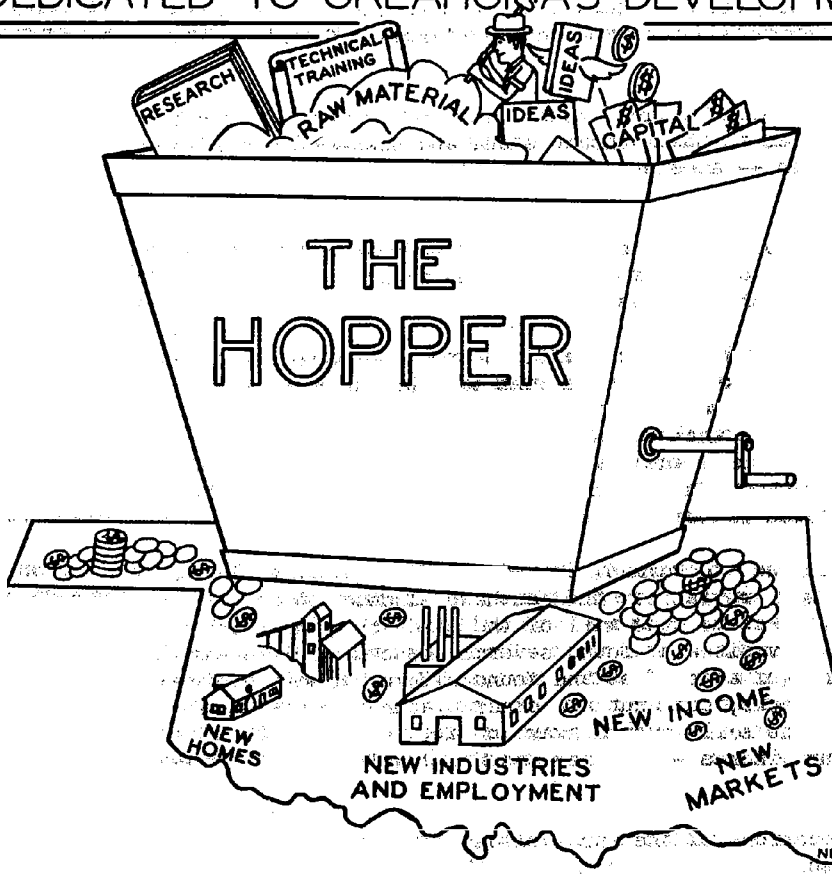
DEDICATED TO OKLAHOMA'S DEVELOPMENT



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WILLIAM E. HAM--APPOINTED
ACTING DIRECTOR OF SURVEY

Dr. William E. Ham, Geologist and Assistant Director of the Oklahoma Geological Survey the past year, has been promoted to the title of Associate Director and named the Acting Director of the Oklahoma Geological Survey.

Dr. Ham was named Acting Director by the University of Oklahoma Board of Regents at its July 9 meeting in Norman. An act of the 1924 session of the Oklahoma legislature transferred the Oklahoma Geological Survey from the old Geological Survey Commission and placed it under the control and supervision of the Board of Regents of the University of Oklahoma.

The appointment was made to fill the vacancy created by the resignation of Robert H. Dott which became effective July 1. Mr. Dott has served as Director of the Oklahoma Geological Survey for a period of 17 years beginning July 1, 1935. He resigned to accept the position of Executive Director of the American Association of Petroleum Geologists with headquarters in Tulsa, Oklahoma. Under the direction of Mr. Dott the Survery furthered knowledge of basic geology of Oklahoma, instituted laboratory research for the purpose of tying in a knowledge of the availability of mineral resources to industrial application and utilization, started a program of systematic ground water investigations, published several reports giving information on the geology, ground water, and mineral resources of Oklahoma.

The new Acting Director is a native Oklahoman. He was born in Guthrie and attended grade and high schools there. He attended the University of Oklahoma where he obtained the BS and MS degrees of geology, specializing in mineralogy and petrography.

Dr. Ham joined the Survey staff in 1941 as

Assistant Geologist. Prior to that time he had served as an instructor at the University of Oklahoma School of Geology for two years. He has served continuously with the Survey except for the school year of 1947-48 when he was away on leave of absence to complete residence requirements for a PhD degree at Yale University. He was granted a Stanolind Oil Company Scholarship while doing his graduate work at Yale.

