Earth Shocks Are Felt in Two Counties

Quake Rocks Area East of Malverne-Leola Reports Tremor.

Malverne, Nov. 17—(Special)—An earthquake was reported at Malverne and neighboring towns yesterday, which caused considerable alarm. The shaking was felt from 6:15 to 6:30 a.m. and many persons left their beds, but no real damage was reported and the shock was not reported.

People who live in the area of Malverne and surrounding communities described the shock as a sudden jolt that made their homes shake. Some described it as a loud rumbling noise, while others said it felt like a strong earthquake. The shaking lasted for about 10 seconds, with some people reporting feeling the shaking even longer.

Leola, Nov. 17—A district earthquake was felt at a local farm. The shaking was described as a brief, intense tremor that caused some恐慌 in the area. There was no immediate report of damage or injuries.

No further information was provided about the earthquake or its cause.

Seismograph Installed By College Here

First Tests of Instrument to Record Earth Shocks Completed.

The seismograph, which was obtained several months ago by the Rock College, was installed yesterday in the basement of the Physical Science Building. The instrument is being tested in preparation for further experiments. The Rock College plans to use the seismograph for research on earthquake activity in the area.

The seismograph was installed by a team of engineers from the University of Illinois. They worked for several days to ensure that the instrument was properly installed and calibrated. The engineers also conducted preliminary tests to determine its sensitivity and reliability.

The seismograph will be used to study earthquake activity in the area, providing valuable information for future research. The data collected will be used to better understand the causes of earthquakes and to improve earthquake prediction models.

Earth Tremor Rattles Windows at New Madrid.

Special to the Tattle.

There were no reports of damage or injuries after the earthquake. However, many people were disturbed by the shaking, which lasted for several seconds.

The earthquake was felt over a large area, including parts of Missouri and Illinois. It was reported to have a magnitude of 3.5 on the Richter scale.

The earthquake was caused by a fault located in the New Madrid seismic zone, which is one of the most active earthquake areas in the United States. The last major earthquake in the area occurred in 1811-12, and several earthquakes have been reported in the area since then.

Texas Shaken By Series of Earthquakes

No Loss of Life Reported—Mexico Also Feels Tremors.

Dallas, Tex., Aug. 17.—(Special)—Earthquakes were reported along the Texas border yesterday, with several felt in Mexico. The largest earthquake, which was recorded at New Madrid, Missouri, had a magnitude of 5.5.

The tremors were felt in various parts of the state, including Harrisburg, where a building was damaged, and Lamesa, where a natural gas pipeline was ruptured.

In Mexico, several buildings were damaged in the towns of Laredo and Matamoros. A natural gas pipeline in Matamoros was ruptured by the shaking, and a building in Laredo was damaged.

The tremors were caused by the same fault that caused the 1811-12 earthquake. The area has been seismically active for centuries, and earthquakes are a natural part of the landscape.

The earthquakes were felt for several hours, with some people reporting feeling the shaking for as long as 15 minutes.

The tremors caused no loss of life, but they did cause significant damage to buildings and infrastructure. It is estimated that the cost of repairs will be several million dollars.

The earthquakes were felt in several states, including Texas, New Mexico, and Oklahoma. The tremors were also felt in parts of Mexico, including the cities of Laredo and Matamoros.

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Will Test Earthquake Theory Based On Shifting Earth Crust

Guatemala Bay, Cuba.—A scientific explanation of earthquakes, called the theory of tides to be tried now in the West Indies from a submerged area.

The International Science Expedition, based at George Washington University, is now under investigation of tides, with a view to understanding the tides of the West Indies. The expedition, which is in charge of Prof. P. G. Stoney of Princeton University, has been working in the West Indies to determine the cause of the tides and the effects of their fluctuation. The expedition is expected to continue their work in the West Indies and to make further studies of the tides and the effects of their fluctuation.

Science

"Electric Eye" Watches for Earthquakes.

The Government of the United States has been experimenting with a new type of earthquake detector, called the "electric eye." The device is based on the principle that a sudden change in the electrical resistance of a wire or a metal strip will produce a sudden change in the electrical resistance. This change can be detected by an electric circuit which is connected to the wire or metal strip. The device is sensitive to very small changes in electrical resistance, and can be used to detect earthquakes as far away as several hundred miles.

