P. Moss, Arkansas-Missouri Power Company, Blytheville; Harry Ponder, Walnut Ridge; Raymond F. Orr, Athletic Mining and Manufacturing Company, Fort Smith, and Dudley V. Haddock, Little Rock, secretary.

With the committee on mineral resources, will meet the industrial development committee of the same statewide association. This consists of: L. A. Watkins, Missouri and North Arkansas Railroad, Paris, chairman; Earl Page, commissioner of mines,

manufactures and agriculture, Little Rock; C. C. Rockenback, industrial commissioner of the Cotton Belt Lines, St. Louis; J. S. Carlyle, director of industrial development for the Missouri Pacific Railways, St. Louis; W. E. Bann, Southwestern Gas and Electric Company, Texarkana; R. E. Ritchie, Arkansas Power and Light Company, Pine Bluff; Col. John R. Fordyce, Hot Springs; S. A. Lipscomb, Little Rock Gas and Fuel Company; S. R. Brooks, Arkansas Portland Cement Company, Little Rock, and Joseph Durham, Little Rock.

Many Inquiries Received.

Excellent and far-reaching work has been done in exploring, cataloging and advertising Arkansas' mineral reserves by the state geological survey under Dr. Branner's guidance. The survey has made and published searching studies of various mineral fields, and has distributed these, together with illuminating maps, among mining engineers and investors. This activity has drawn much favorable comment from important quarters, and gone far to stimulate interest in the state's mineral wealth. A great deal of correspondence on the subject comes to Dr. Branner's office from far and wide over the country. As evidence of how ably his department is proclaiming Arkansas' mineral opportunities, read the following letters taken at random from Dr. Branner's files:

Will you kindly advise us whether there is any high grade dolomite being mined at the present time in your state and, if not, whether your records show deposits of this character which could be opened.

We thank you in advance for this information, and remain,

Yours very truly,

H. M. HOFFMAN,

Ass't. Purchasing Agent,
Pittsburg Plate Glass Co.
Pittsburgh, Pa.

Dr. George C. Branner, Director,
State Geological Survey,
Little Rock, Arkansas.

Dear Sir:

I have some friends who require the use of chalk in their manufacturing process. The chief specifications for this material are that it will not contain an abrasive and that it can be very finely pulverized.

I would appreciate it if you would send me data regarding deposits with in your state which you think might be satisfactory. If this material is already being quarried, please put me in touch with the operators so that I may obtain samples and prices of their product. Any samples you can send me from your own collection would be greatly appreciated.

Yours very truly,

(Signed) H. E. ROTHROCK,

(H. E. Rothrock),
Superior Oil Corporation,
Tulsa, Okla.

State Geological Survey,
Little Rock, Ark.

Gentlemen:

Are there any known occurrences of alum in Arkansas, that are or might be of commercial value?

Any information you can give us will be appreciated.

Yours very truly,

(Signed) G. V. B. LEVINGS,

Vice Pres and Gen. Manager,
American Tripoli Company,
Seneca, Mo.

Dr. G. C. Branner, State Geologist,
Little Rock, Arkansas.

Dear Sir: In certain of our development work we have found it necessary to make a thorough study of natural gas, and are particularly interested in locating and obtaining details on all fields in which the gas contains hydrogen sulphide. There seems to be no published data on this phase of the subject and we have been gathering our information for specific localities from individuals and organizations at the country.

We know that there are natural gas deposits in Arkansas and we hope that you can tell us whether any of this gas contains hydrogen sulphide, and if so, in what counties or localities it occurs. We also wish to learn something about the estimated volume in the ground and whether or not the gas is being used at the present time.

Any information which you may supply on these points will be of great value to us and thoroughly appreciated.

Yours very truly,

THE HELIUM COMPANY,

Louisville, Kentucky.

(Signed) W. R. WOOD,

Sales Research Department,
State Geological Survey,
Little Rock, Ark.

Gentlemen: Can you advise us if there are in Arkansas deposits of true slate in gray-green, red and black colors? We use considerable tonnage at our Southern plant in New Orleans and are desirous of locating sources of supply nearer to New Orleans and Atlanta than those which now exist.

The material we use for the surfacing of roofing is crushed and screened and the resulting product passes through a 10-mesh screen and all of it except for the fraction of a percent is retained on 65 mesh.

If you know of any deposits in your state or of any concerns who are in position to prepare granules for the roofing trade, we shall appreciate being put in touch with them.

Very truly yours,

THE FLINTKOTE COMPANY,

Boston, Mass.

(Signed) C. D. MERCER,

Department of Conservation,
State of Arkansas,

Little Rock, Arkansas.

Gentlemen: We have a prospect who is seeking a location for a porcelain and, or, a glass ware manufacturing plant in western or southwestern Arkansas.

We would like to know where we may obtain information in regard to known deposits of clay for the manufacture of porcelain ware and deposits of sand suitable for the manufacture of glassware.

If you can give us information about such deposits or if you can tell us where we may obtain such information, it will be very helpful to us.

Very truly yours,

Southwestern Gas and Electric Co.

Shreveport, La.

(Signed) R. M. WINSBOROUGH,
Industrial Development Department,
Dr. Geo. C. Branner,

State Geologist,

Little Rock, Arkansas.

Dear Sir: I would greatly appreciate any information you can give me on the occurrence, extent and commercial possibilities of sulphur, pyrite and potash in Arkansas. A price list of state geological publications and maps would also be of assistance.

Thanking you for such data as you may elect to send, I am,

Yours very truly,

(Signed) J. M. RHODES,

Freeport Sulphur Company, Freeport, Texas.

That is enough of the letters to make the point. You glimpse the widespread interest, and you see what the writers want—not after-dinner elocution, but facts. And these preliminary inquiries hardly begin to suggest the curiosity that must be satisfied to effect a sale or bring in an investor. Manufacturers and miners do not put their money into fine words or guesses. They buy only what they can definitely use or sell, and must be convinced with clear-cut data that the mineral in question, or the likely location of it, comes up to their requirements.

Survey Handicapped.

And the Arkansas geological survey, the one source of that information, is terribly handicapped by limited funds, for digging out, assembling and publishing the information. It does its best—and considerably more, by the way, than is accomplished by some other state surveys with larger appropriations. But dollars can be stretched just so far. Right now the Arkansas survey has several publications all ready to be printed and distributed, and no money for the purpose. These publications include one on oil and gas possibilities, one on black marble, and a stream-gaging report of much value to concerns developing power.

Arkansas, sorely wanting more industries, is starving the one state department—the geological survey—which, in view of our great mineral resources, can do the most to get them. In no other field are we so likely to attract industries. But it must be inventoried—put up to the industrial and monied public in the form of facts.

The state needs mines, factories and the like to balance its agriculture—a sound and excellent occupation, let it be said. Nevertheless, Arkansas farming, depending chiefly on cotton, is extended heavily into the precarious foreign market. Half the South's production of staple must

be sold abroad. And in view of that fact, it would seem that Arkansas might very wisely whoa up on agricultural schools and devote a little of the money thus saved to encouraging payrolls based on its minerals. The farmers would gain thereby, since industrial workers make a market for vegetables, fruit, meat animals and dairy and poultry products, thereby encouraging diversification with its larger and surer returns.

If Missouri, for instance, can get along with one agricultural college, why should Arkansas need five? Missouri has an agricultural income not far from twice that of Arkansas' to nourish and protect. More striking comparisons might be made with other states. And then consider the mineral side of the question. Arkansas, which has mineral possibilities greater than Missouri's, spends less than half as much on their development.

During the fiscal year 1930-31, the Missouri bureau of geology and mines, was given \$48,425. Arkansas' equivalent geological survey got an estimated \$23,723—it actually received less. While the last biennial appropriation of the legislature allowed the Arkansas survey \$35,000 for each of the two years, it will actually receive not much more than half that amount, due to the falling off in the revenues from which the funds are derived.

Certainly, it doesn't seem to be good management for Arkansas to "lay it over" more prosperous agricultural states in the number of agricultural colleges, and then in spending for the exploitation of its minerals to tag along behind states whose mineral resources are poorer.

But Arkansas folks have level heads. They want payrolls, and they appreciate the opportunities their rich mineral endowment presents. And so, perhaps, out of the campaign to be launched by the Arkansas Industries' Association, there

may come a little more much-needed financial support for the good work the geological survey is doing. The state faces a job of spending its public funds economically, where they will do the most good. Past performance, in bauxite, oil, gas and other phases of mineral development, prove the geological survey to be a profitable institution. It would seem a "good bet" for the future.

Exhibit at Capitol Feature Of Products Week.

4-24-32

Earl Page, commissioner of mines, manufacture and agriculture, and George C. Branner, state geologist, are assembling an exhibit of Arkansas products in the rotunda of the capitol as a part of the observance of Arkansas Products Week, April 25 to 30. The display is being assembled in cooperation with the Arkansas Industries Association. Mr. Page said the public is invited to view the display. He requested that persons having products suitable for display communicate with him immediately. *GAZETTE*

PRODUCTS EXHIBIT AT STATE CAPITOL

Arranged for Observance of Week Dedicated to Arkansas' Progress.

An exhibit for Arkansas Products Week, to be observed throughout the state from today through Saturday, has been assembled in the rotunda of the capitol by Earl Page, commissioner of mines, manufactures and agriculture, and State Geologist George C. Branner and will be open for inspection by the public all this week.

The exhibit covers the greater part of the rotunda space on the first and second floors and contains specimens of hundreds of agricultural, timber, mineral and manufactured products.

M. R. Owen, state high school supervisor, yesterday sent letters to principals of all high schools in the state, requesting them to co-operate with organizations in their communities in observing the week, and suggesting that schools within reach of Little Rock would find it profitable to send groups of teachers and pupils to visit the exhibit.

CAPITOL AVENUE AND SCOTT STREET
Entered at the Postoffice at Little Rock, Ark., as Second Class Mail
SUBSCRIPTION RATES—By carrier, Daily and Sunday, in Little Rock, 20c per week; outside of Little Rock, 20c per week, or 85c per month. By mail to Arkansas addresses, payable in advance, \$7.50 for one year; \$4.25 for six months; \$2.50 for three months; 85c for one month.
TELEPHONE—ALL DEPARTMENTS—4-0321

THE UTILITIES ISSUE.

"Since 15 United States senators and 22 representatives are upon record as believing that the power issue will dominate the next presidential election, it becomes increasing-

Koleta and Her Cabin

By H. P. BOSTAPH.

Miss Koleta E. Walker, aged 19, is owner of an artistic cabin about three miles northwest of Newark in Independence county, which houses one of the most diversified collections of curios and minerals in the South. She calls it "Koleta's Kurio Kabin."

Two years ago while teaching school near her home, and traveling along the roads to and from school she added many fine fossil and mineral specimens to the assorted rocks she had gathered for three years, and she developed more than a casual amount of interest in these specimens. She read books on geology, mineralogy and allied subjects, and was inspired to assemble a collection of mineral-bearing strata, fossils, sea shells, antiques, Indian relics and curios.

The school children contributed to her collection. Every time they found an arrowhead in the cotton rows or a fossil on the hillside, they brought it to her. In a short time she had assembled a large collection of material. The idea of trading Arkansas articles for those of different states and countries was developed. She found by correspondence that many people interested in these subjects were ready to trade native specimens for those found

in Arkansas. In this locality there is an ore deposit of carsonium, the only known deposit in the world. It is of marine origin, containing gold, platinum and its allied metals. In these beds also are shark teeth, crystals, fossil shells, and the like, from the prehistoric waters of the Paleozoic and Mesozoic seas. Such material is in demand and provided Koleta with trading specimens.

State Comptroller Sees Little School Relief From Changes In Fixed Charges, But Hopes "Impounded Funds" Will Help

By HOWARD REED.

(State Comptroller.)

Quite often we hear the overburdened taxpayer complain of the excessive rates of taxation, asserting that our schools are no better than in the days of old and the expense of operation out of proportion to the service rendered. From such observations as I have made, I am forced to differ with these critics. My children are blessed with far greater opportunities than those accorded me. The teachers, in my opinion, are far more capable; and instead of using teaching as a side-line to farming, horse trading, preaching and other activities, as was practiced in my childhood, they have raised their avocation to a highly specialized profession, and are devoting practically all of their time to teaching, interesting the child in the school's affairs, and in attending college and preparing themselves better to discharge their obligation as teachers. Children in Junior high school are studying courses that it was necessary for me to attend the university to procure less than 30 years ago. My children, as a result thereof, are at least five years farther advanced in their school work than I was at a similar age—thereby, giving them at least five years of opportunity that was not accorded me for scholastic purposes prior to attaining manhood. Therefore, I feel that the statement, that the schools are no better, is not always made in good faith.

When in my teen's and in my jeans, with my pockets full of strings, green apples and many other things, I was in open rebellion with the idea of schools and going was an unpleasant task that I accepted under parental orders. My conduct in school was controlled by my teacher by physical punishment, but modern teaching has made school a pleasure and my children are eager to be there every day on time and are controlled by appeals to their pride and citizenship. My children have better text books—edited to hold and encourage interest and research—and supported by excellent libraries, taught to appreciate good literature, good music and art; while as a boy I had Jew's harps for music, and our training in art was in most instances crayon drawings of crude design upon barns and vacant houses.

Mother's Remedies.

My children are taught good citizenship and sportsmanship, clean living, and the rules of health; and are immunized against many contagious diseases that I had no protection against and which were a constant source of worry to my parents. Mother was a good doctor; she was a sure shot on certain children's diseases with her Jerusalem oak seed and molasses taffy to make it palatable. In the springtime my blood was thinned with sassafras tea in the hope that she could ward off the chills as she knew I would spend a great portion of the summer in keeping the old swimming hole muddy; but she worried about typhoid, smallpox and scarlet fever. The only optical examination I ever had was when mother looked me straight in the eye trying to see if I were telling her the truth; the only examination of my teeth was when all of my brothers were in line and she was trying to fix responsibility for a shortage in her blackberry

jam. The immunization I had was a bag of asafetida around my neck and a buckeye in my pocket to ward off rheumatism. I waded water and snow for more than a mile; occupied my seat all day with wet feet and my parents were frequently up at night with lard and kerosene treating croup, tonsillitis or chilblains; while children now ride to school in modern busses, protected from rain, snow and cold.

One explanation I offer as to the reason for the higher cost of education is that the standards of living of both the pupil and the teacher are higher than in my youth. This, of necessity requires heavier expenditures, and that all children may enjoy the privileges that are accorded to children more fortunate financially. In addition thereto, we know that the higher grades, now available to all, costs more per child than primary work. The school term—as a whole—has been more than doubled, over that afforded me. In the school that I attended in a county site in north Arkansas, we were taught in an old two-story frame building that was unsafe when assailed by the least disturbance of March winds; a fire-trap during school hours; cold in winter; poorly lighted; improperly ventilated and unpleasant in summer. The child in my old home town today has modern equipment and modern buildings, comfortable desks, more capable teachers and a longer term.

My gymnasium was underneath a spreading oak. My athletic equipment was a yarn ball, handmade from an old woolen sock with a marble in the center to give it weight. Our games were bull-pen, town-ball and black-man.

These advantages have not come to the people as gifts, but have been procured as a result of great sacrifice upon their part—sacrifices that have been made in years past, and present obligations that will be with them for many years to come.

The School Debt.

As a result of this era of construction and better equipment, we are advised by the Department of Education that there is a bonded indebtedness for school purposes of approximately \$26,000,000. If the creation of this obligation justifies criticism, the educational leaders should carry only their part of this criticism, as the people in the districts affected voted this burden upon themselves. Their love for their children and local pride may have served in some instances to encourage the use of poor financial judgment. I know of no cause closer to the hearts of the people or more liable to encourage bad judgment or greater sacrifice. Prior to the last legislature we had no way to control the making of obligations, while the power to levy taxes was limited. In many instances, the people have persuaded the directors to violate the rules of good economics and, irrespective of whether good judgment was exercised, these obligations have been contracted and permitted under the law and must be paid. All should assume their part of the responsibility for these conditions.

I am advised by those familiar with school securities that the average minimum rate of interest upon these loans is approximately six per cent. Therefore, the first annual charge to the taxpayers—assuming these figures to be correct—is an interest bill of \$1,560,000. And assuming that the principal mentioned above

is to be retired during the next 20 years—which is the normal life of a loan—we will have an annual payment of principal due in the sum of \$1,300,000. As a result of the reorganization in our methods of administration the state has adopted the plan of state and county supervision for administrative purposes, which occasions an annual administrative charge of approximately \$550,000. Fire insurance cost is estimated at an additional \$250,000. We are further advised by the Department of Education, as a result of its survey, that there is approximately \$5,000,000 in current indebtedness, and it is estimated that approximately \$300,000 of this sum is being carried by the banks of the state. If an interest charge of six per cent is paid for this service—which I deem to be low—we would have an annual charge of \$18,000 in interest from this source. And should this current indebtedness be retired over a period of the next 10 years, we would find it necessary to pay \$50,000 annually upon the principal as well as the interest charge.

Proud of Buildings.

By summarizing the above figures it will be noticed that prior to the expenditure of a dollar for the support of the teachers, and for the transportation of pupils, the first \$3,718,000 collected annually will of necessity go to pay fixed charges against the schools of the state—not a cent of which will go to pay the teachers or support the transportation facilities of the schools. I do not speak in a spirit of criticism, for I am proud of our buildings. I do not think we have too many; neither do I believe they are too expensive, as our children should have the best.

When this program of construction was planned by the educational leaders it was thought that it would cover a five-year period, but the temper of the public was not properly judged and the work laid out for the five-year period was accomplished in 18 months.

I am advised that there are approximately 12,500 teachers teaching in the public schools under normal conditions, and as a result of the expenditures above there is necessarily cut from the salary of each approximately the sum of \$300 annually.

The above figures may be expected to continue during normal times, but during these days of depression we find that the severance tax, dedicated to the public schools, has reduced from the peak of about two millions annually to approximately a quarter million dollars. We have also experienced throughout the state a material decrease in values of property, as revealed by the tax assessor's records, and from a study of the collector's records we find that last year there was lost approximately \$1,400,000 as a result of failure of the collectors to collect the personal assessment after it had been assessed by the assessor. The records of the collector further reflect that by reason of depression that practically 20 per cent of the real estate in value was delinquent last year, and the schools deprived temporarily from the receipts of these taxes.

Less Tax Money.

In addition to the above charges and losses the cigarette tax and the income taxes have both been reduced by reason of the financial condition of the consumer. The records of the state reveal that approximately \$1,500,000 (at least \$250,000 of which is school money) has been impound-

ed and is not available as a result of failures of banks, carrying state deposits. A survey of the bank failures and the affect upon the county funds, made by the comptroller, has revealed that approximately \$1,500,000 of county funds, in forty of the counties, is also impounded—the greater portion of which was school funds.

As a result of the audits made, it has been found that during the past year material amounts vital to the operation of the schools in several counties have been lost, or at least temporarily impounded, through defaulting officers.

The last General Assembly deemed it to the best interest of the state to recodify the school laws and in the recodification provided that no district would be permitted, under any condition, to increase its indebtedness for maintenance and operation. Also, the directors are not permitted to borrow funds temporarily in excess of revenue for a continuation of their operation. With these handicaps I am surprised that conditions are not worse and that so many districts and teachers are carrying on.

In looking to the future I see but little relief to come to the schools by any material changes in the charges treated here as fixed charges, under present laws, but there is certainly hope that conditions will grow better in the ensuing year by reason of realizing upon funds now impounded and coming back to the schools as a result of liquidation. The people will be in a better position to pay their taxes, and retrenchments and economies made in the schools under depressed conditions will materially assist. Many districts have purchased motor buses which will not have to be replaced next year.

During this year the tax rate of the state returned to 8.7 mills; last year our rate was 7.9. This change alone should bring to the common school fund approximately \$175,000.

There are many districts that have not been voting full 18 mills permitted by law. These districts will probably increase their rates at the school election to meet their losses from other sources.

The compliance with Act 63, 1927, by the collectors making settlement every 15 days from February until August results in making available funds earlier than under the old practices. This will be of material assistance to several districts where all officers and directors are co-operating.

Fixed Charges.

The fixed charges, as outlined earlier in this statement, being approximately \$3,718,000—if apportioned to each child of school age upon a basis of 620,000 school children in the state—would represent a fixed charge of interest, debt payment and administration in excess of \$6 per child; while the total apportionment for schools by the state for last year, from state sources, was only \$3.89 each. This charge of approximately \$6 per child, however, is unfair in this respect, that, in some districts, it is less, and in others several times greater per child, and as a result cannot be treated as a blanket charge.

As a result of the distressing conditions in school financial affairs, I have from time to time seen in print severe criticism of the General Assembly by persons bearing the confidence of many, which I cannot regard any way other than that these

investigation or upon false representations, as in practically every instance they cannot be supported by the facts. In an effort to assign reasons for these conditions it has been said that enormous sums of school money were diverted from the common school fund for the support of the University, the agricultural schools and several other smaller schools that have been established in recent years. This statement is not supported by the records as none of these institutions have been given one penny of common school money.

It has also been represented to the public that the State Geological Department had been given school money to operate that department. This statement is not true as the department is supported by a special tax levied for that purpose and never at any time dedicated to the common schools. A part of the monies mentioned above could have been given to the common schools had the legislature desired and these agencies been abandoned or denied. As to the advisability of such action I am not commenting and the point I seek to make is that the monies supporting these agencies was not, under the law, common school money. It has been further charged in the press that approximately \$50,000 of common school money was taken to support county audits that are being made by the state auditorial department, when in truth and in fact the amount diverted for this purpose is approximately \$12,000 annually; and the records of county audits reveal that there has been recovered or developed for the schools approximately \$20 for each dollar spent.

Blind and Deaf Schools.

Wide criticism has been hurled at the legislature by reason of directing from the common school fund for the education of the blind and the deaf children approximately \$150,000

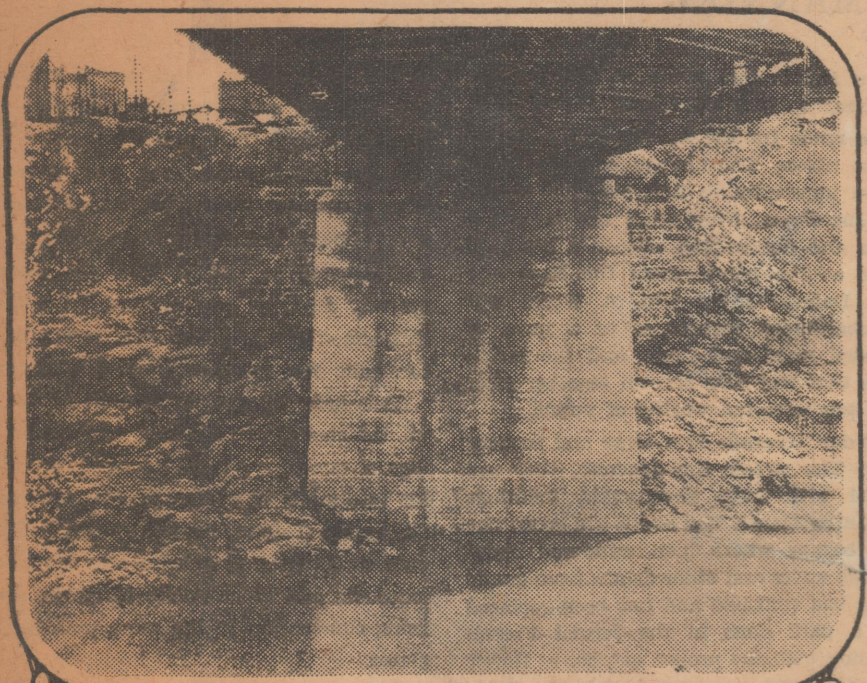
Education
2 cards

La Petite Roche

May 22, 1931

Gazette 1932?

So-called by the French Explorers on Their Voyages Up the Arkansas River Because It Was the First "Little Rock" to Be Seen—Civitan Club Performs Distinct Service for City in Moving Part of Original Rock to City Hall Lawn and Establishing Perpetual Marker There.



The Gazette's cameraman clung to the Missouri Pacific's "Rock Street" bridge to make two views of the original "little rock," from which the capital city derives its name. The bridge abutment rests on this solid foundation.

More than 100 years after it was incorporated and 210 years after it was discovered by a white explorer, Little Rock—or la Petite Roche to a Frenchman—at last will have a fuss made about its unique name. A slab of rock weighing a ton will be removed from its resting place for centuries on the river bank by the Little Rock Civitan Club and placed on the city hall lawn. A bronze tablet will be attached to it on which will be engraved a brief history of the city and the circumstances which gave Little Rock its name.

Most Little Rockians know that the name was derived from the fact that the first rocks were found on this spot by explorers who ventured up the Arkansas river, which made it a landmark for those early adventurers. After many days of flat lowlands, the first sight of the plateau and the mountains rising behind it must have been a welcome one for those grand seigneurs.

But few seemed to remember where the "little rock" is located, although it is indicated by Rock street and the "Rock street" bridge. The Missouri Pacific's Rock street bridge abutment, in fact, rests on the little rock which provided the city a name.

The old boys referred to it as "La Petite Roche," of course, and across the river was "La Rocher Francaise," or "The French Rock"—known to this generation as "Big Rock," on which its situated the United States Veterans' hospital.

Little Rock might well have received the name "Emerald Rock," if the legends torian says that members of John Law's ill-fated "Company of the West" had heard there was an emerald rock farther up the river from their settlement. This is believed to have been one of the tales of loquacious Indians brought with them to the colony, perhaps because the rock was the color of emerald in those days when the sun hit it right from across the river.

Or it might have come down to us as "Arkopolis." Some of the early settlers favored that name in 1821, and it appears on old maps of that date, but the name was never officially adopted.

The first historical reference to "La Petite Roche" is contained in the journals of Sieur Bernard de la Harpe, who came up the river in 1722 with a golly company in pirogues. Some have said that he hoped to find the "emerald rock," but the plain facts are that he would have preferred to find a large deposit of gold. Like most of the gentlemen adventurers of

those days he brought his historians along and these historians made reference to "La Petite Roche," and many other details of the voyage.

