

Arkansas's First State Geologist

Dr. John C. Branner Laid the Foundation of Arkansas Geology, But His Work Was Far From an Easy Undertaking.

Gazette 7-18-37

By Tom Shiras.

Probably no state geologist in the United States ever laid down such a plain and comprehensible geological foundation for mining men to build an industry on, as did Dr. John Casper Branner, state geologist from 1887 to 1892, laid down for Arkansas during the five years that he held that position. To those who are familiar with the vast amount of geological research work he did in the state, with all its complicated details, it seems almost impossible that he could have accomplished what he did in so short a time.

Until 1887, Arkansas geology was not much more than a bad guess. Some geologists had been brought by private interests to make reports on private properties, but these investigations held no general interest and distributed no general information. Arkansans knew that we had zinc, lead, manganese, bauxite and other minerals, but they knew nothing about their association with surrounding rocks and the geological conditions under which they might be encountered. Dr. Branner's reports were written in such a style as to be understandable by the man with even a smattering of geological knowledge, and the flow of mineral wealth from the state, during the last 40 years has been due in no small measure to his researches.

His work was so thorough that he didn't overlook a single mineral resource.

Arkansas black marble, which has been supplanting Belgium black in domestic construction for several years, was supposed to be a new discovery, but in searching for information on the material the writer found it tucked away in an old report by Dr. Branner on limestones and marbles, issued in 1892.

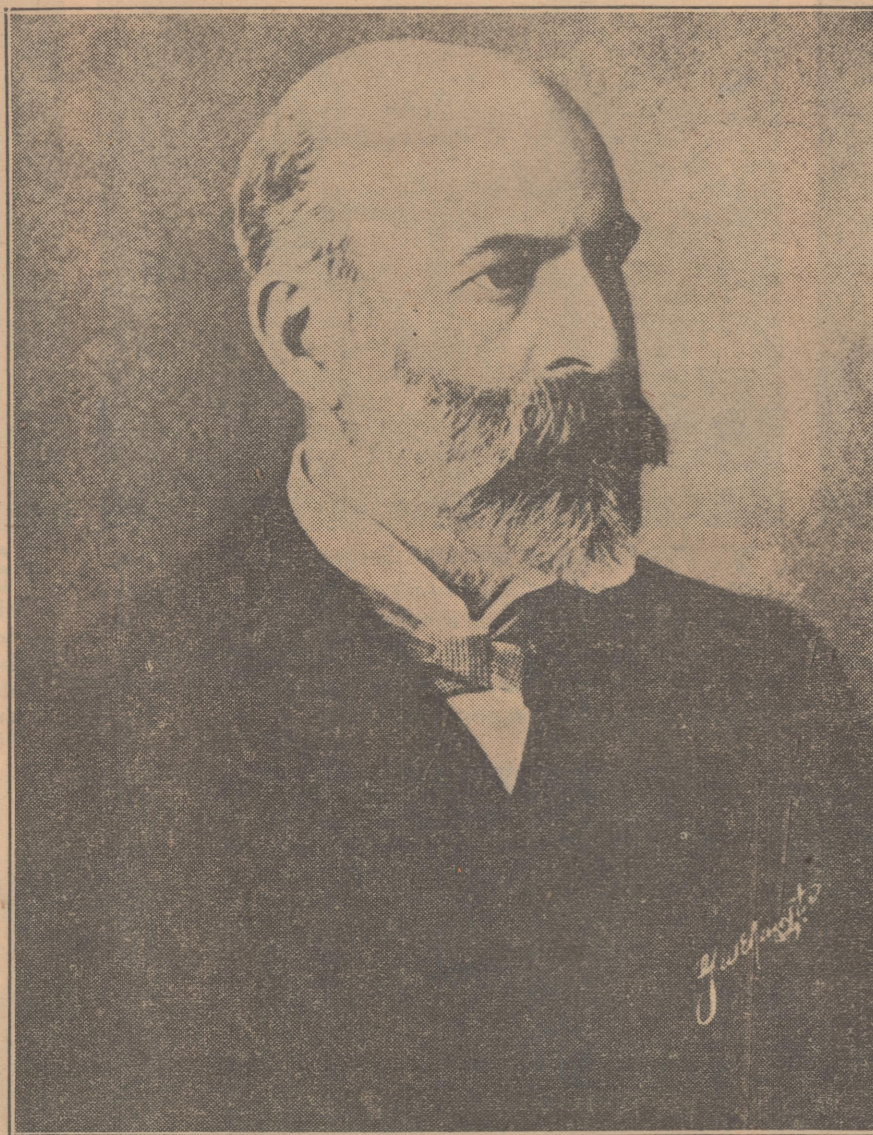
In the early days of mining and prospecting in the north Arkansas zinc and lead field, the work was carried on in a haphazard manner, until Dr. Branner made his survey of the field late in the 80s, and published his report. Little was known of the value of carbonate and silicate of zinc, now two of the field's most widely distributed and valuable ores. A group of miners operating the Morning Star mine on Rush creek, believed that the carbonate ore carried high values in silver. They constructed a small stone smelter, which still is standing, to recover the silver values, and were disappointed when the zinc gases gathered over the top of the flue in pretty rainbows, and no silver ran into the molds underneath.

