

# How Hot Springs Came To Be

Exhibits in New National Park Museum at Arkansas Resort Explain in Detail the Geological Formations Involved in Producing Famous Health-Giving Waters.

By Mary D. Hudgins  
July 25-37

The Hot Springs National Park museum tells the complete history of that area. The story goes back 250,000,000 years. Pictures, charts, captions and models explain clearly the changes which have taken place in the earth's crust, making the waters of the hot springs possible.

The museum is in a large room to the right of the entrance on the first floor of the Park Service Administration building. A series of 15 cases arranged along the walls and through the middle of the room tell the story of the development of the area about the hot springs from its first emergence above the ocean bed to the present time.

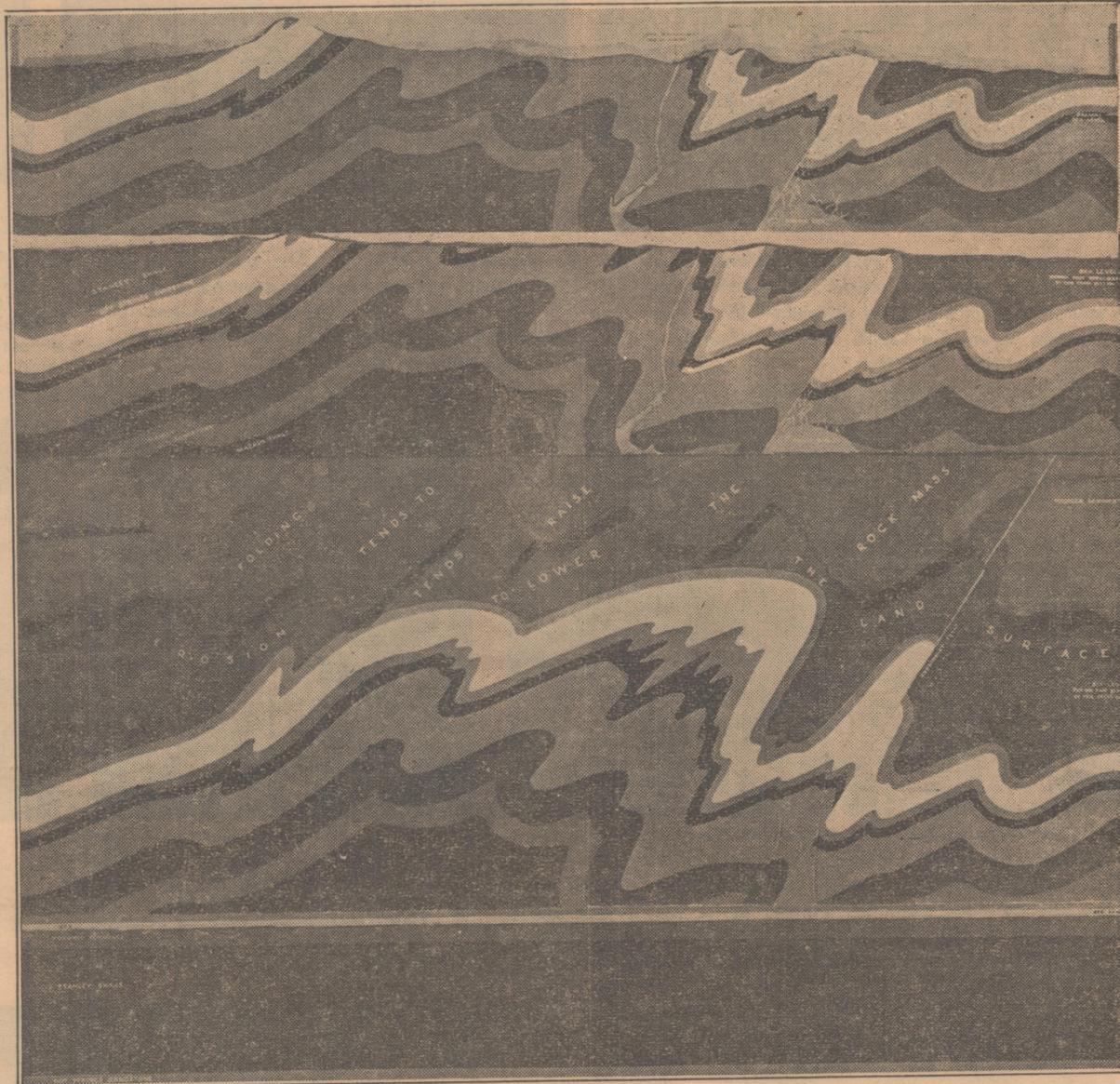
The Hot Springs National Park Service staff, headed by D. S. Libbey, superintendent, worked for months selecting, checking and culling information and possible exhibits. H. W. Lix, acting park naturalist, did much of the work. Experts of the Museum Division of the National Park Service at Washington, D. C., have carefully prepared material for the cases. Albert McClure of Washington spent two weeks supervising the installation of cases and their contents. The Arkansas History Commission, through its secretary, Dallas T. Herndon, made available an elaborate display of Caddo Indian artifacts. The Hot Springs Natural History Society co-operated in every way possible. Members of pioneer families have lent and contributed valuable memorabilia of early day Hot Springs.

Of the exhibits, Superintendent Libbey says: "I feel that the residents of Hot Springs and the visitors to Hot Springs National Park for years to come will consider the exhibits the most effective means of telling the story of the earth forces which caused the hot springs to exist, the aboriginal occupations and utilization of the springs for health purposes, early discovery by white men, pioneer settlement and development, early and current park administration and the intriguing interrelation of all phases of natural science responsible for the plant and animal adaptation found in the park and the vicinity of Hot Springs."

Circling the room from right to left, one is introduced to and made instantly and thoroughly acquainted with the changes in the earth's formation during many millions of years; origin and formation of mineral deposits; early life forms; the Indians and how they utilized what they found near the springs; the early coming of the white man, featuring the expedition of Hernando de Soto; the later coming of the hunters, pioneer home builders and men of science intent on physical and chemical research; the development of the park and city, individually and collectively, and above all the administration of the hot waters under the various agencies which have dictated their control.

As one enters the room the first case to the right is given over to a huge map. It depicts a cross-section of the earth's formation cut vertically deep into the interior of the globe. A series of printed cards at either side of the map explain changes that have taken place in region of which the park is a unit and the piling of layer upon layer of earth materials—rocks and minerals—upon it during the passage of eons of slow development.

The legend begins with an explanation of a great sedimentary basin, which, delta-like, was deposited from wash from the ancient mountains to the south, which were called Llanoria by the geologists. Gradually these beds of erosion-deposited ooze hardened into a rocklike mass. This was uplifted and folded into jagged mountain peaks by the great interior heavings of the earth. During the latter part of the Paleozoic era—the time of ancient life—



This chart in the Hot Springs National park museum shows a cross section of the country in that area at various eras and illustrates the pushing up folding and subsequent erosion in the area around Hot Springs.

these great ridges were forced above the rest of the district. At points where the strain was greatest, faults occurred. These faults resulted frequently in great cracks appearing in the wavelike strata of rock.

After the mountains had been thrown up, nature set to work to level them down again. Water lapped against the mountain peaks. Winds blew away the surface soil. Finally, the hills were worn away until the whole surface was a vast peneplane.

A little before or during the next period of uplifting of mountain peaks, huge beds of molten magmas were introduced into the region and forced through the faults, or cracks, from the heart of the earth. The sedimentary rock beds into which the magmas were forced in time cooled far more quickly than the newly intruded molten substances. It is thought that these intrusions, deeply buried within the earth's crust, are responsible for the heat of the hot springs.

Case No. 2, along the museum's right walls, holds as its central attraction a "U" shaped tube. It is lighted to reveal the water flowing down one arm of the conveyor and up the other to an equal height, forced by the pressure of the water behind it. Thus, instantly the observer may grasp the principle by which many scientists consider the source of the water is explained, as well as the manner by which the hot springs reach the surface.

This animated exhibit is mounted on a chart showing a vertical cross section of Hot Springs National Park—a cross-section which makes Hot Springs, West and Sugar Loaf mountains mere inch high projections at the top of the map. The

theory goes that during the period of uplift and erosion, a huge mass of porous Big Fork chert, embedded between an upper layer of Polk Creek shale and a lower border of Womble shale was exposed to the surface. Both Polk Creek and Womble are water resisting. Water—from rain, springs and creeks—filters down through the sponge-like conduit of the sieve-like Big Fork chert, protected above and below by the impervious layers of shale. Like the "U" tube of the demonstration, the water is filtered downward and forced up to the surface again, flowing in the natural water pipe of the folded chert. Somewhere along its way it doubtless comes in contact with superheated steam rising from the deeply buried masses of hot rocks.

Cracks in the surface layer of Polk Creek shale permit the rising of the heated water to the surface. Such a process constitutes the most popular explanation of the creation and existence of the hot springs.

Other possible sources of the hot springs are, according to the museum charts, several. One takes into account the possibility of the disintegration of radio active minerals in the rocks. Another possibility is the "friction caused by sliding of rock masses over one another during the period of faulting." The "normal heat gradient of the earth's crust caused by the weight of overlying rocks and conduction from the hot core" is another theory that deserves attention. A fourth is "oxidation, reduction and other chemical reactions in

the rocks." With the introduction of the four less widely accepted theories comes the possibility of pristine, "virgin" or "juvenile" water—water which has never before reached the surface of the earth as a basis for the flow of the springs.