The little rock, or "point of rocks," as it was called by some surveyors, has another distinction in that it marked the northeast corner of the Quapaw reservation, according to the treaty of August 24, 1818. By this treaty the Quapaws ceded a large tract from a point 90 miles below the mouth of the Arkansas river west to Big Raft on the Red river, and north to the Arkansas river again.

of those early days had survived. One his- Within this tract was the Quapaw domain reserved by the Indians. The reservation began at a point on the Arkansas river not now known, extended southwest to the Ouachita river, up the Ouachita to the Saline river and up the Saline to a point from which it extended northeast to the "point of rocks" on the Arkansas river.

This Quapaw northern boundary line had much to do with the early settlement of Little Rock. White settlers were forced to remain west of the "Quapaw Line." Now the "Quapaw Line" is nothing more than an ancient landmark for surveyors.

Little Rock is the only large city of that name, but there are five smaller towns in the United States known as Little Rock. Three of these towns—in Mississippi, South Carolina and Iowa—spell it with two words, but in California and Washington the towns are spelled "Lit-

tleroak."

Little Rock was incorporated by an act of the legislature of 1831 and the first Town Council was organized on January 15, 1832. It was made a city of the first class by an act of the legislature March 9, 1875.

The little rock to be placed on the city hall lawn on a concrete base by the Civitan Club will be an appropriate marker. The club plans to hold formal dedication ceremonies at 5 p. m. on June 2. J. H. Kruger is chairman of the Marker Committee of the club, which has performed a distinct service to the city in making a suitable marker out of a part of the original little rock.

Visitors to the city in years to come will pause by this marker and learn how the city derived its unique name. Many of those born and bred in Little Rock may go down there and find out something about the history of their native city.

CITY'S 'LITTLE ROCK' MARKER DEDICATED

Mayor Knowlton Accepts Memorial Presented by Civitan Club.

6-4-32

More than 200 persons attended the ceremonies yesterday afternoon for the dedication of a section of the original "little rock" which has been placed in a concrete base at the southeast corner of the city hall grounds. The program was in charge of E. R. Wiles, past president of the Civitan Club, which conceived the plan of taking a 4,700-pound section of the stone from which the city obtained its name and building a memorial with it.

The program was opened at 4:45 p. m. with a short concert by the 158d Infantry band, Arkansas National Guard, after which Mr. Wiles made a brief address, explaining the purposes of the Civitan Club. The Rev. Calvin B. Waller, pastor of the Second Baptist church, pronounced the invocation.

Mr. Wiles introduced Dr. Howard A. Dawson, newly elected president of the club who explained the symbolism of the rock, at the convergence of the Ozark mountain and the delta regions of the state. Mr. Dawson presented Miss Josephine Tucker, daughter of John Tucker. She unveiled the rock and broke a bottle of water from the Arkansas river on the stone.

Mayor Appreciates Interest.

Mayor Knowlton accepted the gift from the Civitan Club, expressing appreciation for the interest of the organization, and stressing the meaning of the gift for posterity. Dallas T. Herndon, secretary of the state History Commission, made the principal address, discussing the history of the rock, its discovery and the development of the city.

Distinguished guests were introduced. Capt. Arthur Cundy, secretary of Civitan International, brought greetings from the national organization. The band played "The Star-Spangled Banner" and the Rev. John J. Healy pronounced the benediction.

Members of the Civitan Club's Marker Committee were: J. H. Kruger, Dr. James O. Hall, C. B. Erwin, Dr. J. D. Jordan and Dr. Dawson. Members of a City Council committee appointed to assist in the dedication were Aldermen Wassell, Tuohy and Mrs. Conner.

Late today the bronze plaque with the history of the rock will be removed, and a sealed bronze box, eight by 10 inches, containing original copies of addresses made yesterday and a copy of today's Gazette, will be placed in a niche dug in the stone behind the plaque.

Inscription on Rock.

The inscription on the plaque follows:

"The Little Rock—1722. A section of the Little Rock located at the foot of Rock street, forming the south pier of the railroad bridge over the Arkansas river, being the first rock seen by the French explorer Bernard de la Harpe on his voyage from the mouth of the Mississippi river up the Arkansas in 1722.

"For 100 years prior to the founding of the town this rock marked the crossing of the north and south trail of the early settlers, the river being fordable at this point, and was known as the Little Rock. In 1821, Little Rock was made the capital of Arkansas territory, later when the territory became the state and admitted to the Union in 1836, the capital.

"The Little Rock is the northwest corner of the Quapaw line surveyed after the signing of the treaty of cession between the Quapaw tribe and the United States June 24, 1818. Erected with the aid of officials of Little Rock by the Civitan Club, June 3, 1932."

Little Rock

Basic Values of Arkansas

The Following Article by George C. Branner, State Geologist, Shows in Official Figures the Basic Income of the State — Figures for 31 Years Indicate in Striking Way the Steady Growth of the Aggregate Values of the State.

By GEORGE C. BRANNER

(State Geologist)

In times of depression, it is enlightening to consider our basic sources of income. The wealth of Arkansas is based primarily upon the ability of the population to produce agricultural, timber, mineral, and manufactured products. Figures for the 31-year period, from 1899 to 1929 inclusive, indicate, in a striking way, the steady growth of the aggregate value of these products. The record provides adequate grounds for a decidedly encouraging view of the future, irrespective of the present sub-normal condition, which is requiring new adjustments in conditions affecting supply and marketing. The values are set forth in the Table 1 and are plotted on the accompanying Graph 1.

The figures in the table present a picture of the basic production of Arkansas in terms of dollars. The purchasing power of the dollar, however, has varied considerably over the period discussed. Reference to this is made later. In addition, the values presented should not be confused with cash income to Arkansans because of the complex character of property ownership, partial consumption by producers, and variations in quantities stored from time to time, usually for price increase. The values given, however, do form an approximate basis for the real income to the people of the state and form the foundation for the state's pay rolls and taxable property.

The agricultural values include the year values of crops and the cash sales of animal products and of livestock sold or slaughtered. The timber and lumber values include figures on both logs and timber without duplication of values. The mineral values include the usual classes of products in addition to Portland cement, a manufactured product. The figures on manufactured products include the usual classes of products but do not include lumber or Portland cement.

The aggregate dollar value of the basic economic goods of Arkansas during the years 1899, 1909, 1919, and 1929 are shown in the following table:

Year.	Aggregate Value.	Change in Value	Percent Change.
1899	\$112,380,435		
1909	226,413,788	\$114,033,353 inc.	101 inc.
1919	219,988,836	393,575,048 inc.	174 inc.
1929	515,231,804	104,757,032 dec.	17 dec.

The above figures show that during the

31-year period, the 1899 aggregate value increased 4.6 times and doubled itself 2.4 times.

It is of much interest, also, to consider the value of goods produced per capita at 10-year periods from 1899 to 1929. These are shown in the following table. Population figures for 1900, 1910, 1920, and 1930 have been used together with the aggregate values shown above.

Year	Population.	Value per Capita.	Change in Value.	Percent Change.
1899	1,311,564	\$ 85.68		
1909	1,574,449	143.56	\$ 57.88 inc.	67 inc.
1919	1,752,204	353.83	210.27 inc.	146 inc.
1929	1,854,482	277.83	76.00 dec.	21 dec.

The above figures show that during the 31-year period, the value of production per capita increased 3.2 times.

Dr. C. C. Fichtner, professor of economics of the University of Arkansas, has suggested, in connection with these figures, that a better picture of values would be

obtained by the use of the United States Bureau of Labor price indices for commodities in the United States, which set forth the average amounts in dollars and cents which would purchase equal quantities of commodities during the year periods shown. The indices are estimated on the basis that the 1926 value of the dollar is 100 cents. These indices, however, do not take into consideration average prices in Arkansas, specifically, but are for the United States as a whole. The change in aggregate and per capita values are set forth in the table, using the indices referred to:

Year.	Aggregate Value.	Index 1926=100 cents.	Recalculated Value Using Aggregate Index.	Recalculated Per Capita Value Using Index.
1899	\$112,380,435	52.2	\$215,288,189	\$164.15
1909	226,413,788	67.6	334,931,639	212.73
1919	219,988,836	138.6	447,322,392	255.29
1929	515,231,804	96.5	533,918,967	287.91

The following increases are indicated by the above table:

Period.	Increase in Value	Percent Increase.	Increase of Per Capita Value.	Percent Increase.
1899-1909	\$119,643,450	55.5	\$48.58	29
1909-1919	112,390,753	33.5	42.56	20
1919-1929	106,596,575	23.8	32.62	12

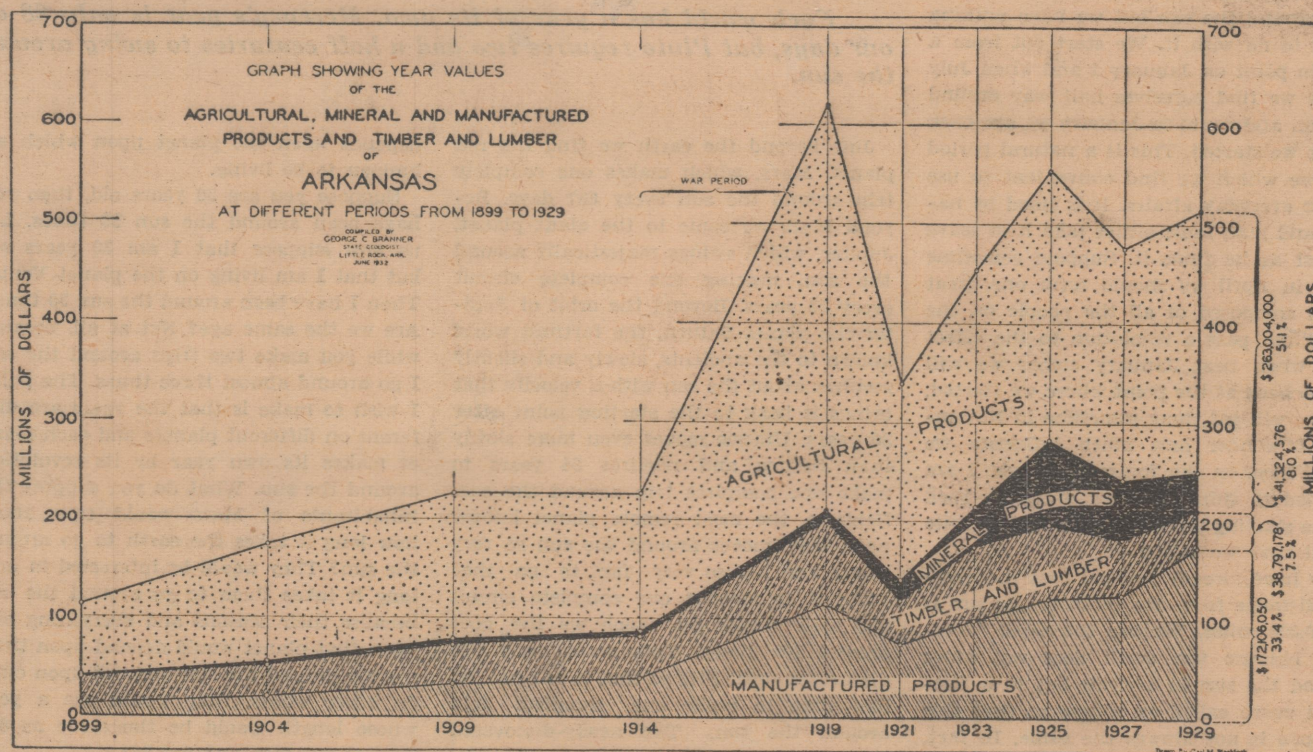
It will be noted that, unlike the figures which do not take into consideration the price index, both the aggregate and per capita figures show a consistent increase for the three periods. This relationship is made clear in Graphs 2 and 3. The average increase of aggregate values for each of the three periods is \$112,876,926, and the average increase of the per capita value for each of the three periods is \$41.58.

Graph 2 shows the comparison between the aggregate values for 1899, 1909, 1919, and 1929, both on an actual dollar basis and on a recalculated basis, using price indices.

Graph 4 shows the variations in the percentage relation of the four main classes of products to their aggregate values over the 31-year period and clearly indicates the trend toward a lower relative percent of agricultural products. The percentages shown are estimated on the actual dollar basis only as price indices for the different commodities are not available for making complete recalculations.

Graph 1 illustrates in a striking way a point of view which has long been current, namely, that the World war released economic forces which have profoundly disturbed the progress of economic events since 1914, as it will be noted that all of the striking changes in growth in the value of Arkansas production from 1899 to 1929 took place following that year.

This is the first of a series of two articles by the state geologist which give accurate and entertaining figures on the basic production values of the state. The second article will appear next Sunday.



Graph compiled from records of the United States Department of Agriculture, the United States Geological Survey, the United States Bureau of Mines, Manufactures and Agriculture, and the Arkansas Cotton Trade Association.

TABLE 1.

Data according to U. S. Department of Commerce, U. S. Department of Agriculture, U. S. Geological Survey, U. S. Bureau of Mines, Arkansas Bureau of Mines, Manufacturers and Agriculture, and Arkansas Cotton Trade Association.

YEAR	MANUFACTURED PRODUCTS.		LUMBER AND TIMBER PRODUCTS.		MINERAL PRODUCTS.		AGRICULTURAL PRODUCTS.		TOTAL VALUE	TOTAL PERCENT	PER CENT OF MINERAL TO AGRICULTURAL VALUE.
	Value	Percent	Value	Percent	Value	Percent	Value	Percent			
1899	\$ 13,264,000	11.81	\$26,624,000	23.69	\$1,643,709	1.46	\$ 70,848,726	63.04	\$112,380,435	100.00	2.32
1904	21,871,000	12.57	31,993,000	18.39	4,438,472	2.55	115,671,721	66.49	173,974,193	100.00	3.84
1909	34,275,673	15.14	40,640,327	17.95	5,889,329	2.60	145,608,459	64.31	226,413,788	100.00	4.04
1914	40,799,000	18.05	43,115,000	19.07	5,787,199	2.56	136,327,793	60.32	226,028,992	100.00	4.25
1919	116,304,549	18.76	84,008,309	13.55	10,709,213	1.73	408,966,765	65.96	619,988,836	100.00	2.62
1921	75,007,933	21.91	44,021,552	12.86	22,515,412	6.58	200,814,460	58.65	342,359,357	100.00	11.21
1923	99,073,278	21.86	73,467,862	16.21	41,954,319	9.25	238,753,800	52.68	453,249,259	100.00	17.57
1925	121,850,439	21.98	73,357,576	13.24	87,185,532	15.73	271,882,600	49.05	554,276,147	100.00	32.07
1927	125,061,403	26.17	57,689,468	12.07	59,449,100	12.44	235,654,575	49.32	477,854,546	100.00	25.28
1929	172,106,050	33.40	38,797,178	7.53	41,324,576	8.02	263,004,000	51.05	515,231,804	100.00	15.71

Basic Values of Arkansas

It May Interest Our Readers to Learn That From 1914 to 1929, as Proved by State and National Statistics, Arkansas Has Become Less Agricultural and More Industrial — Ratio Between the Value of Mineral and Agricultural Products of Great Significance

By GEORGE C. BRANNER
(State Geologist)

July 24 1932

From 1914 to 1929 the agricultural values of Arkansas increased 93 per cent and this value increase was due principally to improved prices. It will be noted, however, that the percentage of agricultural to aggregate values from 1914 to 1929 decreased from 64 to 51 per cent. The lumber and timber value decreased 10 per cent, due partially to depletion of timber. The most interesting and the most encouraging change, however, took place in the manufacturing and mineral products industries and the figures demonstrate the fact that, relatively speaking, the state has slowly become less agricultural and more industrial.

In the mineral industry the outstanding event from 1914 to 1929 was the discovery and production of oil in southern Arkansas. From 1920 to 1925 the value of oil produced in the state increased from nothing to \$68,880,000. During this period, and due almost entirely to the same cause, the total value of all mineral products increased nearly five-fold, or 389 per cent.

The ratio between the value of the mineral and agricultural products is also of much interest. In the United States, as a whole, mineral values usually are from 33 to 50 per cent of the agricultural values. In Arkansas, during the 31-year period under consideration, this percentage has varied from two to 32 per cent, and in 1929 was 16 per cent. This variation in values has been due almost entirely to the fluctuation of the state oil production. It is the writer's opinion that the 16 per cent ratio referred to probably will increase over a period of years. This opinion is based principally on a belief in the probability of the discovery of new oil fields in southern or eastern Arkansas which may follow continued prospecting in that area. The discovery of a new oil field may at any time rapidly increase the value of oil, natural gas, and natural gas gasoline products in the state. The discovery of new oil fields cannot, of course, be definitely depended upon.

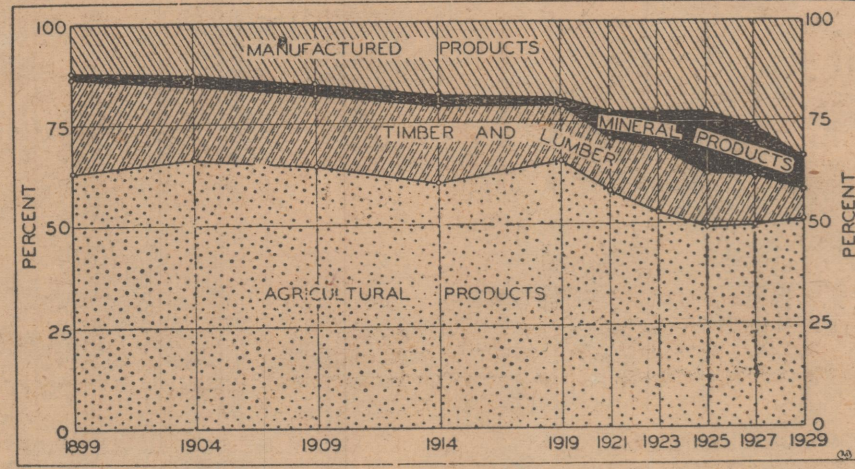
The value of all fuel minerals (oil, natural gas, natural gas gasoline, and coal) reached its maximum in 1925 during the flush production of the Smackover field. The value in that year was \$81,523,000 while in 1929 the value was \$33,735,000. This diminution was due almost entirely to decreased oil production.

The value of nonmetallic resources, other than fuels, has increased at a fairly constant rate over the 31-year period. The value for 1929 (\$6,361,324) was the maximum for the entire period and it is highly probable that this value will increase further due to the many undeveloped nonmetallic mineral resources of the state.

Metallic minerals in the state, which in 1929 were valued at \$1,232,523, may be expected to increase during periods of high metal prices. Metal prices during the war period were the direct cause of the increased value of metallic minerals to \$3,733,010 in 1917. This is the highest figure which has ever been reached.

The natural advantages of Arkansas, which have made possible her remarkable economic growth, are her inland location in the central part of the United States not far removed from the center of population and from markets, her moderate climate, her river, rail and highway transportation facilities, and her various highland and lowland natural resources.

The natural advantages of Arkansas and the competitive forces of business guarantee to a considerable degree continued economic progress and an increase in the aggregate value of the basic products of the state over a period of years. This would probably take place apart from the assistance of any federal, state, or local economic agencies. It should be kept in



Graph Showing Variation in Per Cent of Aggregate Values of Basic Products of Arkansas From 1899 to 1929.

mind, however, that competition between states and sections of the United States is becoming increasingly active in the matter of raw and manufactured materials and in inducements offered for the location of new industries.

In connection with the growth of the mineral industries, for example, detailed information is continually required by interested firms and individuals concerning (1) the quantity and quality of the numerous mineral resources of the state, (2) markets and marketing conditions, (3) old and new uses of various mineral products, and (4) methods by which economies in production or preparation of raw materials may be effected.

The same general type of information is required in connection with the development of all natural resources. Although probably no state in the Union is prepared at the present time to supply complete information bearing on its natural resources, the fact remains that many of the states have built up organizations of trained men who are going about the business of building up the economic life of their respective states in a remarkably effective manner. Groups of this character are sometimes able to create new opportunities for development by special studies of new uses and combinations of raw materials and manufactured goods.

To thoughtful persons it will be apparent that adequate and continuing support of the effective economic agencies of the state, county, and municipality is one of the prices which must be paid for the progressive and competitive development of natural resources.

GROWTH OF INDUSTRY.

Comparative figures, showing the growth in Arkansas of certain classes of industries from 1914 to 1929, are partially available from the records of the United States Department of Commerce and are given herewith.

Industry.	Number of Establishments.		Number of Officers and Employees		Value of Product.	
	1914	1929	1914	1929	1914	1929
Beverages	77	85	177	449	\$ 698,511	\$ 3,156,269
Bread and Bakery Products.....	26	95	387	983	1,441,984	5,242,127
Brick, Tile, and Fire Clay Products..	26	10	...	606	406,598	1,961,283
Canning and Preserving, Fruits and Vegetables	63	132	454	1443	579,209	2,194,259
Car and General Construction						
R. R. Repairs.....	19	15	3,634	4,515	4,971,093	13,108,148
Carriage, Wagon and Sled						
Materials	46	7	534	289	1,186,636	1,015,441
Confectionery	12	7	85	42	361,254	188,244
Copper, Tin, and Sheet Iron Works..	30	9	86	106	262,202	881,306
Flour and other Grain Mill Products	102	30	282	204	5,802,099	4,848,697
Foundry and Machine Shop Products	52	33	319	479	633,440	1,971,983
Furniture	21	13	522	1,698	1,112,784	6,116,552
Ice Cream	31	33	93	174	516,601	1,540,174
Ice	65	128	424	785	1,114,551	3,188,990
Mattress and Bed Springs.....		11	99	178	329,446	945,376
Oil, Cake and Meal, Cottonseed.....	43	31	1,165	1,483	9,249,457	21,451,731
Printing and Publishing.....	307	176	892	1,674	2,341,989	6,775,447
Wood Turned and Shaped and other Wooden Goods	18	29	354	601	506,574	1,611,935
	1,079	844	9,507	15,709	\$31,514,428	\$76,197,962

The above figures indicate a decrease of 21 per cent in the number of establishments, an increase of 65 per cent in the number of employees, and an increase of 141 per cent in value of production.

The following table, taken from the same source, is a partial list of new classes of industries which have been established in Arkansas since 1914:

Industry	Number of Establishments	Number of Officers and Employees	Value of Product, 1929
Boxes, wooden	7	672	\$ 1,445,951
Brooms	3	52	200,989
Car and General Construction and Repairs	5	87	164,950
Electric Railroad Repair Shops.			
Cheese	10	22	429,144
Chemicals	4	75	802,770
Feeds, prepared for animals and Fowls..	7	201	3,743,571
Meat, Packing, wholesale.....	7	64	1,387,051
Motor Vehicle Bodies and Motor Vehicle parts	9	895	3,551,359
Refining of Petroleum Products.....	10	3,873	18,906,361
	62	5,941	\$30,632,055

New outstanding manufacturing establishments which have not been included in either table are as follows:

Company	Capital	Class of Industry
International Shoe Co., Malvern.....	\$ 1,290,640	Shoe Lining
Southern Kraft Corporation, Camden....	265,702	Paper
Arkansas Portland Cement Co., Foreman.	1,000,000	Cement
Rockwell Manufacturing Co., Camden....	400,000	Screen Doors

Mines Produce Greatest Freight

EL PASO, Texas, Aug. 23. (Exclusive)—The mining industry of the United States in normal times provides three times more railroad freight tonnage than agriculture, yet it receives from the government only \$4,000,000 a year appropriation, while agriculture gets an appropriation of \$110,000,000 to \$141,000,000 annually, declared Scott Turner of Washington director of the United States Bureau of Mines, in an address before the El Paso section of the American Institute of Mining and Metallurgical Engineers.

He said he has been attending mining conventions in this country for twenty years and in all that time he has known of only one Cabinet member being present at one of these meetings. In discussing the mining situation he said that the 4-cent duty on copper cannot become operative until the stocks on hand are exhausted. With a return of better economic conditions these stocks, he thought, will rapidly melt away.

"If it hadn't been for the copper tariff—and perhaps in spite of it—we should have seen, or may see, the world-circle of copper completed by the transfer of the center of copper production to Africa," Mr. Turner said.

Mineral Industry

Industry, man

See p. 222

THESE FIGURES DON'T SHOW STATE DEVELOPMENT.

With the exception of the gasoline sales tax and a few minor levies, all the state's special taxes showed a marked shrinkage in yield for 1931-32 as compared with earlier fiscal years. The decrease in severance tax revenue was particularly heavy, as is shown by the following tabulated statement of collections for the designated fiscal periods: 8-21-32

1928-29	.....\$854,685
1929-30	.....788,816
1930-31	.....467,970
1931-32	.....226,498

This is a tax imposed on producers who sever from the soil of Arkansas for commercial purposes such natural resources as crude oil, gas, stone, metallic ores, coal, sand, gravel and timber. The extent to which revenue from such a tax increased would be a gauge of a state's development. By this test, it appears that Arkansas is not maintaining its industrial progress.

Of course something must be allowed for the state of the times. But the depression can not account solely for such a severance tax revenue chart as ours. This tax has been levied for nine years. Leave out the last two abnormal years and go back to 1929-30, when the nation was still to all appearances in the full flush of the greatest prosperity it has ever known. That year's severance tax collections, \$788,816, were the lowest on record up to that time except the \$612,250 of the first year, 1923-24, when the machinery of collection was new. For the following four-year period the collections were as follows:

1924-25	.....\$ 913,584
1925-26	.....1,239,656
1926-27	.....1,838,052
1927-28	.....1,386,055

Oil development in southern Arkansas accounted for those three big years. But as El Dorado, Smackover and Camden passed their flush production days, no new fields were brought in to replace them, and the development of other natural resources was not substantial enough to make the severance tax return even as much as it had returned before the oil boom came.

Although the severance tax last year yielded little more than one-half what it had the year before, two special levies showed striking gains. Slot machine tax collections were three times, and pool table tax collections four times, those of the previous year. But slot machines and pool tables are not going to develop Arkansas.

