

9-19-26

Topographic Engineering Near El Dorado Finished. Fayette 1-18-28

Topographic engineering in the El Dorado quadrangle has been completed by Frank Whaley, United States topographic engineer, and he has returned to Washington, D. C., with the field records, preparatory to publishing a map of the quadrangle, which includes about 250 square miles around El Dorado. The first lithograph maps will be ready for distribution early in April it is said by G. C. Branner, state geologist, who co-operated in preparing field records. The map will show elevation at intervals of 20 feet and will be on a scale of about a mile to the inch.

C. H. Dane of the United States Geological Survey has completed a report on the upper cretaceous formations of southwestern Arkansas, and the report will be published in a few weeks by the state Geological Department, Mr. Branner said.

Geologists Begin Conference at University Today. Fayetteville, May 10.—Approximately 50 geologists from five states are expected here tomorrow for a two days' visit to begin the first of a series of annual field conferences for the purpose of bringing student and graduate geologists into closer touch with formations here and to study the possibilities of oil in north west Arkansas.

States who will have student and graduate geologists here include: Arkansas, Texas, Oklahoma, Missouri and Kansas. The conference is under supervision of the University of Arkansas Department of Geology. State geologists who are expected here, according to Dr. A. W. Giles, professor of geology, include: Dr. G. C. Branner, Arkansas; Dr. Roy Moore, Kansas, and Dr. Charles M. Gould, Oklahoma. The two days' conference, opening Saturday morning, will take the geologists on field trips to Morrow and Winslow, and other near-by regions.

Arkansas will be represented by Dr. G. C. Branner, state geologist, Little Rock; Bryant Parks, Fort Smith, and Cecil Robinson, El Dorado, both graduates of the University of Arkansas and members of the Arkansas State Geological Survey; Dr. N. F. Drake, Fayetteville, former state geologist and professor of geology in the University of Arkansas; Dr. A. W. Giles, head of the Department of Geology in the University and former state geologist of Virginia, and Dr. V. O. Tansey, instructor of geology in the University of Arkansas, and advanced students in geology at the state university.

The approximate geographical center of the United States is located at a point in the eastern part of Smith county, Kansas.

Aerial Mapping Begun In Ozark Plateau Area

Fort Smith (P)—Aerial mapping of a 7,000-square mile area in the Ozark plateau to supply information necessary for planning prospective soil conservation projects in the region was begun yesterday.

Sponsored by the federal government, the survey is divided into three sections, the largest of which extends from a short distance north of Springfield, Mo., to Crawford county, Arkansas, and from Harrison to Rogers. The second is the Spavinaw watershed from Salina, Okla., to Bentonville, Ark., and from Sulphur Springs to Siloam Springs, Ark. The third is a smaller area near Guthrie, Okla., in what is known as the Guthrie watershed. A pilot and photographer will make the survey from an altitude of about 12,000 feet.

STATE IN NEED OF TOPOGRAPHIC MAPS

Are Valuable Assets in Various Industrial Projects, Says Geologist.

Eons ago, scientists say, this planet suffered miserably from growing pains, which set it to quaking and quivering. Things happened to the surface and after a few million years you could hardly recognize the old place.

In this particular section of the globe's anatomy, the attack was acute and the internal disorder was terrific. There were tremors and upheavals, mighty floods and whatnot. The ocean went south and there appeared mountains, valleys, rivers and summer resorts.

As a result Arkansas has a most interesting natural topography.

But alas, Arkansas knows little about its topography and seemingly is content to remain ignorant.

That is the perennial wall of George C. Branner, state geologist, who thinks something should be done about it. The only way to become thoroughly acquainted with the state's surface, he contends, is by means of maps—topographic maps.

Here's What It Shows.

A topographic map, be it known, is a relief map, which not only shows the shapes and elevations of land and water features by contour lines, but also pictures the artificial features, such as railroads, highways, buildings, in their true relation to one another and to the land and water features.

Sounds like a geography lesson.

Well, why should anyone be interested in one of those things? Mr. Branner, for one, thinks an accurate topographic map is a thing of beauty and a joy forever. He can go into ecstasies over a tri-colored sketch with a lot of mysterious lines on it. But there are few persons with similar aesthetic tastes.

Well, then, there are practical reasons for keen interest in topographic maps. (And since we must be practical, let's be serious.)

There is overwhelming evidence, according to Mr. Branner, that the lack of complete and accurate topographic maps seriously retards the industrial and commercial development of the state.

Maps Have Many Uses:

Topographic maps have many uses. They serve as a base on which most problems affecting human activities may be studied and investigated and plans made for their solution. The lack of topographic maps in any area retards the development of that area and increases the expense of planning public works. The possession of such maps insures the economical planning of improvements and reveals possibilities for development of resources that otherwise would remain unknown.

That is Mr. Branner's brief for topographic surveys. Some of the projects in which such maps are absolutely essential are as follows: Irrigation projects, water power development, flood control and prevention, drainage, engineering city water supplies, reclamation service highway construction, railroad building, automobile travel, post-route mapping, aeronautics, oil prospecting, geologic mappings, mining operations, forestry work, soil mapping, valuation of land and land classification, educational use and city planning.

Practically all of these are Arkansas problems.

Topographic maps are made by the United States Geological Survey. The entire country has been divided into sections of approximately 250 square miles each. Uniform maps are made of each section and the time may come when the whole United States will be reduced to scale on paper, with every natural and artificial feature recorded.