A central case has a chart which diagrams the radio active quality of the water. The Arkansas hot springs are compared to European spas as to radio activity. The waters of Hot Springs National park are shown to rank to good advantage in the analysis.

## Baths Taken In Hot Springs Gazette 1-1-38 Show Gain

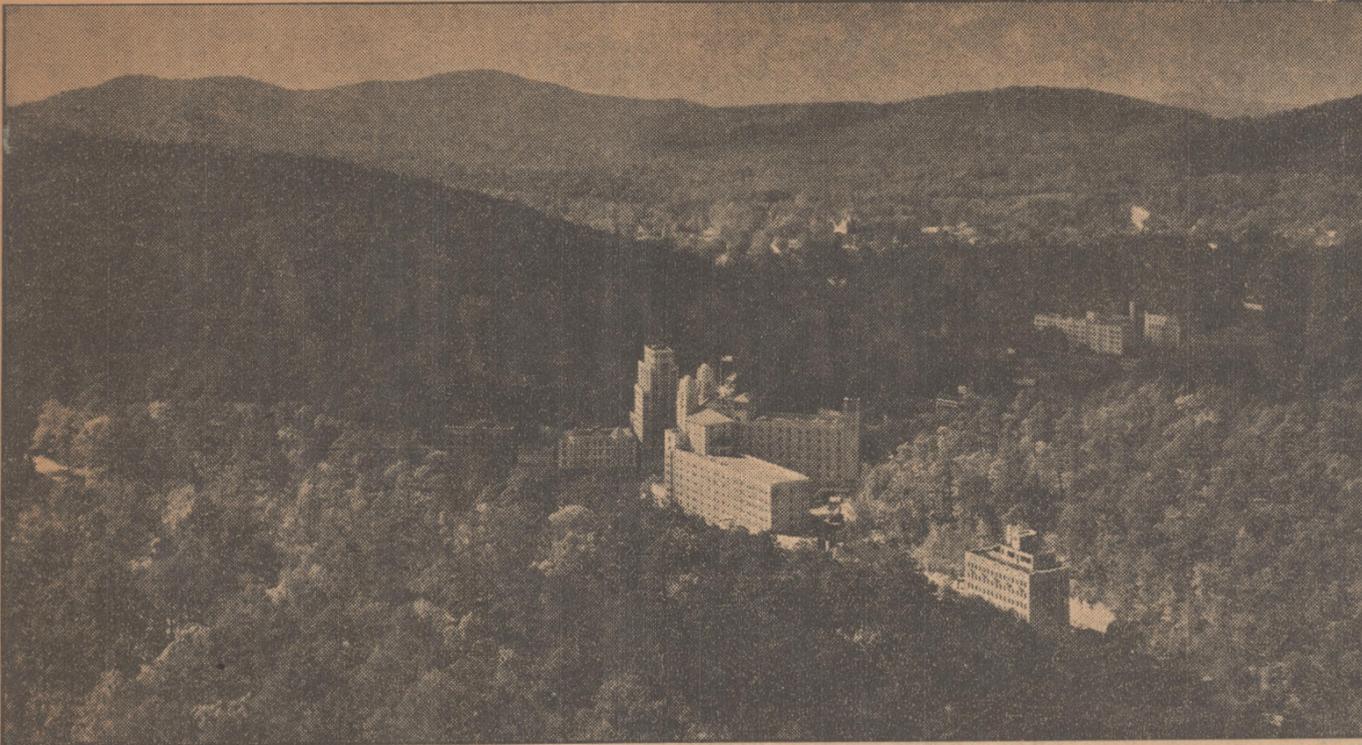
Hot Springs, Ark., Dec. 31 (AP).—Hot Springs National park, where the prosperity barometer is based on the number of baths you take, found 1937 a good year. Total tubbings in the bath-houses supplied by the government-owned hot springs reached 657,389 through December 24, 1937, compared with 576,751 for 1936.

Attaches of the National Park Service said the 1937 figure was "on a par with those of the prosperity period during 1922 to 1929."

Every month of the past year, except incomplete December, showed an increase over similar periods of the preceding year.

Here are the comparisons:		
Month	1936	1937
January	37,814	51,461
February	54,618	62,391
March	83,863	97,519
April	58,379	74,689
May	47,412	58,167
June	43,430	52,211
July	51,973	54,764
August	53,787	60,506
September	36,500	41,226
October	40,716	42,059
November	35,431	38,632
December	32,833	23,764-x
Totals	576,751	657,389
x-December, 1937, figure through 24th.		

## THE GREAT OUTDOORS



Special to the Gazette. 6-27-37  
Hot Springs, June 26.—Officials of the National Park Service, Washington, have notified Superintendent Donald S. Libbey that they have selected the above picture taken from the top of the tower at Hot Springs mountain, which has been enlarged many times, to be framed and hung in the new administration building of the Park service.

The mountain to the left with the shadows is West Mountain and the one to the right in the shadows is Sugar Loaf mountain, both of which are in the Hot Springs park domain. In the valley may be seen the Medical Arts building, the tallest structure in Arkansas. In front of it is the Arlington hotel and on the right (the smaller structure), is the New Park hotel. In

the upper right-center distance may be seen St. Joseph's Infirmary and the Majestic hotel.

The picture does not pretend to show anything of the city of Hot Springs or its main thoroughfare, Central avenue. It was selected because it contained such a fine exemplification of "the great outdoors", and reveals that Hot Springs is nestled in the lap of the

beautiful Ozark mountains. Superintendent Libbey, shortly after taking charge here, was so impressed with the scenic grandeur of the picture that he, too, had one enlarged. Like the one in the National Park Service building, Washington, it is in a special frame.

"It is one of the greatest views of the glory of our national parks," said Superintendent Libbey.

# Customs Of The Caddo PHOT

Case In National Park Museum at Hot Springs Reveals Mu By AU

About Habits of Early Arkansas Indians

Gazette 9-12-37

By Mary D. Hudgins.

The Caddo Indian case is one of the most popular at the Hot Springs National Park museum. It contains a miniature replica of an earth lodge. There are several age-old earthen jars from which some squaw doled out corn meal mush to her earth lodge subjects. There are rouge pots, once filled with red clay, and ear plugs (Indian earrings) with which her granddaughter sought to add to her charms in the eyes of some young brave. There are arrow points chipped laboriously from the Ouachita hillsides and used in taking Arkansas game and killing Arkansas enemies. There are net sinkers used for fishing.

There are many other things which help to fuse the image of the past into the picture of the present. There is much to show how different our modern lives are from those of redmen 2,000 years ago. There is much to set us wondering whether many of our so-called modern ideas are really so new.

Take the earth lodge, for instance. Our modern architects and economists advocate a system of multiple housing units, with central kitchens to serve the needs of an entire group. The Caddo Indians conceived that idea thousands of years ago, and put it into practice.

The depression taught us many things, among them the use of simple, easily obtained products in building houses. The Caddos brought that art to perfection centuries before white men set foot on America.

The Indian earth lodge, made from saplings, grasses and earth, on the site of its erection, undoubtedly was the aboriginal version of the modern apartment house. It went one step farther and provided a single centrally located kitchen. The social system included a queen of the pots and pans who superintended the labor of the less blue blooded squaws, and who allotted the



One of the cone-shaped houses of the Arkansas Caddo Indians made of reinforced mud with a thatched roof.



Another type of Caddo house, made of turf over arched poles.

food consumed by members of the tribe. It is easily possible that Capt. John Smith took his slogan "Those who will not work, cannot eat!" from the code of the redman.

The exterior appearance of an earth lodge in its prime must have looked very much like a Zulu chieftain's notion of a giant bee hive. As well as archaeologists can construct the plan, it must have been something like this. A circle was described, from 16 to 33 feet in diameter. Into it stout poles were driven and drawn up into a low dome. Atop them and almost at right angles still smaller poles were laced to form the roof. Roof poles were interlaced with still smaller poles, cane and small sticks. A layer of sedge grass was added and on top was placed a thick coating of wet dirt. Side walls were subjected to a similar coat of stucco.

Writers sometimes mention Spanish moss as being used in the grass coat of side walls and roof. One of the few places in central Arkansas where Spanish moss grows abundantly is Cedar Glades, the center of one of the richest sources of Indian artifacts in the state.

At the center of the roof of the earth lodge a large opening was left. Here smoke from the communal fire built in the middle of the room below might escape. A single door usually served as the only other source of light and fresh air.

Six to a dozen families lived in one of these dwellings. Privacy was simply and skillfully contrived. Six or eight feet inside the outer wall a second circle of poles was driven into the ground, some six feet apart. From outer wall to inner poles skins were stretched. When skins were hung between inner poles no Indian could have asked for a more compact retreat than his six-foot-square cubicle afforded him.

Housekeeping was relatively simple. The chief squaw took charge of the grain raised by the braves in the fields on the river banks. She presided over the distribution of the game, which was hunted and consumed in common.

Vessels for storing grain, baskets and jars for extracting salt from the earth, and the pots used in the getting and preparing of food all were handmade. Often the process was a complicated one. Clay was rolled into long, snake-like whisks. These were coiled in ever widening circles, circles which might flatten out into a dish or curve upward into a narrow-mouth jar. For the more primitive vessels, sun baking was enough. But for the more delicate, yet lasting pots, those which were elaborately decorated, a system of firing in hot ashes over a bed of glowing coals was used.