Soon after joining the Survey staff, Ham was engaged on special problems including an assignment in the Arbuckle Mountains. Part of his work in the Arbuckles was in connection with a larger program sponsored by the United States Geological Survey designed to increase and correlate information on the surface and subsurface knowledge of the Arbuckle limestone and equivalent formations in other areas. Dr. Ham's particular part of the work had to do with the surface exposures in the Arbuckle Mountains.

His work with the Survey has continued to be primarily concerned with stratigraphy, structure, and economic geology. This work has included detailed studies of glass sand resources in the Central Arbuckle Mountain region and detailed investigations of dolomite resources in the Mill Creek-Ravia area. Publications by the Oklahoma Geological Survey resulting from this work have been a report on the glass sand resources of the region and a report on the dolomite resources. These reports have been in the field of economic geology and have been of considerable value in helping to promote the industrial growth of mineral industries. He has in addition written several shorter papers and collaborated with other authors on other papers and reports, including papers dealing with several economic minerals of Oklahoma.

At the present time Dr. Ham is engaged in preparing a comprehensive report on the geology and resources of the Arbuckle Mountain region.

TWO CHEMICAL PLANT CITES PICKED IN NORTHEAST OKLAHOMA

Recent announcements have been made on the selection of the Grand River area as the location for two new chemical industry plants.

Deere & Company, farm equipment manufacturer since 1837, plans to enter the chemical industry field, with a proposed $20 million plant near Pryor, Oklahoma. Principal products will be urea, ammonia, and urea-ammonia for fertilizer. Urea for plastics, adhesives, and feed supplements is being seriously considered for eventual production.

The new plant is designed to use the Casale process and produce about 180 tons per day of synthetic ammonia. The ammonia will in turn be used to produce 275 tons per day of fertilizer grade urea and 70 tons per day of urea-ammonia solutions. Foster Wheeler Corporation is the principal contractor. Construction is expected to start the latter part of this year and the plant is scheduled to be ready for operation in early 1954. Natural gas, water, and power will come from Oklahoma sources.

Another industry interested in the Grand River area is Midwest Carbide Company of Keokuk, Iowa. Oklahoma coal, limestone, and electric power are the resources drawing cards for this industry. With a $2 million certificate of necessity from DPA, the Company may construct a new carbide plant in northeast Oklahoma. The Company's Board of Directors is expected to announce its decision in a few weeks.

If constructed, the plant will probably be located near Pryor and Choteau in the area of former Oklahoma Ordnance Works. Two paper mills have recently been built in that area by National Gypsum and Coronado Manufacturing Company.

In addition to the direct importance of the

proposed plants is the fact that some of the products can be used in combination with other resources as raw materials in other processing industries. Already some important intermediate products are being made in Oklahoma, and as new chemical industry plants are added the possible combinations of such resources available in Oklahoma and adjacent areas is greatly increased.

ARBUCKLE GROUP OF LIMESTONES PROMINENT IN OKLAHOMA

The name Arbuckle in the State of Oklahoma has a long and honorable status. Fort Arbuckle was named for Brevet Brigadier General Matthew Arbuckle who fought in the Mexican war of 1845. From Fort Arbuckle the mountains of central southern Oklahoma have received the name, Arbuckle Mountains. From a stone post (Indian Meridian, 97 15' W.) which stood in the center of the old fort all land in what is now the State of Oklahoma, excepting the Panhandle, were surveyed. Thus when the United States Geological Survey sent Joseph A. Taff into the Territory to do geologic reconnaissance work it was not surprising to find in his published report of a part of the Arbuckle Mountains, 1902, that to the most striking series of rocks in these mountains he had assigned the term Arbuckle limestone.

It is this great series of limestones and dolomites that have developed the famous "tombstone" topography seen along Highway 77 between Davis and Ardmore. Here the tilted strata have exposed the beds to erosion forces that have cut down slightly the less resistant beds and left standing the more resistant beds which jut out above the sparse vegetation in orderly file as stones in a vast unkempt cemetary.