ARKANSAS MINERAL OUTPUT ANALYZED

Value of All Except Oil 'Maintained Remarkably Well,' Geologist Shows.

George C. Branner, state geologist, yesterday cited data indicating that the value of all mineral production in Arkansas, with the exception of oil, has not been dropping substantially. In 1930, for instance, the value of all minerals except oil produced in Arkansas was greater than in 1927.

Mr. Branner said that oil production in the state may increase "at any time" through discovery of new fields and he added that the state Geological Survey has a report dealing with the oil and gas geology of the gulf coastal area of the state, which it is unable to publish because of lack of necessary funds.

Following is Mr. Branner's statement:

Text of Geologist's Statement.

In an editorial entitled "These Figures Don't Show State Development" in the Arkansas Gazette of August 21 last, it is stated that "By * * * (the state severance tax) test, it appears that Arkansas is not maintaining its industrial progress." It is further stated that "The development of * * * (natural resources other than oil) was not substantial enough (in 1929-1930) to make the severance tax return even as much as it had returned before the oil boom came."

I believe that these statements do not give a complete picture of the situation. If the value of oil produced in Arkansas for the period 1921-1930, inclusive, is segregated from the value of all other minerals produced, and from the value of timber and lumber produced during that period, it becomes apparent that the oil and timber value

has decreased while the aggregate value of all minerals except oil has been maintained remarkably well. This, I believe, is the correct interpretation of the industrial situation so far as it applies to timber and minerals. The following table of values illustrates this point:

Year.	Value of Oil (1).	Value of Timber and Lumber (2).	Value of all Minerals Except Oil (1).
1921	.....\$12,746,000	\$44,021,552	\$ 9,769,412
1922	.....20,416,000	.....	11,002,633
1923	.....25,400,000	73,467,862	16,554,319
1924	.....43,130,000	.....	18,618,999
1925	.....68,880,000	73,357,576	19,305,532
1926	.....64,800,000	.....	19,385,672
1927	.....42,400,000	57,689,468	17,049,100
1928	.....27,450,000	.....	17,559,780
1929	.....21,890,000	38,797,178	19,434,576
1930	.....17,390,000	.....	17,511,000

The oil situation is one which may recover substantially at any time. I am confident that the continued prosecution of wildcat drilling in the gulf coastal plain area, particularly in southern and southeastern Arkansas, will result in the discovery of new oil fields from time to time.

The great importance of oil production to the state, county and city governments is indicated by the tax revenue which has been collected by these agencies in Arkansas as a result of oil production during the 10-year period 1921-1930, inclusive. These revenues are partially estimated as follows:

Oil well permit fees, April 1, 1923, to December 31, 1930, inclusive (state tax), \$217,710.

Corporation tax on oil companies, 1921-1930, inclusive (state tax), \$673,500.

Severance tax on oil April 1, 1923, to December 31, 1930, inclusive (state and county taxes), approximately \$7,354,300.

Portion of real and personal property and special taxes in Union and Ouchita counties due to oil field development, 1921-1930, inclusive (state, county and city taxes), estimated, \$7,116,000.

Total, \$15,361,510. Such large revenues tangibly illustrate the great good fortune which accrues to the state, county and city governments through the discovery of oil and emphasizes the need for these governments taking any reasonable action for the stimulation of drilling in likely areas and for the conservation of the oil found. In this connection the state Geological Survey now has on hand an exhaustive report dealing with the oil and gas geology of the gulf coastal area of Arkansas, but is unable to publish it on account of insufficient funds.

ARKANSAS AND ITS MINERAL DEVELOPMENT.

The statement from State Geologist George C. Branner, which the Gazette published Sunday, is both a reminder of the importance of mineral development for Arkansas and a call to action in aid of this development.

Mr. Branner shows that although the value of oil and timber production has fallen, we can find encouragement in the aggregate value of all minerals except oil. As for oil, he makes the welcome statement that the situation may recover substantially at any time. In this connection he says:

"I am confident that the continued prosecution of wildcat drilling in the Gulf Coastal Plain area, particularly in southern and southeastern Arkansas, will result in the discovery of new oil fields from time to time."

What the discovery of the El Dorado, Smackover and Camden fields meant to Arkansas is shown by Mr. Branner's estimate that in the 10 years from 1921 to 1930, inclusive, state and local taxes resulting from oil production aggregated \$15,361,510. In addition, of course, the Arkansas oil industry put a great amount of "new money" into circulation through construction and operating outlays, leases and royalties.

Those tax revenues alone, as Mr. Branner pertinently says, should show the value of the state's taking any reasonable action that may stimulate drilling in likely areas, so that new fields may be discovered.

There could be no more helpful state action than publication of the state Geological Survey report dealing with the oil and gas geology of the Gulf Coastal area of Arkansas. Because the necessary funds are lacking, that exhaustive report, with its 60 geological maps is still unpublished. And it would cost only \$4,500 to publish it.

MINERALS' VALUE TO ARKANSAS CITED

George C. Branner Addresses Agricultural Extension Service Club.

Arkansas receives more money for its minerals than any other Southern state with the exception of Texas. George C. Branner, state geologist, said last night in an address before the Self Improvement Club of the state Agricultural Extension Service at the Extension offices.

He described the minerals of the state and in giving their value, said that 82 per cent of the income from minerals and mineral products is from coal, gas and oil; 12 per cent from non-metallic minerals, and five per cent from metallic minerals.

In 1929, the gross income from minerals was \$40,000,000, Mr. Branner said. Of this amount \$15,000,000 stayed in the state, \$2,000,000 in taxes, and the balance was spent for equipment with which to mine the minerals.

E. H. Reed, marketing specialist, presented a paper on the "Why and How of Group Distribution."

Campbell Arnaud, manager of radio station KTHS at Hot Springs, talked on "The Preparation and Technique of Presenting Radio Material" at the meeting of the districts agents and specialists of the state Agricultural Extension Service yesterday morning. T. Roy Reid, assistant director, presided.

The annual reports of the county agents and specialists were discussed. Mr. Reid announced that the quarterly conference of the staff of the Extension Service will be held at the University of Arkansas College of Agriculture, Fayetteville, December 9 and 10. G. E. Tanner, Van Buren county agent, was a guest at the meeting.

GEOLOGIST IN TALK TO BANK EMPLOYEES

Early Surveys and Value of Minerals to Arkansas Discussed.

The cause for the first state geological survey in 1857 is not known but the survey in 1857 was made to determine whether there was gold in the Ouachita mountains, and that in 1923 was started because of the discovery of oil in the state, George C. Branner, state geologist, said yesterday morning before a meeting of employees of the Union Trust Company. President Hoover, then only 19, was employed during the summer of 1893 to help with the report on marble in the north central part of the state, Mr. Branner said.

Mr. Branner first discussed the general geology of the state. Practically the entire surface of the state is made up of sea sediment of sand, clay and limestone, although there are a few small areas of volcanic rock, which are valuable, he said. If the layers of rock which have been formed during the last 70,000,000 years were piled on top of one another they would be 10 miles high.

Cinnabar, a sulphide of quicksilver, has been recently discovered in Pike, Howard and Clark counties, and a survey is being made with a view to future development. Mr. Branner said in discussing the economic minerals of the state. In his exhibit in the lobby of the bank is a specimen of the rock and a small bottle of quicksilver extracted from some of the rock in that section of the state.

Over a period of 50 years the economic minerals of the state have been predominantly fuel mineral products. 82.6 per cent petroleum, coal and natural gas, 12.3 per cent nonmetallic and 5.1 per cent metallic. Of the fuel products, 62 per cent are petroleum and of the metallic 74.7 per cent are bauxite. Gas is one of the greatest undeveloped resources of the state, the geologist said. The gas region lies mainly in a great trough between the Ozarks and Ouachita mountains.

Mr. Branner illustrated his talk with charts showing the location of the principal minerals and their respective values. He said the most reliable records available indicate that out of a gross production of about \$40,000,000 in 1929, the net profit to operators was about \$4,000,000, leaving \$36,000,000, which went into royalties, taxes, equipment and other operating expenses, the greater part of which was spent in Arkansas.

The speaker was introduced by Kit Carson.

The Petrified Forest

By CLAUDE A. RANKIN. Produced by infiltration of water

In the southwest corner of Pike county, near the famous gypsum beds on the farm of William F. Morris, about three and a half miles southwest of Murfreesboro, is one of Nature's wonders—a petrified forest.

As you stand, deep in the canyon, in the presence of these beautiful specimens of petrified wood, you are struck with the mighty work of Nature in all its mysterious moods, and the story of these trees becomes very fascinating. You realize that the work of petrification is one over which great scientists might spend a life of study.

Perhaps millions of years ago these trees were uprooted by a mighty convulsion of Nature, and deposited on the floor of an arm of the Gulf of Mexico. These waters long ago receded from this scene of the battle of the elements, and these trees were entombed and petrified by some mysterious process.

Here, Nature provided in the water, chemicals, and the pressure of the earth above, the proper ingredients and machinery for petrification of these trees. The first thing needed was silica, for petrifica-

tion is produced by infiltration of water containing dissolved mineral matter, such as calcium carbonate and silica, or sand, which replaces the organic material. The infiltration, in its process of petrification, was aided by the pressure of the great over-burden of earth, which has since been worn away by the agents of erosion, water, wind, heat and cold, exposing the objects of its silent and age-long labors. When we view these prone trees, we cannot but liken them to the Taj Mahal in ruins.

We are impressed also with the handiwork of Nature as a sculptor when we view the beautiful blue hills stretching out on every side like high altars of worship.

The Parthenon is a wreck; the Pantheon a ruin. The marble of the celebrated Greek sculptors has suffered disfigurement. The Nike, or Winged Victory of Samothrace, is headless, and the Olympian Jove of Phidias has crumbled into dust. Hundreds of other marble masterpieces of the great Greek sculptors are broken, and even their memories have gone glimmering, yet these mute, but enduring, monuments of nature still exist in all their pristine beauty.

MINERAL EXHIBITS DISPLAYED IN BANK

Arkansas Ores Shown in Lobby at the Union Trust Company.

An exhibit of the principal metallic minerals of Arkansas has been placed in the lobby of the Union Trust Company by G. C. Branner, state geologist, at the request of officials of that bank.

The exhibit, in a display case near the Fourth street entrance, contains bauxite, zinc, manganese, lead and cinnabar, or sulphide of quicksilver, in various forms from green ore to manufactured products.

This is the first of a series of mineral exhibits which will be placed on display in the bank lobby by the state geologist. Each display will remain in the bank several weeks. The metallic minerals display has attracted wide attention and has been the cause of many business men gaining valuable information regarding the state's resources, E. J. Bodman, vice president of the bank, said.

In a statement explaining the exhibit, Mr. Branner gave the value of the metallic minerals produced in Arkansas from 1900 to 1929 as follows:

Bauxite, \$23,707,148; zinc, \$5,276,041; manganese, \$2,375,031; lead, \$191,153; antimony, \$9,213, and silver \$2,164, or a total of \$31,560,750. The value of bauxite shown in the list is the estimated value of ore used in manufacture of metallic aluminum only. The total value of all bauxite mined in the state during the past 30 years was \$37,042,418, Mr. Branner said.

Metallic minerals represent only 7.2 per cent of the value of all mineral production during that period. Non-metallic minerals represented 10.3 per cent and fuel minerals, 85.2 per cent.

"Bauxite, zinc and manganese make up 99.35 per cent of the total value of metallic minerals," Mr. Branner said.

Huge Bauxite Resources.

"The bauxite production of the state is confined wholly to Pulaski and Saline counties. In 1930, these counties produced 95.35 per cent of the total bauxite produced in the United States. The bauxite reserves are probably sufficient to last for a long period of years. The maximum production occurred in 1918 (562,892 long tons, valued at \$3,133,880).

"The zinc carbonate and sulphide production has been confined almost entirely to Marion, Boone, Newton and Searcy counties, and reached the highest figure it has ever reached during 1916 (6,815 short tons, valued at \$1,826,420).

"Manganese oxide production is confined to Independence and Izard counties, and reached its maximum in 1917 (19,240 long tons, valued at \$531,738).

"Lead sulphide production is confined largely to Newton county and reached its maximum in 1917 (382 short tons, valued at \$65,704).

"Antimony sulphide has been produced in northern Sevier county exclusively. The maximum production was in 1924 when 100 short tons, having a value of \$6,787 were produced.

"The silver production occurs usually with lead sulphide. The only production recorded is that of 1925 when 3,118 troy ounces with a value of \$2,164, were reported.

"Cinnabar, or sulphide of quicksilver, occurs in at least 34 different points in Pike, Clark and Howard counties. The district is at present in an early stage of development and future predictions are hazardous. It is possible, however, that if present prospecting shows the mineralization to be persistent, Arkansas may produce an important percentage of the total quicksilver produced in the United States. The production for this country in 1930 was 21,553 flasks, of 76 pounds each, having a value of \$2,478,789."

Sy L. R.

Mineral Production

Minerals and Income

How Important Are Mineral Industries to the Economic Life of Arkansas? There Is a Wide Variation of Opinion on This Subject, and Statistics Compiled by the State Geologist Will Interest Those Who Lack Information About These Resources.

By GEORGE C. BRANNER.

(State Geologist.)

12-25-32

It is usually not clearly understood just how important the mineral industries are to the economic life of Arkansas. There is often a wide variation in opinion concerning the taxable wealth of these industries, the pay rolls they create, and the effect of their activities on railroading, banking and merchandising. With the object of determining just what place they occupy in the economic life of Arkansas, an attempt is made herewith to analyze their effect on the entire economic structure of the state. Detailed statistics have been compiled, except in cases requiring extensive investigation, and the result of this study is discussed in this paper. Statistics used were obtained from the state Department of Revenues, the state Auditorial Department, the state Department of Conservation and Inspection, the office of secretary of state, the State Geological Survey, the United States Bureau of Mines and the United States Bureau of Census. Acknowledgment is made especially to Dr. C. C. Fichtner, professor of economics of the University of Arkansas, who kindly commented on this paper.

In organizing a mining company, the following steps are taken:

1. An analysis — sometimes thorough, sometimes superficial — is made of the economic factors involved. These are, (a) quantity and quality of raw materials; (b) geologic factors involved; (c) mining costs; (d) accessibility; (e) transportation facilities; (f) freight rates; (g) process and equipment required for the preparation of the material for the market; (h) cost of labor and equipment; (i) labor supply; (j) taxes; (k) markets and prices, and (l) competition.

2. If it is decided that there is a reasonable chance for profit, the necessary expenditures are made. This usually involves bringing in money for real estate, leases, equipment, buildings, pay rolls, etc.

3. If the project proves successful and the earnings from the sale of the new values created are sufficient to justify continued operation the project then becomes a more or less established industry. With continued operation, earnings may return the original investment and may continue to pay profits.

Of these three steps, the third is the most important to the state government, as it has to do with settled and more or less permanent industrial installations.

The mineral values created annually from 1910 to 1930 inclusive, by the exploitation of the mineral resources, are shown in the following table:

Year.	Value.	Year.	Value.
1910.....	\$ 5,378,649	1921.....	\$22,515,412
1911.....	5,834,016	1922.....	31,418,633
1912.....	6,258,726	1923.....	41,954,319
1913.....	6,780,760	1924.....	61,748,999
1914.....	5,787,199	1925.....	87,185,532
1915.....	6,558,693	1926.....	84,485,672
1916.....	9,508,001	1927.....	59,449,100
1917.....	12,061,702	1928.....	45,009,780
1918.....	14,081,691	1929.....	41,324,576
1919.....	10,709,213	1930.....	34,901,476
1920.....	17,813,328		

A substantial part of the production values given in the above table were expended within the state, and were distributed as profits and expended for real estate, equipment, wages, taxes, royalties, rentals, freight, power, etc. Following is a classification and estimate of the major part of these distributions for the year 1929. The relatively great importance of

the oil and gas industry is shown by classifying its expenditure separately.

Calendar Year 1929.

1. Taxes paid to state, county and city governments—

Tax income traceable directly to mineral industries is shown in table 1.

In connection with the above figures, table 2, is a detailed classification of the figures on severance tax collections annually during the nine-year period since 1923, when the tax became effective.

It will be noted that the severance tax income from petroleum and natural gas from 1926 to 1931 has suffered a marked decline. This has been due primarily to the progressive depletion of the oil fields in southern Arkansas. A factor of much less importance has been the decrease in the price of crude oil.

It will be noted that the tax income from coal in 1931 approximates that of each year from 1923 to 1926 and furnishes a relatively constant source of tax revenue, although the income for 1929 was 1.8 times that of 1931.

The entire tax income to the state, county and city governments from mineral industries, during the 10-year period from 1922 to 1931, is shown in Table 3.

In the 10-year period from 1922 to 1931, the mineral industries paid not less than \$18,938,685.16 in taxes into the state, county and city governments of Arkansas. Of this amount the oil industry paid at least \$17,038,940.27, or 90 per cent.

2. Salaries and wages paid to those employed in the mineral industries. These are shown in Table 4.

It will be noted that the totals of the salaries and wages for the year 1929 were divided as follows: natural gas and petroleum \$2,582,995 all other minerals, \$6,300,634; total, \$8,883,629.

3. Machinery and equipment purchased. This was purchased by 128 enterprises, as follows: natural gas and petroleum group, \$2,250,210; all other minerals group, \$751,809; total, \$3,002,019.

4. Supplies purchased—Natural gas and petroleum, figures not available; all other minerals, \$1,089,629.

5. Payments to railroads, principally as freight revenue—

Figures not available. According to the State Railroad Commission, 4,259,048 tons

of mineral products were shipped by rail from Arkansas mines, quarries and oil fields during the calendar year 1929.

6. Payments to oil and gas pipe line companies for transporting oil and gas, \$7,261,877 (estimated).

8. Payments to land owners for real estate, leases, lease rentals, royalties and mineral rights. This figure is difficult to estimate and will fluctuate widely during a period of prospecting, particularly during oil booms. For the year 1929, it is estimated that this figure is probably not less than \$3,542,970 for natural gas and petroleum, and \$651,639 for all other minerals.

8. Payments to public service and fuel companies for electricity and fuels. Natural gas and petroleum, figures not available; all other minerals, \$995,428.

9. Dividends from stocks and interest on bonds. Figures not available.

10. Miscellaneous payments. General office expense, travel, rentals on office buildings, advertising, etc. Figures not available.

The above figures, certain of which are estimated from meager data, are recapitulated in Table 5.

A check on the above totals of \$17,569,160.72 and \$10,011,612.21, respectively, may be made by comparing them with the value of mineral products for the year 1929, which were as follows:

Value of product—
Petroleum and natural gas...\$28,111,000.00
Less estimated funds
expended 17,569,160.72

Profit and expenses not
accounted for\$10,541,839.28

Value of product—
All other minerals.....\$13,213,576.00
Less estimated funds
expended 10,011,612.21

Profit and expenses not
accounted for\$ 3,201,963.79

Totals—
Value of products\$41,324,576.00
Less estimated funds
expended 27,580,772.93

Profit and expenses not
accounted for\$13,743,806.07

Of the above totals of \$17,569,160.72 and

\$10,011,612.21, it is estimated that at least the following amounts were expended in Arkansas during 1929:

Petroleum and natural gas...\$ 9,057,073.72
Other minerals 9,370,164.21

Total\$18,427,237.93

It is also interesting to compare the per capita income of persons gainfully employed in the mineral business with those employed in agricultural pursuits. These comparisons are as follows:

	(1)	(2)	(3)
Agriculture \$268,004.000	384,381	\$ 684.23	
Mineral ... 41,324.576	8,352	4,947.87	

(1) Value of product. (2) Number gainfully employed. (3) Per capita income.

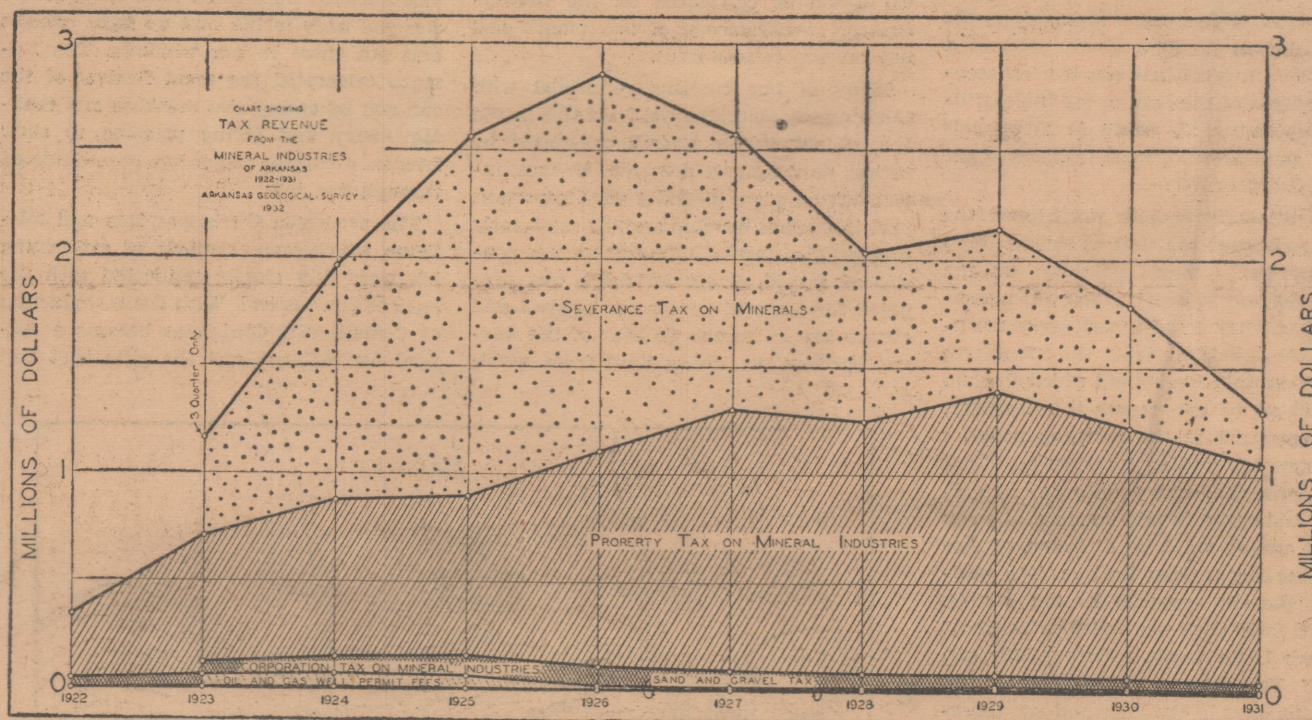
The value of the agricultural products includes crops and animals produced for home consumption and sale. In comparing the per capita incomes, it should be recalled that a greater proportion of the income from the sale of mineral products usually goes into capital accounts than in the case of income from the sale of agricultural products.

The principal findings brought out may be summarized as follows: In the 10-year period from 1922 to 1931, inclusive, it is estimated that the mineral industries paid at least \$18,938,685.16 in taxes to the state, county and city governments. Of this amount, the oil and gas industry paid at least \$17,038,940.27, or 90 per cent. In 1929 the value of all minerals produced was \$41,324,576. Of this amount, probably \$18,427,237.93 (45 per cent) were expended in Arkansas, \$9,057,073.72 (22 per cent) were expended by the oil and gas industries. During that year, the mineral industries paid as taxes into the state, county and city governments a total of \$2,153,571.92. Of this amount, \$1,931,108.72 (90 per cent) were contributed by the oil and gas industries. Also, during 1929, the mineral industries provided employment for 8,352 persons and the aggregate pay rolls totaled \$8,883,629.

Certain useful conclusions may be drawn from the above facts and supplemental data. These are as follows:

1. Increased mining activity within the state is beneficial to the state government, to all lines of business and to employment. This applies particularly to railroads,

(Continued on Page Eight.)



(Continued From Page One.)

wholesale and retail merchandising and banking.

2. There is need for equitable adjustment of taxes on mineral products, higher in some cases, lower in others. Considering that the majority of the Arkansas mineral industries operate at a relative small profit, and are for the most part "marginal industries," it is especially important that taxes not be excessive.

3. In order that as large a share as possible of the funds which the mineral industries must expend in conducting their business be retained in the state, machinery, equipment and supplies should be furnished by Arkansas manufacturing houses when economically justified.

4. Considering that the oil and gas industries, in 1929, contributed about \$1,931,108.72 or 90 per cent of the total annual tax income from the mineral industries, and \$9,057,073.72, or 22 per cent of the total expenditures within the state due to the exploitation of minerals, it follows immediately that every effort should be made by public agencies to bring about the development of new oil and gas producing areas.

5. Every effort should be made to in-

terest new capital in an attempt to bring about other mineral development.

It is primarily the function of the Arkansas Geological Survey to carry out the program suggested by these last two conclusions and, from the standpoint of the state government and the taxpayers, the carrying out of that program is the principal justification for the existence of a state Geological Survey. Considering the great importance to all concerned of the oil and gas activities within the state, a special effort has been made in this direction. The publication of a 457-page report on the oil and gas possibilities of the Arkansas river valley of western Arkansas has been of considerable value to prospectors in that area, and has received wide attention. A report on the oil and gas possibilities of eastern and southern Arkansas, which represents an immense amount of detailed study and collection of material, will be published as soon as funds are available. The report contains 670 pages of manuscript and 76 surface and subsurface maps and sections. Reports have been published on the following mineral resources: Chalk, glass sand, bauxite, barite, cinnabar and black marble.

STATISTICS ON MINERALS.

Table No. 1.