Arkansas pottery is deemed by archaeologists to be of exceptionally fine quality. Dr. John R. Swanton of the Bureau of American Ethnology, Smithsonian Institution, says: "Archaeologically, Arkansas is one of the most important states in the Mississippi valley." And M. R. Herrington, curator of the Southwest Museum of Los Angeles, says: "Southwest Arkansas yields earthenware that for quantity and for variety of form and decoration has few rivals in the territory now covered by the United States and Canada; in fact, only the Pueblo district of the Southwest and the mound region of the Middle Mississippi valley can pretend to compare with it; and of these, the art of the latter is in many ways inferior."

Along with arrow tips and the bones of long deceased redmen, remarkably fine specimen of Caddo pottery have been found, especially along the banks of the Ouachita and Caddo rivers. Usually they are discovered either in mounds which were burial grounds or in the remains of what once were earth lodges. It is odd, when actually so few Indians roamed the hills of Arkansas, that so many fallen lodges have been found in so many places. The answer is simple. An earth lodge was not necessarily a permanent home. Villages generally constituting a number of earth lodges and perhaps a ceremonial house were concentrated near the headwaters

of navigable streams. Here the overflow was infrequent enough to take away the dread of floods, yet rich soil and transportation was at hand. But perhaps floods did come. Maybe soil, after being tilled for several years, refused to yield the best of crops. Possibly game became scarce. An approaching enemy might make it expedient to abandon an entire village. And above all, there was superstition.

If an Indian chief died within the walls of an earth lodge, it became his funeral pyre. The residents of the building left and it was set on fire. A new home was built, perhaps on the ashes of the old one—which, with charred timbers and fallen earth, was half a dozen inches higher than the old site. Sometimes a house, unpolluted by death, but left for some other reason, was merely abandoned. Wind and rain had their way. Through the years the whole mass crumbled into a heap of dust.

The specimen of Caddo artifacts on display at the Hot Springs National Park Service building were almost without exception taken from fallen earth lodges near the banks of the Ouachita not far from Hot Springs. They were obtained through Dallas T. Herndon, secretary of the Arkansas History Commission.

It was in the early part of the century that Clarence Moore moved into south Arkansas and began excavations which led to the writing of half a dozen books, among them "Antiques of the Ouachita Valley." His work was done in south Arkansas and north Louisiana. The country around Hot Springs remained comparatively virgin territory for the excavator until 1917.

In the spring of that year Mr. Harrington, representing the Heye Foundation of New York, moved into a camp on the banks of the Ouachita at what was then Laurence Station, and now known as Catherine Station. Much of the territory which he investigated now lies beneath the waters of Lake Catherine. A small elevation of land will be pointed out by attendants at Rogers Landing as one of the mounds into which Harrington dug.

Seven mounds were investigated by Harrington and his party. Four, perhaps five, were fallen earth lodges. Two mounds indicated possible village sites. Burials were discovered in or at the edges of most of them. Remarkably fine artifacts were uncovered. But these are far from the most amazing part of the Harrington discoveries. At a depth of nine feet, nine inches, he discovered crude, clumsily made large spear points. Between them and the top layer of fine, tiny, delicately made bird arrow tips there was almost 10 feet of river wash earth, filled with chips of flint discarded in the process of making arrow points. In view of the fact that the river overflow accounts for the increase of only a few inches each hundred years, it is staggering to think how many generations of redmen turned to the Ouachita hills for their weapon material.

A Hot Springs stone quarryman has said, "When I'm a' lookin' for stone and find where there's been Indian diggin's I don't have to think there's stone—good stone there. I know." Some of the finest flint and whetstone deposits in the world are in outcroppings along the ridges of the Ouachita mountains.

Redmen from hundreds of miles away were in the habit of paddling up the Ouachita to beach their canoes on its shores. On foot they would tramp into the mountains. Laboriously they broke off huge chunks of flint, first cousin to the whetstone for which the district is also famous. Chunks were broken into smaller bits to make transportation to the river bank easier. Here individual arrow heads were fashioned roughly into a semblance of finished form. With his load made as light as possible, the Indian would start downstream again, to put the finishing touches on his tips at his leisure back home. For thousands of years this continued. The growth in skill and culture

and appreciation of art may be traced in that mass of "rejects" found in soil deposited so slowly through the centuries.

While the Harrington party worked the Laurence site they kept hearing tales of the artifacts to be found farther on near Caddo Gap. In 1915( floods had washed top soil from the farm of Cotton Golden and brought to light valuable pottery of an early civilization. Golden went to town and told his friends. Many of the finest examples of that unearthing may be seen today in the museum of the Fordyce bath house in Hot Springs. The late Dr. A. U. Williams, another Indian enthusiast, acquired some of the jars sold by Golden.

When his work at Laurence was finished, Harrington moved on to Cedar Glades. Here he found deposits quite similar to those located nearer Hot Springs. But his time was short and he found it necessary to abandon his project long before it was finished.

When it was realized that the construction of the third dam on the Ouachita would cover much unexplored territory, a publicity campaign was carried on, and every attempt was made to convince the public what a treasure house of history and art would be lost forever unless excavations were carried on almost immediately. A small sum was collected. But to S. C. Dellinger of the University of Arkansas the challenge was a worthwhile one. During the winter of 1928, he went into the field. Those who worked with him were, in many instances, students of the university, interested in the early history of aboriginal people, and intent on its preservation.

Dr. Dellinger's work has been thorough and his enthusiasm continuous. He worked the Adair site, which had been refused to Harrington. Some of the work was near Cedar Glades, some in the neighborhood of Buckville. The material he found was very similar to that discovered by Harrington. The former inhabitants, he concludes, as did Harrington, must have been semi-Caddo. In all likelihood they were a settled agricultural people. The pots, vessels and water jars he found seemed to indicate this. But many of the objects found could not have been used in the ordinary process of getting a living.

Some of the non-agricultural artifacts found were used in religious ceremonies. Many of the vessels were so elaborately decorated and oddly colored that it was immediately obvious that they were not used in the ordinary affairs of everyday living. Beads and ear ornaments were found in numbers.

It is impossible to assign a definite date to the most robust period of Caddo civilization in the Ouachita hills. But in all likelihood they had pretty well disappeared before de Soto and his men appeared on the scene. Neither Harrington nor Dellinger ran across indications of the white man among the possessions of the Indians. White men almost invariably left glass beads and similar trinkets behind them. Dellinger found none.

## Park Bill for Hot Springs Acted Upon Democrat 3-10-38 McClellan Act to Greatly Enlarge Park Reportedly Favorably.

Washington—The McClellan bill, authorizing the federal government to substantially enlarge Hot Springs National park, through acquisition of adjoining land, was today favorably reported by the House public lands committee.

Under the terms of the measure, which is sponsored by Representative

John L. McClellan of Malvern, purchase of Sugar Loaf and West mountains and a large section of land north of the city of Hot Springs would be authorized.

McClellan explained to the committee, prior to the unanimous favorable vote on the bill, that the National Park Service plans to develop Hot Springs National park over the next few years, and that the additional land is needed for the improvement program.

Present land and facilities are inadequate for the continually growing number of visitors to the park, officials of the Park Service reported.

The McClellan bill would authorize the purchase of 4,787 acres of land in all. He said that the Park Service does not intend to buy it all at once, but will acquire it gradually over several years' time. No estimate of the total cost has been made, in view of possible fluctuations in values over that time.

The Arkansas member said that he hopes to secure approval of the bill by the House within a short time.

# An Amusement I Construction of Castle Park as an Amusement Ago Was Considered Foolhardy Venture, Bu

Gazette 5-29-38

Building castles in Spain usually is considered a precarious business. Building Castle park in the village of Hot Springs, Ark., during the early 70's was popularly considered nothing short of foolhardy. How any sane man could have expected to cash in on a modern amusement center, complete with dance hall, auditorium, skating rink and the beginning of a zoo in a hamlet reached only by a stage coach, no one living in Hot Springs at that time could say. The incredible thing is that it did succeed, and gloriously.

Perhaps Bruin, a dancing bear, famed for his fondness for beer and noted for the wrestling contests which he usually won, had much to do with it. Bruin, however, wasn't the sole attraction. The skating rink was a big drawing card. It was a sport enjoyed by grown-ups and children alike. Those who owned their own skates took them along, others rented them on the grounds.

Although everybody knew a saloon was part of the set-up, Castle park remained for a long time a meeting place for everybody. The trees in its wide expanse gave welcome shade to parties of Sunday school picnickers. A Hot Springs matron recalls that the first May pole dance she ever saw was one presented by children of the Episcopal Sunday school and on the lawn at Castle park. For many years the spot remained a family park in every sense of the word.

Early deeds drawn up before the survey authorized in 1877, which divided Hot Springs into lots and blocks, frequently mention facilities at Castle park as landmarks. "Fifty-three feet east of the skating rink at Castle park" is not an uncommon direction to discover in original Garland county records. Abstract books prove that Fanny Castle placed a mortgage on the spot as early as 1875. When it became possible to take out a government patent to the land, the United States conveyed the property, already occupied by Fanny and P. H. Castle, to Francesia Castle.

Later Tom Shannon acquired the property, which lay on what was then the "upper edge" of town. The present Park Place Baptist church occupies part of the original site of Castle park. The car barn of the Hot Springs Street Railway Company is near what once was the north boundary of the amusement center. A map of Hot Springs published in Harper's Magazine for January, 1878, shows what is now Park avenue as "The Little Rock Road." Sometimes it was just "The Wire Road," a title which came from the fact that it was the one which carried the telegraph wires. The price Shannon is quoted as having paid proves both the popularity and improved condition of

the little out-of-the-way spot. In the early 80's, \$6,500 was big money, and at that Shannon probably bought a bargain. Like the rest of the paraphernalia, Bruin, the beer-drinking bear, went along with the good will.