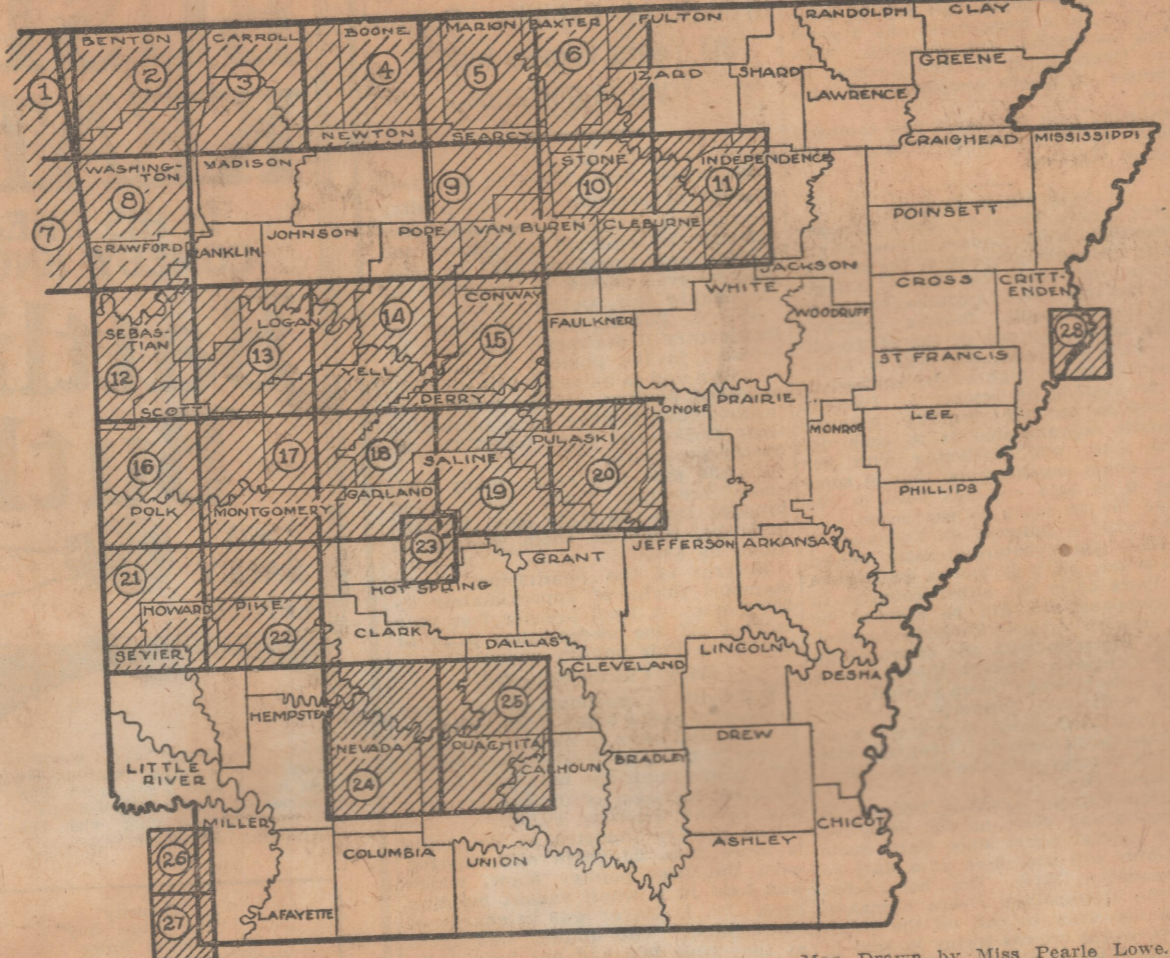
Work Far From Complete.

The work is far from complete. In a few states it has not even been started. The progress of the topographic survey in Arkansas is shown in the accompanying index map, prepared by Miss Pearle Lowe of the State Geological Department. Each of the rectangles surveyed and named.

Accurate maps of these areas may be obtained from the director, United States Geological Survey, Washington, D. C., for 10 cents each in orders amounting to less than \$3. For orders of \$3 or more, the price is six cents each.

The considerable unshaded portion has not been mapped, and, according to Mr. Branner, the project is almost hopeless. The United States Geological Survey cannot complete the work without state co-operation, and as yet Arkansas has not seen fit to make an appropriation for the survey. Twenty-one other states, however, are co-operating and the work is being completed as rapidly as possible.

Map Showing Progress of the Topographic Survey Of Arkansas, Which Still Is Far From Complete



—Map Drawn by Miss Pearle Lowe.

The index map shows the progress of the topographic survey in Arkansas by the United States Geological Survey. Maps of the numbered areas may be obtained for a small sum by addressing the Director, U. S. Geological Survey, Washington, D. C. The surveyed areas are named as follows: 1. Siloam Springs; 2. Fayetteville; 3. Eureka Spring; 4. Harrison; 5. Yellville; 6. Mountain Home; 7. Talequah; 8. Winslow; 9. Marshall; 10. Mountain View; 11. Batesville; 12. Fort Smith; 13. Magazine mountain; 14. Dardanelle; 15. Morrilton; 16. Poteau mountain; 17. Mount Ida; 18. Hot Springs; 19. Benton; 20. Little Rock; 21. Dequeen; 22. Caddo Gap; 23. Hot Springs and vicinity; 24. Gurdon; 25. Camden; 26. Texarkana; 27. Atlanta; 28. Memphis. The area surveyed includes 22,023 square miles, while 30,502 square miles have not been mapped.

The United States department has offered to contribute half the field expenses for surveying any of the given areas and will pay all the expense of engraving and printing. It is on this basis that other states are co-operating.

Cost of Survey. The cost of making a topographic survey of one of the 250-square-mile sections is approximately \$7,500. Half of this cost must be borne by state or private funds. The cost to the state or individuals thus would be \$16 a square mile, or three cents an acre. The ultimate value of the maps cannot be estimated.

Mr. Branner has sought vainly to interest the large lumber, railroad and oil interests of the state in the topographic survey. The officials of the big companies want and need the maps, but they think the state should have them made. The state cannot or will not, so there you are.