	Petroleum and natural gas.	All other minerals.	Total.
(1) Severance tax	\$ 693,502.22	\$ 52,441.49	\$ 745,943.71
(2) Sand and gravel tax		25,634.96	25,634.96
(3) Oil and gas well permit fees	4,825.60		4,825.60
(4) Corporation tax (est.)	56,695.02	8,471.67	65,166.69
(5) Real and personal property tax (est.)	1,176,086.48	135,915.09	1,312,001.57
	\$1,931,108.72	\$22,463.21	\$2,153,571.93

Table No. 2

Calendar Year.	Timber.	Petroleum and natural gas.	Coal.	Sand and gravel.	Miscellaneous mineralsxx	Total timber and minerals
1923x	\$ 85,903.09	\$ 420,584.76	\$ 9,557.64	\$ 715.63	\$ 20,242.49	\$ 537,003.61
1924	125,852.33	1,044,183.40	12,964.80	775.85	22,803.13	1,206,579.51
1925	92,474.62	1,653,973.11	11,285.72	2,198.40	17,463.61	1,777,395.46
1926	81,499.24	1,723,235.04	11,273.03	1,373.77	21,585.80	1,838,966.88
1927	82,532.05	1,250,144.34	14,822.33	1,168.15	18,817.61	1,367,484.48
1928	104,640.91	742,462.56	13,860.75	1,435.78	20,841.81	883,241.81
1929	126,741.81	693,502.22	19,161.45	455.85z	32,824.19	872,685.52
1930	73,693.82	517,537.04	14,500.83	zz	27,571.13	633,302.82
1931	46,239.81	212,531.38	10,623.34	zz	15,664.42	285,058.95
Totals	\$819,577.68	\$8,258,153.85	\$118,049.89	\$8,123.43	\$197,814.19	\$9,401,719.04

x-Three quarters only. xx-Includes clay, lime, manganese ore, bauxite, natural gas, gasoline, stone and shells. z-Six months only. zz-Included in "miscellaneous minerals."

Table No. 3

(1) Calendar year.	(2) Sand and gravel tax.	(3) Severance tax on minerals	(4) Oil and gas well permit fees.	(5) Corporation tax, estimated, mineral industries.	(6) Property tax, estimated, mineral industries.	(7) Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1922	\$ 2,012.06	\$ 451,100.52x	\$ 55,550.00	\$ 43,417.66	\$ 304,127.37	\$ 349,557.09
1923	5,487.29	1,080,727.18	61,850.00	61,275.31	581,044.26	1,154,457.38
1924	14,373.41	1,684,920.84	58,925.00	79,132.96	728,407.81	1,964,491.36
1925	15,386.02	1,757,467.64	19,725.00	96,990.61	729,494.71	2,648,717.18
1926	12,725.93	1,284,952.43	5,875.00	89,034.63	1,069,112.87	2,948,066.07
1927	12,879.59	778,600.90	8,225.00	81,078.65	1,206,971.62	2,591,757.29
1928	15,682.78	745,943.71	4,825.00	73,122.57	1,151,058.47	2,026,689.82
1929	25,634.96	559,609.00	2,735.00	65,166.69	1,312,001.57	2,153,571.93
1930	24,046.32	238,819.14	1,149.75	57,210.71	1,150,995.98	1,794,597.01
1931	11,852.81	218,859.75	695,684.60	49,254.71	1,005,703.62	1,306,780.03
Totals	\$140,081.17	\$8,582,141.36	\$218,859.75	\$695,684.60	\$9,301,918.28	\$18,938,685.16

x-Three quarters only.

Table No. 4.

(1) Product.	(2) Salaried officers and employees.	(3) Salaries.	(4) Average salary.
(5) Wage earners.	(6) Wages.	(7) Average wage.	
(1)	(2)	(3)	(4)
Coal	229	\$ 325,872	\$1,423
Clay products	39	70,089	1,797
Natural gas and petroleum	169x	392,259x	2,321
Sand and gravel	64	165,085	2,579
Limestone	11	16,020	1,456
Marble	4	3,370	842
Abrasive materials	2	2,300	1,150
Other stones	26	68,260	2,621
Other industries	87	228,583	2,627
Totals	631	\$1,271,838	\$2,015

x—Estimated.

Table No. 5

	Petroleum and natural gas.	All other minerals.	Total
1. Taxes	\$ 1,931,108.72	\$ 22,463.21	\$ 2,153,571.93
2. Salaries and wages	2,582,995.00	6,300,634.00	8,883,629.00
3. Machinery and equipment	2,250,210.00	751,809.00	3,002,019.00
4. Supplies	x	1,089,639.00	1,089,639.00
5. Freight	x	x	x
6. Income to oil and gas pipeline companies	7,261,877.00		7,261,877.00
7. Royalties, leases, rentals, etc.	3,542,970.00xx	651,639.00xx	4,194,609.00
8. Fuel and electric energy	x	995,428.00	995,428.00
9. Dividends	x	x	x
10. Miscellaneous	x	x	x
	\$17,569,160.72	\$10,011,612.21	\$27,580,772.93

x-Data not sufficient to make estimates. xx-Partially estimated.

MINERAL WEALTH THAT WAITS FOR DEVELOPMENT.

Between 1910 and 1930 the products of Arkansas mineral industries had a total value of more than \$611,000,000, according to figures presented in today's Gazette Magazine by the state geologist, George C. Branner. Their production averaged about \$30,000,000 a year over that period. And it may help us realize more definitely what the creation of \$30,000,000 of new wealth annually means in Arkansas to remember that at present prices that is approximately the farm value of a 1,000,000-bale cotton crop.

From 1922 to 1931 inclusive, Mr. Branner estimates, our mineral industries paid almost \$19,000,000 in state, county and city taxes. And in 1929 they paid their employees \$8,883,629 in wages and salaries.

Mr. Branner begins his article by saying that it is not clearly understood just how important mineral industries are to the economic life of Arkansas. Certainly a group of enterprises that produce new wealth, pay taxes and provide employment on the scale he reveals must be regarded as of major importance to our prosperity.

We should realize, of course, that these figures show only what has been done, and are no measure of what might be accomplished by greater development of our mineral resources. As Mr. Branner points out, Arkansas has a big stake in the development of new gas and oil producing areas. And as the discovery of cinnabar deposits last year reminded us, our mineral resources are by no means confined to petroleum.

We maintain experiment stations and other agencies to promote the welfare of our cotton growing industry. The state Geological Survey, of which Mr. Branner is director, is the agency through which we can further the development of our mineral resources. It is a valuable promotion medium for Arkansas because the reports of the state geologist go to people who are looking for favorable opportunities to invest in mineral industries.

*Editorial
min Res*

State's Mineral Output Since 1925 Greatest in Entire History

Arkansas Has Been, Is, and Probably Will Continue to Be for Long Time, Primarily Producer of Fuel Minerals, State Geologist George C. Branner Says in Study of F

Value of Petroleum Seen as 52.6 Per Cent of Worth of Minerals Since 1880

By GEORGE C. BRANNER, State Geologist. Jan. 22, 1933

During the last century the use of minerals in the United States and in the world generally has proceeded at a continually accelerating rate, due to the steadily increasing use of metal machinery, of mineral fuels, and of metal and other mineral products in nearly all types of construction. The total production of minerals in the United States in the period since 1910 has been greater than in all of its preceding history and, in Arkansas, the total production of minerals since 1925 has been greater than the aggregate produced before that period.

An excellent perspective of the mineral industry in Arkansas and an understanding of its trend may be obtained from a study of the 50-year production record from 1880 to 1929, inclusive. Detailed statistics have recently been compiled for this 50-year period and are presented in the accompanying table and charts.

The inter-relation of the values of fuel minerals, non-metallic minerals and metallic minerals produced in 50-year period, is shown in Chart 1. Fuel minerals include petroleum, coal, coal tar, coal gas, gas coke, natural gas and natural gas gasoline. Non-metallic minerals include asphalt, bauxite used in the manufacture of non-metallic products, cement, clay products, fuller's earth, gypsum, gems, glass sand, lime, marl, mineral water, limestone, oilstone, phosphate, sand-lime brick, sand and gravel, slate, stone and tripoli. Metallic minerals include antimony ore, bauxite used in the manufacture of aluminum, lead, iron, manganese and manganiferous ores, silver and zinc ores. Aggregate production and values of these mineral products for the 50-year period are shown in Table 1.

The inter-relation of the values, expressed as percentages, of the three groups of mineral products for the 50-year period, as well as the detailed percentage relation within each group, is shown in Chart 3.

The following conclusions, which appear to be outstanding, are based on a study of the figures set forth in Table 1 and of detailed statistics which cannot be shown here on account of lack of space.

1. The relative values of the fuel, non-metallic and metallic minerals produced during the 50-year period are expressed comparatively as percentages by the figures 52.6, 12.3 and 5.1. The respective values are \$523,139,466, \$78,061,206 and \$32,030,063, a total of \$633,230,735.

Arkansas has been, is, and probably will continue to be for a long period to come, primarily a producer of fuel minerals. During only three years of the 50-year period has the value of fuel minerals (the aggregate of coal and natural gas in this case) dropped below 50 per cent of the total annual value of minerals produced. This was from 1915 to 1917 during a period of abnormal prices caused by the World War.

2. The importance of petroleum is demonstrated by the fact that during the nine-year period from 1921 to 1929, inclusive, following the discovery of petroleum in Arkansas, the value of its production totaled \$326,912,000, or 51.6 per cent of the value of all minerals (\$633,230,735) produced since 1880. The remarkable rise in the value of fuel minerals, due almost entirely to the production of petroleum from 1921 to 1925, and the decline thereafter is shown in Chart 1.

3. During the 50-year period the value of non-metallic minerals (\$78,061,206) was 14.37 per cent greater than that of the metallic minerals (\$32,030,063.) During only two years of this period did the value of metallic minerals produced exceed that of the non-metallic minerals to any appreciable extent. These were the war years 1916 and 1917, during which exceptionally high prices of aluminum, manganese, zinc and lead prevailed. The value of non-metallic minerals has increased at a slow and fairly steady rate since 1880, the value of the 1929 production (\$5,992,799) being the maximum for the whole period.

4. Of the value of metallic minerals (\$32,030,063) produced in Arkansas during the 50-year period, bauxite used in the manufacture of metallic aluminum has represented 74.1 per cent of the total; zinc, 16.4 per cent; manganese and manganiferous ore, 8.8 per cent; and lead, 0.6 per cent. The remaining one-tenth of one per cent is made up of antimony, iron, and silver ores.

The production of metallic minerals was strongly influenced by excessively high prices of metals during the war, the maximum all-time production of inc ore occurring in 1916, lead and manganese ore in 1917, and bauxite in 1918. The maximum production of manganiferous ore, however, occurred in 1929.

2. Although the marginal character of the natural gas production of Arkansas is a controlling factor in the situation, it is not unlikely that several new gas fields will be discovered in the Arkansas River Valley province of western Arkansas, as geologic conditions over a large area there are favorable for gas accumulations. The remarkable expansion of the trunk gas line system in Arkansas and adjacent states in recent years has added much to the value of any commercial gas which may be discovered in western Arkansas. Gas trunk line mileage in Arkansas increased from 220 miles in 1924 to 1,289 miles in 1931.

Of the 32,278,000,000 cubic feet of gas consumed in Arkansas in 1931, it is estimated that only 41.2 per cent was produced in the state, and of the remainder, 56.5 per cent was imported from Louisiana, and 2.3 per cent from Oklahoma. This situation is apparently due almost wholly to a price advantage in favor of imported gas and not to a lack of gas reserves within the state.

3. Coal production is also largely marginal, present profits being small. Most of the new coal mining activity is confined to high grade deposits. Fairly complete knowledge of the coal deposits of western Arkansas is available, and the reserves are large.

Non-Metallic Minerals. 4. With improvement in business conditions, it is likely that there will be an increase in the production of clay products and a diversification in the clay-working industries in Arkansas. New and detailed knowledge concerning the distribution, quality, and quantity of clays throughout the state will add materially to such development.

5. The reserves of chalk in southwestern Arkansas are very large and further utilization may be anticipated. The deposits can provide material for the manufacture of Portland cement, quick lime, hydrate, and agricultural lime.

6. It is to be expected that the barite mining industry will be established in Arkansas, as reserves of fairly good quality exist in quantity, and the preparation of a high-grade product apparently offers no technical difficulties.

7. The immense deposits of limestone in northern Arkansas will probably be further developed. These limestones provide building stone, decorative marbles, terrazzo, raw material for making quick lime, hydrate, and agricultural lime. The limestones in the Ouachita Mountains of central Arkansas also offer possibilities for limited exploitation.

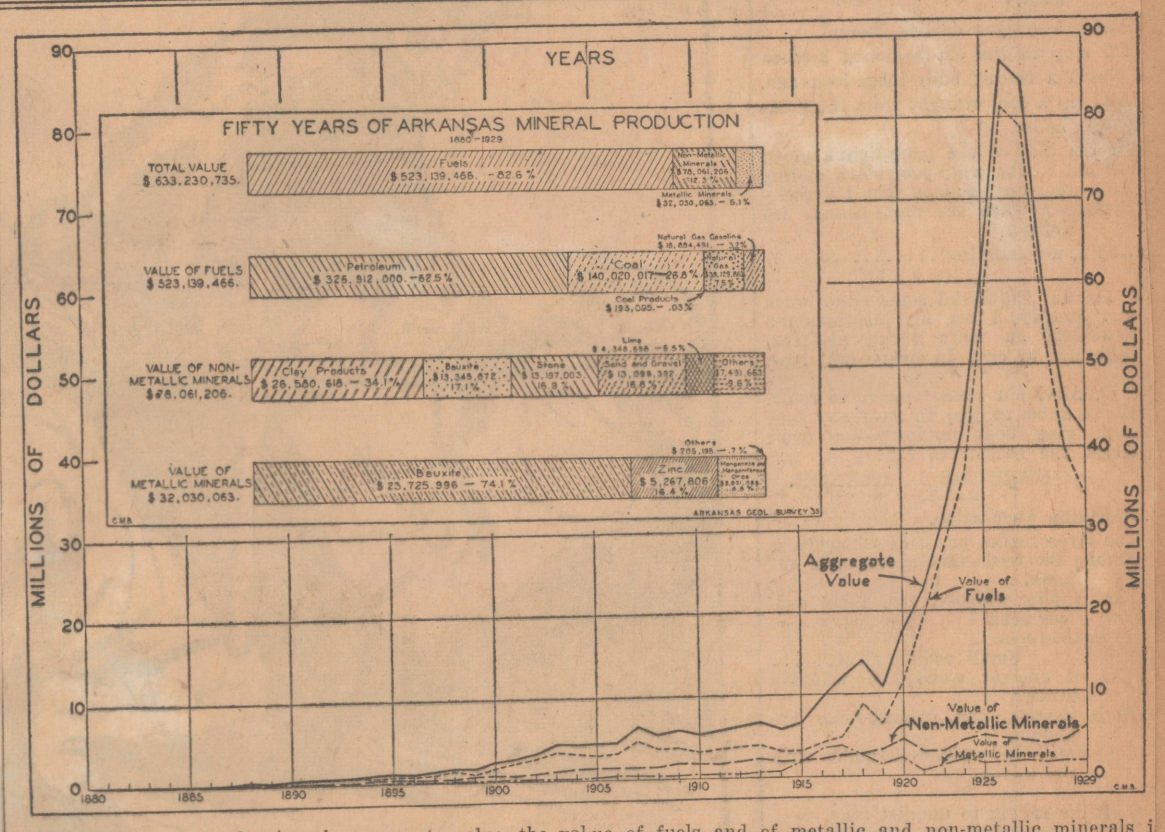
8. The black marble deposits in northern Arkansas will doubtless be exploited much more than they are at present as the deposits contain large quantities of good quality stone and are the only deposits of true black marble now known in the United States. This marble has a distinct price advantage in central United States over the imported black marble.

9. Utilization of the glass sand deposits of northern Arkansas will probably be increased.

10. Gravel production will be controlled largely by the character of highway building and maintenance program in the state. The gravel reserves are of great extent.

Metallic Minerals. 11. Bauxite production is also largely marginal and will probably be controlled principally by the amount of bauxite imported. Judging by the figures for 1926, 1927, 1928, 1929, and 1930, the relation between the Arkansas production and the amount of ore imported into the United States seems to have become fairly well stabilized. It seems probable that larger reserves of bauxite are available in Arkansas than is commonly believed. Geophysical prospecting will probably play an important part in the discovery of new deposits.

12. Zinc and lead ore production is almost entirely marginal. Electric



The above chart showing the aggregate value, the value of fuels and of metallic and non-metallic minerals is "Chart 1" referred to in Mr. Branner's accompanying article. The chart "50 years of Arkansas mineral production" is referred to as "Chart 3" while the table below is "Table No. 1."

power is now available in the zinc and lead district of northern Arkansas and there are excellent highways. These two factors are beneficial to mining within the district. The development of hydro-electric power on White river and its tributaries will also be of benefit as will any development tending to reduce the cost of mining and transportation. Considerable knowledge of the zinc and lead deposits is available and reserves exist in quantity.

13. Manganese mining is an almost wholly marginal operation. The relatively recent discovery of manganese carbonate deposits in the Batesville district may have an important bearing on mining activity there, as the quantity of reserves has been substantially increased by this discovery. The development of processes whereby low-grade manganese-bearing clays

may be economically beneficiated to a ferro-manganese grade of ore may also result in an increase in the quantity of manganese produced in northern Arkansas.

14. The cinnabar district is in an undeveloped state and prediction are hazardous although the present situation is encouraging. If prospecting now going on should indicate that mineralization is persistent, it is possible that, within the next few years, an important part of the domestic production will come from Arkansas.

15. It is to be expected that rutile (titanium ore) will be successfully concentrated from titanium-bearing soils in Hot Spring county. The marketing of rutile has been delayed due to technical difficulties in concentrating the ore, but these difficulties probably will be overcome.

Table 1—Quantity and Value of Minerals Produced in Arkansas During the 50-Year Period, 1880 to 1929

Rank	Mineral	Production	Value
1	Petroleum	338,571,000 barrels	\$326,912,000
2	Coal and coal products*	62,652,902 short tons	140,213,112
3	Natural gas	262,762,017 M. cubic ft.	39,129,863
4	Bauxite	6,483,951 long tons	37,071,868
5	Clay products		26,580,618
6	Natural gas gasoline	191,705,955 gallons	16,884,491
7	Stone	5,242,980 short tons	13,197,003
8	Sand and gravel	28,367,965 short tons	13,099,392
9	Zinc	27,292 short tons	5,267,806
10	Lime	593,778 short tons	4,346,658
11	Oilstones	84,468,348 pounds 1,992 short tons	2,425,481
12	Mineral waters	21,214,370 gallons	2,226,404
13	Manganese ore	107,409 long tons	2,160,269
14	Manganiferous ore	123,755 long tons	670,797
15	Lead	1,412 short tons	193,294
16	Cement	105,000 barrels	183,750
17	Sand-lime brick	21,610 thousands	172,946
18	Fuller's earth	17,799 short tons	169,210
19	Phosphate rock	31,742 long tons	129,615
20	Slate	620 squares	53,449
21	Gems and precious stones		28,427
22	Asphalt	4,815 short tons	22,368
23	Clay, raw	2,942 short tons	**18,005
24	Marl, calcareous	6,000 short tons	12,000
25	Antimony	159 short tons	9,219
26	Sand, glass	5,918 short tons	3,641
27	Tripoli	345 short tons	3,369
28	Silver	3,118 troy ounces	2,164
29	Gypsum	600 short tons	1,800
30	Iron ore	225 long tons	518
	Miscellaneous		2,059,203
			value \$633,230,735

* Coal products include coal tar, coal gas, and gas coke (\$193,095).
** Not included in total value for state.

Figures according to the United States Geological Survey and United States Bureau of Mines.

Miss Prod
2 cords

OUR MINERAL WEALTH.

Arkansas, like 47 other states in the Union, is fighting the world-wide depression. Also, like other states, her "frozen assets" are among the curses which prevent a return to brighter days—and one of these is her minerals, a tremendous source of potential riches. That wealth is a sort of savings account which we are "keeping up" at what now appears to be a heavy cost, but when the time comes that we can draw upon it we'll thank heaven that we have it. When those assets are "thawed" we'll more than collect the lost profits.

State Geologist George C. Branner has made a study of the records covering a period of 50 years of mineral production in Arkansas and he presents some of his conclusions in an article in this edition of the Arkansas Democrat. There is enlightenment, and encouragement aplenty in that article for any Arkansan who may feel that "it will be 50 years before the state recovers," as one bilious contributor wrote.

What minerals mean to our financial welfare is made plain in Mr. Branner's last annual report. The figures deal with the year 1929, a so-called prosperous year, but they show convincingly that in normal times our mineral resources rank near the top of our most dependable assets. We quote a paragraph from the report:

"In 1929, the last year for which complete figures are available, the mineral industries of Arkansas yielded mineral products valued at \$41,324,576. This amount was eight per cent of the total value of agricultural, mineral, timber and manufactured products for that year (\$515,231,800), or 15 per cent of the value of agricultural products during 1929 (\$263,004,000). Also during 1929, \$8,883,629 were paid by the mineral industries in wages and salaries to 8,352 persons in 44 counties of the state. Approximately 33,000 persons in the state were dependent on the mineral industries for support in that year...."

It is to geological research that we owe the discovery of our minerals. That obviously means that our state geological department is a sort of custodian for that part of our wealth—we use the word "custodian" for lack of a better one. Upon the efficiency of our geologist and his assistants depends the welfare of the mineral industries.

A bill introduced in the Arkansas Senate would make among other changes, the state geologist's department a bureau under the reorganized state bureau of mines, manufactures and agriculture. Aside from the fact that such a move probably would be a violation of the constitution which specifies how the geologist must be selected, it would be experimenting with a state department which has been, and should continue to be, kept out of politics. A perfect way to toss it into politics would be to make a "bureau" of it. Little if any money could be saved for the simple reason that we are already spending on it far less than it should have for actual needs.

Valuable Ore Reported Found Near Salem.

Special to the Gazette. 4-33
Salem, Feb. 3.—A party of miners from Chicago have leased several acres about five miles northeast of Salem and are sinking shafts in several places. It has been reported that they have found valuable ore in paying quantities. Mining machinery will be shipped soon.

TO DISCUSS PLANS FOR STATE EXHIBIT

Commission Appointed by Governor Futrell Will Meet Thursday.

5-2-33
Little Rock members of the Arkansas Century of Progress Commission appointed by Governor Futrell to solicit funds and arrange for an Arkansas exhibit in the Hall of States at the Century of Progress Exposition in Chicago this summer will meet today and a meeting of the entire commission has been called for Thursday, it was announced yesterday.

Members of the commission are: Mrs. Jay Fulbright, Fayetteville; Mrs. R. N. Garrett, El Dorado; Mrs. J. W. Bass, Harrison; Mrs. W. R. McCloy, Baxter; Mrs. Allie Gaughan Barr, Camden; Mrs. John W. Stayton, Newport; Chester Babcock, Blytheville; E. L. Howlett, Hot Springs; W. W. Campbell, Forrest City; V. W. St. John, Mena; W. B. Sorrells, Pine Bluff; Rutherford Ross, Fort Smith; Dr. R. L. Smith, Russellville; Dr. L. J. Kominsky, Texarkana; R. T. Doughtie, Helena; Charles A. Stuck, Jonesboro; J. C. Hall, Batesville; W. F. Norrell, Monticello; J. D. Barlow, Hope; Roger Crowe, Stuttgart; J. E. Bratt, Siloam Springs; Mrs. M. W. Hardy, Mrs. R. E. Plunkett, Mrs. B. B. Williams, Mrs. J. W. House, Mrs. H. M. Armistead, C. A. Franke, T. L. Bellin-grath, Hardin Bale, Claude Sharp and A. W. Parke, Little Rock.

COMMITTEE WILL SEEK EXHIBIT FUND

Commission Takes Steps to Insure Arkansas Display in Chicago.

5-12-33
An Executive Committee of the Century of Progress Exposition Commission was selected and three vice presidents were elected at a meeting of the commission at the Hotel Marion yesterday. The commission was appointed recently by Governor Futrell to arrange for an Arkansas exhibit at the exposition in Chicago.

It was announced Wednesday by Senator W. F. Norrell of Monticello, a member of the commission who went to Chicago this week to make arrangements for the state exhibits, that the state display will cost \$25,000. The Executive Committee will be in charge of the financial campaign and complete arrangements for the exhibit.

Members of the committee are: Scott D. Hamilton of Hot Springs, Mrs. M. W. Hardy of Little Rock, Harley C. Stump of Stuttgart, Mrs. Allie G. Barr of Camden, Rutherford Ross of Fort Smith and C. A. Stuck of Jonesboro. One additional member will be appointed.

The three vice presidents of the commission are: J. C. Hall of Batesville, Senator Norrell and Mrs. W. E. Bass of Harrison. All the officers are ex-officio members of the Executive Committee.

No Elaborate Display.

Since the amount to be spent by this state is small in comparison with other states, it was decided to display only a few resources of the state and to attempt to make them unusual. Recreational features will be brought out and, as Arkansas will be the only rice state besides Texas, represented a rice exhibit will be included.

Each member of the commission will form county organizations which will help to collect funds and aid in obtaining necessary materials. It was also decided to select 10 Arkansas girls as sponsors, who will go to Chicago and act as hostesses.

Governor Futrell attended the meeting and expressed himself in favor of the plans. A. W. Parke of Little Rock, secretary of the commission, who accompanied Senator Norrell to Chicago, briefly described the trip and told what other states are doing.

Dr. J. L. Kosminsky of Texarkana, president of the commission, who presided yesterday, will return to Little Rock tomorrow and an office will be opened. N. F. Schiffin and Hays McClerkin of Texarkana have been added to the commission.

Two Groups of Geologists Will Visit Arkansas.

July 2-1933
Preparations have been made by George C. Branner, state geologist, to conduct two groups of geologists through sections of Arkansas during the summer.

A group of 40 to 50 foreign geologists en route to the sixteenth session of the International Geological Congress in Washington the latter part of July will come to Arkansas July 18 for a visit to the bauxite deposits in Saline county. The party will arrive here at 8 a. m. Tuesday, July 18, and will be taken in private automobiles to Bauxite, Hot Springs and Magnet Cove. The group will return to Little Rock in the afternoon and will leave at 6 p. m. for Birmingham to visit the iron mining sections near that city.