Some time during its career Castle park was re-christened Central park. A good many Hot Springs folk remember it by no other name. Under the new title it flourished for a long time and then began to decline in popularity.

Like his home, Bruin also flourished and largely because of his beer drinking, became enormously fat. Unlike fat people, his temper did not mellow with the years. On several occasions in his youth he had broken loose, causing many a head of hair to stand on end, but doing no damage to anything save the dignity of a few. But one day when

afternoon at Castle park without planning to "set 'em up" for Bruin at least once. And what a thirst that bear developed! Nor did it make the park's owner unhappy, for the feat worked both ways. The tale of Bruin's cleverness brought folks to the park. The sight of Bruin occasioned the buying of beer which the management purveyed to all comers.

One day it was noised about that Jay Gould would be in Arkansas within a few days, and that he was coming to Hot Springs. It was a short time after the "Diamond Jo" railroad had been

built, connecting the town with the outside world by rail. Joseph Reynolds and Jay Gould were good friends, so it had been with Gould's "Iron Mountain" railroad that Reynolds had con-

By Mary



Street scene on Central Avenue, Hot Springs, as Jay Gould saw it when he was guest of honor at Castle Park.

he had got along in years he broke loose and wasn't fooling. Around and around inside the park's little white picket fence he chased the owners. Finally they shot him. There was no other way.

His had been a spectacular career. Once a private dinner party held in honor of Jay Gould at a leading resort hotel by the high moguls of the community was delayed a full hour, and Bruin was responsible. Little did the pet bear care that the manager was tearing his hair and the head chef was going slowly mad. Slowly, delightedly, enjoying every drop Bruin out at Castle park was doing his own feasting. Bottle after bottle of beer he drank to the health of the famous magnate. Gould and the motley crowd of Hot Springs citizens looked on in delight. Of the spectators only the donors of the delayed dinner, knowing their plans had gone distinctly awry, were annoyed.

As a youngster, Bruin had started on the downward path of degradation. When he was still a cub he had discovered a half-empty beer bottle. He tried it standing up, but it wouldn't work. Then he had an idea. He lay on his back and drank all he could. Then, converting himself into a rocking chair, he tilted back and back until his weight rested on his shoulders. That left his hind paws free to tilt the bottle down to the last few delicious drops. Somebody watched the thing happen, and the bear's reputation was made.

Thereafter no party of picnickers ever dreamed of spending a Sunday

nected at Malvern. The great railroad executive, on a tour of inspection of his roads, planned to board one of the pigmy coaches of his friend Jo's little narrow gauge road and roll into Hot Springs to see his cronies. His friends and friends of theirs had decided to take possession of the great man upon his arrival and conduct him to the privacy of a special suite at the largest hotel, where they planned to offer him the finest luncheon they could muster.

But the mayor of Hot Springs had another idea. He had been elected on a "for-the-people" platform. Even after he entered office he continued to practice what he had preached. He planned, and as he planned he chuckled. Unless he misgauged his man pretty badly, Gould could be depended upon for good sportsmanship. It was worth trying anyway. If the mayor's idea worked, everybody, whether he had a high hat and the price of a fancy dinner or not, would be able to get a good look at Jay Gould.

So when the train pulled in it was the mayor who first approached the financier. With a courtly bow, he informed the important guest that a special welcome had been prepared for him at another part of the city. Gould, good naturedly climbed into the mayor's carriage. Up Central avenue they went, followed by the carriages of the disgruntled First Families of Hot Springs, and after them a motley crowd of any and everybody. On went the procession, past the hotel, on the porch of which stood the proprietor wearing his best smile to welcome his guest. Finally,

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In any alphabetical list of the states

there was a right turn and the journey continued for a few blocks. Bruin wasn't expecting them, but he was always glad to accommodate where beer-drinking was concerned. The mayor's speech was brief, humorous and to the point. Such a famous visitors, he felt sure, must have seen some rare sights in his time. Now he was in for a new one. "Mr. Bruin, Mr. Gould. Mr. Gould, Mr. Bruin." The mayor bowed. "Mr. Gould, I have had the honor of presenting one of Arkansas's first citizens who is eager to drink your health." Bruin's chain wasn't long, but he advanced as far as possible and gave his own version of a smile.

For a moment, Gould was a bit taken back. But as the cork was drawn and the beer began to rock farther and farther backward, clinging to the emptying bottle, a slow grin spread over the visitor's face. As the level of the liquid descended in the bottle the grin widened. By the time the first bottle was finished the usually stately Gould had so far unbent that he set 'em up for the whole crowd, and especially for Bruin.

At the dinner which followed, and which turned out to be not so much the worse for a little waiting, "The Wizard of Wall Street" turned out to be the wit of the occasion. Bruin, who reminded him of the woodland bears he had encountered while serving as a civil engineer in his youth, had been just the touch to bring out the human side of a man condemned by circumstances to live on a plane of dignity.

But attention was no novelty to Bruin. He was accustomed to finding his name in the public press. The Hot Springs Daily Visitor of March 15, 1877, devoted several paragraphs to his exploits as an entertainer of the "General Ticket and Passenger Agents Association, Hot Springs Excursion, March 13, 14, 15, 1877, St. Louis, Iron Mountain and Southern and Hot Springs Railways."

In the morning the group was offered a sightseeing tour about the village. In the afternoon, following an elaborate hotel luncheon, Bruin was the attraction. He was scheduled to rob a bee hive. But those who had planned the adventure forgot one thing. If the group was to get near enough to enjoy the sight they would be in breathing proximity to the bees. Bruin had his fur coat for protection, but the weather was mild and not many of the observers were so shielded. However, they did have one source of protection, which they used to good advantage.

A smoke screen is presumed to be strictly a new device, one invented by Twentieth century military experts, but a valuable experiment in that direction was made in Hot Springs in 1877. Big, black cigars had been distributed liberally at the luncheon the railroad men attended. When the bees started swarming they came in handy. The Daily Visitor covered the incident in this manner:

"The entertainment for our guests in the afternoon was a success in every particular. Bruin did nobly and robbed the bee hive to the satisfaction of all present, creating much amusement. There was a very large gathering present to witness the fun and the bees mixing with too much enthusiasm in the crowd, causing much sport and kept the smokers smoking vigorously."

There is another tale which Bruin's fans never fail to recall. After the street car track was built it led past Castle park. Visitors, especially those interested in sunshine and companionship and unable to do much walking, liked to congregate on benches near the place where Bruin was chained. Often they bought him beer. His capacity was awesome, but even Bruin had his limitations. This particular day the bench was lined with elderly men. Beside each one rested a pair of crutches. They had taken the car to the park and had hobbled the few steps over to the bench.

Bruin drank and drank. He eyed the men and within his heart was born an



Hot Springs as a Visitor Saw It in 1834.

### Gazette Magazine Section 5-29-38

Q. How long have the healing properties of the waters at Hot Springs, Arkansas, been known? R. M. E.

A. Tradition says that their curative properties were known to the Indians long before the Spanish explorations; that they warred for them, finally making an agreement whereby all tribes had access to the springs. They were known probably to De Soto, and were visited about 1800 by French hunters and by members of the Lewis and Clark expedition in 1828. In 1832 Congress created a reservation to prevent exploitation of the waters for private gain, but litigation ensued which was not ended until a Supreme Court decision in 1876.

affection for the benefactors who were so kind to him. Suddenly he felt an overpowering desire to show his affection in some more tangible form. He had an earnest longing to hug them, one after another. His chain was old and it gave way after a few tugs. Drunkenly he lurched forward. He had only a short way to go, but his befuddled, beer-soaked brain told him something was wrong. The bench before him was suddenly empty. Only half a dozen pairs of abandoned crutches rested against it.

Fortunately for the invalids there was a street car at the end of the line ready to pull out for town. The men were traveling "in high" when they reached its steps. Not until they were seated did they realize that they were men who couldn't under any circumstances walk without support. Meanwhile Bruin had been captured, and the motorman obliging collected the crutches. "Why, you could have played marbles on those men's coat tails," said one observer. "Sick? I never saw well men run faster!"

Like Bruin, Castle park is only a memory. But in its heyday it was an important part of civic life in Hot Springs. A city directory for 1876 announced that the "greatest convenience" boasted by the village was the horse-drawn "railroad" running along Valley street (now Central avenue) from the depot to Castle park. Out-of-door concerts were popular there. Balloon ascensions were favored Sunday afternoon spectacles. Parachute jumps were frequent. Sometimes a dog was loosed from the air and allowed to float slowly down under a parachute. Fourth of July celebrations and other patriotic holidays called for fireworks, taken up in a balloon, attached to parachutes and released to whirl a streak of vari colored light through the blackness of the night.

To those who remembered the spot, Castle park itself was a bit like those sky rockets. With a bang it burst into public notice, zoomed into increasing popularity, reached a peak and like its gunpowder counterpart, flickered and died, leaving behind nothing but memories.

Still they are pleasant memories.

### Alabaster Map of State Given To Hot Springs Museum.

Special to the Gazette. 6-21-38

Hot Springs, June 20.—An alabaster model of Arkansas, eight feet high and 11 feet long has been installed in the National Park Museum here. It was presented by Dallas Herndon, Little Rock, secretary of the Arkansas History Commission. The model is the reproduction of a map drawn by the late Dr. John C. Branner, state geologist from 1887 to 1892, and the father of the present state geologist. It shows all elevations principal highways, especially those emanating from Hot Springs into the adjacent Ouachita mountain region; the state's resources and industries; Hot Springs' two inland lakes, Hamilton and Catherline, and the location of all state parks.