The earlier prospectors in the field would start in on an ore outcrop and drive their tunnel straight into the mountain, cutting through the ore run. Dr. Branner's advice was to follow the ore wherever it led, and that it was more likely to be found along fault lines and breaks. It was after this report was published that really worthwhile ore bodies were developed. The ore leads, instead of running into the mountains generally follow the same meandering as the adjacent hollows.

While at work in the field, he predicted the discovery of rich beds of carbonate ore, and dwelt on their value. He pointed out some favorable locations for mines. The carbonate ore has been found as he predicted, and several good mines have been opened up on sites that he pronounced good.

His report on the field is studied as carefully today by the more conservative element in the mining fraternity, as it was when first published. Those who follow it closely in relation to their operations, reduce many of the hazards of a hazardous industry.

Dr. Branner's report on the manganese ores of Arkansas is one of the most complete ever published in the United States. It covers everything from the uses made of the ore by the early Egyptians, down to the minute details of the deposits in this state. Few of these reports are now in existence, and during the World war,



DR. JOHN C. BRANNER.

when manganese mining was at its height in the Batesville-Cushman field, there was only one of these reports in the entire field. The owner of the book, knowing its value to operators, placed it in the vault of the old Union Bank and Trust Company. When a mining man wanted to consult it, he was given a chair in the vault and obliged to do his reading there. There was usually a waiting list for the book, and this volume probably has been read by more persons than any other book in existence in Batesville today. When the war ended the volume was in tatters.

Dr. Branner exploded several false ideas about some minerals that were believed to be present but were not here. He cracked up the only gold boom in the history of the state and it left a lasting impression on the minds of the people.

This boom started in the Ouachita mountains, in the southwest part of the state, in 1885. By 1887 it was going good. Thousands of people thought that Arkansas was going to be another California. Thousands of dollars were invested in stocks, prospects, mining equipment, etc. Stamp mills were dragged for miles over the mountain trails by mule teams from the railroad points to the mines, and some were erected.

The Arkansas Geological Survey was organized in 1887, and Dr. Branner was appointed state geologist. The gold boom was one of the principal reasons for its creation. People in the state wanted definite information on the ores and deposits.

Dr. Branner's first work in the spring of 1887 was to investigate and make a report on the gold and silver deposits in the Ouachita region. Gathering an able staff of geologists around him, he started on his task. The results were as disappointing to him, no doubt, as they were to thousands of others.

After spending a year in the field, examining hundreds of prospects and making hundreds of assays, he was forced to the conclusion that gold did not exist in the Ouachita region.

The report of his investigations first was made to Governor Hughes and made public by the Arkansas Gazette on August 9, 1888. The thoroughness with which Dr. Branner investigated the situation is indicated in the following extract from his report to Governor Hughes, printed under big headlines on the front page of the Gazette:

"Of the silver districts, the following two appear to hold out some promise:

"Silver City district probably merits development, but the work so far has been without an understanding of the nature of the deposits, and the mines now are almost unworkable.

"The Kellogg mines in Pulaski county yield galena, but the quantity of ore obtainable is unknown.

"The following properties, on account of their prominence, are selected as examples of another kind. What is said of these is usually applicable to hundreds of other prospects which it is not necessary to mention here.