In 1904 Taff published his last great report on Oklahoma Geology in which he mapped and described the Arbuckle limestone of the Arbuckle and Wichita Mountains. At this time the great series,

measuring as much as 6,700 feet in thickness, was cited as a marked illustration of a great body of limestone deposited under remarkably uniform conditions. Early investigations of the strata were primarily academic. By 1911, E.O. Ulrich was questioning the propriety of terming this vast series of limestones and dolomites a formation. The paleontologists were noting that at various horizons in the series were found distinct faunas. Chester A. Reeds, 1910, C.N. Gould, 1925, together with many other writers were reflecting the interest of the stratigrapher in correlating the Arbuckle limestone of the Wichita and Arbuckle Mountains with rocks of similar age elsewhere in the United States.

Luther White, 1926, stated that he believed the "siliceous lime", an oil producing horizon in northeastern Oklahoma was a part of the Arbuckle limestone. In 1928, the discovery that the great Oklahoma City oil field was producing from the "fare-well rock" -- the Arbuckle -- so called because it had been considered folly to drill deeper when the top of the Arbuckle was reached. In this year Decker and Merritt published the first detailed report on the physical characteristics of the Arbuckle limestone, and they note that it is beginning to be of interest to the oil producer because of its supposed relation to the siliceous lime and Turkey Mountain sand found in the deep wells of the state. In 1932 Ulrich formally named three formations in the Arbuckle limestone and in 1933 Decker raised the name to group rank, the Arbuckle group, and named nine formations.

Through the years that have followed the production of oil from the Arbuckle, the scientists have not been idle. The term, Arbuckle group stands, its place in the academic literature and in the language of the oil geologist is assured.

LANDSLIDES IN LE FLORE COUNTY

by
Malcolm C. Oakes

Reports of earth slides of some magnitude in the region between Poteau and Fanshawe, Le Flore County, began to appear in the press, and direct inquiries for explanations of these occurrences came to the office of the Oklahoma Geological Survey during the latter part of May and June. Because of the pressure of other work, it was not feasible to send geologists from the Survey to that area immediately and it was not until July 10 that a trip could be made by the writer and John H. Warren to investigate the disturbed area.

Considerable interest ahd developed because of the time association of the land slips with the moderately severe earthquake which was felt over a large area of the middle west on April 9, 1952. After first reports of the disturbances northeast of Fanshawe, there was some conjecture as to whether there may have been movement along a fault in that area which could have been the cause of the earthquake. Also, it is known that land slides, rock streams, and other surface disturbances are commonly associated with rugged topography and steep mountain slopes.

We are indebted to Mr. W. N. Perkins, the weather observer at Fanshawe, who acted as guide to the Fanshawe locality; also, to Mr. J. S. Sorrels of Poteau and Mr. James S. Orr of the Le Flore County Gas and Electric Company of Poteau, who joined the party for part of the investigation.

Mr. Perkins gave us the information that some fence builders were using drinking water from a spring and noticed that it was muddy the first time they visited it after the earthquake shock of April 9th, 1952. He is uncertain of the exact date

but thinks it was about April 12th or 13th. The fence builders went up the stream a short distance and found the slide.

Part of July 10, all of July 11, and part of July 12 were spent in the region visiting and examining disturbed areas. Three land slide areas were visited during this time and examined carefully to determine their nature and whether they could possibly be associated with faulting or were merely typical land slides common to steep slopes.

Various estimates have been made of the area involved in the Fanshawe slide, SW¼ sec. 11, T. 6 N., R. 23 E. — some as high as forty acres. We made no measurements, but it is my judgment that including the displaced material and the cracked area above the slide proper the area involved is about 5 acres (five acres).

No bed rock is involved in the slide except a minor amount of fresh dark shale -- all else is clay and stones -- the usual residual material variously called talus material, mantle rock, colluvium, etc. Such material is common on steep slopes of the mountains in eastern Oklahoma, and occasionally it breaks off and slides to lower levels, usually after a week or two of heavy rainfall.

Usually such slides are bounded by a vertical wall along the side of the ridge and by two cracks extending from this wall straight down the slope. Within the disturbed or displaced material there may be other cracks roughly parallel to the wall and to these bounding cracks.