### Hot Springs National Park Papers Be Enlarged

Washington (AP)—Hot Springs National Park, Ark., will be increased by 4,771 acres, under a measure signed by President Roosevelt. The act authorized appropriation of such funds as are needed to effect the enlargement through purchase of land adjoining the present boundaries.

### Hot Springs National Park To Seek Larger Appropriation.

Special to the Gazette. 6-29-38

Hot Springs, June 28.—Four thousand, seven hundred and seventy-one acres were added to Hot Springs National park when President Roosevelt signed the bill enlarging the park yesterday.

"The next thing will be to get an appropriation for additional maintenance," said Supt. Donald S. Libbey. The bill merely defines large limits or authorization of the government to accept, by donation or purchase, land to round out the park area.

A scenic skyline road, more expensive foot trail and bridle paths will be sought by the National Park Service.

### ARKANSAS AND THE GROWING PARK PATRONAGE.

The National Park Service reports ever increasing patronage by tourists and sightseers. Up to July 15 this year a total of 2,974,000 persons had visited the national parks since last October 1, an increase of 23,897 over the corresponding period last year. And last year there was a 26 per cent increase over the previous year, which itself had brought a record breaking number of visitors. 8-8-31

The popularity of national and state parks is going to increase with every year, and Arkansas stands to get a continually increasing tourist business in consequence. Arkansas has in its own state parks, and in recrea-

tion areas that have been developed in the two National Forests and in the land use demonstration areas at Mount Magazine, Boston mountain and Wedington mountain are tourist attractions of peculiar interest and appeal that lie within easy distance of a vast population. The state and federal money that has gone into their development and into building highways to make them accessible represents an investment which should be more and more profitable as time goes on and more and more tourists come to spend their money in Arkansas. But if Arkansas is to get its full share of the national tourist business, the areas and highways under state control must be adequately maintained, and effective advertising of Arkansas as a vacation playground must be done.

## New National Park Head At Hot Springs

12-29-38

Special to the Gazette.

Hot Springs, Dec. 28.—Preston P. Patraw, new superintendent of Hot Springs National park, arrived today, but will not take charge until Sunday.

He first came to Hot Springs as a clerk in the National Park office in November, 1922. He served under two superintendents, until July, 1927, when he became assistant superintendent of the Grand Canyon National park in Arizona. He remained there until January, 1932, when he was appointed superintendent of Zion National park in Southern Utah.

To Washington Conference.

"There have been many changes in the city and the National park," Mr. Patraw said. "I have not had time to make a tour over the National Park area, and will have to leave for Washington Tuesday, a conference of all superintendents of national parks, will be held January 5 to 10. I want to learn of plans the National Park Service has for Hot Springs National park."

"I have every reason to believe that Hot Springs is going to have a busy winter season. I believe the two world's fairs, one in California and the other in New York, will stimulate tourist travel. There has been a noticeable uptrend in business, and that will help Hot Springs, always popular with health and pleasure seekers, will obtain its quota of patronage."

Mr. Patraw is a member of the Rotary Club of Zion National park and attended the meeting of the Hot Springs club today. He was the guest of George Bolton, assistant superintendent, and received a cordial welcome.

# ARKANSAS BEAUTY SPOTS IN BLOCK PRINT

1-1-39 Gazette

By Vivian Williams Utley

The question often is asked: "How long have the healing properties of the waters of Hot Springs, Ark., been known?"

Tradition says that their curative properties were known to the Indians long before the Spanish explorations that they warred for them, finally making an agreement, whereby all tribes had access to the springs. They probably were known to De Soto, who reached the place on his Southwestern journey of 1541-42, "since the historian of the expedition relates that they came to a place where their horses drank of a lake of very hot water and somewhat brackish."

The springs were visited about 1800 by French hunters. The Lewis and Clark expedition found them in 1828, when a hunting and trapping village was already established there.

The Spaniards realized the value of the springs, and the Spanish authorities tried to detach them from the Louisiana Purchase of 1803. Visitors began coming in 1812, many of them bringing their families and camping near the springs.

Featherstonhaugh, the English traveler and geologist, visited there in 1834 and described the place as follows: "Four wretched looking cabins, in one of which was a small store, contained all the accommodations that the springs offered to travelers. We had never seen anything worse or more unpromising

A Mr. Whittington, who purchased bear skins and other skins of wild animals of the hunters, paying for them with the commodities he gets from Little Rock, was obliging enough to say that we could take possession of one of the cabins." He then says that Mr. Whittington loaned them some skins to cover with and that they feared a dismal visit in the place.



Hot Springs as the English geologist, Featherstonhaugh, saw it in 1834.

Since Mr. Featherstonhaugh was a naturalist and was sent here for geological research in America, he probably found much to report on the geological formations around Hot Springs.

In 1830 Asa Thompson leased the springs and built a bath house, commercializing on the hot water. Other citizens bought land at or near the springs. In time several families claim-

ed the land on which the springs were located and litigation followed until 1876, when a decision by the United States Supreme Court designated the land on which the springs are located as a United States National park. Hot Springs was incorporated as a town in 1876 and chartered in 1879.

Hot Springs, Ark., probably is better known at large than any American

city west of New York city. A railroad was built to the city in 1874 and visitors found it easy to reach the place. Business began to grow. It is now a thriving city. The National park is under federal supervision, including all the bath houses. The government has an Army and Navy hospital there, as well as a government bath house where needy people can be treated free.

# ARKANSAS BEAUTY SPOTS IN BLOCK PRINT

By Vivian Williams Utley.

Devil's Den State park is located in the northwest corner of the state, in the Boston mountains, 25 miles southwest of Fayetteville.

One wonders what could suggest such a name for a state park, but a description of the wonders and beauties of the region offers the answer.

It is so named because of an unusual formation on a rock ledge which parted and formed a subterranean crevice several miles long and varying from two to 20 feet in width. Like all caves found in isolated places, legends and stories about its history abound. It is said that an Indian girl was once carried to the cave and killed. Someone's imagination about the infernal regions gave the cave its distinctive and possibly very appropriate name.

The dam pictured in the print is one of three on Lee's creek, a small stream in the valley, the source of which lies in small springs and streams. During the dry season pools of clear water stand on the rocky bottom of the creek, but after a rain the creek rushes through the mountain valley with a



Dam In Devil's Den State Park.

1-15-39 Gazette

fierce force that cuts out the eroding banks which are overhung by high bluffs 800 feet high.

Many of these high bluffs are in the form of stairsteps and are extremely steep. They overlook points from which one may view the beautiful valley be-

low. Several little waterfalls tumble over 60-foot-high bluffs, adding to the beauty of the park. Blooming trees abound, as well as the better known timber trees on the mountainsides.

Wild life has been almost killed out by hunters, but the state Park Com-

mission hopes when the entire region of 5,500 acres is placed under the proper supervision, that the park will be restocked with animals active to that section.

A CCC company has been working on the park for several years. The most important of the completed developments are the roads and paths for horseback riding and walking. When the project has been completed it will contain all necessary equipment for a recreation area. Cottages, assembly halls for all kinds of gatherings, a water system, amphitheaters, swimming and fishing facilities, camping sites with picnic tables and furnaces will be included.

The dams will make several lakes within the park. One outstanding thing that will be restored is a settler's log cabin homestead that stands in the enclosure. It will be kept intact, with house, barn and fences, adding to its rustic charm.

Arkansas may well be proud of the state and national parks that are being established within her borders, and Devil's Den State park promises to be one of the most attractive.

# BEAUTY SPOTS IN BLOCK PRINT

1-8-39 Gazette

By Vivian Williams Utley

"Why make the long trip to the Grand Canyon, Yellowstone Park or Garden of the Gods to see world-celebrated natural wonders, when you can make a short drive up to Buffalo River State park site in Marion county, Arkansas, and see enough to keep you looking and wondering for a week?" asks Tom Shiras of Mountain Home.

He might have said the same thing about Boone county, situated between White and Buffalo rivers, deep in the Arkansas Ozarks.

One pauses on the brink of a paved highway to see a glorious vari-colored sunset above majestic mountains covered with stately timber, veiled in lavender haze, with the line between the hills and the sky lost in dark blue cloud-banks overhead.

The view staggers the imagination. It seems like a stupendous stage set up for man's puny efforts. Looking down in the valley where swift flowing streams zig-zag around hills and mountains, one sees white bridges which mark the place where seemingly tiny roadways cross the crystal streams. Good houses on well-kept farms are far down in the valleys.

Often, going along on a ridge road at an elevation of from 1,000 to 1,800 feet above sea level, the shining white highway can be seen miles ahead on the other side of the valley. At many points where rivers and creeks have washed for ages, high, pine-crested sandstone bluffs, 500 feet high, have been left by erosion. Big holes on their sides mark the opening of caves, many of them running several hundred feet back into the hill. Some of these caves have Indian pictographs on the walls and various stories are told about the possibility that De Soto's men carved some of the pictures on the walls of the caves.

It was a few miles south of Harrison somewhere in the vicinity of Pinnacle Rock, shown in the print, that a man who was driving across a dry creek bed noticed a peculiar rock. He took it to Harrison and left it in a store, where Mrs. Bernie Babcock



Pinnacle Rock, near Harrison, Boone county, Arkansas

found it and bought it. It is a pure Castilian head sculptured out of pure quartz and of excellent workmanship.