Topographical Maps Received. G. C. Branner, state geologist, has received a limited supply of advance copies of a new topographic map of the El Dorado quadrangle, which was surveyed and mapped by the state and federal Geological Departments last summer. The map shows detailed topography of 250 square miles from a point north of El Dorado to the Louisiana line. Oil and gas wells, pipe lines and power lines are shown in red. The copies received here are lithographed, but the map will be engraved and turned out in large quantities in a few months by the United States Bureau of Printing and Engraving.

GEOLOGICAL SURVEY ENGINEER SPEAKER
C. L. Sadler of Washington Gives Talk Before Engineers' Club.

C. L. Sadler, engineer with the United States Geological Survey service and a former resident of Arkansas, was the principal speaker at the meeting of the Engineers' Club yesterday at the Hotel Marion.

Mr. Sadler outlined the history of Geological Survey work and pointed out the value of maps, especially with reference to their use in locating a water supply for a city. He exhibited maps showing the lower Mississippi valley, the state of Arkansas showing both highlands and lowlands, and the different types of topography.

A chart showing the symbols used by the survey service, a relief map of Kentucky, a map of Washington, D. C., and a map of the flood area of the Mississippi valley, featured the exhibit.

Following his talk a moving picture showing how maps are made was given. Mrs. Bernie Babcock, who was present as a visitor, told the engineers that they were in position to furnish exhibits for the Arkansas Museum of Natural History and that contributions along this line would be appreciated.

Much of Arkansas Would Be Included in Survey

More Than Half of Proposed Topographical Mapping of Mississippi Valley for Flood Control Purposes Would Be Done in This State. 6/3/28

The proposed topographical survey of the Mississippi valley for flood control purposes would be devoted by more than 50 per cent to Arkansas lands, and would benefit all engineering projects in the state.

This is the judgment entered by C. L. Sadler, division topographical engineer of the United States Geological Survey, who finds that Arkansas presents some of the most interesting problems and features that men of his profession encounter.

State Geologist George C. Branner is now co-operating with the federal survey in the preparation of a topographic map covering the entire state, while some areas already have been mapped. This work would be available to the flood control engineers.

Mapping out the alluvial valley of the Mississippi, together with the lower reaches of the principal tributaries of the lower stream, would embrace 30,000 square miles of territory, 18,000 miles of which would lie in Arkansas. Such a project is endorsed by such eminent engineers as John F. Stevens, C. E. Grunby, Arthur E. Morgan and Morris Knowles. Major General Jadwin, chief of army engineers, has recommended the mapping of 16,000 square miles, while the Mississippi River Commission is on record for such surveys as are needed in connection with further study of the control plan.

Survey to Cost \$2,300,000. To complete the entire area would cost about \$2,300,000, at a rate of about 10 cents per acre. Ordinarily it would require at least three years, but in

an emergency could be finished in shorter time.

The maps are used in the study of drainage problems, the determination of the improvement of river channels, and the study of run-off water, which is important in connection with the construction of bridges. General Jadwin believes that such maps are not essential to flood control but would lend material assistance. Construction of spillways, in which the drain of the land is important, would be aided particularly by topographical data.

Many Uses for Maps.

Highway departments are using the maps to plot the right-of-way of roads along medium grades; the city of Tulsa was able to find a route for a gravity pipe line from its new reservoir, many miles distant; railroads constantly use them; preliminary surveys for sewer systems can be eliminated; and one city, Waterbury, Ct., was able to locate a water supply, without a cent of cost, by desk study of geological survey maps.

Aerial photography, of which the survey is at present deprived because of technical rulings, would be a feature of the Mississippi valley mapping program, in which the United States Air Corps and commercial concerns probably would co-operate. In that event airplanes, equipped with multiple lens cameras, soon will be flying back and forth over the valley, recording its topographical features from a height of 10,000 feet. These photographs would supplement the ground survey work.

Examination of the published topographic maps of various portions of

Arkansas shows a surprising variety and range of physical features, according to Mr. Sadler, such as to tax ingenuity of the mapmaker to record.

Describes the Ozarks. "In the Ozarks a series of extensive plateaus rise one above the other, entrenched with countless valleys of creeks and winding rivers," Mr. Sadler said. "Berryville is on the lowest plateau, Rogers and Bentonville on a higher surface, and the crest of the scenic Boston mountains occupies the culminating plane."

"In the Arkansas Valley between Little Rock and Fort Smith the geologic structure bears a close relation to the topography. The long, narrow ridges indicate moderately to highly inclined rocks; and the butte-like mountains, such as Magazine and Sugarloaf, indicate practically horizontal rocks in synclinal basins.

"In the Ouachita mountains, including the proposed Ouachita National park, there are numerous closely spaced high mountain ridges, all of which are formed by steeply inclined rocks. The mountain ridges at and near Hot Springs have peculiar zigzag courses across the country and make such letters as M and W, each letter having dimensions of many miles.

"Some of the most striking features of the lowland area east and southeast of Little Rock are the ox-bow loops of Arkansas river and the many horseshoe-shaped lakes, swamps and bayous, all of which are the partly obliterated records of the past meandering of the river back and forth across its flood plain."

Differ From Pioneers.

Modern topographers follow a more prosaic existence than the pioneer map-makers, but on the other hand their work is more accurate and the use made of it greater, he said.

"The pioneer topographer often shot with his rifle quite as accurately as with his telescope, was as successful with his fishing lines as with his contour lines, communed as freely with roving Indians as with the voices of nature—in fact, he was a combination of engineer, draftsman, explorer, packer, horseman, mountain climber, and diplomat," Mr. Sadler continued.

"Little remains of those experiences. Few indeed are the areas in which the topographic engineer cannot depend on a Ford to solve his transportation problems, and although there are still numerous vicinities where the pack train and camping outfit are necessary, a very large percentage of the work is done with more modern and more prosaic equipment.