Outside the obvious slide it is usual to find cracks with minor vertical displacement, from a few inches to a few feet. Such cracks are roughly parallel to the boundaries of the slide.

We found all of these features at the Fanshawe

slide. Parts of the area are thoroughly churned up and the timber is thrown in all directions. In other parts, the timber is merely leaning and some of it is still green.

Two slides of recent occurrence were visited on the north side of Cavanal Mountain, the Wasson Ranch slide near the W¼ cor. sec. 18, T. 7 N., R. 25 E., and the Wildcat Mountain slide near the E¼ cor. sec. 8, T. 7 N., R. 25 E.

The Wasson Ranch slide is really a narrow strip along the north side of Cavanal Mountain about one-fourth of a mile long in which there are several fresh cracks with vertical displacements of less than 10 feet -- mostly one to four feet. At one place the roots of a tree 2 feet in diameter are astride the crack and the tree is split.

All of these cracks are in surficial material, like that involved in the Fanshawe slide.

In the investigation of the Wasson Ranch slide we were accompanied by the owner of the ranch, Mr. J. A. Wasson, Shady Point, Oklahoma, and his son, J. R. Wasson, and by Mr. J. S. Sorrels of Poteau, Oklahoma.

The Wasson Ranch slide was first seen a few days after the quake of April 9th, 1952, and the size of leaves on killed timber is about the same as at the Fanshawe slide, and indicates that the two occurred at about the same time.

In the afternoon of July 11, Warren and I looked for other cracks on the west end of Cavanal Mountain without success and visited the Wildcat Mountain slide.

The Wildcat Mountain slide at the E¼ cor. sec. 8, T. 7 N., R. 25 E. is the least spectacular of the three visited but it is said that it broke a fence

and it was straying of stock that lead to its discovery a few days after the quake of April 9th, 1952.

It is a small slide consisting of several cracks parallel to the mountain side, and down-slid blocks between -- a step slide similar to a step fault.

It is an old slide but recently rejuvenated. Sizes of leaves on killed bushes dates it as about the same as the Fanshawe slide.

Mr. W. F. Jung of the Sheffield Steel Corporation, Houston, Texas, whom we met in Poteau, had visited the Fanshawe locality and called our attention to the fact that some of the boulders in the mantle rock around the slide had apparently been shaken about so much that the soil in which they had been bedded is pushed away on all sides.

We returned to Norman, Saturday, July 12th, but on the way revisited the Fanshawe slide. We climbed higher above the wall of the slide than on the previous visit and found several cracks with displacements of a few feet and found within blocks bounded by cracks, but not at other places, large rocks with the soil pushed away on all sides as much as four inches -- similar to Mr. Jung's observation.

The locations of the three slides visited have been platted on a geologic map of the region, and found to be approximately along the axis of the Cavanal syncline which is nearly parallel to other synclines and to the longest faults of the region. The one other slide reported, but not visited by us, also lies near the axis.

Many people travel about in the mountains and in view of the great amount of public interest shown in the Fanshawe slide in particular, it is

probable that if fresh slides are as numerous in other parts of the mountains some would have been found and reported.

Although we found no actual fault movement in the bed rock of the area, which is covered for the most part by surficial material, it is possible that the general quake of April 9th triggered off pent up stresses in the bed rock along the axis of the Cavanal syncline and that the resulting movement augmented the general quake locally. It is probable that the slides were already imminent and that the intensified quake only hastened them.

Thus, it is our opinion that the disturbances reported from Le Flore County are land slides and that the only connection between them and the earthquake of April 9th is the probability that the earth tremors started land slides that were already imminent and probably would have occurred within a few years anyway.

LIQUIFIED PETROLEUM GAS INDUSTRY HAS RAPID GROWTH IN OKLAHOMA

One of the newer important phases of the petroleum industry is the production and distribution of the liquified petroleum gases. Prior to 1941 production figures by states were not reported by the United States Bureau of Mines, but by 1941 it had gained sufficient importance that beginning with that year, the figures are available. For the ten years for which figures are available, 1941-1950 inclusive, Oklahoma production has grown from 91,136,000 gallons valued at $2,076,000 to a production of 283,026,000 gallons valued at $8,393,000.