There is some historic basis for the idea that the sculptured head may be that of De Soto, as an account of De

Soto's journey was written by one of his men and presented to the king and court of the Indies in 1541. [Vol. 1 Arkansas Historical Commission: "We started for a province 11 days off . . . which they called Coligna," a note

says that Coligna is supposed to have been situated between the sources of the St. Francis and White rivers or the hills of the White river. On the way they "crossed vast plains and high mountains." Later they set out for the "province of Tula," which is supposed to have been in the country between the Washita and Little Missouri rivers.]

The account of "The Gentleman of Elvas," published in 1557, relates that De Soto sent out scouting parties to the west to ascertain the size of Indian towns and the amount of supplies they might secure. It is entirely possible that they came down Crooked creek and wintered there. If that is true, one of their men might have made the sculptured head to pass away the time and it would have been natural for him to make a likeness of his leader.

On April 9, 1869, Gov. Powell Clayton approved an act of the legislature creating the county of Boone out of several surrounding counties and naming it for Daniel Boone, the Kentucky frontiersman and Indian fighter.

Harrison was founded in 1869 by Capt. H. W. Fick and named for Larue Harrison, who surveyed and platted it. It is a thriving town between majestic mountain ranges. Lumbering and fruit raising are the principal industries. Roadside markets sell baskets, cider, grape juice, apples, grapes, peaches and melons in season.

# Why Hot Springs Are Always Hot

Constant Temperature of World - Famous Waters Is Studied by Scientists.

By Mary D. Hudgins. GAZETTE

5-26-40

Just why the waters of Hot Springs reach a temperature of 112.5 to 148 degrees Fahrenheit, with an average of about 143 degrees, has been a problem to puzzle laymen and experts for hundreds of years. Each man has sought to solve the enigma in the light of his own experience and beliefs. Devils and deities, volcanoes and vapors, heated deep within the earth's crust, all have been credited with causing the phenomenon. But it is only within comparatively recent years that geologic studies have been made and scientific theories evolved.

There are tales of both red and white men who feared the steaming pools. One account of the Hernando DeSoto expedition tells that the party was "sore afeared" when it came unexpectedly upon lakes of very hot water. But the self-confidence of the red men living nearby reassured them. They themselves drank and bathed and were pleased with the result.

A legend, preserved in Allsopp's "Folklore of Romantic Arkansas," recounts the trials of the Kan-a-wag-as Indians. Because of their arrogance and wilful heedlessness in disregard for the commandments of the Great Spirit, they were visited with a dreadful scourge of illness. The plague raged until the entire tribe was threatened with extinction. Finally their boastful spirits were broken and they prayed for deliverance. One youth, not quite so ill as his fellows, crept down the mountainside to the valley below to bring water to his fellows. But there he found what he thought to be the final mockery. The cool, refreshing springs had turned to pools, steaming with heated vapors.

He cried out in horror, but in desperation touched his lips to the water. Reassured, he bathed himself as well. Feeling refreshed he returned to his fellows and spread the glad tidings of his returning strength. Soon all the Kan-a-wag-as had descended the mountain to the pools, were refreshed and began to recover. But the hot springs remained forever a pledge of the red man's god of protection for his people.

There is yet another tale of Indian veneration. The red man, believing in the curative properties of the water, felt that no single tribe should be sole owner of the hills about the springs. All men should equally share in the privilege of coming into the "land of the Great Spirit," in peace and finding sanctuary there. It is even said that a tribe too closely pressed by an enemy might come within the prescribed area and be safe from pursuit. However much truth there may be in this tale in its entirety, it is an undeniable fact that red men, even those of enemy tribes, have been seen by early white men bathing together in the same pool.

As late as 1832, Hiram A. Whittington wrote to a brother in Cohasset, Mass., "These springs were discovered by the French whilst hunting on the Washita, about 100 years ago. At that time, and we know not how long before, they were resorted to by different tribes of Indians for the purpose of healing their sick, and it was always considered sacred ground. Hostile tribes on meeting here (no matter how irritated they were toward one another) embraced as brothers. The tomahawk was buried and the pipe, em-

blem of peace and love, was passed from one to another. I wish I could say as much for the whites since they have visited here."

Even yet visitors to the spa, unfamiliar with the true character of volcanoes, occasionally believe them to be the source of heat. There is a story of a German who came to Hot Springs during the 70's. An hour or so after he stepped from the coach of the little narrow-gauge Diamond Jo line he saw vapors of the springs rising from the side of the mountain where the springs emerged and snaking down the valley through which flowed Hot Springs creek. Wild-eyed and muttering, he made his way back to the station, only to find that it was hours until the next outgoing train. Shouldering his valise, he started down the tracks toward Malvern. The spot, he declared, was too near "the fires of hell" and reminded him too strongly of tales of volcanoes for his comfort. He wanted to be as far away as possible when the eruption came.

William Dunbar, eminent pioneer scientist of the Southwest who was elected a member of the American Philosophical Society on the recommendation of Thomas Jefferson, was sent by the third president in 1804 to analyze the waters of the hot springs and to map the streams leading to them. Even then the reputation of the waters and curiosity about them must have been strong, for he wrote to Jefferson, shortly before undertaking the journey: "Here is a Curiosity—called the boiling Spring or fountain—this bath



Henry W. Lix, acting park naturalist, Hot Springs National Park.

or watering place already—a reputation for cures performed on some invalids who have bathed in the waters; at this time two or three inhabitants from Natchez are gone in hopes of being cured of parylitic disorders."

Descendants of Emanuel Prudhomme, rated Hot Springs' first white settler because he spent a couple of years there in the early 1800's, say

## STATE PARKS FOR ARKANSAS

1-18-39 OWN SAKE Gazette

The state has been put on notice that Civilian Conservation Corps assistance in state park development work may be withdrawn unless the legislature makes adequate provision for maintaining and operating the parks. But wholly aside from that threatened, the parks should be adequately maintained in the interest and for the benefit of Arkansas's own people.

It might be said that without the work the CCC has done Arkansas would have no developed state parks. The government has provided almost all the labor and most of the money that have gone into them since the active development program started in 1933. The appropriation asked for in the state Park Commission's budget amounts to less than one-thirtieth of what the federal government has been spending annually, and is prepared to keep on spending if Arkansas does its part.

But important as it has been and still is to receive this federal assistance, Arkansas for its own sake can not afford to neglect the nine state parks which last year drew 182,000 visitors, including many from other states.

## Park Attracts More Visitors

10-15-39 Gazette

Washington, Oct. 14 (AP). — Hot Springs (Ark.) National Park was visited by 178,755 persons in the travel year which ended September 30, the National Park Service reported today. This figure compared with 121,909 in 1938.

More than 15,500,000 visited the parks, battlefields and monuments maintained by the Park Service in the travel year. Travel to the 25 national parks accounted for 6,804,216, or nearly 250,000 more than in 1938. There was an increase at 17 parks easily accessible from coast-to-coast routes between the world fairs in New York and San Francisco, and a decline at eight parks located outside the fairs' "zone of influence."

National monuments received 2,566,452 visitors this year, compared with 2,313,630 last; national historical parks, 683,194 compared with 864,796; national military parks and cemeteries, 2,008,121 this year and 2,877,655 last; national battlefield sites, 128,618 this year, 152,976 last; seven miscellaneous national memorials, 2,650,871 this year, 2,883,503 last year; Boulder dam national recreational area, which doesn't fit into any of the assorted groupings, 611,895 this year and 564,800 last year, and the Salem maritime historical site, Massachusetts, also a unit apart, 1,000 estimated this year, with no previous report.

The Richmond Battlefield Park national monument project, not yet a part of the system but over which federal jurisdiction is pending, reported 46,524 visitors in 1939 compared with 39,645 in 1938.

Shenandoah National Park in Virginia, despite a decline from 954,967 in 1938, still led the parks with 911,612 visitors this year.

that he was led to the springs by the Natchitoches Indians. The story goes that he was a sufferer from granulated eyelids. The red men, believing in the power of the "magic" waters, insisted that they would cure their white friend.

Geologically, the story of the formation of the hot springs, by its very immensity of time and space, is far more romantic than any tale of the red men or legend of the white. Millions of years ago, runs the account, there was a vast island sea which covered an area roughly extending from New Hampshire to Louisiana. South and west of this sea there were lofty mountains. Slowly, through uncounted centuries, these peaks were worn away and their substance washed northward into the ocean. Finally the sediment thus deposited reached the remarkable depth of almost six miles.

Later there came a period of mountain making. Great pressure was brought to bear on the ooze, hardening slowly into rock. Such was its force that peaks emerged from the water and a surface which had originally extended over 100 miles was constricted into scarcely 50 miles. Naturally such terrific force changed not only the extent, but the nature of the

Womble shale: Ordovician.

The accompanying diagram shows the relative positions of the formations and can be used in explaining the theories evolved for the cause of the heat of the hot springs.

Now Bigfork chert (of which novaculite, or whetstone, is a variety) is slightly porous. Shale is not. The surface of much of the Hot Springs area is overlaid with a layer of Stanley shale and underlaid with Polk creek shale. Much, much farther down, Womble shale and Mazarn shale have been solidified into gigantic lumps. Between these impervious walls there is a widespread area of Bigfork chert, forming a colossal conduit. Between West and Sugarloaf mountains there is an outcropping of chert which is but thinly concealed beneath the earth's surface. Upon it have fallen the rains of centuries.

Slowly, slowly, this water is filtered through the microscopic openings in the chert. Imprisoned by the impervious walls of shale, above and below it sinks down and down into the bowels of the earth. There it meets—what?