"The Golden Wonder has milled a considerable quantity of the barren siliceous rock which occurs without vein structure over hundreds of square miles. Had the rock yielded one-tenth of what had been claimed the mill would have earned a dividend many months ago.

"The Lost Louisiana is an extinct hot spring, with no semblance of a vein in the hard rock. The soft material which occurs in the pockets in the mine and in the choked throat of the extinct spring, is nothing but 'wad,' a form of bog manganese. It has been tested many times by the chemists of the survey and also by Dr. [P. de P.] Ricketts [of Columbia College, New York] and by other chemists. All report 'no trace of pellurium.'

"The Ozark mine is an old hot spring mound containing a deposit of fine black earth which is the famous 'black mud' of this region and is said to be 'lead ore, rich in silver.' It contains neither lead nor silver.

"A sample from the Accident Mining Company's shaft containing graphite, but without a trace of gold, silver or lead, was reported as yielding 33 per cent lead. A smelter has been erected to work this material.

"The Garland County Mining Company called slabs of graphite there 'richest silver ore, running high in lead.' It contains no trace of either.

"The Phoenix Mining Company has been working dolomites and grits, but they have no trace of mineralization, except in occasional seams which carry only traces of gold and silver.

"The Shippey mine at Hot Springs has in place of ore a mass of quartz of the same character as the country rock for miles around. The failure of the mill at Jonestown is due to the barrenness of the material worked. No process can make it pay.

"Mozambique tunnel is in shale with streaks of limonite iron ore, bearing no appreciable amount of precious metal.

"The Golden Crown is in quartz of unworkable value.

"The Accident ore is a common gritty sandstone like the bare carboniferous sandstone at Golden City, Logan county.

"The Silver Word in Polk county depends largely upon the same black earth as that at the Ozark mine. Worthington's mines and other south of Dallas are mostly of this character, though some, like the Phoenix, are in common gritty sandstone.

"The Sand Carbonate, in Saline county, is a deposit of siliceous material like geyserite, lying between quartzite and shale, and carrying only traces of gold.

"Near Blocher a little gold occurs in patches of bog iron ore, but there is not enough of it to pay for working.

"It may be said of the gold mines of Arkansas in general that it is very doubtful whether a single one of them has ever legitimately returned a single ounce of gold."

A few weeks later the report appeared in the Engineering and Mining Journal of New York city. It was received by the conservative minority as authoritative and final. But the more credulous majority would have none of it.

Promoters of the mines, who had been discredited, were indignant, and most of the investors who had put their money into the ventures, mad. They didn't believe it because they didn't want to. Governor Hughes was asked to remove Dr. Branner from office, and he actually was burned in effigy. But the doctor and Governor Hughes stood pat. Dr. Branner knew he was right and ignored the efforts to destroy his reputation. Later, the legislature endorsed his work and increased the appropriations for his department. No doubt this report saved thousands of dollars that otherwise would have been put into the so-called gold mines.

While Dr. Branner did not find any gold, he did discover that the lead ore (galena) that occurred in the southwest part of the state carried silver, but as far as the writer knows, no commercial deposits have been developed.

Dr. Branner was the first geologist to identify peridotite, the diamond-bearing formation in Pike county near Murfreesboro. He did not pronounce it diamond-bearing at that time because no diamonds had been discovered in it. It was not until 29 years later that John Huddleston found the first stone in the peridotite pipe.

Dr. Branner was assisted in his work in Arkansas by geologists from all parts of the United States. Many of his old students followed him from Indiana University, where he held the chair of geology for two years. Among the younger geologists who worked with him in Arkansas was Herbert Hoover, now the only living ex-president of the United States.

While Dr. Branner was engaged actively in Arkansas only five years, he continued the work periodically for many years after. His work in this state probably was the greatest accomplishment in his life, and though fraught with many difficulties, he was convinced that his endeavors here were well worth the effort. Fourteen volumes of his geologic reports were published, and several more were prepared, but not published because of lack of finances.

Dr. Branner was born in New Market, Tenn., in Jefferson county, July 4, 1850. He was a son of Michael T. and Elsie Baker Branner. His geological work covered both North and South America. Resigning as state geologist of Arkansas in 1892, he accepted the chair of geology in Leland Stanford University. In 1899, he was made vice president of that institution and in 1913 was made president, a position he held for two years. He held many scholastic and honorary degrees. His death occurred March 1, 1922, in his seventy-second year.