"During the field season, which usually begins in April and ends in November, you may encounter the topographer with his mounted plane table and telescopic alidade, 'running out' the section line highways of the Central Western states, working across the sand dunes along the borders of the Great Lakes, penetrating the in-

tricate glacial drift country of Wisconsin, scaling the Appalachians, following the tortuous windings of Pennsylvania, Tennessee and Kentucky rivers, invading the Maine forests, battling with the winds of the trans-Mississippi plains, climbing to the summits of the snow-topped Western mountains, or mapping the valley floors of mighty rivers.

"Although the glamour and romance of those olden, golden days of pioneering and adventure are no more, the modern knight of the plane table finds no less of inspiration in his work."

EXPERT DESCRIBES WORLD MAP NEEDS

Declares Topographic Surveys Aid All Lines of Industry.

Washington, D. C., Oct. —The surveyor's transit and rod and the airplane are supplanting the covered wagon and the pick and shovel of the early pioneer in present day opening up of the unsettled areas of North and South America, according to Dr. William Bowie, of Washington, D. C., speaking in Mexico City at the opening session of the Pan-American Institute of Geography and History.

Dr. Bowie, one of three delegates from the United States to the first meeting of the newly organized institute, was designated by the National Geographic Society. He is chief of the division of geodesy of the United States Coast and Geodetic Survey and a world famous authority on isostasy.

Charting Potential Resources.
Maps which give precise locations, elevations, and other topographic information constitute the framework of further surveys of forest, mineral, plant, animal, water power and other forms of potential wealth, the speaker explained.

"Therefore the engineers and other leaders in industry are making their wants known in regard to topographic mapping," he continued. "It has truly been said that only a rich nation can afford to develop its natural resources and its industries without previously having executed the topographic surveying and mapping. Thus are avoided wasteful mistakes of the past in road building and railway construction by routes which are circuitous and in areas which have not the latent resources or are too far from markets to be profitable."

Institute's Map Program.
A major program of the institute is the co-ordination of topographic surveys already made independently and stimulation of map making programs of the governments themselves.

Another imperative demand for mapping of hitherto unexplored areas arises from the commercial airplane lines, Dr. Bowie said, for airplanes now are using routes over tracts which know neither the highway nor the steel rail.

"We have heard much in recent decades of the application of scientific principles to agriculture and other great industries in exchange of goods and in communication," Dr. Bowie said. "But science can only go a certain distance toward bettering the condition of humanity and making civilization nobler without having geographic facts. It is here that the geographer must supplement the work of the physicist, the chemist, and the engineer. For without geographical information

and background the other sciences cannot be efficiently employed in the utilization of the resources which nature has given abundantly to the nations of the world.

Even U. S. Not Thoroughly Mapped.
"The officials of the National Geographic Society have expressed frequently, and do on this occasion through me, their opinion that civilization will be greatly advanced by an early completion of the mapping of the world.

"We all should like to see the day when there is an adequate topographical map covering the area of each of the countries in the Western hemisphere. Much mapping has been done in my country, but only 43 per cent of the United States has as yet been topographically surveyed and many of the map sheets are inadequate to meet the modern needs of agriculture, mining, development of hydroelectric power and extension of transportation and communication systems."

NEW TOPOGRAPHIC MAPS READY SOON

Proofs of Two Made by U. S. and State Co-operatively Received.

G. C. Branner, state geologist, said yesterday that proofs of two new topographic maps of Arkansas have been received from the chief engraver of the United States Geological Survey, and that they will be ready for distribution at cost about March 15.

The maps were prepared co-operatively by the state and federal geological surveys. One map gives economic and topographic information of the entire state and the other shows the topography of the lowland area or Gulf Coastal Plain of southern and eastern Arkansas.

The first map shows the topography of the state by contours at 250-foot intervals, which is the smallest interval that could be used to show the highlands of western Arkansas on the United States Geological base map of Arkansas, size 40 by 35 inches. This map has a scale of about eight miles to the inch. The new base map of the state, prepared by the government in co-operation with the state survey in 1929, was used as the most practicable map available for a topographic map for general distribution.

Drainage is shown in blue, and county lines, cities, towns and railroads in black. Topography is shown by brown contours and primary and secondary highways in red. Power transmission lines, power dams, oil and gas pipe line, mines and quarries, and oil and gas fields are shown.

Mr. Branner said the map will be particularly useful to civil, industrial and mining engineers, and to tourists and aviators.

It is estimated that 2,451 miles of power transmission trunk lines; 566 miles of oil trunk pipe lines and 1,133 miles of gas trunk pipe lines are shown on the map.

Because of contrast in the topography of the highland area and the lowland area, it was necessary to prepare a separate topographic map of the Gulf Coastal Plain of southern and eastern Arkansas, Mr. Branner said. This map has a contour interval of 100 feet. Bench marks are given to the nearest foot and drainage and basin boundaries, oil and gas fields and primary and secondary highways are shown. This map will be of value to civil engineers and geologists and will be useful in working out industrial problems, flood control and other problems, Mr. Branner said.

Federal Plans For Mapping State Rushed

Control Surveys for Arkansas to Be Completed in Three Years.

(By CHARLES HAYDEN).
Washington, Feb. 27.—(Special.)—Federal control surveys fixing levels and arcs of triangulation at intervals of approximately 50 miles apart, one of the essential features for accurate map making, will be completed for the state of Arkansas during the next three years. Notice of this decision is contained in a letter which R. S. Patton, director of the United States coast and geodetic survey, has written to Rep. Hartsill Ragon.

The bureau has embarked on plans for establishing these levels and arcs for the entire country and funds for starting the work, which it is estimated will require 10 years, are provided in the current supply bill of the department. In fact some of the preliminary work already is in progress, engineers for the bureau having run an arc of the first order triangulation along the Mississippi from Cairo to New Orleans. One-half the stations of this arc are on the east and the other on the west bank of the river. This will furnish first order control for maps, surveys and engineering projects along the eastern boundary of Arkansas.