It is believed that igneous rock (resulting from the solidification of molten magna) was introduced into the sediment in an early age. Some of

earth) rise to meet the downflow, mingle with them and heat them. Still others believe that instead of hot water, the steam pours through faults in the shale, blends with and raises the temperature of water. The igneous rock, mentioned in the preceding paragraph, would account for the source of heat in the last two theories.

Analysis of the water of the springs would lend credence to the final theory. Radioactivity undeniably is there. But a comparison of the amount in the different springs shows no correlation between the extent and temperature.

Some experts have held that the entire source of the hot springs is juvenile water (that which has never before reached the earth's surface). They point to certain possible flaws in the meteoric water theory. In many places the surface of the collecting basin, they insist, is lower than the point of emergence of the spring, thus destroying the "U" tube explanation of its conduction. Their opponents reply that it has never been proved that sufficient space, at a great enough height, is not present to insure collection of enough water to account for the daily flow.

Another debatable question has been: "Can it be proved that rainfall effects the volume of outrush from the springs? This time the meteoric water theory devotees answer devotees of the juvenile water theory in this way: "So far, measuring of the daily flow has not been sufficiently inclusive to make a direct answer possible either way."

But on one point there is certainty. Whatever the source of heat, its constancy is pretty well established. There has been practically no change in temperature during the period in which men have recorded the thermometer's findings. Dunbar and Hunter (1804) listed 150 degrees from the "largest spring," which unquestionably must have been the "Big Iron Spring." In 1834, G. W. Featherstonhaugh visited the spot and wrote that the waters of some of the principal springs reached a temperature of 146 degrees. David Dale Owen reported 146-148 degrees in 1859 for "Hog Spring," which his map shows at the location of the "Big Iron." Heywood in 1901 recorded 147 degrees and Hamilton in 1931 placed it at 148. Allowing for discrepancies in instruments, this would point rather definitely to a record of no appreciable change in more than 100 years.

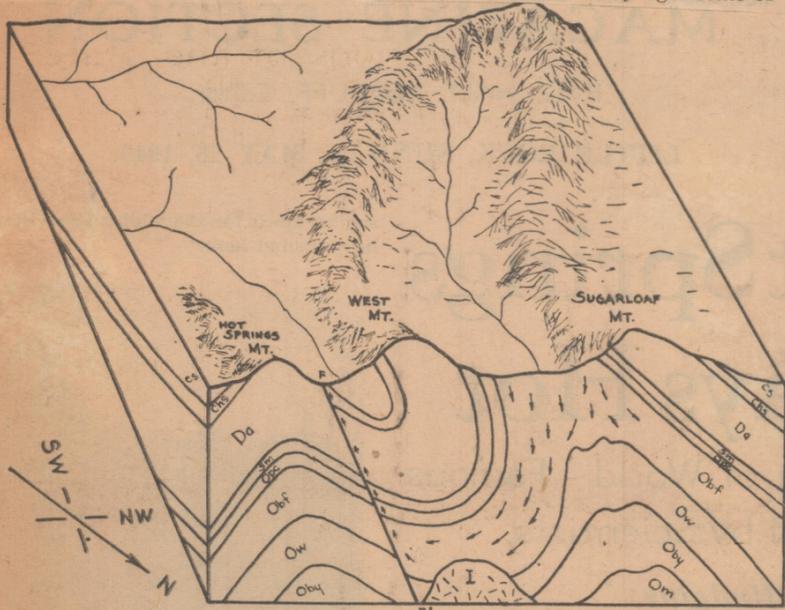
The spotlight of interest in the phenomenon of the source of heat for the hot springs has been particularly strong during the past few years. For approximately 40 years Arkansas and United States government experts have made studies and released pamphlets on the subjects. Universities have sent research workers to the spa for a similar purpose. But with the

setting up of Hot Springs National Park Museum, cases were put on display with maps and legends, so plain and so easy to understand that the layman could comprehend them almost at a glance.

Henry W. Lix, acting park naturalist, assisted in the arrangements of the museum and was responsible for Cases One and Two, which graphically show the strata underlying the Hot Springs area and the probable sources of heat for the springs. A skillful planning of lighting and actual flow

of water through a "U" tube offers a vivid and animated picture of what probably is occurring beneath the earth's crust.

Much of the material for this article has been obtained from Mr. Lix and from a paper of his appearing in the National Park Service Quarterly for Region 111, April, 1940. Another source was "Mineral Water at Hot Springs," a brochure by Frederick W. Cron, lieutenant Corps of Engineers, Reserve, reprinted from "The Military Engineer," March-April, 1939.



Cross section of Hot Springs area, showing various formations.

I—Hot Igneous rock.  
FF—Fault.  
Arrow—Water.  
Cs—Stanley shale.  
Chs—Hot Springs sandstone.

Da—Arkansas novaculite.  
Sm—Missouri Mountain shale.  
Opc—Polk creek shale.  
Obf—Bigfork chert.  
Ow—Womble shale.  
Oby—Blakely sandstone.

contours. When the pressure against bulging mountains became too great, rocks broke instead of bending. Fissures appeared. Huge masses slipped upward, others downward.

Through other thousands of years Mother Nature started the patient task of wearing down the mountains she had built. At least twice she succeeded in so obliterating the peaks she had thrown up that the area was a vast plain and erosion practically ceased. Not satisfied, she again threw up mountains, and again carefully set to work to tear them down once more. Peaks were ground away until their tops became low-lying valleys.

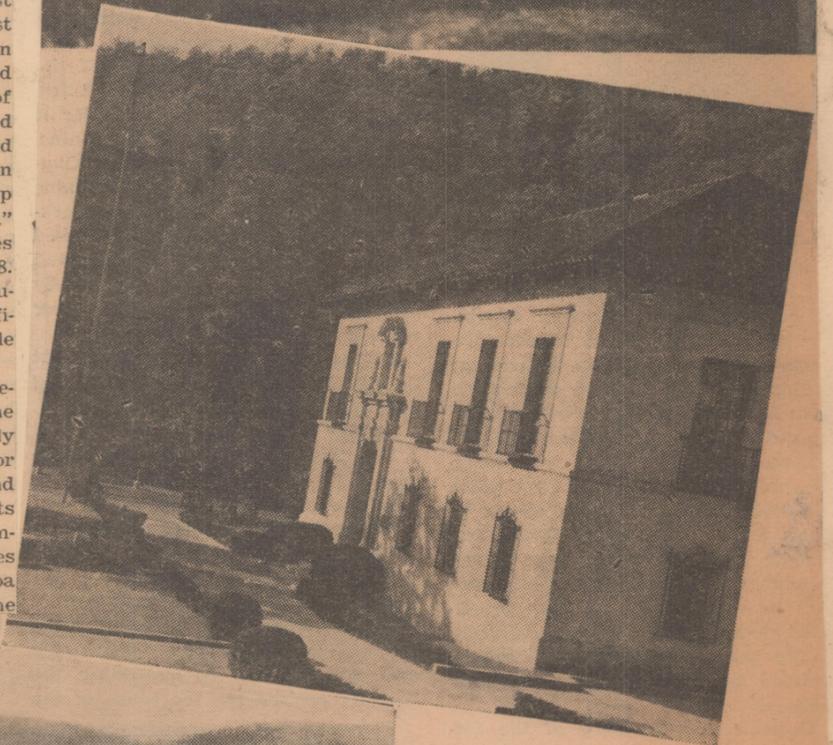
This is the story, roughly, of the Ouachita range, extending from Little Rock into Oklahoma. In particular it is the story of the Zig-Zag mountains, one of the seven divisions of the Ouachita's novaculite uplift. It explains how and why strata of rock, rick-racking through the earth like solidified flashes of lightning, with occasional cracks or "faults" running vertically through them have been piled, layer upon layer for uncounted centuries.

In the immediate vicinity of Hot Springs National Park the underlying rock strata include:

- Stanley shale: Mississippian.
- Hot Springs sandstone: Mississippian.
- Arkansas novaculite: Devonian.
- Missouri mountain shale: Silurian.
- Polk creek shale: Silurian.
- Bigfork chert: Ordovician.

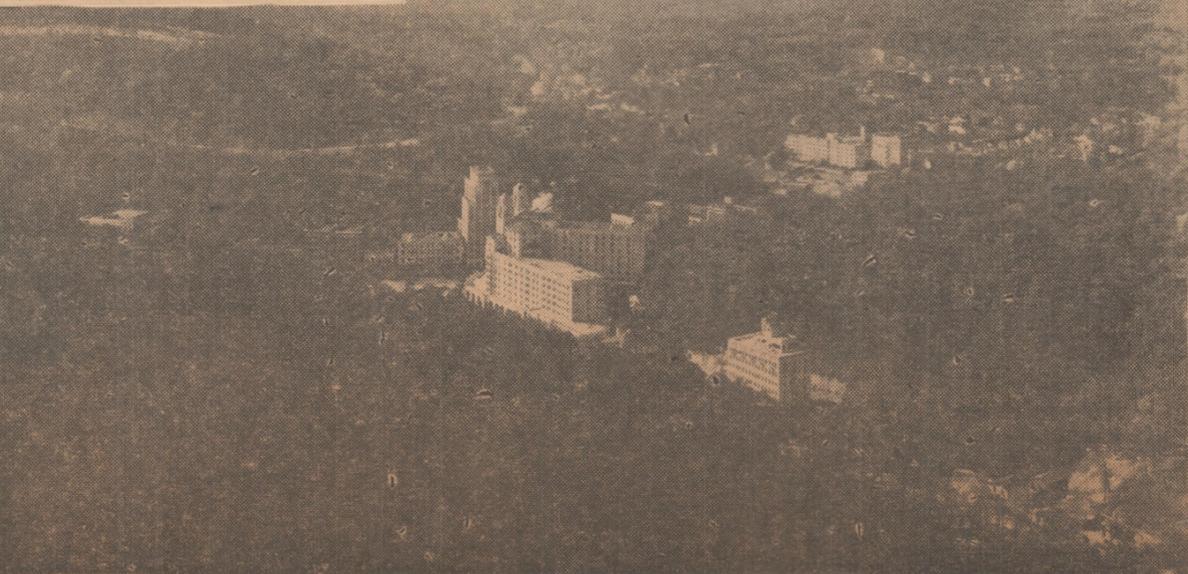
these areas are now exposed. Since heat from this source must long since have dwindled away it cannot be credited with the heating of the water. But such observable formations probably are identical with the deep-lying magnetic body which supposedly "heats the springs."