At Least 30 Dead in Mexican Quake

Entire Country Shaken by Severe Tornado With Heavy Property Loss.

Chicago—A severe tornado with heavy property loss occurred in the city of Chicago on Thursday afternoon. The tornado, which was accompanied by heavy rain, caused widespread damage, particularly in the business district. The death toll was reported to be at least 30 people, with many more injured.

Strains in Earth Cause of Quakes

Chicago.—Earthquakes are probably produced by a sudden release of strain within the crust of the earth. As a result, they can be a column of steel falling when squeezed with great pressure. Professor S. J. Mearns, J. S. Professor of geophysics at the University of Chicago, declared in a radio talk over the Columbia Broadcasting System arranged by Science Service, the institution for the popularization of science.

Certain earthquakes are produced by the movement of the earth's crust as it moves in response to forces acting on it. These forces can be generated by natural processes, such as the movement of tectonic plates, or they can be caused by human activities, such as the drilling of oil wells or the construction of dams. In some cases, earthquakes can be triggered by large explosions or industrial accidents. The energy released during an earthquake can be enormous, causing widespread destruction and loss of life.

The study of earthquakes has been a major area of scientific research for many years. Scientists use a variety of methods to study earthquakes, including seismology, which involves the study of seismic waves, and geophysics, which involves the study of the earth's physical properties. These methods have helped scientists understand the causes of earthquakes and develop ways to predict and mitigate their effects.

Quake Relieved in Asia When Recorded at London

[New York Times June 8]—London, June 7—Three London seismographs today recorded a violent earthquake in Asia, which was said to have caused a death toll of 10 people in the affected area. The earthquake was recorded at 12:45 p.m. today, and was caused by the movement of the earth's crust.

The death toll was reported to be 10 people, with many more injured. The earthquake was recorded in several countries, including India, Pakistan, and Japan. The effects of the earthquake were felt in many parts of Asia, causing widespread damage and loss of life.

New Quake and Tidal Wave Hits Mexican Town

Mexico City, June 8—A severe earthquake occurred today in the city of Mexico, causing widespread damage and loss of life. The earthquake was recorded at 10:15 a.m., and was caused by the movement of the earth's crust.

The death toll was reported to be at least 50 people, with many more injured. The earthquake was recorded in several countries, including the United States, Canada, and Europe. The effects of the earthquake were felt in many parts of North and Central America, causing widespread damage and loss of life.

A surprising note in the relatively small damage in the United States due to earthquake in the last century. Including the disastrous region west of the Rockies, Mrs. Freeman finds that although 20 to 30 lives were lost in the Franciscan Diocese of 1898, there were only 201 people in the entire United States who died directly or indirectly from earthquakes in the last century. And this includes the Charleston and C. C. quake of 1898, where hundreds of people lost their lives.

The property damage due to quakes in the last century is also relatively low, being given by Mrs. Freeman as only $99,000,000. This does not include the damage done by fires, tremors, floods, etc.
Arkansans Need Not Fear Another Quake, Geologist Says Series of Minor Temblors Since New Madrid Earthquake in 1811 to '13 Means Gradual Earth Adjustment Being Made Which Prevents Recurrence of Catastrophe Which Visited California

State Has an Average of One Minor Convulsion Every 6.7 Months, Records Show

By WILLIAM JOHNSON.

"Ah, prehensile terra firma," said Morse, when solicited to enlist in the navy. "I want nothing but terra firma.

The assurance of this view has been emphasized by the recent experience of the California water front earthquake, which has brought a breath of fresh air to the face of the Pacific Coast. It is true that the area of the earthquake was very small, and that much of the damage was due to the peculiar character of the buildings and the way in which they were constructed. But it is also true that the earthquake was a serious event, and that it showed the vulnerability of the region and the need for better construction practices.

The Geologist Survey made this investigation chiefly in two ways. First, by gathering information from the people who were actually involved in the earthquake. This was done by sending out two teams of experts, one east and one west, to gather information and to make observations. The teams were made up of experienced geologists and engineers, and they were instructed to collect all available information, including any data that might be useful in the investigation.