The other group will visit northern Arkansas counties during the Kansas Geological Society's annual field conference. The conference will begin at Joplin, Mo., September 3, and after the members spend two days visiting geological formations in that state they will come to Arkansas September 5 and 6, where they will visit Mammoth Spring, Melbourne, Sylamore, Big Flat, Yellville, Harrison, Eureka Springs, Rogers and Fayetteville. The geologists will study outcroppings of the Pennsylvanian and Mississippian rocks, which are the principal oil and gas bearing formations in the state.

Geologists of Foreign Lands Inspect Mines Visit Bauxite and Magnet Cove in Day's Tour in State.

July 18-1933
A group of 35 internationally known geologists, members of the International Geological Congress, which will meet in Washington, D. C., July 22-29, arrived here early Tuesday morning to spend the day visiting Bauxite mines at Bauxite and inspecting various minerals to be found at Magnet Cove in Hot Spring county. The visitors represented nearly a dozen different countries and were led by Dr. Joseph T. Singewald Jr., professor of Economic Geology at Johns Hopkins University, Baltimore.

Arriving via Missouri Pacific Lines from Joplin, Mo., the geologists, garbed in their best working clothes, were met by Dr. George C. Branner, state geologist, officials of the city and state Chamber of Commerce and other citizens who offered the use of their cars for the day. The party will return to Little Rock about 6 o'clock Tuesday afternoon, departing by Rock Island Lines for Birmingham. The tour is one of several excursions sponsored by the International Geological Congress.

Vernon E. Scheid, instructor in geology at Johns Hopkins University, was the assistant leader of the party.

At noon Tuesday, the Republic Mining and Manufacturing Company, operators of the mines at Bauxite, will entertain the visitors at a luncheon. Prior to the luncheon, the geologists are expected to make trips into the mines and to inspect the ores at the mines.

Following luncheon, the party will go to Magnet Cove by way of Hot Springs. Former State Senator Joe W. Kinzey will be host to the visitors at Magnet Cove.

Members of the party, despite their prominence, provoked no few laughs from a large group of onlookers at Union Station, due to their dress. For the most part, they were dressed in heavy hob-nailed shoes, khaki working pants and shirts and khaki knapsacks slung over their shoulders. Many had the customary geologist's hammers hung through their belts.

A few members of the party donned shorts for the trip to the mines, while others had on a new type of miner's cap with the small lanterns mounted in front.

The party included one woman, Mrs. James W. Lunn, from the Gold Coast, Africa. Her husband, a member of the Gold Coast Geological Survey, was also a member of the party. Mrs. Lunn was dressed in khaki shorts, a khaki shirt, half socks and heavy shoes. She, too, carried a knapsack over her shoulder.

Personnel of Party.

Members of the party were: Dr. Singewald; Dr. Scheid; Dr. Alan M. Bateman, professor of Economic Geology, Yale University; Professor Gaston Betier, director geological survey and mining department, Alger, Algeria; F. A. J. Blondel, Bureau d'Etudes géologiques et minières

coloniales, Paris, France; Professor Charles Bohdanewicz, professor of economic geology, Krakow Mining School, Poland; W. Horatio Brown, chief of geological department, Bertha Mineral Company, Austinville, Va.; Dr. E. L. Bruce, Miller Memorial professor of geology, Queens University, Kingston, Canada; Dr. A.

F. Buddington, professor of geology, Princeton University, Princeton, N. J.; William H. Callahan, geologist, Bertha Mineral Company, Austinville, Va.; Charles Cohen, geologist, Johns Hopkins University; Robert W. Dickson, statistician, American Bureau of Metal Statistics, New York; Dr. J. Drugman, external collaborator in Mineralogy, Museum of Natural History, Brussels, Belgium; Dr. George M. Hall, professor of geology, University of Tennessee, Knoxville, Tenn.; Duncan Johnson, geologist, Johns Hopkins University; Professor Michael P. H. LeGraye, professor of Mineral Economics, Liege, Belgium; Dr. Lunn, Mrs. Lunn; Dr. Elwood S. Moore, professor of Economic Geology, University of Toronto, Toronto, Canada; O. F. Pfordte, retired mining engineer, Cairo, N. Y.; Dr. F. L. Ransome, professor of economic geology, California Institute of Technology, Pasadena, Calif.; Alfred L. Ransome, geologist, Stanford University, Stanford, Calif.; B. Rama Rao, assistant geologist, Mysore Geological Survey, India; H. Reisch, mining engineer, Alpine Montangesellschaft, Fohnsdorf, Austria; Dr. Edward Sampson, associate professor of economic geology, Princeton University; Mauel Santillan, director of geological survey, Mexico City, Mexico; Dr. Friedrich Schumacher, professor of economic geology, Bergakademie, Freiberg, Saxony, Germany; Dr. J. I. J. M. Schmutzer, professor of Mineralogy and Petrography, University of

Utrecht, Holland; Dr. Quentin D. Singewald, assistant professor of geology, University of Rochester, Rochester, N. Y.; Dr. Edward Steidtmann, professor of geology, Virginia Military Institute, Lexington, Va.; Dr. Jacques Thoreau, professor of mineralogy, Lovain, Belgium; Dr. Shinji Yamane, professor of economic geology, Kyushu Imperial University, Kukuoka, Japan; N. M. Federovsky, director Institute of Geology, Moscow, Russia; Dr. N. R. Junner, director of geological survey, Gold Coast, Africa, and N. I. Switalsky, geological institute, Leningrad, Russia.

Geologists Come Far to See Arkansas' Mineral Wonders

July 19, 1933
Foreign Scientists, in America to Attend International Congress, Take Many Specimens When They Leave Bauxite and Magnet Cove.

"Rock-crazy. That's what all these white folks is—rock-crazy," said the red-cap Negro porter at the Rock Island station about 5:30 p. m. yesterday, when Excursion A-2 of the International Geological Congress, taking a side trip to Bauxite and Magnet Cove on its tour of the mining districts of Southeastern and Central states, pulled into the station with barely enough time for its excursionists to unload their mineralogical gatherings of the day and hop on the train for Birmingham, Ala.

What was perhaps the most distinguished group of 35 people, from a scientific standpoint, ever to set foot in Little Rock at one time climbed out of the 11 cars in which they had made the day's journey looking like Hollywood's most celebrated collection of tramps and hitch-hikers.

Wearing every variety of trousers from grass-linen shorts to green-and-purple plaid jodphurs, of sox from cotton anklets pulled up high to black-ribbed stockings, sacks on their shoulders, lamps on their belts, knapsacks curled around their necks, they plodded into the station.

Two German geologists from Freiberg, internationally known for their research work, were out prepared for ever emergency—storm, wind or snow. Heavy plaid jodphurs, over the bottoms of which were stretched woolen socks and high-top shoes, were hitched up to the neckline by gaily colored suspenders ("We call them the 'pessimists,'" the only woman in the party later explained); over one arm they carried intricately-made German knapsacks, in each of which was at least 100 pockets, heavily stitched. That, and a gay assortment of knives, hatchets and geological instruments, with—of course—the inevitable sack of rocks, completed their regalia. But there were others—men in khaki, an Indian in white linen, a Frenchman in shorts and a beret—and all following the one trail to the baggage car where the day's accumulations were piled up in virtual mountains, later to be classified and tagged, one by one.

Couple Both Geologists.

Outstanding in the group were Dr. and Mrs. James W. Lunn, both of whom are doctors of geology (Mrs. Lunn having taken degrees at Bryn Mawr, University of Wisconsin and Columbia University), geologists of note who have just returned to America after a long stay in Africa where they were connected with the Gold Coast Geological Survey.

Mrs. Lunn, wearing a faded green polo shirt, khaki shorts, golf sticks and high boots, expressed herself as highly satisfied with the results of the day's expedition.

"You know," she said, "when I was in school they used to show us all sorts of outlandish mineralogical specimens. I could neither spell them, remember them nor identify them, and I didn't believe they existed anywhere except on those shelves, but I saw them today at Magnet Cove."

"There is an interesting collection of rocks there," she continued, "with more than 40 identified mineral species, all igneous rocks, of course. They have no commercial value, but are quite rare." This excursion is one of several ex-

cursions being taken by members of the International Geological Congress prior to the meeting proper of the Congress, which will take place in Washington July 22-29, and will be attended by approximately 500 geologists from all the countries of the world. Of the 12 short excursions and eight long excursions being taken before the convention itself, this is the longest, Dr. Branner said.

Under the direction of Dr. Joseph T. Singewald Jr., professor of economic geology at Johns Hopkins University, and Vernon E. Scheid, instructor in geology at Johns Hopkins, the group already has visited the Pittsburgh coal fields, the Bedford limestone formations, the Illinois fluorspar region and the zinc, lead and iron deposits around Joplin, Mo. From Little Rock they will proceed to Birmingham, Ala., where, arriving this morning, they will visit the Alabama iron fields. Then on to Georgia to the manganese deposits, to Tennessee to inspect the zinc and lead fields and on to Washington for the International Congress, a 12-day tour in all, which, leaders of the party said last night, has gone through without a hitch so far.

Met by State Geologist.

Arriving in Little Rock at the Missouri Pacific station at 8 yesterday morning, the party was met by Dr. George C. Branner, state geologist, who had made advance plans for the excursion. After breakfast in the station, the entire party was on its way by 8:30, arriving at Bauxite in the early afternoon. There, as guests of the Republic Mining and Manufacturing Company, the visitors made a tour of the open mines. At lunch, Dr. N. R. Junner addressed them on the unusual wealth of the deposit at Bauxite. Dr. Junner, who as director of the Geological Survey of Gold Coast, Africa, laid out and plan-

Improved Conditions Add Mill Minerals

Next National Boom May Bring Arkansas Greater C. Before to C. Resources--New Industrial Development for Reservoir

While Agricultural Values Have Decreased, Prices of Minerals Have Increased

By WILLIAM JOHNSON.

Arkansas owes a lot, when you come to think about it, to old George W. Stoney. He started something of great value to the state, away back in the dim dawn of civilization, when he discovered how to mold copper into an ax that was away ahead of a stone one for settling arguments by mashing in the other fellow's skull. That invention got the human race to experimenting with minerals. At first the results were slow and few, and doubtless the skeptics of that time hooted the whole idea, and recommended sticking to knotted clubs and flint-headed spears. But the experimenting went on, discomfiting and aggravating the doubters with occasional achievements that they had to admit were better than the old implements and contraptions. Gradually, through the long centuries, the trying and seeking built up the modern Iron Age, which fabricates scores of minerals into a host of useful and ornamental products. And Arkansas sits on this inspiring picture of progress with as prettily varied a wealth of fuels, ores, clays, sands and rocks as it could ask to possess.

During the 50 years up to 1929, Arkansas produced minerals to the value of \$633,230,000. That's a neat sum, but there are reasons for believing that the next national boom may bring the state greater opportunities than it has ever had before for cashing in on its mineral reserves. Dr. George C. Branner, state geologist, thinks so, and there are all sorts of facts, figures and economic trends that bolster up his opinion. The general pointing of the whole manufacturing situation seems to be that the next industrial expansion will draw on minerals even heavier than in the past. And Dr. Branner is convinced that this larger consumption will redound to Arkansas's advantage.

Let's glance at the country's tremendous use of fuels, ores, rocks and earths. For years these items have constituted the main raw materials of industry, normally making up about two-thirds of all the railway tonnage of the United States. The demand for minerals, especially in the past 25 years, has grown by the well-known leaps and bounds. Every reader old enough to remember "free silver," handle-bar mustaches and "Fire when you're ready, Gridly," knows without being harassed by statistics, how oil consumption has swelled from a trifling matter into the kind of figures employed in astronomy and political orations. Iron has done almost as well, with copper, lead and zinc showing a lively increase. And nearly as astounding as the vaulting market for these minerals has been the ascending demand for the non-metallic minerals—stones, clays, sands and the like. Of this department of the nation's mineral market, a federal report says:

"The non-metallic metals were of so little relative importance in early years that very few statistics exist prior to 1880, and the records for that year indicate that most of these industries were then practically in their infancy. A twenty-fold increase in production value, from \$56,000,000 in 1880 to more than \$1,200,000,000 in 1929, indicates the rapidity with which these great industries have been enlarged to vital parts of the country's manufacturing and commercial activity. The non-metallic minerals now provide materials that are of tremendous value to civilization."

Uses of Minerals.

There is no romance more thrilling than the way in which inventive genius has constantly been taking ores and earths and rocks that previously had little or no value, and transforming them into aids and boons to human living. Bauxite, of no particular worth up to about 50 years ago, affords a classic example of special interest to Arkansas, which has marketed millions of dollars worth of this mineral. Science peered at bauxite, explored its nature, and showed industry how to get aluminum from it, along with alum, abrasives and sundry other articles of commercial importance. And to mention only a few less well-known tricks among the myriad such that science has taught modern industry, it discovered a basis for face powders in soapstone, a toughening ingredient for varnishes in lime, a glaze for ornamental purposes in mica, and a bleach for cottonseed oil in fuller's earth.

The big majority of minerals, metallic and non-metallic, now have uses somewhere in the vast industrial processes of the nation. And constantly the entire list is being explored for new uses, which are found frequently, and for substitutes for more expensive industrial materials. Hence, it is likely that the consumption

of minerals will again spurt ahead when the nation's factories once more begin the busy rhythm of happy days. Demand may not increase at the amazing rate of the last decade or two, because some minerals wear away slowly in use, the amount of scrap metal steadily piles higher, and improving technologic processes give larger yields of the finished mineral from the raw material. But granting all of this, it seems clear from the past course of our industrial set-up, that we are embarked on a program of producing more and more kinds of goods from cheaper and cheaper sources. And that means a growing demand for minerals, as being low-cost and plentiful working material, filled with possibilities for the chemist and manufacturer.

Consequently, Arkansas, bountifully supplied with minerals, would appear to be in a favored position. There are many informed men who hold that view. Maybe you recall that it was the opinion expressed a couple of years ago by a number of mining engineers who spoke at the American Mining Congress, then held in Little Rock. On that occasion, a consulting engineer of one of the large steel and iron companies, said:

Arkansas' Advantages. "The center of population of the United States is gradually moving westward and today Arkansas is closer to that center than any other mining state of the Union. Arkansas has greater potential undeveloped water power than any other state in the Mississippi valley, and the future of this great development will go hand-in-hand with mining development. Due to the geological formation of the state, her rich mineral deposits are easily found. To my mind, south Missouri and north Arkansas constitute one of the greatest, if not the greatest, mining fields in the world. And in the course of my work, I have examined and operated properties in California, Mexico, Canada, China, Japan, Korea and South Siberia."

Added to other influences favoring Arkansas is the fact, if experts on the subject can be credited, that in several established mining regions of

the United States the point of cheap production has been passed, or soon will pass, and that higher costs will stimulate the development of cheaper new mining fields. Also, the experts tell us, capital now seeks large supplies of high-grade material when it hunts a fresh site. And these are exactly the qualifications Arkansas can meet in many ores, clays, stones and other minerals.

Finally, as proving that the cheerful tokens noted are not all pleasant deceptions, Arkansas showed a distinct rise in mineral and manufacturing enterprises before the big bust came in '29. Dr. Branner has got together some interesting significance in Dr. Branner's words, without wading through the statistics:

"From 1914 to 1929 the state's agricultural production values increased 93 per cent, due principally to improved prices. Even so, in this period the percentage of agricultural to total values decreased from 64 to 51 per cent. Lumber and timber values decreased 10 per cent, partially because of the depletion of forests. Meanwhile, an encouraging change took place in the manufacturing and mineral products industries, where United States census figures, which, however, do not cover all of the plants, record an increase of 65 per cent in the number of employees and 141 per cent in the value of production. Relatively speaking, Arkansas has slowly become less agricultural and more industrial."

Value of Oil.

Quite a number of new industrial plants arose in the state between 1914 and '29. Among these, plants refining petroleum products, like Abou ben Adam, led all the rest, with a count of 10, having 5,941 officers and employees and a production valued at \$18,906,331. That was more than half the entire output value of all the industrial plants established between 1914 and '29, as listed by the census, though its count wasn't complete.

Oil is far and away the leader among Arkansas' mineral products. It alone accounts for 52 per cent of the state's entire mineral production of \$633,230,000 for the 50 years up to '29, the value of oil having been \$326,912,000, though its discovery in the state goes back only a little more than a decade. When gas and coal returns are added to the oil income, the total amounts roughly to five-sixths of the entire value of mineral production during the 50 years previous to '29.

It is true that others of the state's minerals have also been developed only in comparatively recent years. Bauxite mining, which ranks next to fuels, isn't a very old industry, and mining of the non-metallic minerals—the rocks, clays and sands—didn't get under way on any important scale until after 1900. The returns from these non-metallic minerals in 1900 were only \$750,000, and by 1929 that figure had expanded to \$5,211,000, nearly a seven-fold increase. Very likely, minerals other than fuels will show a further handsome gain when times improve, and industry again looks around for raw materials.

But while Dr. Branner points out all of those faces and possibilities, and is eager to see every mineral resource of the state developed, overlooking no way to help that end along, he still insists that the biggest opportunities are in oil and gas—the products which have paid the bulk of Arkansas' mineral income. He thinks the state possesses large reserves of oil yet to be discovered. His own words on the subject were:

"Other minerals are more spectacular than oil, and they will yield a good deal of money for some men who develop them in certain sections. But oil remains our brightest prospect for a large mineral income. What is needed is a stimulation of 'wild catting,' and that requires not only satisfactory prices for oil, but also dependable geological information, to concentrate efforts in the most promising fields and minimize waste of effort and money. We are endeavoring in the State Geological Survey, to supply that information with studies and mappings of oil horizons, distribution, and other essential data."

How soon the price of oil will get back to remunerative levels is anybody's guess. Some uncertainty also hangs about the effects on new drillings of government control of oil. Rapidly as economic matters have been moving under President Roosevelt's dynamic leadership, the oil muddle may soon be cleared, but until that happens discussion of the subject is hampered by too many uncertainties for it to yield much light.

Other Mineral Prices.

Other mineral prices have been moving upward in a heartening manner. Lead, for instance, has advanced from 2.87 cents per pound at St. Louis, in January of this year, to 4.25 cents in July. Zinc quotations for the time dates and in the same market, rose from 3.01 cents per pound to 4.67 cents. Quicksilver went up from \$48.50 per flask of 76 pounds to \$56. These gains led Judge J. H. Hand of Yellville, a director in the Southern Division of the American Mining Congress, and a firm believer in the future of Arkansas' mineral future, to say:

"For the past few years the zinc and lead industry has been prostrated, along with other industries, by weak demand and low prices, resulting from the depression. Since the upturn in business about the first of March, the revived demand for metals has brought a steady advance in price all along the line, with zinc making an especially good showing. 'The steel industry is regarded as the business barometer of the country. If it proves so now, we certainly have got started on the way to healthy business recovery. Steel mills in every industrial center within the past two months have recalled thousands of men who had been laid off for two to three years. Since nearly half of the normal consumption of zinc is for galvanizing steel products, it is not difficult to vision heavy demands for that metal in the near future."

Zinc Prospects.

A summary of zinc prospects for Arkansas recently written by Judge Hand, contains the following interesting paragraphs:

"The Tri-State (centering around Joplin, Missouri) and New Jersey fields having been under continuous zinc production over a great many years, it is obvious that, in the nature of things, their ore reserves must now be nearing the point of exhaustion. This is a fact which their strongest advocates no longer attempt to ignore. During their long period of operation, the capacity of those fields for zinc production in the past has been sufficient to satisfy current demands in this country and to anticipate the supply of future requirements for years ahead; hence, there has heretofore been no economic justification for the development of new sources of production, except under extraordinary demands such as prevailed during the World War."

"Now, with the former consumption of zinc not only holding its own, but with new uses of it developing, and the older active centers of production undeniably on the wane, the early development of new mines will be imperative, not only to the life of the zinc industry itself, but to many branches of manufacturing industry as well."

"New enterprises that may consider engaging in the development and operation of zinc mines in the future will be primarily interested in these fundamental factors: First, extent and richness of ore deposits; second, comparative cost of production; third, grade and quality of the product; fourth, accessibility to market."

North Arkansas Districts

"The Ozark Zinc District in Northern Arkansas is known to comprise the largest area of zinc deposits in the United States. These deposits are recognized by all the geologists and members of the mining profession who have investigated, as being of the highest grade of zinc ores, from from iron, manganese and other mixtures that impair the quality of the zinc ore deposits found in other states."

"Local transportation difficulties were the chief obstacle to successful operation of mines in this district heretofore. What were then called roads were but mountain trails of the primitive type, rough everywhere, steep in places and muddy in others, according to the weather. A ton of ore was the high load for a good team of mules, while a round trip from mine to railroad point took a day to a day and a half. Now, under this state's \$100,000,000 highway program, practically every mineral section in the district is connected with rail shipping point by modern roads over which auto trucks may move rapidly with capacity loads."

State Richly Equipped.

Zinc has long been one of Arkansas' commercial hopes. And there are many others on the state's mineral list. About 50 of its counties have deposits of staple minerals used in the manufacture of daily necessities. Thus richly equipped to play a profitable part in supplying the nation's mineral demands, Arkansas would seem to be assured of getting a growing share of the huge sums paid annually for fuels, ores, rocks and earths."

But there is no use in dodging the fact that a state, like an individual, must practice self help in order to thrive. The national search for new mineral sources may not profit Arkansas in proportion to its vast mineral stores, if it does not bring them to the attention of mining men, and provide the information that the modern mining engineer requires. This means giving the State Geological Survey adequate financial support, for it is to that agency that mining men look for unbiased data on mineral deposits."

Arkansas has the assurance that any funds appropriated for its Geological Survey will be used to the fullest to present the nation with a persuasive picture of the state's mineral riches. Dr. Branner isn't just a good geologist. He also has an economic slant of mind, and thinks of his researches in terms of industries and payrolls. This is another hope to add to the many others which promise Arkansas an enhanced income from its opulent mineral endowment.

ned the bauxite mines in Africa, was greatly interested in the Arkansas deposits and found them remarkable in the fact that the supply was apparently unlimited.

"It not only will outlast my generation and your generation," he said last night, when questioned at the station concerning the deposit, "but it will outlast our grandchildren's grandchildren. You don't know how valuable a thing you have here."

Following luncheon, the geologists, with the exception of Dr. Junner and three of his associates who stayed at Bauxite to examine the mines further, went on to Magnet Cove, where many varieties of igneous rock formations found there were chipped off and brought home.

"You never saw one of us standing up straight," one of the men said later. "We looked like a bunch of rabbits hopping around the ground, jumping from one rock to another and chipping it off. We all came home carrying about 100 pounds of rocks on our shoulders."

The entire excursion (from Washington back to Washington) has been simplified by the providing of each member with a guidebook, in which each section to be visited is described minutely by geologists of renown. Bauxite, for instance, was written up, with illustrations and sketches, by Dr. Branner, while Magnet Cove was described by K. K. Landes, Vernon E. Scheid and Bryan Parks.

Transportation to Bauxite and Hot Springs was furnished by the following business men: James R. Rhyne, W. DeWoody Dickinson, Col. John R. Fordyce of Hot Springs, Dudley Haddock, George R. Gay, Fred Lund, George D. Suter and Leonard White.

Personnel of Party.

Members of the party were:

Dr. Singewald.
Mr. Scheid.
Dr. Alan M. Bateman, professor of economic geology, Yale University.

Prof. Gaston Betier, director, Geological Survey and Mining Department, Alger, Algeria.

F. A. J. Blondel, Bureau d'Etudes geologiques et minerales coloniales, Paris, France.

Prof. Charles Bohdanawicz, professor of economic geology, Krakow Mining School, Poland.

W. Horatio Brown, chief of geological department, Bertha Mineral Company, Austinville, Va.

Dr. E. L. Bruce, Miller Memorial Professor of Geology, Queen University, Kingston, Canada.

Dr. A. F. Buddington, professor of geology, Princeton University.

Wm. H. Callahan, geologist, Bertha Mineral Company.

Charles Cohen, geologist, Johns Hopkins University.

Robert W. Dickson, statistician, American Bureau of Metal Statistics, New York City.

Dr. J. Drugman, external collaborator in Mineralogy, Museum of Natural History, Brussels, Belgium.

Dr. George M. Hall, professor of geology, University of Tennessee.

Duncan Johnson, geologist, Johns Hopkins University.

Michel P. H. LeGraye, professor of mineral economics, Liege, Belgium.

Dr. James W. Lunn, geologist, Gold Coast Geological Survey, Africa.

Mrs. Lunn, geologist, Gold Coast.

Dr. Elwood S. Moore, professor of economic geology, University of Toronto, Canada.

O. F. Pfordte, retired mining engineer, Cairo, N. Y.

Dr. F. L. Ransome, professor of Economic Geology, California Institute of Technology.

Alfred L. Ransome, geologist, Leeland Stanford University.

B. Rama Rao, assistant geologist, Mysore Geological Survey, India.

Dr. H. Reisch, mining engineer, Alpine Montangesellschaft, Fohnsdorf, Austria.

Dr. Edward Sampson, associate professor of economic geology, Princeton University.

Mauel Santillan, director of geological survey, Mexico City, Mexico.

Dr. Frederick Schumacher, professor of economic geology, Bergakademie, Freiberg, Saxony, Germany.

Dr. J. I. J. M. Schmutzer, professor of mineralogy and petrography, University of Utrecht, Holland.

Dr. Quentin D. Singewald, assistant professor of geology, University of Rochester.

Dr. Edward Steidtmann, professor of geology, Virginia Military Institute.

Dr. Jacques Thoreau, professor of economic geology, Kyushu Imperial University, Fukuoka, Japan.

N. I. Switalsky, mining institute and geological survey, Leningrad, Russia.

Dr. N. R. Junner, director of geological survey, Gold Coast, Africa.

Arkansas At the First World Fair

At the Philadelphia Exposition in 1876 This State Was Literally "the Belle of the Ball." Its Many Wonderful Exhibits Attracted Nation-Wide Attention. \$15,000 Was Spent on Them.

By DIANA SHERWOOD

The big show which re-opened at Chicago yesterday, really is not the first Century of Progress Exposition. The Scientific American of January 22, 1876, said: "It is proposed to erect near the Centennial buildings a monument 100 feet high commemorative of a Century of Progress of Our Country." The Centennial Exposition in Philadelphia that year would show the world what the United States had accomplished in its first century.