Some say that as the meteoric water from the surface seeps downward it comes in direct contact with beds of radioactive minerals. Others insist that it only approaches near enough these beds to be affected by waves from it. Still others say that juvenile waters (those created and held within the



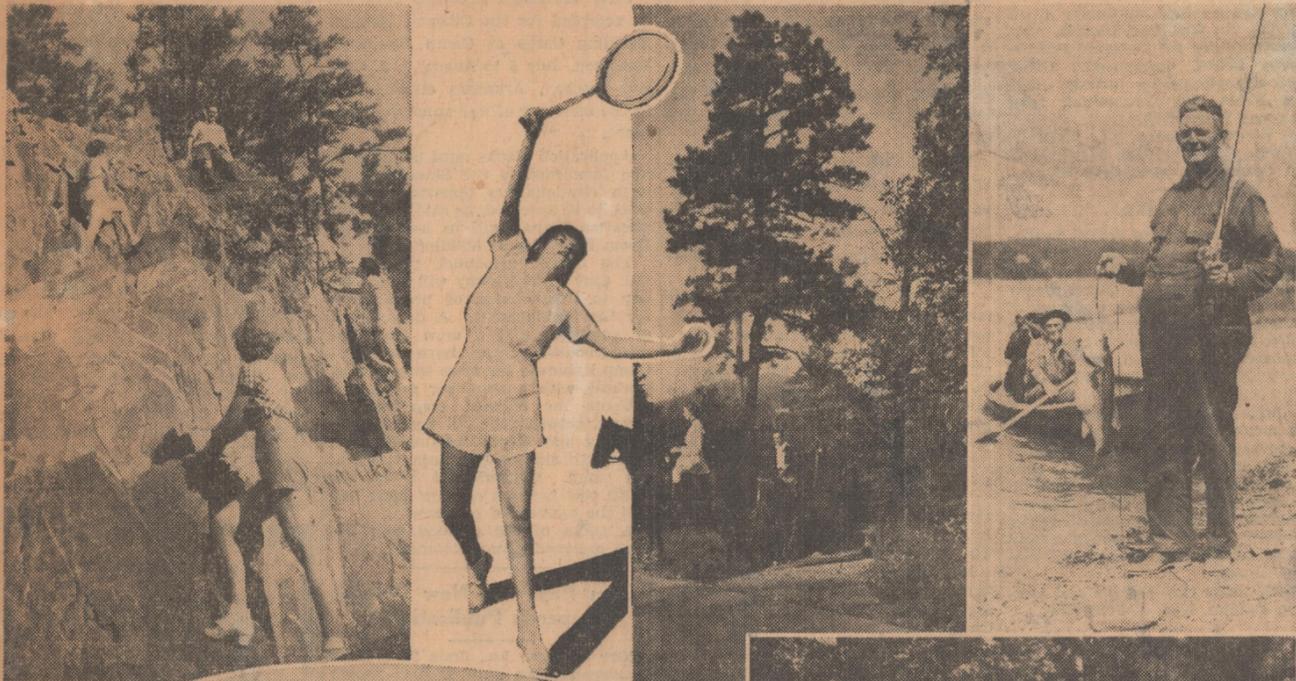
—Photographs by Henry Lix and G. A. Grant.

A steaming hot spring at Hot Springs National Park is shown at the upper right. Above is the administration building of the park, with West Mountain in the background. At the left is a view of the city, West Mountain and Sugar Loaf Mountain, showing part of the "collecting basin" of the hot springs.



# HOT SPRINGS NATIONAL PARK IS A LAND OF THRILLING SPORTS AND RECREATION AMID SCENIC BEAUTY

GAZETTE 6-30-40



Mountain climbing, tennis and golf at the Country Club which is open to visitors the year around, fishing and boating on Lakes Hamilton and Catherine, swimming and bicycling or, in short, most any sport on land or water your heart may desire is yours at Hot Springs National Park, Arkansas.

rates are set by the government and rooms in the lodge may be obtained for \$2 to \$3 per day for a single person, or for \$3 to \$6 per day for two persons.

Cabins may be obtained for \$18 per week.

#### What You Find.

Breakfast may be obtained in the lodge dining room, a spacious room, which also provides dacing room, for 35 cents. Lunch may be obtained for as little as 50 cents and dinner for \$1. A la carte service is provided. The minimum dining room prices are also set by the government.

The lodge itself is a two-story building of rustic stone and timber construction in keeping with its mountain environment. It faces south, overlooking the picturesque Petit Jean Valley. The Ouachitas may be seen in the distance. The

lodge has 26 well-furnished bedrooms with guest facilities for 52 people. Twelve rooms have private baths and 12 have communicating baths. The remaining two are convenient to public facilities. The lobby, lounge, display room and dining room occupy the main section of the bottom floor. Butane gas is used for heating purposes.

The 18 cabins are situated in two long string-like segments on each side of the lodge. Located 100 feet and more apart, each in a little private clearing of its own, the cabins have varied floor plans general-

ly consisting of a screen-in porch, a combination living and bedroom, and two small rooms, one a kitchen and the other a bathroom. Cooking is by gas or oil and all utensils are furnished. The capacity of each cottage is four people normally. There are no garages.

From each cabin a foot trail connects with the south rim belt trail passing the lodge.

#### Recreation Facilities.

Trails for hikers, tennis and horse-shoe courts and other entertainments are provided. Nearby are two beautiful artificial lake recreation

areas which may be used for boating or swimming. They are Cove lake, 166 acres of water, and Spring lake, 86 acres of water. Both are within easy access to motorists or hikers from the mountaintop.

Other units on top of the mountain include, in addition to the lodge and cabins, a servants' dormitory which will accommodate 14 people; a concessions building, a power generating system, and a water and sanitary system.

In 1933 the mountain was acquired by the United States as a part of the Mount Magazine Land Utilization

Project and the development of the

## Mount Magazine Recreational Paradise



## PONCE De LEON SOUGHT HOT SPRINGS AS FABLED "FOUNTAIN OF YOUTH"

GAZETTE 6-30-40

By ALTA SMITH.

The city of rest, recreation and recuperation is the title that has been applied to Hot Springs National Park—the first and only area in America recognized by the United States government for nature's great magic gift—47 thermal springs, which flow from the base of Hot Springs mountain at the rate of one million gallons daily. These waters, noted the world over for their restorative value, range in temperature from 102 to 147 degrees Fahrenheit.

Legend and authentic records tell us that many generations ago, before the white man came, Indians from all parts of the continent recuperated at Hot Springs believing the great hot pools to be the abiding place of their "Great Spirit." So miraculous were the cures discussed by friendly Indians that they caused Ponce de Leon to seek the springs as the widely fabled "Fountain of Youth." Later Fernando DeSoto and other explorers camped in the "Valley of Contentment."

Because of the medical value of the waters, Hot Springs was set aside by a special act of Congress in 1832,

## Forest Service Has Provided Modern Vacation Facilities

By ROY BOSSON.

One of the largest, most diversified, and most unusual public recreational developments ever attempted by a government agency has just been completed atop lofty Mount Magazine by the U. S. Forest Service.

With a 26-guest-room lodge and 18 modern tourist cabins erected, ideal conveniences have been provided for the vacationist seeking quietude and recreation in the healthful atmosphere of a high altitude.

The mountain is six miles long and from one-half to one mile wide on its forested top. It is generally 2,800 feet high and ascends to a peak elevation of 2,883 feet, the highest point between the Appalachians and the Rockies, except for the Black Hills of South Dakota.

Lodge and cabins atop the mountain are operated under government permit and Forest Service supervision by the lessees, J. S. Reedy and Miss Maude Partridge. Maximum

for the people of the nation. The park embraces 1,016 acres, including Hot Springs mountain along the base of which is located the world renowned magnolia-bordered bath houses, the Spa's show places.

That Uncle Sam was wise in his act, is evidenced by the resort's popularity with the American public. During the year just passed, the travel records show that in excess of 300,000 people visited Hot Springs. Many come as did Elbert Hubbard, "Not because I am an invalid, but because I do not want to be one." For aside from its famous waters Hot Springs has a good climate and its setting in the foothills of the Ouachitas is full of beauty and charm.

A diversity of recreation, which provides complete relaxation from business cares, is offered the visitor, chief of which is golf, horse-back riding, tennis, swimming, fishing and hunting with nightly dance frolic in the larger hotels and swank night clubs.

The permanent population of Hot Springs is over 30,000. It also boasts of splendid paved highways and streets, fine hotels, apartments, tourist courts and trailer parks.