Another arc of the first order triangulation will extend from Fort Smith southward to the Gulf and there will be another from Shreveport to Vicksburg thus providing established points for surveying on the western and southern borders of the state. During the coming year an arc will be surveyed through south-

eastern Missouri and this will serve to establish lines in northern Arkansas.

In his letter Director Patton expresses the desire to confer with Dr. George C. Branner, state geologist of Arkansas, before determining the location of lines of levels in that state. He expresses gratification over the interest Representative Ragon has shown in this work.

Final Proofs of Geological Maps Received.

Final proofs of two new maps sponsored co-operatively by the Arkansas Geological Survey and the United States Geological Survey were received yesterday by George C. Branner, state geologist.

One of the maps is a state topographic and economic map, which gives the topography of Arkansas, the trans-

mission lines, the oil and gas lines, primary and secondary highways and all quarries and oil and gas fields. It is drawn with 250-foot contour lines.

The second map is a topographic map of the gulf coastal plains and is based on 100-foot contour intervals. Both maps should prove interesting and useful to engineers of the state, according to Mr. Branner.

It is planned by Mr. Branner to make a relief map from the new topographic map which can be cast and sold at cost (a negligible sum) to the high schools of the state.

was released on a \$120 bond. 6-8-31

Topographic Survey Urged.—G. C. Branner, state geologist, principal speaker at the weekly luncheon meeting of the Engineers Club at the Hotel Marion yesterday, urged members of the organization to assist the state in obtaining a topographic survey of Arkansas. Under the Temple bill passed several years ago, Mr. Branner said, many states of the nation have obtained services of governmental agencies in making topographical surveys. Heretofore assistance has been given only those states which have contributed to the cost of the work. Recently, however, Mr. Branner said, a new director has been placed at the head of the government surveying forces and it is possible that a new interpretation of the Temple bill may be made. If so Arkansas would derive much benefit from an authoritative mapping of the state, Mr. Branner said. At present, the speaker told members of the organization, only slightly more than one per cent of surface of the state has been reliably mapped under the standards now accepted. Of the total of more than 52,000 square miles only about 750 square miles have been surveyed. Gazette.

New York Line A NEEDED MAP.

If Congress appropriates a billion dollars for public works in order to create employment, it will find the bureaus charged with the mapping of coastal waters and interior areas indispensable. To improve harbors without adequate knowledge of their waters, to build a highway across country which has not been topographically mapped, to develop water power or control floods without determining the profiles of streams, would be as wasteful as building a skyscraper without drawings and specifications.

We have 3,000,000 square miles of continental territory, coasts and scores of bays, harbors and rivers that must be studied in carrying out any program of public construction. Yet only 44 per cent of the country has been mapped in accordance with topographic standards, and some of the early mapping is almost useless for engineering requirements. At the present rate of progress it will take 140 years before we can pretend to have accurate knowledge of the United States as a whole. Over a billion a year is now spent on dams, bridges, roads, waterways and harbor improvements, involving much waste for lack of surveys and soundings.

A topographic map of a region is as important and as much of a tangible asset as any highway, dam or harbor improvement that may come within the scope of a relief measure. Its preparation would give employment to many physicists, engineers and geologists. A topographic map of Kansas, for example, supplemented by surveys of timber, soil and rainfall, is as useful to a New York banker who invests his money in a factory that utilizes corn as a raw material as it is to any Kansas farmer. Our size and wealth have made us indifferent to the need of detailed knowledge about the United States. A small and poor nation could not afford the luxury of remaining in ignorance about its own territory.

Dr. Branner said that completion of the work in this state was aided greatly by Congressman Hartsill Ragon, who co-operated with the survey in obtaining appropriations for the work, and Charles S. Christian, chief state highway engineer, who furnished much information, including the location of highway bench marks.

REPORT ON STATE ELEVATIONS READY

Data to Be Distributed Soon, Dr. Branner, Geologist, Announces.

Sept 7 1932
A report entitled "Elevations in Arkansas," which will include the elevations and descriptions of more than 200 permanent bench marks and more than 6,000 other points in Arkansas is being prepared by Dr. George C. Branner, state geologist, and will be ready for distribution soon, Dr. Branner said yesterday.

The United States Coast and Geodetic Survey practically completed its leveling in this state during the past winter, Dr. Branner said. Dr. Branner said that standardized elevations are essential to the development of national, interstate and state engineering and highway and bridge projects. The elevations also are useful to municipalities in planning water supply or sewage disposal projects, he said.

Before last winter, the Coast and Geodetic Survey and the Engineering Corps of the United States Army had run about 1,000 miles of first order leveling, Dr. Branner said. This was increased more than 350 miles last winter, and in addition, about 600 miles of second order levels have been completed, he said.

Two field parties of the Coast and Geodetic Survey worked in the state last winter, Dr. Branner said. Lieut. G. R. Fish and six men worked in the eastern, southern and southeastern parts of the state, while Ensign A. L. Wardwell and another party worked the western area. Two circuits were run in Little Rock, and the latitude, longitude and elevation of the state "zero milestone" here were determined.

The bench marks, Dr. Branner said, are brass or aluminum plates, stamped with the elevation at the point where they are installed, and usually are placed in a permanent foundation, as bridge ends, buildings or special concrete posts. The marks are established at intervals of about two miles along railroads and highways.

Dr. Branner said that completion of the work in this state was aided greatly by Congressman Hartsill Ragon, who co-operated with the survey in obtaining appropriations for the work, and Charles S. Christian, chief state highway engineer, who furnished much information, including the location of highway bench marks.