No other state had a more attractive, comprehensive or creditable exhibit than did Arkansas, and that in spite of the worst financial condition the state has ever known, before or since. Only 11 years had passed since the close of the war. A debt of more than \$2,000,000 was marked up against the state.

But Arkansas in 1876 looked into the far distant future. It seems providential that Augusta H. Garland was governor. He appealed to the legislature of 1875 for an appropriation for the Centennial Exposition. Zealously he successfully fostered Senate bill No. 217 for an appropriation of \$15,000 for an Arkansas display. Then everybody got busy; Centennial Clubs were organized over the state; small prizes were offered for superior products of all kinds.

Many Arkansas Prizes.

No wonder the Arkansas building and many of its exhibits won prizes! No wonder the publicity and advertising kept immigration pouring into this state for the next 25 years.

Newspapers of New York, Philadelphia, Baltimore, St. Louis and Boston gave much space and unstinted praise to the Arkansas building, one of the largest and handsomest on the Avenue of States. It was octagon in shape, 80 feet in diameter, the construction entirely of native Arkansas wood; the upper part of the walls was of stained glass; a great dome crowned the center, under which, on the main floor stood the large bronze fountain given by the women of the state.

Cotton Curiosity.

Added to the lavish decoration of flags and bunting were a carload of crystals from Hot Springs and thousands of cotton plants holding the ripened bolls. Such a curiosity was this cotton—so desirable for souvenirs from the South, within a short time every boll had been "picked" from the Arkansas building.

On January 13, 1876, the state commissioners, Dr. George W. Lawrence of Hot Springs and George E. Dodge of Little Rock, in an open letter entreated the people of the state to help make their exposition a success.

In the number and variety of native woods Arkansas easily led all exhibitors. The commissioners placed orders with Little Rock mill and cabinet workers for special display fixtures. Butler Gibb & Co. got the job of making the great cabinet for housing the Hot Springs "diamonds." It contained 2,165 pieces of Arkansas wood, beautifully carved and polished. The firm also made a checkerboard of unique design, the squares being of black walnut and white ash, with a gay border fashioned of red cherry and red cedar. It contained 407 pieces. The huge old book case now in the Missouri Pacific Land Office was a part of their display. The "books"—200 of them—were made of different woods; there were 20 varieties of oak alone; each volume had the name of its wood carved on the back and one "cover" was highly polished.

Gum Recognized.

Gum had never been considered building material, because it would warp. Butler Gibb & Co. did such wonderful things

with it in cabinets, chests, mantles, interior finish and furniture, the attention of the Pullman Company was drawn to this particular wood, and for years used it for the interiors of their sleeping cars.

From the A. H. Ryan Company the commissioners ordered a triangular sharpened counter to cost \$800. It contained 3,027 pieces of wood and was decorated with 180 hand-carved roses, lillies, vines and leaves, berries and fruits in different colored



woods. The carving was done by Charles Wagoner of Little Rock. The sides of the triangle were 16 feet long, the "shoulders" six feet high. Woods used in this counter and in the Butler & Gibb cabinet were walnut, pine, cypress, cherry, cedar, holly, cottonwood, ash, oak, sweet gum, maple, hackberry, sycamore, hickory, locust, persimmon, sassafras, mulberry, dogwood and rosebud. Cooperage concerns displayed kegs, casks and barrels made of the hardwoods. On either side of the main entrance rose a high pyramid made of sawed sections of trees; one of cottonwood measured seven feet in diameter; there was a grapevine 13 feet thick.

Mineral Display.

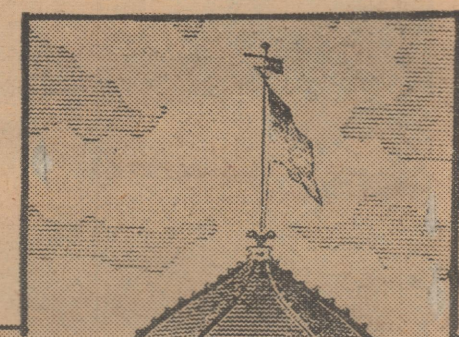
The mineral display included, iron, zinc, silver, copper, lead, bismuth, manganese, marble, granite, limestone, kaolin clay, slate and other ores. Coal from Johnson, Pope, Yell and Sebastian counties ranked with that from Pennsylvania and Ohio. The largest single lump of coal was from the Ouita mines in Pope county.

So interested and enthusiastic were the members of the Arkansas State Grange, they voted that each member should contribute 25 cents which would amount to several hundred dollars, in furthering the display of agriculture and husbandry. Unfortunately, a hard freeze and deep snow late in March made a fruit display impossible, with the exception of the carload of canned specimens sent by the T. B. Mills Company.

Agricultural Products.

All other agricultural exhibits were eclipsed by Arkansas' cotton. The Memphis Cotton Exchange had offered a prize of \$1,000 for the finest cotton sent to them to be forwarded to the fair; this money was won by William Taylor of near LaGrange, Lee county. John G. Fletcher sent two bales of exceptionally fine cotton. When awards were made, Arkansas took both first and second prizes on cotton in the bale.

Corn made a fine showing; one stalk



Here is a rare picture of the Arkansas building at the Philadelphia Centennial in 1876. Without a doubt Arkansas was "the belle of the ball" at the exposition. In the accompanying article is told the story of the marvelous exhibits and the unusually high interest taken in this exhibit, both by the people of the state and others. The Arkansas building was the exemplification of the true Southern spirit at that famous Philadelphia fair.

was 16 feet high with ears eight feet from the ground. The thousands of little sacks of shelled corn given as souvenirs found they way into every state and Canada, and to lands across the seas. There were sheaves of oats four feet high; sheaves of wheat five feet high; there were rye, barley, rice; timothy, millet and Chinese and Egyptian feed grasses. There was a surprising display of tobacco, hemp, flax, ramie and silk. There were walnuts and pecans, hickory and hazel nuts, filberts and chinquapins.

What had been designated the finest all round exhibit of grains at the fair came from British Columbia. On the avowed word of Dr. Lawrence the Canadian commissioner came to him and wanted to trade exhibits!

Another interesting exhibit in this department was the silk scarf made by Miss Rebecca Washington of near Fort Smith; she had raised the silk worms on wild mulberry leaves; had spun the silk and crocheted the lace. It received much attention.

The Butter Statute.

A Mrs. Brooks of Helena created quite a sensation with the head she had sculptured in butter called "A Dreaming Iolanthe." The model for this head was the late Mrs. C. C. Waters, who, at that time, lived in Helena. Mrs. Brooks supplied the Waters family with butter. One day she found Mrs. Waters ill, and was impressed with her beauty as she lay on the pillow. Returning home, she carved the image on a large pat of butter. Judge Waters was so pleased with it, he had it packed in ice and sent to Philadelphia, where it was

kept frozen throughout the six months of the exposition. We are indebted to Mrs. J. N. Belcher for this little story. She, as Miss Sallie Rison, went to that great fair with her sister and brother-in-law, Mr. and Mrs. J. A. Jones, and remembers vividly the head sculptured in butter.

Other objects of interest in the Arkansas building were the large assortment of stuffed animals, birds and fishes; flowerers made of wax and of hair in bewilder-

ing array. There was a large collection of pottery, too. But listen; that pottery was hundreds of years old; it had been taken from the Indian mounds scattered over the state; some of the largest arrow heads ever found were in that collection.

Everything Free.

In the Arkansas building, no one from home was permitted to spend a cent; free was the food, free the drinks. The fine whiskey and rare old champagne were kept under lock and key awaiting their coming. There was no expense to the state in feeding them. The Vienna bakery close by, the dairy companies and makers of German meat products kept Arkansas supplied with bread and rolls, butter and cheese, sausages and other delectables. South American countries insisted upon keeping us in coffee. Good advertising, you see. But if you craved pickled oysters, that was another matter. You had to go out to get those, and pay plenty.

A Philadelphia music house loaned a piano for the Arkansas women's reception room and the sight of it moved so many persons to sit down and render "Arkansas Traveler," the strains came from the building all hours of the day. On the walls of this room were portraits of prominent Arkansas gentlemen, notably Hon. Chester Ashley and Sandy Faulkner. Also a creditable copy of the famous painting, "The Arkansas Traveler." Mrs. Belcher says she hated the conversation painted in; she feared it would give the wrong impression of Arkansas people.

In that room also was a map of the state, seven by six feet, painted by Johnson and Douglass of Little Rock at a cost of \$600; on it was designated the sections of the state from which all displayed products had come.

Many Guests.

The reception rooms were always filled with guests, the registers showing hundreds of names each day. The long lists of those from this state would make in-

(Continued from Page 1.)
teresting reading at this time. To those rooms came daily the Arkansas Gazette and the Little Rock Daily Herald. Also the Fayetteville Sentinel and Dardanella Independent were kept on file. The Gazette kept a reporter on the grounds throughout the exposition to send the news to home folks through its daily and weekly editions.

An important personage connected with the Arkansas building shall not be overlooked. He was "Dan," the pompous Negro "houseman." In gorgeous livery, with "Arkansas" on his hat, he dispensed the real thing in Southern hospitality when the world came knocking at the door. Visitors from other states and countries admitted they had returned to the building purposely to see Dan. Barney McKinney of Little Rock also represented his state on the Centennial police force—greeting his friends with becoming dignity.

The Centennial Regiment.

Early in 1876 steps were taken to assemble a Centennial Regiment for Arkansas. Every county and town was asked to send a company and the response was gratifying. The regiment, under command of Col. Mills, was supplied with uniforms appropriate for various occasions; there were four bands in the regiment, some one of which played a concert daily at the state building.

Jesse M. Dill, 814 Rock street, was connected with the railroad exhibit. In enumerating some of the "new" things exhibited in '76 he recalls particularly the telephone, then only a curiosity. All inter-

communication on the fair grounds was by telegraph. This telephone was a silly looking contraption made of a couple of tin cups that looked like mustard cans tied to the ends of a long wire; through this thing it was possible actually to talk and be heard across one of those large buildings.

First Arkansas Phone.

The old postoffice in Little Rock was just being completed and a mechanically gifted citizen who had visited the big fair thought he could build a telephone like the one he had seen there. He did so, and believe it or not, it worked when installed in the postoffice. That was the first telephone in Arkansas so far as known.

Other brand new things at the fair, according to Mr. Dill, were ice cream, popcorn, typewriters, folding beds, elevators and washing machines operated by steam power, gas and water meter, linoleum, asbestos. Gas was the illuminating agency—electricity not having arrived in that capacity. When night came, the exposition closed and every one left the grounds.

In 1876 Arkansas proudly held her place among the foremost states of the nation. The \$15,000 expended came back an hundred fold in succeeding years.

What a pity it is that the spirit of Governor Garland and of our ancestors could not have actuated us to similar purpose in the present Century of Progress Exposition, that our good state might, at least, have maintained her position so splendidly achieved at the first Century of Progress Exposition.

(Continued on Page 11.)

Mapping of State's Resources Seen as Great Achievement

Surveys Invaluable in Following Out Mineral Vein, Establishing Hydro-Electric Building Highways, Malaria Control and Layin Out Parks, State Geologist Points

Made Possible by CWA Funds; Three Phases of Work Begun, To Start on Fourth Soon

By WILLIAM JOHNSON.

Almost any normal person would erupt a couple of gay yips over the discovery of an ancient map purporting to give obscure directions for finding buried treasure. The average man would gamble his job and his savings, if any, on an attempt to unravel the cryptic instructions and locate the riches. Probably you couldn't buy that map from him for \$300 an inch, however vague it was on the amount of wealth and the way to unearth it. But as showing the curiousness of human kind, there's little such popular interest in real treasure maps made today. The scientists draw these latter maps with minute care, after all sort of exact investigation and measurement, and they guide folks who understand them to many a fortune secretly tucked away by that queer old hoarder, Mother Nature. They help to reveal mineral deposits, and also aid in developing water power and drainage and flood control—just to mention a few of the more outstanding uses. Fashioning such maps for Arkansas is a main activity of the State Geological Survey, presided over by Dr. George Branner. Their production, however, has been sadly hampered, particularly since the depression set in, by lack of funds. And since miners and associated industrialists, the modern treasure seekers, demand these maps to light their searchings and enterprise, you can see that the financial restrictions on Dr. Branner's activities has had a hindering effect on the state's economic advancement.

But now, as a cheerful item of news that you may have under-estimated, the federal government has begun to spend some of its re-employment money in Arkansas, to further the exploration and mapping of the state's resources. This work may well mean, said Dr. Branner, future industries and pay rolls, besides having other substantial values which we'll glance at later. Three phases of the work are under way, with a fourth soon to begin.

One of the phases already in operation is "position" and "control" charting, conducted by the U. S. Coast and Geodetic Survey. Another recently launched by the U. S. Geological Survey, is making aerial maps. And a third, in charge of U. S. War Department engineers, is topographical mapping.

In addition, the U. S. Geological Survey will presently make a study of the coal and gas resources of the Arkansas river valley, the quicksilver areas of southwest Arkansas, and the reserves of bauxite.

These explorings and chartings are to carry forward and fill gaps in government work of the kind which began years back. The findings recorded as public property, will give to Arkansas a number of honest-to-goodness treasure maps to add to those already got up by federal and state scientists, to aid in locating and developing the state's resources in minerals, farm lands, forests and water power.

Let's take a brief look at each of these activities.

First, the "position" and "control" charting under the U. S. Coast and Geodetic Survey. There has been allotted for this work in Arkansas, from CWA funds, \$44,600 a month, for two and one-fourth months, a total of \$100,350. Dr. Branner is State Administrator of the project for Arkansas. The employment quota was 11 first engineers, 120 second engineers, and 289 "others," all of whom have been engaged and are now measuring, computing and setting down the results of their intricate inspections. Several sections of the state, including one around Little Rock, another in the White river strawberry district, and one in the neighborhood of Caddo Gap, will be thus treated.

What Crews Are Doing. A scientist could explain just how this affair is managed—and the average reader would probably flee from his mysterious and brain-benumbing language as from a pestilence. But fear not—the author of this piece is no scientist. So he got Dr. Branner to state the import of the work in everyday speech. Thus revealed, what those engineers and their crews are doing is to make maps of the areas they survey which will show the exact location of the land with reference to sea level and the stars.

A man who understands such maps can take one of them and read from it every rise and fall of the land, and its true position in the state, the country and the universe. And that information is as useful to the mineralogist, or water-power development engineer, for instance, as spectacles are to a near-sighted man hunting out wood ticks on his person. Neither of those citizens who are so useful to a state's advancement, can go ahead with their affairs unless they have maps of that precise kind.

"Such maps," said Dr. Branner, "besides being invaluable in following out a mineral vein, or establishing a hydro-electric project, are extremely helpful in constructing highways, in malaria control, establishing parks, or any activity which must take into account the 'lay' of the land, or its exact position."

and the knowledge contained in those "position" and "control" maps is to be amplified and extended by photo maps made with aeroplanes. This kind of mapping, which proved so useful in the World war, was swiftly taken up afterward by U. S. engineers of the War Department, as a vital aid in leveeing and channeling rivers. Soon, other uses were found for it, one being a high utility in fairer assessment of taxes. A number of American cities have vastly improved their tax gatherings in this way. An aerial map shows the location of every scrap of land with reference to commercial centers, schools, transportation and other things that give it worth, as well as with regard to slums, dumps and similar adverse influences.

Aerial Photography.

Eastern Arkansas has been pretty well photo-mapped by War Department engineers, to assist in flood control. Now, a force of men in Little Rock, under W. C. Holland, from Washington, D. C., is carrying this work farther. Aerial photos of Greene, Desha and Lincoln counties, taken by government experts three or four years ago, are being assembled in "aerial mosaics," as Mr. Holland termed the maps. When you see those maps, and learn all of the values they have, you hope this project will be extended to include more of the state.

Every farm, road, ditch, grove, slough, corn shock and woodpile is recorded by the camera-eye flown over the landscape. You can discern the individual trees in an orchard by using a reading glass. Weedy, neglected or shallowly-tilled land shows up in contrast with well-cultivated land. Swampy overflow areas and eroded, gullied slopes and hillsides are in clear relief. Plainly, those maps would have a high value in assessing taxes. Besides showing the character of the soil, they make it impossible for any remote tract to be overlooked.

In laying out drainage ditches, or in campaigning against the dark strongholds of malarial mosquitoes,

aerial photo maps would save a lot of guesswork and be a first aid to economy of money and labor. They would have enormous value in retiring "marginal" lands from cultivation—a project which the government seems to have in mind—for they indicate its full extent. And they would show just where reforestation is needed to prevent erosion and aid in controlling the flow of streams to the end of ironing out an alternation of spring torrents and midsummer trickles.

Making these "aerial mosaics" is an interesting job, as Mr. Holland described it. The camera man must have a capable pilot who can fly straight lines, about a mile apart. Photographs are taken at a height of round 15,000 feet, about every 30 seconds, according to the speed of the plane. The photographs must overlap 50 or 60 per cent, since only the central part of each one is true to scale. When all of the pictures are completed, they are put together in the "mosaic," with a map drawn of the region, and giving the ownership of every tract of land in it, as a guide.

The photo maps now being made of the three counties will have a scale of one inch to 2,000 feet.

Topography Mapping.

The topography mapping under way in Arkansas is directed by C. L. Sadler, a government engineer. This mapping needs little explanation. Being a charting of hills, valleys and

other contours, it adds further to the information of mining men, road builders and planners of drainage and leveeing.

For the projected mineral deposit studies in Arkansas, by the United States Geological Survey, \$29,500 has been allocated, divided as follows: \$16,500 for the coal and gas resources of the Arkansas river valley, or as much of that region as the experts can get over by June 16, 1935, when, according to present plans, the work will end; \$7,500 for an estimate of the reserves of bauxite; and \$6,000 for exploring the quicksilver deposits of southwestern Arkansas.

Detailed inspections of these regions will be made, and the findings recorded in elaborate maps and official publications. Dr. Branner's office will co-operate in the work, which probably is to be in charge of scientists from the United States Geological Survey. There was no announcement on that point, however, when this article was written. It has been stated that local experts and labor will be employed as fully as possible.

Dr. Branner is in high spirits over all of this scientific searching around and charting, because he sees in it bright prospects of future industries for the state. He has an economic mind. He values geologic studies mainly for their worth in promoting mines, oil and gas wells, and other such enterprises, and for the help they give in developing power and land resources. And he knows that when men who contemplate such enterprises write to Arkansas for information, or come to the state to look it over, they want facts, not flowery statements. Mineral and power facts must be put in the language used by engineers, too—that is, in maps, charts and technical reports which indicate promising mineral or power prospects, and how they probably can be got at in an economical way. If you have any doubts on that score, just amble out to Mr. Branner's office and look at the erudite questions that come to his desk. Often, due to the financial cramping of the State Geological Survey, the precise knowledge sought could not be given. Very likely, the state has thus lost some industries which would have paid many times over for adequate financing of Dr. Branner's department. Arkansas, one of the richest states in minerals, ranks away down in the money it spends on its geological survey.

Our Mineral Exhibit.

Reviving industry is again bringing mineral and power resources into the national spotlight. Reports are that the Arkansas mineral exhibit at the Chicago Century of Progress show, attracted the attention of a number of mining and smelting men. They are said to be visiting the state to see if conditions "substantiate the exhibits." Commerce and industry, a business magazine, asserts that zinc and lead possibilities are of particular interest, and that "the true vastness of Arkansas resources in these minerals is coming to light." But bauxite and quicksilver ores, and clays, sands and marbles, in all of which Arkansas is rich, are not being overlooked.

So, happy results may issue from the treasure maps and reports now accumulating in Dr. Branner's and in federal files. There are not many more mineral frontiers to exploit, and from all accounts Arkansas has by far the best one left.

A large development of the state's mineral reserves would crown with success long effort to bring them into use and profit. Arkansas hasn't been asleep at the switch in this respect. It had energetic men more than 75 years ago who strove to enlist the interest of capitalists in its varied ores and valuable stones. In the 1850's the state had an elaborate report on its geology made by David Dale Owen and two assistant geologists. A quotation from that yellowed old volume is interesting. Discussing the probability of the state having gold and silver, the authors continued:

"Yet, even if no gold should be found profitable to work, there are resources of the state in ores of zinc, manganese, iron, lead, copper, marble whet and hone stones, rock-crystal, paints, nitre-earths, kaolin, granite, freestone, limestones, marls, green-sand, grindstones and slate, which may well justify the assertion that Arkansas is destined to rank as one of the richest mineral states in the Union."

The much later discoveries of bauxite, oil, gas, quicksilver and other minerals, add emphasis to that statement. But the report goes on:

"Her zinc ores compare very favorably with those of Silesia; and her argentiferous galena far exceeds in percentage of silver, the average of such ores of other countries. Her novaculite rock cannot be excelled in fineness of texture, beauty of color and sharpness of grit."

"Her crystal mountains stand unrivalled for extent; and their products are equal in brilliancy and transparency, to any in the world. (Too bad Mr. Owen didn't know about Pike county diamonds.)"

"Arkansas is a young state, and her geological survey is, in reality, only fairly commenced. If thus early in her work we are able to report such flattering prospects, what may not be anticipated by thorough and minute detailed surveys?"

Pioneer Miners.

Away back in that pioneer time, a good many Arkansians were trying to make use of the state's mineral wealth. Mr. Owen mentions two or three iron forges built by local talent, each of which was making a few hundred pounds daily of iron and selling it to home demand. One enterprising pioneer was blasting out rock crystal, which he marketed in considerable quantities for use in jewelry. Roofing slate had been manufactured in Pulaski from a local rock bed, and put on Little Rock roofs. Mr. Owen says, however, it didn't wear very well. He notes numerous other attempts to profit by the state's profusion of minerals.

But there was little capital in the state, and the home market for mineral products was small. The big industries were far away, with other huge mineral deposits between them and Arkansas. Freight rates on bulky stuffs ran high. So only slow progress could be made in developing the state's ores, sands and valuable earths. Yet, it was steady progress, mounting year by year into hefty sums, and spurring ahead when bauxite, and then oil, were discovered.

Now, perhaps, there will be, with industry again sitting up and looking like it might soon be licking its chops for more raw materials, a further advance in the exploitation of Arkansas' vast mineral deposits. The maps and other data needed in unearthing this buried treasure, are becoming more enticing to capital. It all seems to read a cheerful promise—nothing spectacular, probably, no "rush," but a steady, pleasant gain of industries and pay rolls.

PRESIDENT STUDIES DEVELOPMENT PLAN

Shows Great Interest in Committee's Proposals for Co-ordination.

OPPOSES 'PORK BARREL'

Insists on Program That Provides for Adjustment That Will Offer Opportunity to All.

Hyde Park, N. Y., June 25.—(P)—President Roosevelt headed for Washington tonight to complete a busy week of government business begun today in a survey of the new national planning program and in consultation with Postmaster General Farley on appointment of the newly created government agencies.

In the next day or so he will name the important commissions to take over administration of the stock exchanges and communications. Mr. Farley submitted a list of applicants.

Studies Committee Report.

Mr. Roosevelt showed particular interest in a preliminary report submitted by a specially appointed committee to draft a plan of co-ordination for national development, including the economic, physical and sociological phases.

The committee headed by Frederic A. Delano and including Wesley Mitchell of Columbia University; Charles E. Merriam of Chicago University; and Col. George Walte, deputy public works administrator, conferred throughout the afternoon with the president and promised a comprehensive program by mid-summer.

The president told the group he wanted co-ordination among the federal, state and local governments on internal improvements and a systemized program that would eliminate "pork barrel" methods of rivers and harbors appropriations. He said he wanted the national development plan

to provide for adjustment of population in an effort to offer opportunity for all people to make the most of natural resources and their own welfare.

The president specified to his national Planning Commission that investigation was to be made on the following lines:

1. Land and water development.
2. From the sociological standpoint.
3. From the governmental view.
4. In regard to economics.

It was emphasized that this study was not to supersede special plans by the government agencies; rather to provide for a co-ordination of all existing efforts.

Witnesses Bird Release.

Late in the day, Mr. Roosevelt went over to the farm lands of the family estate to release 12 grouse grown in captivity under the care of the state Conservation Commission. L. Osborne, state conservation commissioner, attended the release. It is one of the few times that this gamebird has been grown in captivity.

Late tonight he called for a car to take him to a special train which will reach the capital early tomorrow morning. During the remainder of the week he expects to clear his desk of all pending government affairs and set out on Saturday on his cruise to Hawaii.

He expects to reach Washington in time tomorrow to meet with the Executive Council.

Department Created in 1889 to End Existence After This Week

State Treasurer-elect, Earl Page, Thirteenth and Last Commissioner of Mines, Manufactures and Agriculture.

A week from today the once powerful and extensive Department of Mines, Manufactures and Agriculture will cease to exist, and as a result thereof the present commissioner, Earl Page, will be without a job for two weeks.

As soon as the House of Representatives completes its organization and canvasses the vote cast for constitutional officers at the last general election, Mr. Page will be sworn in as state treasurer. This probably will occur January 15.

The 1933 legislature passed an act abolishing the department at the end of Mr. Page's third term. The bill as first introduced would have abolished it immediately, but because a majority in each House thought it unwise to legislate out of office a man who had led the ticket in the preceding general election, the bill was amended to make it effective January 1, 1935.

The marketing and warehouse division and gin regulatory duties of the department were abolished at that time, however, and the department was given a small appropriation for its last year and a half of existence.

Balance in Appropriation.

Funds were appropriated to operate the curtailed department two years, but Mr. Page will leave a full half year's appropriation and nearly \$200 which he could have spent during the first half of the present fiscal year untouched. The total unexpended appropriation will be \$5,185.50.

Mr. Page and two assistants have devoted most of their time during the past year and a half to issuing the monthly Market Bulletin, distributing literature relating to the state's resources and answering correspondence concerning agricultural, mining and business affairs.

The elaborate exhibit of state products maintained by the department on the first floor of the capitol for

many years was dismantled in 1927 when the space was needed for the rapidly expanding Department of Revenues.