Second, the survey was conducted by gathering a large amount of data from the records of the earthquake. This included information on the number of buildings that were damaged, the extent of the damage, and the types of buildings that were affected. The survey also included information on the number of people who were injured or killed, and the extent of the economic damage.

The survey was completed in early November, and the results were published in a special report by the Geologist Survey. The report included a detailed analysis of the earthquake, and it provided a comprehensive overview of the damage that was caused.

The report was well received, and it helped to increase public awareness of the earthquake and its effects. It also provided valuable information to the government and to the people of California, who were trying to recover from the disaster.

The Geologist Survey's findings showed that the earthquake was a serious event, and that it demonstrated the need for better building codes and construction practices. The survey also showed that the earthquake was a natural event, and that it was not caused by human activity.

The survey concluded that the earthquake was a natural event, and that it was caused by the movement of tectonic plates. The survey also showed that the earthquake was a serious event, and that it demonstrated the need for better building codes and construction practices. The survey also showed that the earthquake was a natural event, and that it was not caused by human activity.

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Geologists Expected California Earthquake: Collapse of Floor Off Coast Caused Slipping of Crust of the Earth

That for twenty years geologists and seismologists have known the Los Angeles district must eventually have a great earthquake. Now the capital of California is in an area that has been identified as a possible site for a great earthquake, and the likelihood of a major earthquake in the future is greater than ever before.

The San Andreas fault, which runs through the center of the state, is a large horizontal fault that has been active for millions of years. The fault has caused a series of earthquakes in the past, and it is believed that a major earthquake will occur in the future.

The San Andreas fault is part of the region known as the San Andreas Fault System, which consists of a series of parallel faults that run from the Pacific Ocean to the Sierra Nevada. The system is about 600 miles long and is one of the most active fault systems in the world.

New Devices Solve Earthquake Engineering Problems

A new method of predicting earthquakes has been developed by scientists at the University of California, Berkeley. The method involves the use of seismometers, which are devices that measure the shaking of the ground during an earthquake.

The seismometers are placed in strategic locations and are connected to a computer that analyzes the data. The computer is able to detect the onset of an earthquake and to predict the size and location of the event.

The new method is more accurate than previous methods, and it has the potential to save many lives in the future. The scientists hope that their work will be used to develop early warning systems for earthquakes.

TRI-STATE RAMBLES

Earthquakes in Arkansas—More About Blanch K. Bruce

By GEORGE M. K. Bruce

Thanks to Dr. George M. K. Bruce, an Arkansas geologist, we are now aware of the risk of earthquakes in the state. Bruce is a professor at the University of Arkansas, and he has been studying the geological history of the area for many years.

Bruce has developed a system for predicting earthquakes in the state, and he has been able to identify several areas that are at risk. His work has shown that the risk of earthquakes in the state is higher than previously thought.

Bruce's system involves the use of seismometers, which are devices that measure the shaking of the ground during an earthquake. The seismometers are placed in strategic locations and are connected to a computer that analyzes the data.

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California Seismic Network

The California Seismic Network is a state-wide system of seismographs that is used to monitor earthquakes in the state. The network consists of several hundred seismographs, and it is able to detect earthquakes of any size.

The network is used by scientists to study the causes of earthquakes and to predict the likelihood of future events. The network is also used by emergency management agencies to monitor the potential for earthquake damage.

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FAR WEST STATES ROCKED BY EARTHQUAKE

Center of Disturbance Near Salt Lake City, Seismologists Report.

Salt Lake City, March 31--(AP)--The earthquake works on the Greater Salt Lake region are having a profound effect on the city's building and engineering structures, and on the city's business and industrial community.

The earthquake, which occurred near the center of the city, was felt as far away as Montpelier, Idaho, and was reported to have caused damage to buildings and to have caused injuries to several people.

Four Earth Tremors Felt in Western States.

Salt Lake City, March 31--(AP)--Four earthquakes were felt in the western United States today, according to the United States Geological Survey.

The first tremor was reported at 7:20 a.m. today, and was felt in the vicinity of Salt Lake City, Utah. The second tremor was reported at 7:45 a.m., and was felt in the vicinity of Los Angeles, California. The third tremor was reported at 8:00 a.m., and was felt in the vicinity of Seattle, Washington. The fourth tremor was reported at 8:30 a.m., and was felt in the vicinity of Portland, Oregon.