Phone 4-5478.—Adv. 9-9-32
Dr. George C. Branner, state geologist, is preparing a report on elevations in Arkansas as determined by the United States Coast and Geodetic Survey, he announced Tuesday. The federal agency last winter did considerable work in Arkansas and placed permanent bench marks (elevations of those specific locations above sea level) at more than 6,000 locations. Several of these are in Little Rock.

Geologist Has Copies of Treat Topographic Quadrangle.

Advance copies of the Treat topographic quadrangle, so named because the town of Treat, Pope county, is located in the area, have been received by G. C. Branner, state geologist, from the United States Geological Survey, Washington, D. C. The quadrangle includes approximately 270 square miles in northwestern Pope county and northeastern Johnson county. The quadrangle map has a scale of about one and a fourth miles to the inch and a contour interval of 50 feet. This is the first quadrangle completed in Arkansas since the El Dorado quadrangle was completed in 1930 as a co-operative project of the federal-state geological surveys. Mr. Branner said a limited number of copies of the Treat quadrangle are available at his office.

Relief Model of Arkansas Made For Geological Survey.

Jan 31 1933
A relief model of the state has been completed for the Arkansas Geological Survey by Mrs. D. C. Sawyer of Quanah, Tex., former draftsman for the department. Work has been progressing on this model for the past year under the direction of State Geologist George C. Branner.

Data was taken from the Geological Department's state topographic map, published in 1930. The map is 30 inches by 35 inches in size. The vertical relief is emphasized by exaggerating the vertical scale about 12 times the horizontal. The horizontal scale is eight miles to the inch and the vertical 3,500 feet to the inch.

The map is constructed of linoleum, each layer representing a contour interval. Angles between the edges of the linoleum have been filled with wax. Plaster casts will be made from the original model and sold at low cost.

The model is small enough to serve as a wall map and will be of use, Mr. Branner said, to schools, chambers of commerce and engineers.

40 TOPOGRAPHERS TO BEGIN SURVEY

Will Map Ouachita River Sections of Union and Ashley Counties.

Special to the Gazette. 1-10-33
Huttig, Jan. 9.—United States government topographers from the Geological Survey Bureau of the United States Interior Department have been gathering in Huttig during the past five days to survey territory along the Ouachita river in Union and Ashley counties. The purpose is to make a topographical map of this section of south Arkansas as a ground plan for any improvements or developments the government may care to inaugurate in the future.

Nearly 40 topographers are engaged in the work, completion of which, under favorable circumstances, will require about two months. Whether the survey will be extended to any other counties in Arkansas has not been disclosed, although some of the lines of the present survey will touch Ouachita, Bradley and Calhoun counties as well as some Louisiana parishes as far south as Bastrop.

Twenty-eight topographers were in the first group that arrived in Huttig Thursday. Many were accompanied by their wives and children, suddenly increasing the population of the town by approximately 50, and almost exhausting the capacity of the Colonial hotel.

Reunion and Conference Held.
Glenn S. Smith, division engineer of the Geological Survey, arrived Saturday to supervise plans. He immediately called a conference of the men located in Huttig and Strong. The men located in Crossett will make surveys on the east side of the Ouachita river while the west side will be surveyed by the groups located in Huttig and Strong.

Approximately 50 attended the conference and plans were perfected for the two months of topographical work in south Arkansas.

The conference also became a reunion of the topographers, who have been working in various states with no opportunity to see each other for several years. It is said to have been the largest gathering of government topographers outside Washington for nearly a decade.

Many States Represented.
Fourteen or 15 states are represented. Many of the men motored here from their homes and others from Washington, some coming from states as far distant as California, Minnesota and New York. All timed their departure from starting points so accurately that the 24 automobiles arrived at Huttig in almost continuous caravan within 10 hours in one day.

Probably nothing that has happened to Huttig during the three years of the nationwide depression has brightened and benefited the city more. Location of groups in Crossett and Strong has served also to improve business conditions in those towns and surrounding communities.

Eastern Arkansas Quadrangles Completed by Engineers.

Jan 15 1933
The Arkansas Geological Survey has received a complete reference set of lithographed topographic quadrangles of eastern Arkansas, completed recently by the Corps of Engineers of the U. S. Army in connection with a survey of the alluvial valley of the Mississippi river under direction of the Mississippi River Commission, State Geologist George C. Branner announced yesterday.

The sheets are advance copies, subject to correction, Mr. Branner said, but the entire set may be consulted at the survey office. The quadrangles will not be placed on sale until the final corrected edition of each has been printed.

Mr. Branner said the contour interval used on all maps is five feet and the scale 1:62,500 square miles or about one mile to the inch. The completed quadrangles cover an area of about 250 square miles each. The total area covered by the 54 quadrangles is about 15,600 square miles. Field work has been completed on 23 additional quadrangles, Mr. Branner said.

The territory includes parts of the states of Arkansas, Mississippi and Tennessee.

\$69,000 GEOLOGY FUND TO ARKANSAS

Allotted Under National Recovery Act for Topographic Mapping.

George C. Branner, state geologist, has been notified that \$69,000 has been allotted to Arkansas from the \$2,400,000 granted to the federal Geological Survey under the National Recovery Act for topographic mapping in various states.

C. L. Sadler, section chief of the topographic branch of the United States Geological Survey, who will have charge of the federal mapping in Arkansas, has requested Mr. Branner to receive applications for positions connected with the topographic mapping program in this state. The positions will include rod men, level men, transit men and topographers.

The Arkansas Geological Survey and other state surveys urged that federal funds be allotted for topographic work similar to that included in the program.

Arkansas was granted a larger amount than was allotted to surrounding states, Mr. Branner said, the allotment to Missouri being \$36,000; Oklahoma, \$30,000, and Kansas \$30,000.

Six projects, to which \$11,500 each has been allotted, have been approved for Arkansas up to the present time. These are all located in the Ozark and Ouachita National Forests and call for six 15-minute quadrangles containing about 250 square miles each as follows:

Ozark National Forest, Watalula quadrangle.