The constitution of 1874 authorized the legislature to create a department of mines, manufactures and agriculture and the department was established by the legislature of 1889. Subsequently various bureaus and divisions were added to the department until its jurisdiction extended from weeds, baled cotton and impure foods and drugs to co-operative associations and honey bees.

Disintegration Gradual.

Dismemberment of the department was started in 1925 when the feed and fertilizer inspection service was transferred to the newly created Department of Conservation and Inspection. That department passed out of the picture in 1933 when its duties were transferred to other agencies.

The 1933 legislature completed the job started in 1925 by abolishing the warehouse and marketing division, transferring the Bureau of Crop Estimates to the state Plant Board and the licensing of co-operative organizations to the secretary of state.

Mr. Page is the thirteenth commissioner of mines, manufactures and agriculture, and is one of three who held the office six years. The other three-term commissioners were John H. Page (not related to the present commissioner) and Jim G. Ferguson. Ferguson was succeeded by William M. Wilkes who held the office four years preceding Mr. Page.

M. F. Locke, the first commissioner, was appointed in January, 1889, was elected in 1890, but served only one elective term. Other commissioners who served between 1892 and 1912 were: John D. Adams, George M. Chapline, W. G. Vincenheller, Frank Hill, H. T. Bradford, Guy B. Tucker, Fred H. Phillips and Clay Sloan.

State Plan. Board

ROUTE OF DE SOTO IN STATE CHARTED

Colonel Fordyce Bases Club
Address on Paper He Recently Compiled.

The route followed by de Soto through Arkansas nearly 400 years ago was traced yesterday by John R. Fordyce, member of the Arkansas History Commission, in an address at the weekly meeting of the Little Rock Lions Club at the Hotel Marion.

The address was based upon a paper prepared by Colonel Fordyce and published in the Arkansas Historical Review last June. Drawing from published accounts of the de Soto expedition written by the Spaniards and others, Colonel Fordyce has succeeded in identifying most of the places visited by de Soto in Arkansas.

Lantern slides depicting pottery and other artifacts of the Indians living in Arkansas then were used to illustrate the narrative.

Route of Explorer.

The de Soto expedition entered Arkansas in 1541 at the tip of Willow Point in Phillips county, 40 miles below Helena, after having spent a month building barges for the crossing.

The first Indian town visited by the Spaniards, Colonel Fordyce said, probably was near Helena, and it was there that the first Christian religious ceremony was held in Arkansas. Colonel Fordyce suggested that it would be appropriate to erect a cross of stone with a table to commemorate the event.

The expedition went north first and Colonel Fordyce concluded that "the only practical location for this trail would be along the eastern side of Crowley's Ridge," and stayed a month at the principal village of the Pacaha tribe. Exploring parties went to Bald Knob and Heber Springs and returned with salt and copper.

Head Toward Little Rock.

Then the expedition moved southward to the White river and an Indian village called Quiguate "probably near the Menard mound, stayed three weeks, and headed toward Little Rock.

They reached the Arkansas river "somewhere above Pine Bluff," and crossed it twice before reaching Coligua (North Little Rock).

"The country in the vicinity of Little Rock fits the description the historians have left us of the country around Coligua," said Colonel Fordyce. "Here the alluvial country and the mountains meet and here the Arkansas river forms a gorge between Big Rock and the hills projecting from the Country Club, on the Little Rock side."

Follow Rivers South.

From Little Rock the Spaniards went by easy stages down the Saline river, to the Ouachita river to a village that "must have been near the old town of Rock Port, northwest of Malvern," and thence to Hot Springs, then called Tanico.

The Spaniards made supplies of salt and then moved south to establish winter quarters near a village on "the north side of the Ouachita opposite Camden." The expedition there until March 6, when started south, leaving where the Ouachita enters

PRESIDENT RETIRES ALL PUBLIC LANDS

Preparing for Conservation
Program; 175,000 Acres
in Arkansas.

Washington, Feb. 9 (AP).—In preparation for a nationwide conservation program, President Roosevelt today withdrew all remaining public land from use. His order, completing that of last November, affects about 1,200,000 acres, and puts the final touch on withdrawal from settlement, location, sale or entry of the entire 165,695,000 acres of public domain.

The November order was to make possible segregation of 80,000,000 acres of permanent livestock grazing areas under the Taylor act. The president today's withdrawal, applicable to

12 states, was "pending determination of the most useful purposes to which they may be put in furtherance of the land program and conservation and development of natural resources."

He said that this land, not suited to profitable growing of crops, was destined for the conservation and development of forests, and other natural resources, the creation of grazing districts, and the establishment of game preserves and bird refuges.

Washington, Feb. 9, 1935. Unsettled public land, was more affected by today's order than any other of the 12 states. Public land in the others named included: Minnesota, 269,451; Arkansas, 175,924; Florida, 32,303; Nebraska, 20,225. Inconsiderable amounts exist in Alabama, Kansas, Louisiana, Michigan, Mississippi, Oklahoma and Wisconsin.

Several years ago the office of register of the United States Land Office in Arkansas was abolished, because the remaining public land was regarded as of so little value as to be unfit for homesteading.

NEW USE FOUND FOR RADIO IN CAR

When you park your car in a lonely but rustic spot along the road for a picnic or otherwise, and are unable to tune in on your favorite radio station with your automobile radio, get out and study the geology of the region, for you may discover an explanation there, says Science Service, which reports that Dr. Ernst Cloos, geologist of Johns Hopkins University, has found that an ordinary radio set may be an aid in geologic mapping by locating such "dead spots."

The phenomenon of fading of certain frequencies has been often observed by motorists driving along a road with the radio tuned to a certain wave length. It can usually be explained by overhead electrical wires, railroad crossings, overhanging and wet trees. But when these outside influences can be eliminated, and the "dead spot" continues to exist after repeated observations, geologic irregularities at the surface and

Dr. Cloos has found, after numerous observations, that a fault which he brought two different rock masses against each other, or a rock joint, or steeply dipping, geologic structures, offer the most favorable conditions to produce "dead spots."

The discovery, reported in the American Journal of Science, may become an important tool in the hands of the geologist.

SCIENTISTS OPEN ANNUAL MEETING

College Instructors of Arkansas
Will See Magnet
Cove Today.

Special to the Gazette.

Arkadelphia, April 19.—The 19th annual meeting of the Arkansas Academy of Science, Arts and Letters convened at Henderson State Teachers College this morning, and will continue through tomorrow. Professors from the University of Arkansas, College of the Ozarks, Arkansas Polytechnic College, Hendrix State Teachers College, Harding College, Arkansas College, Jonesboro, Magnolia and Monticello A. and M., Henderson and Ouachita are attending. The welcome address was delivered by President J. P. Womack of Henderson.

L. B. Ham of the physics department, Henderson, spoke on "Magnitude of Energy Changes in a Molecule. Professor Ham of the university discussed "Loudness and Intensity Comparisons."

Afternoon Session.

At 1:30 the discussions were resumed and the following program was given: "Experiments with Animals in Tide Pools," by Miss Maggie Denison, biology department, Henderson; "The Relation of Certain Site Factors to the Rate of Growth of Our Native Pines," L. M. Turner, forestry and horticulture department, University of Arkansas; "The Occurrence of Fagus in Northwest Arkansas," D. M. Moore, botany department, University of Arkansas; "Some Fossil Plants of Arkansas," C. L. Deever, biology department, Ouachita; "Individuality in the Animal Kingdom," David Causey, zoology department, University of Arkansas.

Botanical Garden Inspected.

At 4 p. m., a short field trip was made to the Ouachita College arboretum or botanical garden, the leader being Professor Deever who, with his botany students, has gathered many rare plants and set them in the big ravine.

The annual dinner was held in the parlor of the Methodist church at 6:15 p. m.

Prof. H. L. Minton, head of the department of geography, State Teachers College, Conway, delivered the annual public lecture at 8:15 p. m. His subject was "The Fornado in the United States."

The Academy members look forward to tomorrow's trip to the famed Magnet Cove which they will inspect and hear a lecture by State Geologist George C. Branner.

SHOW INTEREST IN MAGNET COVE VISIT

Arkansas College Scientists
Inspect Mineralogical Marvels of Area.

By EDGAR B. CHESNUT.
(Staff Correspondent of the Gazette.)

Magnet Cove, April 20.—Members of the Arkansas Academy of Science turned from listening about to looking at the mineralogical marvels of this unusual little community as they brought their 19th annual convention to a close today.

For more than four hours—even forgetting the noon hour in the rush of interesting events—the two dozen college professors of the state in attendance tramped about the hills and vales of the cove, tiny hammers knocking off precious chunks of specimens here and eager hands picking up equally as valuable finds there.

All in all, it was what most members declared to be the most interesting and valuable closing session of any of the conventions held thus far.

From the time the professors and students gathered at Henderson State Teachers College early today to hear state Geologist George C. Branner outline the trip, until the last straggler stumbled wearily down the tall mountain containing rich deposits of rutile, every minute was taken up in active and diligent field work.

For many of the professors, the visit to this famous geological center was a startling revelation. Even the thorough study of the area that had been done through textbooks had given no inkling of the vast wealth of scientific background to be gained by actual visit to the scene.

Dr. Hyman of Henderson
New Academy President.

Before departing for the field trip, the members of the academy held a brief business session, at which new officers were elected. Dr. H. H. Hyman, professor of physics and mathematics at Henderson State Teachers College, was elected president. W. C. Munn of Arkansas A. & M., Monticello, was elected vice president; W. R. Horsfall of Arkansas A. & M., treasurer; L. M. Turner of the University of Arkansas, secretary, and Miss Maggie Denison, editor of the proceedings of the meeting.

Brief reports on the membership activities during the past year were made, and this constituted the business meeting.

Gives Description Of
Cove's Characteristics.

Anticipations aroused by Geologist Branner's glowing description of the geologic characteristics of the famous cove, the professors and students lost little time in getting to the starting point, the western edge of the cove, where the igneous portion begins. Before leaving, Mr. Branner had presented to the expedition members, small pamphlets, containing data on the cove, and a geological map of the area.

Mounting a huge boulder of gray syenite protruding from a hillside just off the highway, Mr. Branner made a brief talk, and answered questions concerning the formation of the rocks on the outer rim.

Before the party could move to the next spot of interest, it was joined by former state Senator Joe Kimzey of Magnet, who is more familiar, probably, with the geology of the Magnet Cove area than any other person. As the party progressed, he proved of great assistance in pointing out the various rocks and minerals, explaining their creation and the uses to which many of them are converted.

Probably the most entertaining, if not interesting, spot visited by the scientists and students was the field of lodestones which the main highway divides. Women members of the party pulled out hairpins, the men yanked out their knives, and those with neither hunted nails and other metallic substances to demonstrate the magnetic qualities of the countless stones scattered about.

From here the itinerary took the party up into the hills to the home of Mr. Kimzey, where one of the best collections of minerals in the country was viewed. With approximately 350 different kinds, many of them from the Magnet Cove area, the collection amazed the members of the party, who stood around, examining them, making notes and asking questions.

Party Interested In
Titanium Plant Visit.

A visit to the titanium plant of the Titanium Corporation of America was another interesting feature. Here the party saw raw ore being scooped out of the hillside by huge steamshovels and hauled to the mill, and they traced its course, step by step, through the plant, saw the titanium ore separated from the coarse dirt by a series of washers, and then watched it sacked in 100-pound bags ready for shipment. The varied uses of this ore, for hardening steel and making a pigment for paint, was explained during the trip through the plant.

The visit to this plant ended the field work along the highway, and the scientists and students turned up the side of a steep, rocky hillside to inspect several titanium test shafts on property under Mr. Kimzey's management. The long, hard climb failed to dampen the ardor of the members of the party, and after reaching the top, many continued on over the rugged mountain to a deposit of black quartz, said to be one of the two black quartz deposits in the world. It was at this spot that the tiny geologists' hammers flew fastest, all of the professors being eager to obtain specimens of the beautiful black crystals.

As the party stumbled over the rocky terrain, time after time large pieces of flint, the same kind of flint of which the Indians made their arrowheads and other implements of war and household implements long before the coming of the white man to this section, were found.

Some members of the party saw the rock crushing plant of the Lawrence Company on the edge of the cove. Here they saw a broken and crushed into tiny granules that later will be used to surface tarpaper roofing. The green nepheline syenite rock is carried through three crushers and two screens before it is turned out into granules for the top and dust for the bottom of the composition roofing.

Entertain Hopes For
Future Development.

A fact stressed during the trip, in addition to the vast mineralogical qualities of the cove, was the high hopes that persons familiar with the area have for the future development of its industrial possibilities. Arkansas Power and Light Company's rural electrification program was launched at Magnet Cove with the view of making available power for additional mining industries already in the offing.

The Kimzey-Lawrence plant now is being electrified, the first industry in the area to change from gasoline power.

Work of changing this plant over will be completed next week at a cost of several thousand dollars.

The fact that the Rock Island railroad penetrates the rim of the cove, affording ready transportation, was pointed out as another advantage for mineralogical development on a large commercial scale.

Members of the party who had made a study of its history before embarking on the field trip called attention to the fact that it was just 100 years ago that Featherstonhaugh began the first geologic study of the Magnet Cove area, which is an elliptical basin, including an area of about 5.1 square miles.

The party made the trip to Magnet Cove from Arkadelphia in 12 automobiles, and in addition to the 24 professors there were about 18 or 20 students from Henderson State Teachers College and Ouachita College. Among the professors who took leading parts in the discussions and collected numerous specimens were Prof. L. M. Deever of Ouachita College, Prof. L. M. Turner of the University of Arkansas, Miss Maggie Denison of Henderson State Teachers College, Conway, and Prof. H. Horton of Henderson State Teachers.

Marker Will Be Erected At
Historic Salt Well.

Special to the Gazette.

Arkadelphia, June 8.—A marble slab to be embedded in a large rock is being prepared for Harris Flanagan chapter of the U. D. C., to be placed on Highway No. 8 near the Arkadelphia airport to mark salt wells from which De Soto and his Spaniards are said to have purchased salt from the Indians in 1541 and where salt was obtained during the Civil war for the Confederate armies.

HERE COLLECTING DATA ON RIVERS

Mrs. Magruder Gordon Maury Returns After 35-Year
Absence.

The rich history and romance of Arkansas rivers since the time of the Red Man will be preserved in a 125,000-word chronicle being compiled by Mrs. Magruder Gordon Maury, whose pen name is Jean Maury West. She returned to Little Rock yesterday after an absence of 35 years.

"My book will be one of a series of 24 to be published by Farrar & Rinehart which will be, in effect, an ex-

haustive anthology of American rivers," Mrs. Maury said. "I was given the assignment in Arkansas because I am a native of the state, having lived near Jonesboro and Little Rock until 1900."

Mrs. Maury plans to remain here several days collecting data, and will then make trips up the various water courses. She has completed her trip on the Red river and now is inspecting the Ouachita.

Mrs. Maury, a book reviewer and literary editor for the Boston Transcript, said that a score of writers are engaged in similar tasks in other states, and that three volumes will be written about the Mississippi river. She hopes to complete her work in time for a publication date concurrent with the Arkansas centennial celebration next year.

J. H. Hand to Represent State
At Mining Congress.

J. H. Hand of Yellville, member of the Board of Governors for Arkansas of the Southern Division of the American Mining Congress, was designated by Governor Futrell yesterday as the special agent of the governor and official representative from Arkansas at the annual meeting of the Metal Mining Section of the congress in Chicago, September 23-28.

Mr. Hand, who is manager of the Ozark Mine Owners League, said he will represent the interests of Arkansas zinc, lead and cinnabar mine operators and that displays of these Arkansas minerals will be among the exhibits to be shown in connection with the meeting.

The Southern regional meeting of the American Mining Congress was held in Little Rock in 1930 and was attended by several hundred persons interested in development of minerals and mining activities in the Southern states.

Finds Sulphur Spring While
Wading in Creek.

Special to the Gazette.

Fifty-Six, Aug. 9.—Judge Dene Coleman and family of Batesville, who spent the day on North Sylamore creek yesterday, found a sulphur spring in the bottom of the Mitchell hole, below here. Wading across the middle of the hole, Judge Coleman noticed the water at the bottom was a bluish color and the sand very cold. Suspecting a spring, he dove down and took a drink and found that it was strong sulphur water.

ANTIMONY MINING MAY BE RESUMED

Prospectors and Engineers
Inspect Old Shafts in
Sevier County.

Special to the Gazette.

Gillham, July 18.—For the first time since the World war there are prospects that antimony mining in this section of Sevier county will be revived. Several parties of engineers and prospectors have visited the old mine shafts recently and investigated ownership of lands over the eight-mile vein of ore known to exist here.

A test shaft is being sunk for a Boston (Mass.) man, and Shreveport interests are said to be trying to obtain leases in this vicinity.

For several years, Gillham was the largest antimony mining district in the United States. As far back as 1873, the Otto mine here produced 2,500 tons of ore, which analyzed 50 per cent metallic antimony.

In 1880, a group of Eastern capitalists opened the May shaft, about six miles east of Gillham, and the town of Antimony City, with a population of 1,000, sprang up on the Sevier-Howard county line.

War Revives Industry.

From 1885 until the World war, there was little ore produced, chiefly because the market price was low, but with the opening of hostilities, the demand became greater, and a smelter was built at the town of Gillham. Several old shafts in the district were reopened and for several months a fine grade of metal was turned out under the directions of a chemist, brought from France.

The market for antimony again went into a decline after the World war, and the plant was shut down. Since then attempts to revive the industry have been short-lived.

E. E. Vaughan, Gillham engineer, who has machinery on the ground for mining and crushing the ore, said that since the war, practically all antimony used in the United States has been imported from the Orient. It is only in recent months that the supply has been curtailed, causing the price to advance sharply.

Suits Charge That Blasting Has
Ruined Four Wells.

Special to the Gazette.

De Queen, Oct. 1.—Two unusual damage suits were filed in Circuit Court here this week by complainants who charge that their wells were dried up by a highway construction job.

Plaintiffs are R. O. Henry and Mrs. Bettie Jamison of Gillham and the defendant is the McGeorge Contracting Co. of Pine Bluff.

The complaints allege that while the McGeorge company was constructing an underpass beneath the Kansas City Southern railroad and U. S. Highway 71, near the Gillham east city limits during the summer, the use of heavy dynamite charges so changed the structure and water table underlying the plaintiffs' land that the veins supplying their wells were changed, causing the wells to go dry.

Mrs. Jamison has asked \$3,500 for the loss of two wells, and Henry is seeking \$5,000 for a similar number.

J. H. Hand to Represent State
At Mining Congress.

J. H. Hand of Yellville, member of the Board of Governors for Arkansas of the Southern Division of the American Mining Congress, was designated by Governor Futrell yesterday as the special agent of the governor and official representative from Arkansas at the annual meeting of the Metal Mining Section of the congress in Chicago, September 23-28.

Mr. Hand, who is manager of the Ozark Mine Owners League, said he will represent the interests of Arkansas zinc, lead and cinnabar mine operators and that displays of these Arkansas minerals will be among the exhibits to be shown in connection with the meeting.

The Southern regional meeting of the American Mining Congress was held in Little Rock in 1930 and was attended by several hundred persons interested in development of minerals and mining activities in the Southern states.

Marion. Saline Mining and Developing Company, Little Rock articles of incorporation.

tion, capital stock, 1,500 shares with a par value of \$5 each; incorporators, W. H. Maxwell, J. D. Jordan, W. C. Stenger and M. C. Stenger, all of Little Rock.

Arkansas's Minerals Added Assurance of

Value of Products of Oil and Gas Wells, Mines, Quarries and Gravel I

pression Came, Expected to Rise to Even Greater Heights Whe

Geologist Cites Advantages To Little Rock if Another Gas Supply Is Discovered

By WILLIAM JOHNSON.

Somebody once wrote a fantastic yarn about a man with X-ray eyes. He could look through earth, rock or walls, as if they were glass, and must have been an uncomfortable person to have around where anything secret was going on. To a newspaper, a guy with eyes like that would be worth a Hollywood salary. And if he also had a mathematical wizard's mind, think of the report he could give us on the mineral wealth of Arkansas. Peering into the depths of our valleys and hills, where Nature has hid away Golconda treasures of oil, gas, lead, zinc, cinnabar, and 57 varieties, more or less, of other minerals, that X-ray-eyed gent probably would pronounce a figure of value that would sound like the total of appropriations Congress can think up in a campaign year. It is, as the novelist of the early 1900's used to say about four times per chapter, "an intriguing thought." But actually, Science is giving man X-ray eyes, or their equivalent. The geologist of today, with his instruments and his brain-benumbing mathematics, is ferreting out the mineral riches old Mother Nature so slyly tucked away underground. And the inventory of this wealth in Arkansas, which our own State Geological Survey is making, throws a rosy light of cheer on the piled-up debt clouds—\$250,000,000 of public obligations—that frown down upon us. Our minerals ought to be a big help in weathering that threat to our earnings and living standards.

Minerals now occupy a large place in Arkansas's economic scene—or did before the Big Bust curled up all industry everywhere with a solar plexus wallop. Back in 1929, the state's mineral industries handed pay envelopes containing a total of \$7,611,000, to 7,721 wage earners and salaried officials. The value of our mineral products for that year was \$41,324,000—a tidy spot of cash. It would take about a million average dairy cows to gross that much money annually, with butterfat worth 30 cents a pound, or would require the lint cotton at 12 cents a pound, and average yields, from around 1,900,000 acres. That's twice as many milk cows as Arkansas has got, and 80 per cent of its cotton acreage. So, you see, minerals are pretty important.

The value of our minerals took a dizzy flop, of course, when old man Depression stuck out his foot and tumbled most every industry into a bath of red ink. Our oil and gas wells, mines, quarries and gravel pits paid us only \$15,540,000 in 1933, the latest year for which figures are at hand. But the value of these gilt-edged resources is as certain to come back as the country is to peel the depression off its galled neck. What's more, there are sound reasons for believing that national recovery will open wider commercial opportunities for Arkansas minerals than they've had heretofore.

One of the reasons for so believing is this: Industry is turning more and more to fabricating a vast range of commodities from the cheapest raw materials. You can think of endless examples—rayon from wood; butter substitutes from vegetable oils; drugs and dyes formerly of plant origin, from coal; phonograph records from straw; shattering explosives from cotton linters; and no end of other such every-day articles, all built up from lowly and unlikely-looking substances—even to human food from spinach.

New Uses of Minerals.

Minerals are playing a constantly increasing part in this triumph of modern science. As a rather recent instance, there's "rock wool"—a cottony insulating material made of silicious lime stone. If you had shown a man some of that fluffy stuff a few years ago, and told him it was spun from a rock, he probably would have given you a pitying look and refused even to argue with a person so far gone in idiocy. Many such mineral marvels today are a promise of more to come—and of a hungrier demand in the future for Arkansas's soil-stored wealth.

But the state's fuel minerals—its reserves of oil, gas and coal—represent its biggest opportunity in this field, says Dr. George C. Branner, state geologist. He pointed out that in the 50 years from 1880 to 1929, the fuel minerals accounted for 82 per cent of Arkansas's entire mineral income. Other minerals will become more important, he thinks, and may well contribute substantially to our income. But he believes the fuel minerals will continue for a long time to hold top place in a big way.

Oil, of course, rates number one on the fuel mineral list. Up to the present time, 50,000 acres of oil lands have been discovered in Arkansas, comprising 15 fields of from 85 acres to 29,500 acres. The possibilities of further production are, in Dr. Branner's informed and measured opinion, "by no means exhausted." He thinks the new Rodessa field in Louisiana, five miles south of the state line, may well extend into Arkansas. The depression, he said, has checked new developments in the state, by price drops and uncertainties who discouraged the "wild catting," he believes that when market conditions again encourage oil hunting a good deal of it will be found in Arkansas areas that wear hung out where she hid it.

And the gas deposits, especially in the western part of the state, are a long way from being fully exploited, Dr. Branner said. Apparently the hindrance to further development there at this time, he added, is the lack of a market.

Promising Gas Areas.

Promising areas for gas drillings lie waiting within a hundred miles of Little Rock, the geologist continued. They are found around and north of Morrilton, Conway, Russellville, and adjacent points, he explained. Then he said:

"We have, it appears, large reserves of gas within easy reach of Little Rock. Our people here want and need industries. Gas draws the fueling industries as a honey pot attracts bees. If seeming ample supply of gas were developed, and could be put down in Little Rock at a low figure, say eight or nine cents a thousand feet, it probably would bring about a rapid industrial expansion here. Fort Smith has a number of industries, including glass manufacture, that were located there largely by the attraction offered in its gas supply."

Everybody knows that competition in industry is keen these days, and that production costs are figured down to pennies. Obviously, then, an abundant and cheap gas supply, which might offer a fuel-using industry a saving of 10 or 15 per cent on that item, would give Little Rock a powerful appeal to this class of industries seeking locations.

There's another angle of the gas business, too. One of the big economic drains on Arkansas is the high proportion of the state's earnings that it pays out to other states for daily necessities. Gas is among these imported articles—not wholly, but to a large degree. A well-informed man told the writer that Little Rock now consumes about \$1,000,000 worth of gas annually, around half of which is piped from neighboring states, while the other half comes from home deposits in the Clarksville valley.

Taking the state as a whole, it uses considerably more imported than home-produced gas. The figures for 1932, the latest available, were 25,330,000,000 feet of gas consumed in Arkansas, and 10,235,000,000 feet produced. That totals a pretty hefty flow of cash out of the state—to pay wages, buy materials and build industry elsewhere. Year after year that financial drain goes on, while all the probabilities, as revealed by surveys the state geologist's office has made, point to huge reserves of gas within our own borders—probably enough to supply us for 100 years.

Importance of Bauxite.

Turning to the state's metallic minerals, there is, first in importance in this classification, bauxite. In 1933, Arkansas bauxite represented 99.3 per cent of all that was produced in the United States, though not of all the country used—for bauxite is imported heavily from South America. The state's 1933 production was around 150,000 tons, valued at \$853,000—a severe drop from the boom period figures.