His son, George Branner, is the present state geologist of Arkansas.

Dr. John Casper Branner Laid Arkansas Geological Foundation Gazette 8-8-37

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Until the year of 1887, Arkansas geology was not much more than a bad guess. It is true that some geologists had been brought into the state by private interests to make reports on private properties, but these investigations held no general interest nor distributed no general information. People in the state at large knew that we had zinc, lead, manganese, bauxite and other minerals, but they knew nothing about their association with surrounding rocks and the geological conditions under which they might be encountered. Dr. Branner's reports were written in such a style as to be understandable by even the man with just a smattering of geological knowledge, and the flow of mineral wealth from the state during the last 40 years is due in no small measure to his researches.

His work was so thorough that he didn't overlook a single mineral resource. People today find some mineral or some rock and think that it is a new find but it is not new. You can always find one of Branner's old reports that will cover it in detail. Arkansas black marble, which has been supplanting Belgium black in domestic construction for the last several years was generally supposed to be a new discovery, but in searching for information on the material, the writer found it snugly tucked away in an old report on Limestones and Minerals, issued in 1892.

In the early days of mining and prospecting in the North Arkansas Zinc and Lead Field, the work was carried on in a haphazard manner until Dr. Branner made his survey of the field late in the 80's, and published his report on it. Little was known of the value of carbonate and silicate of zinc, now two of the field's most widely distributed and valuable ores. One group of miners operating the Morning Star mine on Rush Creek, thought the carbonate ore carried high values in silver. They constructed a small stone smelter, which is still standing, to recover the sil-

Luncheon Planned.
A joint luncheon will be held at noon with the Little Rock Engineers Club and the Arkansas Engineers Club. Welcome will be extended by Mayor Overman, and pictures of Alum Fork dam, source of Little Rock water supply, will be shown with an explanation of the design and construction.

"Physical Characteristics of Soils and Their Application to Design" will be discussed by T. A. Middlebrook, senior engineer, Board of Engineers for Rivers and Harbors, Washington, D. C. Following his address an inspection trip to the auxiliary reservoir and filter plant of the Little Rock water system will be made.

A banquet program has been arranged for 7:15 Thursday when the national officers will give informal talks and guests will be introduced. The speaker has not been designated.

Friday's Program.

"Specific Application of a Soils Problem" will be the subject of Ralph B. Hanson, assistant engineer in charge of soils laboratory, Little Rock District, United States Engineers, at the Friday morning session. A business meeting and the election of new officers is scheduled for 10:30. An inspection trip to Alum Fork dam has been arranged for the afternoon.

Entertainment features for wives of the members are being arranged.

Dr. Branner, who will address the opening session, has been state geologist since 1923. He received his education at Leland Stanford University, University of Chicago, University of Southern California and Oxford University, England. He served with the army ambulance service during the World war and has been an officer in the Army Reserve Corps since 1922. He is a member of the American Association for the Advancement of Science, American Association of Petroleum Geologists, American Civic Association, American Geophysical Union, Association of American State Geologists, Geological Society of America, Society of Economic Geologists, the Arkansas Planning Board and the Little Rock Science Club.

Mr. Middlebrooks is a graduate of the Georgia School of Technology and took post-graduate work at the Massachusetts Institute of Technology. He has been connected with the army engineers in various capacities since 1929.

Mid-South Engineers Coming To Convention in Little Rock;

War Department Envoy Due

The Mid-South section of the American Society of Civil Engineers will hold its annual convention at the Hotel Marion Thursday and Friday.

Speakers will include T. A. Middlebrooks, senior engineer in the war department, Washington. Roy C. Gowdy of Denver, Colo., vice president of the national body; George T. Seabury, its secretary since 1925, and L. L. Hiding of Memphis, a director, will attend.

Theme of the convention will be "Soils as an Engineering Factor."

Following registration, the convention will open at 10:45 a. m., with an address on "Basic Geology of Soils," by Dr. George C. Branner, state geologist.

At noon there will be a joint luncheon with the Little Rock Engineers' Club and members of the Arkansas Engineers' Club. Mayor Overman will speak. Motion pictures of Little Rock's new water supply source will be shown.