Earth Tremors Recorded On Seismograph Here.

Salt Lake City, March 31--(AP)--A four-hour tremor was recorded on the seismograph at the University of Utah today, according to the United States Geological Survey.

The tremor was felt in the vicinity of Salt Lake City, and was reported to have caused minor damage to buildings in the area.

Tilt Of Ground May Allow Prediction Of Earthquakes.

Salt Lake City, March 31--(AP)--A new method of predicting earthquakes may be developed in the near future, according to a report by a team of scientists from the University of Utah.

The team of scientists, led by Dr. John A. Murray, has been studying the tilt of the ground in the Salt Lake City area, and has discovered that a small tilt can indicate the presence of an earthquake.

Long Rise In Earth Level Predicted For New York City.

New York, May 31--(AP)--A new method of predicting earthquakes may be developed in the near future, according to a report by a team of scientists from the University of Utah.

The team of scientists, led by Dr. John A. Murray, has been studying the tilt of the ground in the Salt Lake City area, and has discovered that a small tilt can indicate the presence of an earthquake.

Other scientists are conducting research on the same phenomenon, and it is hoped that they will be able to develop a more accurate method of predicting earthquakes in the future.
## Earthquakes and Earth Shocks Are Felt in Nebraska

Chadron, Neb., July 29—(AP)—The tremors of the Nebraska quake were especially noticeable at the town of Chadron, where a light earthquake shook the region on the afternoon of July 29, 1932. The shock was felt by many people in the area, causing minor damage to buildings and homes. The earthquake was registered at 4:05 p.m. on the Richter scale.

## Seismometer Here Records Quakes

Two earthquakes of great intensity were recorded Friday night by the seismograph at St. John's Seminary, in Colorado. The first was a major earthquake that occurred at 9:29 p.m. and was the second at 9:30 p.m. Both earthquakes were registered on the Richter scale, reaching a magnitude of 7.6 and 7.5, respectively.

## New Tremors Felt in East

New York (AP)—After shocks of yesterday's earthquake were felt in parts of upper New York state and in Ontario, Canada, today, new tremors were felt again. The shocks were slight and caused no damage. The epicenter of the earthquake was located near Utica, New York.

## Intense Quake Recorded Here

The seismograph at St. John's Seminary, in Colorado, recorded an intense earthquake yesterday afternoon, according to the Rev. Joseph A. Murray, in charge of the seismograph. The earthquake was the second of the day, occurring at 12:35 p.m. It was registered on the Richter scale as a magnitude 7.0 earthquake.
The TERROR of the EARTHQUAKE

By DR. FRANK THONE

Science Can’t Predict Earth Tremors Yet But Through Seismological Observatories, One of Which Is Located at Little Rock, Location of Quakes Can Be Determined Speedily.

Capt. N. H. Heck, principal seismologist of the United States Coast and Geodetic Survey, locating the epicenter of a quake on a large globe.

Now the results are handled by telegraph and radio, and epicenters are given at least a preliminary location in a few hours.

The setup is this: The many university and government earthquake observatories send their data, as code telegrams, to Science Service in Washington, D.C. Science Service turns these messages over to the United States Coast and Geodetic Survey, and also telegraphs them to the headquarters of the Jesuit Seismological Association, in St. Louis.

These two latter organizations calculate the epicenter independently of each other, and then exchange information for the purposes of checking up and correction.

In the meantime, the location of the epicenter is available for the press while it is still news, and not six weeks later when most people have forgotten about it. The location of the Ontario epicenter, near the home of the Donie quintuplets, was thus determined by mid-morning of the day on which the quake occurred.

It is perhaps not so coincident that so many of the earthquake news items you see in the papers come from Georgetown, St. Louis, Peoria, or some other Jesuit university. The “black robes” have a long tradition of interest in earthquakes. One of the oldest, and at the same time most interesting, of earthquake descriptions in North America was dug out of the archives of his society by the late Father Tundur, not long before he died.

It is a report of the great quake of 1063 in “New France” (now Canada), by a Jesuit missionary, Pere Chambless, translated into Latin by his friend, Pere Francois Raguenese.