Arkansas's supremacy in bauxite naturally raises the question, Why can't it be manufactured here into the products it yields? The variety of things industry now gets from it are intimate needs of every person's life. Aluminum ware is only one item. Take, for instance, the state's bauxite production in 1933. About 30 per cent of it went to make aluminum metal, while 38 per cent was diverted to the manufacture of aluminum sulphate, a form of alum, 26 per cent to abrasives, and five per cent to chemicals other than aluminum sulphate. So, all day long,

you are helped in your living by bauxite. You perhaps eat food cooked in aluminum utensils. Aluminum sulphate is used in making paper, and in purifying water. It even enters into your breakfast, by way of the baking powder that lightens your biscuits.

There would thus seem to be wide opportunity for the manufacture of bauxite products in Arkansas. This question, however, runs into technicalities that your informant doesn't know enough about to make him capable of expressing a worth-while opinion. It doesn't pay to launch out shedding information right and left like a normal school, unless you know the information is correct. Some men who have studied the facts say aluminum manufacture in Arkansas isn't feasible, because it requires much more of other materials than it does of bauxite, and materials that mostly would have to be hauled into the state. These men assert as a clincher for their argument that aluminum manufacture, like other industry, has been seeking the cheapest locations, and that in passing Arkansas by, in spite of our vast bauxite deposits, it must have sound economic reasons.

But aluminum is only one item bauxite yields. And among its numerous other products are some that Arkansas could, and should, manufacture, we're told by folks who have dug into the subject. Most likely, they say, the manufacturing would have to be on a small scale, at least in the beginning. But "from little acorns mighty oaks grow." Look into the manufacturing of any state, and you'll find that it started, in the main, with modest plants—often only little shops which launched out with the idea of supplying just local, neighborhood demand. By degrees they spread, until they reached out over the state and into the national market. That's the proved way to get industries. They must be grown. Trying to import them ready-made—coax them away from other places—is, in the light of experience, about as fruitful an enterprise as a woodpecker's attempt to get his breakfast out of a concrete telegraph pole.

Tax Question Bobs Up.

In every consideration of manufacturers, the tax question bobs up. Right now, in connection with bauxite, there is talk of increasing the bauxite tax. Maybe it could be done safely, but certainly there should first be careful study of all the probable effects. You hear it said that manufacturers of bauxite can get this material from South America laid down in St. Louis, for about the cost of the Arkansas product, and that the South American ore is better. That claim may, or may not, be true. But obviously it would be wise to get at the truth before plastering any further tax on our bauxite—especially as no reasonable increase of the tax is going to bring in any great revenue. Of the state's total severance taxes, bauxite pays only two to four per cent. The total in 1933 was \$190,624, to which bauxite contributed \$7,968. If you doubled, if you quadrupled, that sum, it wouldn't then be enough to solve any financial problem of the state.

Oil and gas are the big severance tax producers, as they are the tip-top sources of our mineral industry wages and income. They paid 76 per cent of the severance tax in 1933—\$144,926 of it. And back in the peak year of Arkansas's oil production, in 1926, oil and gas clinched \$1,723,000 of severance revenue into the state's coffers. Its total severance receipts that year were \$1,338,966. Oil and gas accounted for 93.7 per cent.

"What Arkansas needs," said Dr. Branner, "is more oil fields. Everything that can be done to encourage oil production, should be done. We are striving in this office to provide prospectors with information of promising locations to drill, and with every encouragement to keep them drilling."

About 600 copies of a study of oil possibilities in the coastal plains area, by the state Geological Survey, have been sent out to interested concerns all over the United States. The small oil prospector, Dr. Branner pointed out, must look to the state for such guidance. He can't afford the cost of making a survey himself—and he's a big factor in oil-field development. Even the biggest companies, that have their own geological experts, depend on state maps and studies for wide pictures of the possibilities, from which they select localities for their own further investigation.

State's Need of Industries.

But though recognizing the prime importance of oil and gas to Arkansas, Dr. Branner's office isn't losing sight of the opportunities in other minerals.

"The state needs a lot of small industries," the geologist said, "and ought to have them, for it's got abundant raw materials. This comparatively new rock wool industry, for instance, would have fitted nicely into our economic picture. Arkansas has the required kind of rock

in plenty."

But industries today demand exact knowledge of raw material sources. And in supplying that information, the Arkansas Geological Survey has been handicapped by insufficient funds. Other mineral states are giving their geological departments much larger appropriations—and getting the industries.

The Arkansas Geological Survey, however, is piling up a lot of detail knowledge of the state's mineral resources. Seadily it is mapping and charting the things oil and mining engineers want to know. It has recently surveyed oil and gas prospects, those for bauxite, sand, marble, and other items. It is continuing work in the cinnabar field in Pike, Clark and Howard counties, which, Dr. Branner says, may prove to be the most important source of quicksilver in the United States. And among further surveys that is hoped means can be found to make, are one of the state's commercial clays, another of phosphate deposits, a study of the brine content of deep oil wells to determine their bromine and iodine content, and an inquiry into the oil shales of northern Arkansas. Mapping, too, is being pushed forward—an important thing. As Dr. Branner puts it, every activity begins with maps.

All together, there is much cheer in the outlook for Arkansas's mineral development. Our soil riches are a sleeping giant, which, if fully awakened, can carry a big part of the state's financial burden, and add much to its well-being. Already that giant, only partly awakened, has done stout service. Getting him on the job in complete, wide-eyed efficiency, is a task that calls for the co-operation of all groups in the state.

STATE TO PROFIT BY ORE EXHIBITS

Display at American Mining Congress Meeting Attracts Much Attention.

Oct. 6, 1935

Special to the Gazette

Yellville, Oct. 5.—Arkansas is expected to profit immeasurably as a result of its ore exhibit which attracted much attention at the American Mining Congress convention at Chicago last week, it was said here by J. H. Hand, who was Governor Futrell's official representative at the meeting, and who arranged Arkansas's exhibit. Mining officials and engineers from all over the country attended the convention. Dr. George C. Branner, state geologist, spoke. Mr. Hand also represented the Ozark Mine Owners League.

Exhibits in the Arkansas display included zinc, lead, cinnabar, manganese and copper ores. In array of minerals shown, only one other collection exceeded the Arkansas exhibit, and that came from a district which lies in parts of three states. No other state had a cinnabar exhibit, and that Arkansas feature attracted unusual attention.

"The high quality of the zinc from the Ozarks decisively led all other zinc exhibits," Mr. Hand said, "and made a strong impression among members of the industry who recognize the scarcity of premium grade zinc ore. Representatives of prospective enterprises, now on the lookout for new zinc and lead mining projects, spent much time inspecting these exhibits and studying accompanying data relating to matters of mining in the Ozarks area. It is certain that investigations soon will be made in the field with a view to establishing active mining operations on a liberal scale."

At the conclusion of the show, the Arkansas minerals were presented to the engineering firm of Krause & Co., Inc., of Milwaukee, Wis., which will install them in its offices.

Holds State Can Bring Suits For Back Severance Tax.

Sept. 24, 1935

Attorney General Carl E. Bailey, after a preliminary investigation, advised J. Fred Brown, state severance tax agent, yesterday, in his opinion, the state can sue to recover overdue or unpaid severance taxes as a step toward possible recovery of thousands of dollars from producers of oil, gas, bauxite ore and other minerals subject to the 2.6 per cent severance tax.

Mr. Brown, whose office was created by the last legislature, has been investigating severance tax collections for the past several months. He advised Attorney General Bailey that the \$2 per ton basis used by the state Revenue Department for computing the tax was below the market value at various times.

Dr. George C. Branner, state geologist, whose investigations brought the matter to the attention of the state comptroller and the last legislature, said that approximately 823,000 tons of bauxite had been mined in Arkansas during the past five years and might be subject to additional tax if the \$2 basis were too low. Dr. Branner said the f. o. b. price of bauxite was \$4 to \$6 per ton but that the product was worth less at the mine where the tax is computed.

Mr. Bailey said a further investigation should be made into the technical field of recovering more severance tax because of undervaluation. The opinion pointed out that statutes provide that a 2.6 per cent tax shall be levied on the gross market value of the total production of bauxite and "that the value should be computed as of the time and at the place where the ore was taken from soil in its unmanufactured state."

The attorney general said Act 174 of 1929 allowed the state to sue within five years for recovery of overdue taxes "accruing because of under-assessment of tangible property."

HOW CAN WE BEST ADVANCE INDUSTRY IN ARKANSAS?

Talk about the great opportunities this state offers for manufacturing has long been one of the easiest things to start in any gathering of Arkansas people. But this talk has not started many industries. We actually had fewer workers on factory pay rolls in 1929 than we had in 1909. From 1899 to 1925, as Dr. David Y. Thomas showed in his history of Arkansas, industrial employment in Arkansas increased only half as much as in the country as a whole, and only one-third as much as in the other Southwestern states.

What's the explanation? The Industrial Development Committee of the State Planning Board, after a survey and study, tells us that we have had two major handicaps. One is a restricted home market for Arkansas-made goods. The population is comparatively small and much of it has relatively small buying power. And when we undertake to send Arkansas-made goods into the enormous market of the North and East we run against the second obstacle—a long haul and the high incoming and outgoing freight rates decreed for us by the Interstate Commerce Commission because Arkansas lies in a low density freight traffic territory. The Industrial Committee finds one opportunity for Arkansas in the development of many small industries supplying home needs for articles and goods that are now imported from other sections. That is one way to advance. Then there is the great field opened by new developments in chemical industry, holding out opportunities in cheap paper manufactured from pine pulp and abrasives and other chemical products obtained from bauxite.

Whether we should have a state department to promote industrial development, as the Planning Board recommends, or an agency of the type of the Arkansas State Chamber of Commerce, we surely can not simply throw up our hands and trust to conditions to right themselves. We must know what our difficulties are and set to work to overcome those difficulties or to adjust our industrial efforts to our special conditions.

Sept. 24, 1935

Published Daily and
ARKANSAS DEMOCRAT COM
Capitol Avenue and Scott Street
Entered at the Postoffice at Little Rock,
SUBSCRIPTION RATES—By Carrier, Daily
By mail to Arkansas addresses, payable
year; \$4.25 for six months; \$2.50 for three
TELEPHONE — ALL DEPARTME

MR. FISH ON THE NE

A neutral critic of President Roose
would, at least, make allowance for th

Increase in Manufactures One of Arkansas's C

State Is Putting Labor and Ability Mainly Into Raw Materials for Manufactured Goods Other States Are

Lack of Local Markets Seen As One Reason Industrial Development Has Lagged

By WILLIAM JOHNSON.

Arkansas is in something of the financial fix of a man who worked for a merchant in a small town. He was paid his wages in goods out of the store, and the store didn't carry some of the things he wanted. So the man cooked up this more clever than efficient scheme: He would buy eggs from his merchant-employer, at retail prices, of course, take them to another store, and swap them there, at wholesale prices, for the goods he required. It isn't necessary to go into the statistics of that procedure to see that the results were painfully similar to the fate of the man who got caught in a tunnel between two trains. And on a larger scale, Arkansas is using pretty much the same plan. We are putting our labor and ability mainly into raw materials—cotton, timber and minerals—which we exchange at wholesale prices for manufactured goods at retail prices, from all over the national scene. A state cannot carry that handicap and really prosper. The price spread between raw materials and finished goods is too stiff a tax on earnings—and a tax that's spent outside the state, for the upbuilding of other localities. If Arkansas is going to join its richer sister-commonwealths in the economic land of milk and honey, clearly it must build up its manufactures. It must, with its own abundant labor and raw materials, provide more of its own industrial needs, and also fatten its income by larger sales of factory goods in outside markets.

Writing in the Arkansas Democrat, December 21, 1930, Circuit Judge Richard M. Mann, said:

"We have been sending to other states approximately \$395,000,000 annually for manufactured products. . . . If we had this \$395,000,000 which we annually send to other states, it would continuously employ 316,507 men, eight hours a day and six days a week, at 50 cents per hour."

Perhaps that employment estimate was high, since it made no allowance for the purchase of raw materials for manufacture, some of which might have to be imported, nor for manufacturing machinery the state hasn't yet learned to make. But certainly Judge Mann put his finger in that paragraph on a great weakness in Arkansas's economic structure. He had been appointed, in 1923, by Governor Parnell, chairman of a committee today study the state's industrial situation. Hence, he spoke from the knowledge of assembled facts. He further pointed out in the Democrat article that "during the past 10 years we have sent 75,000 of our own people into other states seeking employment, because we have failed to provide facilities for earning here." That loss of youth is a huge drain on the state. Aside from the wealth it would create here if it had working opportunities, the cost of rearing 75,000 young people for other states is a heavy one. Social experts figure there's an expense of \$630 in bringing a child up to the age of six years. For 75,000 children, the total bill would be \$47,250,000. And the outlay doesn't end at six years.

Keeping Youth at Home.

Never before was it so important for Arkansas to keep its young folks at home, and to establish profitable employment for them, and for all its citizens. Our expenses are up, with \$250,000,000 of public debt, mostly created during the booming '20's, to carry, with the equipment that borrowed money built to maintain, and comfortable livings to earn. Our income is down—to little more than half what it was when we were spending all that borrowed money. Manifestly, we must improve our earning facilities—expand our intake of cash.

What, then, are the state's best opportunities in manufacture? That is answered in a report compiled for the State Planning Board, under the direction of Earl O. Mills, who was assigned to the board as a consultant, by Secretary of the Interior, Harold L. Ickes. The report says:

"Certain manufacturing activities could very probably be successfully stimulated here. Of these, the following deserve special mention:

"Cotton goods manufacture, in the original piece, such as cotton duck, also the manufacture of low cost wearing apparel, such as work clothes, dresses, etc.

"Small furniture plants to be located in rural communities at or near available timber. We now have very successful small plants at Benton and Camden.

"Paper manufacture. Recent development of the use of small pine warrants consideration of this class of industry, particularly as to newsprint and other general papers. The present pine growth, together with the potential supply, is attractive to this industry.

"Clay manufacture, such as tile, brick, etc., and the development of clays as pigments or for other uses.

"Small woodworking plants for the manufacture of novelties, toys, furniture materials, etc.

"Canneries. Tomatoes are canned in northwest Arkansas and other vegetables elsewhere, but the preponderance of the supply of canned goods consumed in Arkansas comes from other states, although Arkansas soil is generally suitable to growing fruits and vegetables."

Census of Industries.
The report recommends the creation of a state department to round up and analyze facts bearing on our manufacturing possibilities. Such a department could give industrialists who are looking for locations the information they want about materials, labor, markets and the like, and could also advertise manufacturing opportunities, the report suggests. It says the state department might consist of an appointee selected by the governor, for competence and experience, and a small personnel, given an appropriation that "need not be large."

Before going farther into this document, let's glance backward a few decades, to the "good old days" of whiskers, suspenders, red flannel underwear, and two-hour Sunday dinners. We'll thus get a clearer view of the present situation.

Arkansas stepped out pretty briskly in manufacturing in the '70's, '80's and '90's. Throughout that period there was a fine rising hum of industry in Little Rock and over much of the state. It's true, most of the plants were small, except for the saw-mills, which sized up the average almost anywhere. But that was a day of small industries, and Arkansas's variety of them whistled, shrieked and droned a tribute to the vim and alacrity of the time. The goods turned out weren't confined to the ordinary run of merchandise, such as flour, carriages, hats, crackers, candy, overalls, barrels, wrapping twine, rocking chairs and bricks. Products requiring high mechanical skill were made, too—as, for instance, cotton gins and steam engines, which went out of Little Rock and stood up with the country's best. The gins pulled

down a top award at the Philadelphia Centennial.

Tall obstacles of little capital, lack of trained labor, and slender home markets, were overcome by those pioneer builders of mills and factories. They had no statistics of materials and markets to guide them. Such statistics were then pretty elementary—on the order of the bill rendered by a backwood's teamster, which read: "Three comes and three goes at four bits a went, \$3." The state's industries of that day sprouted from a mixture of confidence, sheer grit and level-headed sense.

When Industry Thrived.

For about three decades, beginning in the '70's, Arkansas's industry forged ahead at a lively clip. It employed less than 5,000 wage earners in 1879, 14,000 in 1889, 31,500 in 1899, and nearly 45,000 in 1909. The value of manufactured products in 1899, including lumber and timber, was \$40,000,000. By 1909, the value was almost \$75,000,000. Then something came unstuck. The value of products continued to grow—to nearly \$120,000,000 in 1921, to \$197,000,000 in 1925, and to \$210,000,000 in the boom year of 1929. But not all of that gain can be credited to increased output—some of it came from rising prices.

And as a source of employment our industries made no advance after 1909. They employed almost 45,000 wage earners in that year, and 20 years later, in 1929, they employed 44,121—a few hundred less. A brief swell of pay rolls under the stimulus of the World War was lost afterward, when, for several years, the number of wage earners fell below the 1909 count.

Nor—another industrial measurement—has the use of primary horse power increased much since 1909. The figure for that year was 173,000 horse power, and for 1927, the latest record at hand, 183,000 horse power.

In the light of these and other statistics, Dr. David Y. Thomas says in his history of Arkansas, that the industrialization of the state has proceeded much slower than that of the other Southwestern states.

of the nation. He points out that where the growth of manufacture in states round about us, as measured by the number of wage earners employed was, from 1899 to 1925, about one and three-fourths times that of the entire country, Arkansas's growth was only half that of the whole country.

Why? Clearly, one big reason is the decline in lumber and timber production, which fell from a peak value of \$84,000,000 in 1919, to \$73,000,000 in 1925, and to not quite \$38,000,000 in the boom year of 1929. This emphasizes the need of giving reconstructive care to our forests.

Manufactured Goods.

In strictly manufactured goods, the state's showing is much better. The value of production here, as given in the report for the Planning Board, rose from \$13,265,000 in 1899 to \$116,000,000 in the war boom year of 1919, to \$121,000,000 in 1925, and to \$172,000,000 in 1929. Since then, it has, of course, tumbled—to \$81,500,000 in 1931, the latest year cited. Timber products, however, fell even further—to a 1931 value of only \$16,734,000. The 1933 value of the state's manufactured output, including timber, is given in a census report as \$81,000,000. (Round figures have been used throughout this article, as a mercy to the reader.)

The strictly manufacturing industries show a pleasant gain from 1909 on, in both number of wage earners and horse power used, as well as in value of output. Up to 1923, the wage earner count had gained 43 per cent, and the horse power 172 per cent, and there was a further increase through the boom that went to smash in 1929.

Nevertheless, Arkansas hasn't developed manufacturing industries in anything like the measure of its need. It hasn't shifted fast enough to fabricated goods, as its lumber industry declined. The state continued to export lumber, and buy it back in furniture and other finished productions. It has gone on shipping out cottonseed oil, bauxite, and other raw products, and repurchasing them in their manufactured forms. It hasn't developed any cotton manufactures in proportion to its cotton goods consumption. Nor has it built up the creameries, cheese factories, milk condenseries, meat packing plants, and the like, that it might have had if its farming had taken on a live stock balance, and the production were processed at home in the substantial measure found in other agricultural states.

Why Manufactures Lag.

The Planning Board report unfolds several reasons for the backwardness of our manufactures. It says:

"Probably the greatest contributing factor is the lack of local markets, due to the state's limited population. In order to survive, most of the industries manufacturing commodities in Arkansas must have a wider market for their products than exists in the state—particularly in the large centers of population in the North and East. The sale of goods to such markets involves competition with plants located elsewhere and this necessitates paying transportation charges on finished goods and also on materials used in the manufacture of commodities which must come from other states. All of this transportation

burden must be added to the cost of manufacture and be borne largely by the consumer. The result is that the growth of many industries in the state is prevented by existing transportation rates.

"The Interstate Commerce Commission has divided the United States into rate territories based largely upon density of traffic. The result is that the North and East have the lowest transportation cost per mile, and in the South, lying east of the Mississippi river, rates are approximately 40 per cent higher, while in the Southwest, including Arkansas, they are approximately 50 per cent higher. There is a need for a revision downward in the freight rate structure within, to and from Arkansas. The vast market of this country lies north of the Ohio and Potomac rivers and east of the Mississippi, where the lowest freight cost occurs. Some relief has been ordered by the commission in I. C. C. Docket No. 13535 effective June 12, 1935, but not sufficient to induce the proper development of the Southwest including Arkansas."

Then the report recommends the state agency, before mentioned, to foster industrial ventures with adequate information.

Individual Earnings.

Undoubtedly, low average individual earnings in Arkansas, compared with neighboring states, are a hindrance to our expansion of manufactures, since they restrict home buying power. Nevertheless, the state has a large total of buying power, enough to support a very considerable industrial expansion, which is going out of Arkansas to pay for goods manufactured elsewhere. And to increase this buying power, obviously our agriculture must be improved along diversified

lines. That need—and opportunity—was dealt with in an earlier article.

The industries built in Arkansas since 1914 are evidence of the manufacturing opportunities in the state. Among these later industries, the Planning Board report cites boxes, brooms, railroad shop construction and repairs, cheese, chemicals, feeds, meat packing, motor vehicle parts and bodies, and refining of petroleum products, with a value of production in 1929 of \$30,600,000, and in 1933 of \$12,800,000. The number of employees in this field was 2,916 in '29, and 3,514 in '33. And there are other new industries, the report says, for which it lacked full data, but it named these: the International Shoe Company, at Malvern; the Southern Kraft Corporation, Camden; the Arkansas Portland Cement Company, Foreman, and the

Rockwell Manufacturing Company in Camden.

Leading Industries.

Here are some further items of much interest from the report:

"The five leading industries in the order of the value of products for 1933 were as follows:

- "1. Oil, cake and meal, cottonseed, \$7,719,567.
- "2. Furniture, \$3,976,976.
- "3. Car and general construction, railroad repairs, \$3,879,958.
- "4. Printing and publishing, \$3,365,882.
- "5. Bread and bakery products, \$2,837,665.

"The total value of these five classes of products in 1929 was \$52,694,005, or 68.3 per cent of the value of all manufactured goods and in 1933 the total value of these five products was \$21,780,048, or 64.7 per cent of that of all manufactured goods.

"The loss in value of manufactured products from 1929 to 1933, expressed in percentage of the 1929 value, indicated that the following

industries maintained their production status most successfully during the period of the depression:

Industry.	Loss in Value of Products (Per cent)
Confectionery	27.8
Furniture	34.9
Beverages	42.7
Bread and bakery products	45.8
Canning and preserving	47.2
Fruits and vegetables	50.5
Printing and publishing	50.5

It would seem from those figures that the safest manufacture to start in Arkansas would be confectionery, next furniture, then beverages, and so on through the list.

One concluding word: The world around, there are no wealthy regions with generally high living standards, among those depending chiefly on agriculture. Too many things can happen in weather and markets to knock an agricultural income galley west overnight—especially if it's mainly derived from one crop, as Arkansas's is from cotton.

Wherever you find a prosperous people, you find one with diversified employments and earnings. They have farms, factories, and probably forests and mines. Arkansas has everything needed to create such a diversification—including the brains and ability, as the industries created in the state's earlier years, under severe difficulties, abundantly prove.

Arkansas Rich In Mineral Resources

Dec 15 1935

Following is a list of economic mineral resources of Arkansas, classified under three heads by George C. Branner, state geologist:

1. Adequate reserves as to quantity and quality, production dependent on price and demand: Bauxite, building stone, dolomite, limestone, marble, sandstone, syenite, chalk, clay, coal, dolomite for burning, glass sand, lead, limestone for burning, manganese, mineral waters, natural gas, natural gas gasoline, novaculite (oilstones), petroleum, portland cement materials, road-

making materials, sand and gravel, slate, tripoli, zinc.

2. Questionable reserves as to quantity and quality, or both, limited production dependent on price and demand: Antimony, asphalt, copper, diamonds, greensand marl, gypsum, iron, ocher, pyrite, silver, soapstone.

3. Most promising for exploration to increase either quantity or quality of reserves, or both: Bauxite, brines, clays, Fuller's earth or bentonite, lead, manganese, natural gas, oil shales, petroleum, phosphate, quicksilver, titanium, zinc, barite.

The minerals produced in Arkansas in 1934 were, according to the United States Bureau of Mines, as follows: Bauxite, cement, clay products, coal, lead, lime, magnetite, manganese ore, manganiferous ore, natural gas, natural gasoline, oilstones (novaculite), petroleum, quicksilver, rutile (titanium), sand and gravel, slate, stone, tripoli, zinc.

Consider for a moment just what it would mean to Arkansas as a whole if the natural resources listed above were developed to the extent that they should be. It would mean that Arkansas would not only rate as high as any other state in wealth, but perhaps would rate even higher than any other.

It is hoped that some day reasonably soon most of the natural minerals will be developed into finished products. It is the belief of many who are interested in the state's development that as soon as capital has some encouragement to enter, the future for Arkansas is unlimited.

ICKES REPORTS ON DEPARTMENT OF THE INTERIOR

Dec 16 1935

Claimed By

and facilities for a study of explosive
Bartlesville, Okla., and Laramie, Wyo.
the petroleum experiment stations
California, Ala., modernized buildings
Lake City, College Park, Md., and Tu
ed enlarged laboratory facilities at Sa
mining accidents declined; said it nee
Hartsville, Tex.; said the number of
was maintained at its plant
helium used by the Army-Nation
Bureau of Mines: Reminded th
to the federal government.
maximum cost of \$40,000,000 a mont
college and vocational studies at
to permit continuance of high school
time jobs for 2,000,000 young peopl
educational expenses, advocated part
states ought to pay a large share o
Office of Education: Noted than
topographic mapping.
ceive larger appropriations to carry out
ducting water; recommended that it re
d miles of streams capable of pr
including some in Puerto Rico; surveye
scale maps of 46,000 square miles, say
Geological Survey: Completed larg
erous other bureaus included:
Activities of the department's num
being given administrative jobs.
tion Corps and that more Indians wel
now enrolled in the Civilian Conserv
the report said 27,000 of the race we
Indian emergency conservation wor
reservation by the \$10,000,000 spent o
Emphasizing the help given ever
ble.
said false propaganda was respons