E. L. Wales, engineer of materials and tests of the state highway department, will speak at 2 p. m. on "Physical Characteristics of Soils and Their Interpretation."

Mr. Middlebrook will follow at 3 p. m. with an address on "Physical Characteristics of Soils and Their Application to Design."

The engineers will inspect the auxiliary reservoir and filter plant of the Little Rock water supply system.

The annual banquet will be held at 7:15 p. m. Thursday. The national officers will make informal talks. Main speaker for the affair will be announced later.

Friday morning Ralph B. Hanson

5-29-38 Fifty Years Ago.
(Arkansas Gazette, May 29, 1888.)

In reply to the request of Hon. H. L. Rimmel, secretary of the Arkansas Bureau of Immigration, as to the work and progress of the state Geological Survey, its scope and when the report may be expected, Dr. John C. Branner, head of the survey, replied that the annual report will be out on or about the first Monday of December. It will consist of one octavo volume of 600 to 800 pages, or two smaller volumes, and will be accompanied by extensive maps. The work will include a general geologic history of the state and reports on a large number of investigations in Washington, Carroll, Madison, Boone, Newton, Johnson, Pope, Crawford, Sebastian, Scott, Logan, Yell, Pulaski, White, St. Francis, Phillips, Saline, Hot Spring, Garland, Montgomery, Clark, Pike, Howard, Sevier, Hempstead, Little River and Sevier counties, and, if possible other counties. Special reports will be made on the granite and other rocks, the coal and iron, other minerals and the mineral waters. The maps, in addition to giving contours and elevations, will include roads and streams.

GIVING THE WORLD THE FACTS ABOUT ARKANSAS.

Arkansas is the subject in the June issue of the Manufacturers Record of the second in the series of maps and articles in which this Southern business magazine is taking up in turn the economic resources of each of the Southern states. Gazette-38

A double-page map sets forth in graphic form information regarding raw materials and transportation facilities available in each of the 75 counties. The two-page article on the reverse side of the map gives in concise form the basic facts necessary to an understanding of Arkansas's present development and industrial and other opportunities for the future. Prepared with the aid of State Geologist George C. Branner, Engineer-Director L. A. Henry of the state Planning Board, and other persons intimately familiar with the state in a practical way, this condensed but exhaustive summary covers agriculture; climate; manufactures; banks; transportation by rail, highway, waterway and air; standing timber resources and potential timber production; mining and minerals; electric power and taxation.

These are the facts—the inventory of advantages and resources—on which Arkansas must depend for its larger material development and with it the social developments measured in more income for its people, higher general standards of living and enlarged tax resources to support public services. They are the facts of primary importance to financial interests with capital to invest in new or expanded industrial and business enterprises. The Manufacturers Record is giving them national publication in a form well calculated to make them readily readable and comprehensible, and encourage their preservation in the files of business and financial institutions.

1938 Leaving Tonight. 9-17

George C. Branner, state geologist and vice chairman of the Arkansas Planning Board, and L. A. Henry, engineer-director for the board, will leave tonight for Washington to attend a Planning Technicians' Conference called by the National Resources Committee.

Programs for the conference indicate it will be one of the most exhaustive and authoritative sessions ever conducted on the manifold phases of planning under way in the United States today. From Washington Mr. Henry and Dr. Branner will go to New York to discuss plans for Arkansas's exhibit at the New York World's Fair next year with Morris Sanders, architect, and fair officials.

Telling the World About Arkansas

11-17-38
By M. C. BLACKMAN
(State Publicity Director)
Stuttgart Leader

A fascinating and valuable book on Arkansas has been compiled by George C. Branner, state geologist, who has gone far beyond the field of geology in its narrowest sense to make a graphic study of "The Wealth of Arkansas."

The book has not been published, but before I tell you what it's like, I will say that it should be published that it should be used as a textbook in the public schools of the state, and that portions of it at least should be widely distributed outside the state.

It's like, I will say that it should be the work of Branner's book is that the earth plus the people plus the tools equal wealth, and he proceeds to apply this formula to the state of Arkansas.

He does this with a minimum of text and a maximum of illustrations. The value and charm of the book lie in the simplicity and deftness of execution of the drawings, the majority of which are the work of H. A. Thomas of the state Planning Board.