Ouachita National Forest, Poteau Mountain quadrangles Nos. 1, 2, 3 and 4, and Benton quadrangle No. 2.

Modifications of these projects are permitted, subject to the approval of the administrator of public works, and some modification has been suggested by Mr. Branner and D. Hodson Lewis, secretary of the Little Rock Chamber of Commerce, with reference to the immediate industrial and mining needs of the state. Action on the suggested modification has not yet been taken.

Allotments to states have been based on: (1) Federal needs for mapping in national forests, in national parks and monuments, on Indian reservations, for river utilization surveys of streams on public lands, for geologic studies in mining areas of public land states, and for tactical maps for the War Department, and (2) in the remaining states on needed resurveys or revision of existing maps, geologic studies of oil, gas, and mineralized regions, highway studies, etc.

Index Map of Topographic Quadrangles Finished.

Approximately one-third the area of Arkansas has been mapped adequately, 39 per cent partially mapped and 28 per cent unmapped from a topographic standpoint, Dr. George C. Branner, state geologist, said yesterday in announcing that an index map of topographic quadrangles of the state has been completed and is ready for distribution.

MAPPING PROJECT SUBJECT OF TALK

Engineers Club Advised of Work of Geological Survey in This Area.

Mapping of a quadrangle 400 square miles in area surrounding Little Rock by the United States Geological Survey was discussed by F. C. Whaley, associate engineer in charge of the work, at the weekly meeting of the Little Rock Engineers Club yesterday noon at the Peacock.

The quadrangle extends 12 miles east 15 miles west, 10 miles north and 15 miles south of Little Rock. The map will be part of a huge topographical map of the entire state, which will be included in a map of the United States. A crew of about 20 men is working on the mapping in this vicinity.

Mr. Whaley also discussed making maps by aerial photography.

George C. Branner, state geologist, informed members of the club that approximately 33 per cent of the state is adequately mapped, 38 per cent is mapped but not adequately, and 29 per cent is not mapped.

Charles W. Holderbaum, president of the club, appointed R. A. Kern, Ross L. Lander and J. H. Crossman as members of an Entertainment Committee, and Drew H. Lander, Haskell Dickinson and L. N. White as members of a Transportation Committee, for the convention of the Mid-South Section of the American Society of Civil Engineers to be held in Little Rock May 24 and 25.

Branner Urges Study of U. S. Mapping Need

State Geologist Asks President to Name Commission.

A national commission to make a thorough analysis of the need for mapping in the United States, filing its report with the president, was urged by Dr. George C. Branner, state geologist and president of the Association of American State Geologists, in a letter to President Roosevelt yesterday.

Should the report demonstrate the need for expediting the national mapping program, Dr. Branner asks the president to request the next session of Congress to provide a special appropriation sufficient to provide a substantial start on this program.

Dr. Branner calls attention to enactment of the Temple act in 1925, which provided for extensive work in mapping the nation, but states that the act never has been put into effect. About one-half of the continental United States, exclusive of Alaska, is entirely unmapped and about one-fourth is inadequately mapped, he wrote the president.

Dr. Branner's letter follows, in part:

My dear Mr. President: I am writing this letter as the president of the Association of American State Geologists, which represents forty active state geological and mining bureaus, as well as one of many thousands of geologists and engineers in this country who are vitally interested in the effective utilization of our natural resources for the benefit of the people of this country.

I have learned with both astonishment and regret that the national program reported on by the Board of Surveys and Maps last autumn, approved by the National Resources Board, and which, according to press reports, was approved by you, has not been put into effect.

In view of the large sums now being expended for public works, it seems to me that this is a very distressing situation. This country is about the only well-organized nation in the entire world that has not made the mapping of its area a public undertaking of first importance. When it is realized that about one-half of continental United States, exclusive of Alaska, is entirely unmapped and that about one-fourth is inadequately mapped, the seriousness of the situation becomes apparent. The waste resulting from the lack of maps with which to locate economically and permanently both public and private works is inevitably enormous. In addition, dependable maps are essential to the graphic presentation of various types of basic social and economic data, the correct organization of which is essential to economic government.

You know, of course, that the Congress in 1925 passed the "Temple Act," which was approved by the president, and which authorized the completion of the topographic mapping of this country within twenty years. This act has never been put into effect. In fact, the number of square miles of new topographic mapping completed by the U. S. Geological Survey in continental United States, exclusive of Alaska, either independently or co-operatively with state or other agencies, subsequent to 1925 has actually been

less than that completed in the ten years preceding.

May, I therefore, suggest that if the officials of your administration are not aware of the fundamental urgency of this matter, you appoint a committee or commission composed of officials of the government, and of engineers, geologists, and industrial leaders from outside of the government to make a thorough analysis of the need for mapping in this country and report to you? Should such an investigation demonstrate the need for expediting the national mapping program, may I also suggest that you request Congress at its next session to provide a special appropriation sufficient to permit a substantial start to be made on the most urgent part of the program?

Yours respectively,
George C. Branner,
President.

Asks Action On National Map Program

Dr. George C. Branner, state geologist and president of the Association of American State Geologists, wrote President Roosevelt yesterday that he had learned "with astonishment and regret" that the national mapping program approved by the Board of Surveys and Maps, by the National Resources Board and reported to have been approved by the president, has not been put into effect.

Dr. Branner said the association represents 40 active state geological and mining bureaus and speaks for thousands of geologists and engineers "who are vitally interested in the effective utilization of our national resources for the benefit of the people of this country."

The letter called the president's attention to the fact that a smaller area has been mapped since the Temple act (calling for complete mapping of the country within 20 years) was passed in 1925 than was mapped during the 10 years preceding passage of the act.

Dr. Branner said the United States is about the only country in the world that has not made the mapping of its area a public undertaking of first importance. He pointed out that only about one-fourth of the country is adequately mapped and that half of the area is entirely unmapped.