These cable-car tracks in San Francisco ran athwart the famous San Andreas fault, which slipped sideways in the classic earthquake of 1906 in Montana’s capital, midnight shock waves rattling windows and a score of great Eastern cities, gave us all the unsteady knowledge that we also live in glass houses—where stones may fly at any moment without being thrown by any human hand.

The dread of the earthquake, an entirely natural and normal emotion in all of us, was without doubt the motivating force behind the curious apparent dispute among seismologists for a few days after the Jan. 26, 1961, earthquake of November 1. These students of earthquakes and their causes were eagerly interviewed by newspapermen, with the insistent demand, “Prophecy! Prophecy!”

The resultant apparent disagreement among them was not due to any real difference in scientific opinion as to their part, but rather to differences in interpretation by the writers who questioned them. If the question were, “Will there be another quake, right here, in this town?” all the honest seismologist could answer was “I don’t know; but probably not.” And by the process of simplifying and at the same time fortifying somebody’s clear statement when you repeat it, these professional and qualified answerers of the scientists came to look a bit odd when they appeared in print.

Scientists regret that they simply are not able to give prompt and sweeping responses to demands for earthquake forecasts.

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Power of Earthquake Imitated In Laboratory

By HOWARD W. BLAKESELY
(Associated Press Science Editor)

A beam of light the thickness of a pencil is reflected from the corner of a metal table at Massachusetts Institute of Technology at Cambridge.

Put one finger in the beam, wiggle it, and the table—150 pounds of raw metal—shakes like a leaf.

Thus for the first time in the laboratory the real power of the earthquake is imitated—the nearest human thing to the irresistible force.

The shadows cast by the finger in the light beam shake the table—or differently stated the power in a shadow actuates a piston driving with a 2,000-pound push. This is a multiplication which is virtually infinite even as the earthquake’s power is infinite so far as man’s puny handiwork is concerned.

The result is a shaking table, set up in the laboratory of Arthur C. Ruge, research associate in seismology, on which the realizations of earthquakes can be reproduced in a new way. The fluctuating amount of light in the beam is converted by a vacuum tube into an electric current which regulates the driving piston that in turn shakes the earthquake table.

This makes it possible for the first time to repeat in the laboratory an earthquake that has happened in nature, reproducing it more by more.

Herefore the seismologists have had to guess how much to shake their tables to imitate a real quake—where so little movements with big ones.

The new tech table will follow every up and down of the line drawn by the recording needle of a seismograph. Actually the line drawn by a seismograph needle is turned into color, like that of a paper doll. Its wavy edge runs through the beam of light, and the beam reproduces every variation.

It is planned to give this table all motions of the ground during earthquakes, north to south, east to west, and up and down. The control with a beam of light which is capable of actuating any number of tons desired, makes this possible.

What might have happened to a full sized water tank in the Long Beach, Calif., earthquake of 1893 is shown in the accompanying illustration. When the wavy outline of the shadowgraph of the Long Beach earthquake record interceptor a beam of light reflected from the table corner, a piston under control, of the beam shakes the table and the model tank upon it. Arthur C. Ruge (foreground), research associate in seismology at M. I. T., designed the machine.

Earth Tremors Recorded Here

March 7—Special

Four earth tremors varying in duration from six to 45 minutes recorded on the seismograph at St. John’s Seminary yesterday and the day before. The Rev. Joseph A. Murray, rector, seismologist, said that the last shock, starting at 5:51 a.m. yesterday and lasting 45 minutes, was severe but deep in the earth. He said it probably occurred about 2,150 miles from Little Rock.

A slight shock registered at 5:25 p.m. Monday, lasted only a few minutes. Father Murray said it probably resulted from a geologic shift within a radius of 30 to 100 miles of Little Rock.

At 11:46 a.m. a tremor of somewhat greater intensity was recorded.

From seismograph records of an earthquake at 6:18 yesterday morning, the seismograph showed nothing to bear them out. Father Murray expressed belief that there must have been blasting in the vicinity that was mistaken for earth tremors.

Residents of Seattle said that whatever it was rattled the dishes in their cupboards.

Slight Earthquake Fell at Paragould

March 7—Special

A tremor of about 10 seconds duration at 7:34 Friday was felt at Paragould, Ark. The tremor was not strong enough to rattle the dishes or windows, but did cause a little disturbance.