Factual information about physical Arkansas, from climate to manufactured products, are conveyed with a minimum of effort on the part of the reader. One glance, and you get the whole picture. No text is necessary—and that is the ultimate test of a graphic drawing.

The majority of the pictographs show not only Arkansas's resources, people and developments, but compares them with those of 11 southern states. Often this comparison is not conducive to patriotic pride, but it is honest, and it is better to know the worst rather than delude ourselves.

Any industrialist or business man of the North, East or West contemplating coming south to Arkansas could spend an hour with this book and know precisely what to expect to find in this state in the way of advantages, disadvantages and potentialities.

For this reason, I should like to see the Centennial Commission order several thousand copies of "The Wealth of Arkansas" for careful, selective distribution to persons who will make pertinent inquiries about Arkansas as a result of the state's exhibit at the New York World's Fair and as a result of whatever advertising campaign may be conducted

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balance not in

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TELLING THE WORLD ABOUT ARKANSAS

West Memphis News
By M. C. BLACKMAN

State Publicity Director
11-25-38

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For this reason, I should like to see the Centennial Commission order several thousand copies of "The Wealth of Arkansas" for careful, selective distribution to persons who will make pertinent inquiries about Arkansas as a result of the state's exhibit at the New York World's Fair and as a result of whatever advertising campaign may be conducted in the near future.

For my use in answering the hundreds of inquiries received in this office weekly, I should like to have at least 35 of the 57 drawings printed in looseleaf form (with the minimum of descriptive text on the back) convenient for mailing.

I also should like, if appropriation is forthcoming from the next legislature, to reproduce and distribute in mat form to the newspapers of the state the same drawings, so that the people of the state might become better acquainted with Arkansas in a painless, simple and easily remembered manner.

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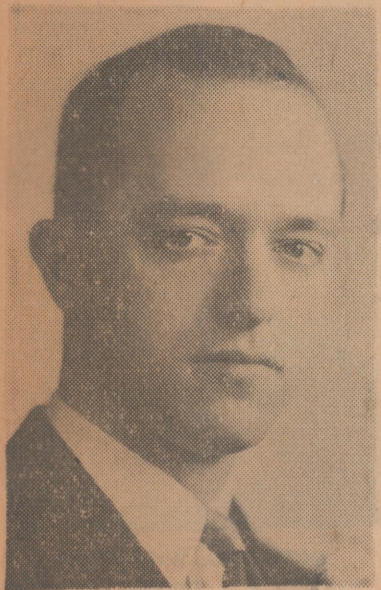
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Planning Branch of the War Department. This survey later was accepted by the Army and Navy Munitions Board as the official plan for the nation.

Dr. Branner was president of the Reserve Officers Association of Arkansas for two years.

Geologist to Address State Voters League



RICHARD J. ANDERSON.

Women Voters In Annual Meet

Gazette 3-8-42

Richard J. Anderson, acting state geologist, will speak on "The Role of Government in the Development of Mineral Resources in Time of War" at the annual dinner of the Arkansas League of Women Voters at the Woman's Club at 8 p. m. Friday.

Mr. Anderson is a graduate of Columbia College, New York city and has attended graduate schools of Columbia University and the University of Minnesota. From 1938 to 1941, he was a member of the faculty of the Department of Geology, University of Minnesota, which position he resigned to become assistant state geologist of Arkansas. He now is replacing Lt. Col. George C. Branner who was called to active duty last month.

Mr. Anderson spent several months in 1937 and 1938 in the Union of South Africa and in central Africa as field representative of American mining interests. In 1940, he was a member of a United States Geological Survey party which was sent to the Kenai peninsula in Alaska to study chromium ore deposits. He spent part of 1936 in the Arkansas quicksilver district as geologist for a mining concern.

Women Voters League Will Meet Friday

Democrat 3-8-42



—Shrader Photo.
RICHARD J. ANDERSON.

With Richard J. Anderson, acting state geologist, programmed to be principal guest speaker, the Arkansas League of Women Voters will hold their second annual meeting Friday and Saturday in the Woman's Club there.