He suggested that a commission, composed of government officials, engineers, geologists and industrial leaders, be appointed to make an analysis of the need for adequate mapping, and that Congress be asked to make a special appropriation at the next session to start work on the most urgent part of the program.

President Approves Mapping Program Suggestion.

Dr. G. C. Branner, state geologist, received a letter from President Roosevelt yesterday, written from Warm

Springs, Ga., expressing approval of Dr. Branner's suggestion that funds be provided to continue a federal mapping program. Dr. Branner, as president of the Association of American State Geologists, wrote the president several weeks ago, pointing out that only one-fourth of the area of the United States is adequately mapped and that about half has not been mapped at all by a federal agency. The president's letter said the United States Geological Survey, the Coast and Geodetic Survey and the Army Engineers Corps are engaged in mapping activities and that a part of the work relief fund will be used to finance a two-year mapping program. Consideration will be given Dr. Branner's suggestion that a specific appropriation be made to continue the work, the president said.

National Mapping Program To Be Conference Objective.

Dr. George C. Branner, state geologist, said upon his return from Washington yesterday that a conference of representatives of agencies that make and use maps will be called in April to discuss plans for carrying out a mapping program throughout the United States. The meeting will be called by H. M. Feiker, executive secretary of the American Engineering Council. A national legislative committee will be set up at the meeting to seek passage of legislation providing for mapping of large areas of unmapped territory in several states. Dr. Branner attended the annual meeting of the Association of American State Geologists in Washington and the meeting of the American Institute of Mining and Metallurgical Engineers at New York. He was re-elected president of the former organization.

Reports Progress On Map Project

Progress on a program for national mapping was reported by Dr. George C. Branner, state geologist, upon return today from Washington where he attended the annual meeting of the Association of American State Geologists, of which he is president.

Such a program was suggested to President Roosevelt by Dr. Branner last year. Following meetings at Washington, a conference of map-making and map using agencies will be called in April by H. M. Feiker, executive secretary of the American Engineering Council, for discussion of the program.

It is expected that a national legislative committee will be named at this meeting to seek passage of acts which will provide for the work. Dr. Branner also attended a meet-

ing of the American Institute of Mining and Metallurgical Engineers at New York last week. He made arrangements for publication of a bulletin on bauxite deposits in Arkansas, presented at the meeting by M. N. Bramlette of the United States Geological Survey.

Topographical Map Of Area Received

Dr. George C. Branner, state geologist, today received from the United States Geological Survey a topographical map for the Little Rock quadrangle showing elevations for most of the city and adjacent territory to the south and west.

The contours are shown at 10-foot intervals with Granite mountain south of the city the highest point in the quadrangle, which extends from Markham street south to the Pulaski-Saline county line near Jennings lake, and from the Biddle shop area west to and including Westwood addition on the Little Rock-Hot Springs highway.

The map may be inspected at Dr. Branner's office and additional copies will be available for distribution later.

PULASKI AREA MAPPED.

A topographical map of several hundred square miles of Pulaski county south and west of Little Rock was received from the United States Geological Survey yesterday by Dr. George C. Branner, state geologist. The map shows elevations in the area with contour lines at 10-foot intervals. Dr. Branner said the map will be available for inspection at his office by interested persons until a supply is received for distribution.

Preliminary Contour Map Of Logan Area Received.

Dr. George C. Branner, state geologist, received from the United States Geological Survey yesterday a preliminary edition of the new Booneville quadrangle, covering an area of approximately 250 square miles in the western part of Logan county. It is the first map of the area made since 1888. Contours are shown at intervals of 20 feet.

The geologist said he had recommended to O. M. Fairley, engineer in charge of the Mount Magazine recreation project, that a 200-foot well be drilled on the mountain as a test for water supply.

Ghost Towns of State Shown on Old Maps in Donaghey Collection

Fayetteville—An Arkansas Traveler might once have visited the towns of Cadron, Panther, Lewisburg and Hopefield within the confines of his state's boundaries. Today these towns are to be found only on old Arkansas maps.

Thirty-three maps of Arkansas, drawn between the years 1825 and 1878, have recently been placed on display in the Vol Walker Memorial library at the University of Arkansas. They are a part of the George Donaghey collection of Arkansas material now owned by the University.

Most interesting map in the collection is a geographical, statistical and historical study of "Arkansas" territory, drawn in 1825 by Major S. H. Long of the U. S. engineers. Engraved and hand-painted in colors that remain vivid after a century, the map is inscribed to J. C. Calhoun, secretary of war, under President Monroe. Towns shown are Little Rock, Cadron, Arkansas Post, Hopefield, Helena, Batesville. The phonetic spelling "Arkansa" is used throughout.

James Callan, civil engineer of Washington, D. C., showed the state's five judicial districts in his map, drawn in 1839. The districts were Fayetteville, Red River, White River, Arkansas and Helena.

More than 200 townships are plotted on maps copied from descriptions in the general land office. Mounted on linen and bound in four volumes, the copies were made between 1865 and 1873 from maps and descriptions made as early as 1825. J. S. Conway, noted figure in Arkansas history, is mentioned as a draftsman.

Development of the railroads as well as distribution of population may be seen in the early maps. In 1856 there was not a railroad in the state, but construction of three lines was proposed. One crossed Arkansas diagonally from northeast to southwest and would connect Cairo, Ill., with Shreveport, La. Another crossed the state from Memphis to Fort Smith by way of Little Rock, and the third proposed a route from Helena to Little Rock.

The passage of time caused towns to disappear, it is shown in the maps. Few persons today know that once there was a Lebanon in Searey county, a Conway in Lafayette county, a Sylvia in Washington county, and Rob Roy in Jafferson county.

The map collection was given to the university by former Governor Donaghey, who is enlarging it with new purchases from time to time.