Slight earth tremors were reported in eastern Missouri and western Tennessee.

St. Louis, May 14.—A tremor of about 10 seconds duration at 9:25 Monday was felt at Cape Girardeau, Mo., and at a point several miles distant. No damage was reported.

St. Louis, June 15.—Earthquakes recorded in Missouri, Arkansas, and Tennessee.

Five States

Columbia, March 2.—An earth tremor was felt in the State of Ohio at 9:47 a.m. (E.S.T.)

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The tremor was felt in the vicinity of Lima and Belfontaine, Ohio.

From as far north as Windsor, Ontario, across the border from Detroit, to Louisville, Ky., and even to the state of Illinois, reports of tremors were received.

A tremor of about 10 seconds duration at 7:33 Friday was felt at Poplar Bluff, Mo., and the tremor was felt at 7:33 Friday, when the tremor was felt at Poplar Bluff, Mo.

These things are common; there is nothing serious about it,” Stoddard said.
Instruments Are Used In Locating Salt Domes and Oil Fields.

Probably you don't know that seismographs, which record vibrations of the earth, and other delicate scientific instruments are employed in locating salt domes. They are, but not for sale to the public.

The Geophysical Exploration Company has a suite on the third floor of the Glover building, and there the instruments used by the company in its geological investigations are made. One of the rooms in the suite is fitted up as a regular machine shop, but of course on a small scale. Another is the recording room.

The company, which has its head offices at Washington, D. C., established an office and instrument shop here two years ago, following a season of geological research in this section by a scientific party under the leadership of Dr. L. Den Leet of Harvard University. The local office is in charge of H. G. Taylor, vice president of the company. Carl Wirtzfeld, an expert instrument maker born in Ger- many, is the man who works on the instruments, as he is the only ironmonger in this country who is also a skilled instrument maker. Raymond Wirtzfeld and his assistant have recently been employed to work on older instruments, which are used in conjunction with the three seismographs by the geologists.

First Field Test 10 Years Ago.

The seismograph first was used to locate oil in Kansas about 10 years ago. The Geophysical Exploration Company formed about the same time, of great advantage and it had the use of a seismograph and it has made its own instrument since that time. The three seismographs the company has in Kansas have proved especially successful in locating oil fields in Kansas and other producing areas. Of the three in Kansas one has been sent to a city in the southern plains of Texas and Louisiana, only four or five have no connection with salt domes, he said.

The domes average about a mile in diameter in Kansas, and from 300 to 500 feet of salt below the surface of the earth. In some cases the dome causes a bulge in the earth's surface, and then the salt above it and others there is no outward indication of their presence; yet, there are underground areas surrounding the dome.

Explosions are used to cause the vibrations recorded on the seismographs. These explosions are not large, as are used by one-field party. Seismographs are set up at different points around a central station, where the blasting is to be done, and a wire is run from these to the station for the registration between the seismograph stations and the central station. One of its important functions is to signal the location of the blast.

The seismographs record of earth vibrations from the explosions indicate whether there is a salt dome in the earth's surface and what kind and any of the instruments. By changing the loca- tions of the instruments, figuring various angles and repeating the process the location of the center of the dome can be discovered. This takes travels much faster through earth than through water, alone or other substances.

The instruments used by the geolo- gists are much smaller than the instruments employed in determinations to determine the location of earthquakes. Mr. Taylor said he had studied two seismographs, one that had been used and another one with an instrument so far. They weigh only 10 pounds each and their size is about the size of a cigar box, about 20 inches. The seismographs are used to weigh about a ton each, but they have three times the sensitivity of the smaller ones.

Magnification of the 10-pound seismographs is about as high as that of their big brothers, Mr. Taylor said, and under similar working conditions are sufficient to detect slight as a millionth of an inch. The company's instruments have not been improved by the instrument makers only since since their manufacture are all that started. There are underwears to send out an- other field test in the spring in this section.

Mr. Taylor is accompanied by Miss Ruth R. Kingsbury and George C. Brainerd, state geologist, dest- ined to work on the new method of locating salt domes to Little Rock last summer in an article that was published in the Gazette November 30.