Mrs. George C. Branner, Little Rock, state president, will preside at

business sessions Friday at 10 a. m. and Saturday at 9:30 a. m. when members will hear recommendations resulting from studies conducted by local leagues on problems of juvenile delinquency and eleemosynary institutions presented by Mrs. Winston Kellogg and Mrs. Vincent Maxted, Little Rock.

To Honor New President.

A reception honoring the newly elected president and other state officers will be held at 7 p. m. in the Woman's Club when members and their husbands and honored guests will be invited.

Dr. Anderson will be guest speaker at the dinner at 8 p. m. following the reception, when he will talk on "The Role of Government in the Development of Mineral Resources in Time of War."

A graduate of Columbia University, New York City, Mr. Anderson spent several months in Africa as field representative of American mining interests in 1937 and 1938. In 1940 he was a member of a United States Geological Survey party sent to Kenai Peninsula, Alaska, to study chromium deposits. He left a position as faculty member in the University of Minnesota Department of Geology to accept the position as assistant to Lieut. Col. George C. Branner, state geologist and succeeded Colonel Branner to the post when he was called to active Army duty February 25.

Chrome Survey Proves Of Unusual Interest

To Arkansas Geologist

Acting State Geologist Richard J. Anderson yesterday received from the United States Geological Survey a pamphlet which had more than usual interest for him. It was "Chromite Deposits of Kenai Peninsula, Alaska." Mr. Anderson spent four months in 1940 in field work for the report between intervals of teaching at the University of Minnesota. The publication and accompanying maps gave Mr. Anderson credit for his participation.

Gazette 4-22-42 GEOLOGIST TO DENVER.

Richard J. Anderson, acting state geologist, left Monday night for Denver, Col., where he will attend the joint annual convention of three organizations for geologists, mineralogists and geophysicists, which will close Saturday. War production and post-war problems will be discussed.

Colonel Branner in Charge Of Motorized Equipment.

Apparently something has missed fire in a plan under which Lieut. Col. George C. Branner, former state geologist, would be assigned to the War Production Board as a specialist in bauxite production.

After completing a 10-week course at Fort Francis E. Warren at Cheyenne, Wyo., Colonel Branner was transferred to Camp Custer, Mich., and placed in charge of motorized equipment.

Under an earlier plan, Colonel Branner was scheduled to be detailed to the Office of Production Management, now a part of the War Production Board, "in an administrative capacity in connection with the current responsibility of that office on the utilization of bauxite in Arkansas and other Southern states."

If this plan was not feasible, he was to have become liaison officer between the office of the under-secretary of war and the OPM "in order to assure that the bauxite facilities in this country will be utilized to the maximum practicable advantage."

Richard J. Anderson, who was named acting geologist when Colonel Branner obtained a leave of absence, has been laboring night and day for months to place the office routine in such shape that he can go into the field.

A request for information concerning iron ore deposits in Randolph, Clay, Lawrence and Sharp counties will call for immediate field work, Mr. Anderson said. The latest information regarding these deposits found in the Geology Department was written in 1892.

Gazette 5-23-42 To Mining Conference.

Howard A. Millar, associate commercial representative with the mining branch of the War Production Board in Little Rock, will go to Picher, Okla., tomorrow to attend a meeting of mining company officials from Oklahoma, Kansas, Missouri and Arkansas. Production quotas for mines in this area which furnish coal and other strategic war materials will be discussed. Dr. Richard Anderson, acting state geologist, also will attend the Oklahoma meeting.

Mineralogical Group Discusses Mercury.

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Next to diamonds, mercury is the most valuable mineral found in Ar-

kansas, Speed U. Reavis, commercial geologist, told the Arkansas Mineralogical Society at the Museum of Natural History and Antiquities, last night. More than 25 persons, including several from over the state, attended.

Mr. Reavis said there were 12 mills in the state producing from 12 to 80 tons of mercury per day and all but one were owned by Arkansas people. Dr. John Trotter presided in the absence of C. D. Botsworth, president of the society.

Richard J. Anderson, acting state geologist, told about the production of several minerals and described the difference between aluminum and alumina. Other speakers were Hardy I. Winburn of the Niloak Company of Benton, W. G. Stenger, D. M. Stewart, W. G. Shockley and George Rosenthal, youthful mineral enthusiast.

Future meetings were planned for the first Monday of every month. Members of the organization, which numbers 227, plan several field explorations.