

DEPARTMENT OF THE INTERIOR

FRANKLIN K. LANE, SECRETARY

U.S. NATIONAL PARK SERVICE

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GENERAL INFORMATION

REGARDING

THE NATIONAL MONUMENTS

SET ASIDE UNDER THE ACT
OF CONGRESS APPROVED
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GENERAL INFORMATION REGARDING NATIONAL MONUMENTS.¹

INTRODUCTION.

The act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities"² authorized the President of the United States "in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments." Under such authority the President has created 36 monuments between date of this act and April 1, 1917. Twenty-one of these are administered by the Interior Department, 11 by the Department of Agriculture, and 2 by the War Department; while 2, the Cinder Cone and the Lassen Peak, have been absorbed into the Lassen Volcanic National Park.

The lands embraced within the national monuments were taken from the public domain, with exception of the Muir Woods and the Sieur de Monts, in which cases donation was made to the United States by the owners; and the Lewis and Clark Cavern, which the Northern Pacific Railway Co. quitclaimed in favor of the United States, under condition that the premises should immediately revert to the grantor should the monument be no longer maintained.

DISTINCTIONS BETWEEN NATIONAL MONUMENTS AND NATIONAL PARKS.

National monuments differ from national parks in several respects, particularly with regard to method of creation, but it would be difficult to define one generally in terms that would exclude the other. It has been the endeavor of the Interior Department to administer those monuments under its control along the lines of national-park protection and development, though effort in the past has been restricted by lack of Federal appropriation to meet the necessary expense. Fortunately many of the objects in the monuments are of such character as to withstand any effort to damage or destroy.

Each national park has been created by special act or provision of Congress, and contains scenery or natural wonders of the highest order as exemplified by the Glacier, Yellowstone, or Yosemite National Parks, while the national monuments are created (and their boundaries modified when necessary) by proclamations of the President under authority of the act for the preservation of American

¹ The information in this compilation is current as of April 1, 1917.

² Text of this act is given on p. 72.

antiquities, and the objects preserved thereby must possess some special historical or scientific value. This does not exclude scenic areas from national monuments (as, for example, the canyons in the Mukuntuweap or Grand Canyon National Monuments), but the underlying idea in creation of a national monument is a special object, and its scenic value is subordinate to its scientific value.

LIST OF MONUMENTS.

The 34 monuments now in existence are administered by three executive departments, as shown by the following tables. The sequence follows the order of creation and if more than one proclamation has been issued the dates of all the proclamations are given.

National monuments.

ADMINISTERED BY THE DEPARTMENT OF THE INTERIOR.

Name.	State.	Date.	Proclamation.	Area.
				<i>Acres.</i>
Devils Tower.....	Wyoming.....	Sept. 24, 1906	34 Stat., 3236.....	1,152.00
El Morro.....	New Mexico.....	Dec. 8, 1906	34 Stat., 3264.....	160.00
Montezuma Castle.....	Arizona.....	do.....	34 Stat., 3265.....	160.00
Petrified Forest.....	do.....	{Dec. 8, 1906 July 31, 1911	{34 Stat., 3266..... 37 Stat., 1716.....	{25,625.00
Chaco Canyon.....	New Mexico.....	Mar. 11, 1907	35 Stat., 2119.....	¹ 20,629.00
Muir Woods ²	California.....	Jan. 9, 1908	35 Stat., 2174.....	295.00
Pinnacles.....	do.....	Jan. 16, 1908	35 Stat., 2177.....	2,091.21
Natural Bridges.....	Utah.....	{Apr. 16, 1908 Sept. 25, 1909	{35 Stat., 2183..... 36 Stat., 2502.....	{120.00 ¹ 2,740.00
Lewis and Clark Cavern ²	Montana.....	{Feb. 11, 1916 May 11, 1908	{39 Stat., Proc. 44..... 35 Stat., 2187.....	{ ¹ 2,740.00 160.00
Tumacacori.....	Arizona.....	{May 16, 1911 Sept. 15, 1908	{37 Stat., 1679..... 35 Stat., 2205.....	{160.00 10.00
Navajo.....	do.....	{Mar. 20, 1909 Mar. 14, 1912	{36 Stat., 2491..... 37 Stat., 1733.....	{ ¹ 600.00 360.00
Mukuntuweap.....	Utah.....	July 31, 1909	36 Stat., 2498.....	¹ 15,840.00
Shoshone Cavern.....	Wyoming.....	Sept. 21, 1909	36 Stat., 2501.....	210.00
Gran Quivira.....	New Mexico.....	Nov. 1, 1909	36 Stat., 2503.....	¹ 160.00
Sitka.....	Alaska.....	Mar. 23, 1910	36 Stat., 2601.....	¹ 57.00
Rainbow Bridge.....	Utah.....	May 30, 1910	36 Stat., 2703.....	160.00
Colorado.....	Colorado.....	May 24, 1911	37 Stat., 1681.....	13,883.06
Papago Saguaro.....	Arizona.....	Jan. 31, 1914	38 Stat., 1991.....	2,050.43
Dinosaur.....	Utah.....	Oct. 4, 1915	39 Stat., Proc. 32.....	80.00
Sieur de Monts ²	Maine.....	July 8, 1916	39 Stat., Proc. 65.....	5,000.00
Capulin Mountain.....	New Mexico.....	Aug. 9, 1916	39 Stat., Proc. 72.....	680.37

¹ Estimated area.

² Donated to the United States.

ADMINISTERED BY THE DEPARTMENT OF AGRICULTURE.

Gila Cliff Dwellings.....	New Mexico.....	Nov. 16, 1907	35 Stat. 2162.....	160.00
Tonto.....	Arizona.....	Dec. 19, 1907	35 Stat. 2168.....	¹ 640.00
Grand Canyon.....	do.....	Jan. 11, 1908	35 Stat. 2175.....	¹ 806,400.00
Jewel Cave.....	South Dakota.....	Feb. 7, 1908	35 Stat. 2180.....	¹ 1,280.00
Wheeler.....	Colorado.....	Dec. 7, 1908	35 Stat. 2214.....	300.00
Mount Olympus.....	Washington.....	{Mar. 2, 1909 Apr. 17, 1912	{35 Stat. 2247..... 37 Stat. 1737.....	{608,640.00 608,480.00
Oregon Caves.....	Oregon.....	July 12, 1909	36 Stat. 2497.....	480.00
Devil Postpile.....	California.....	July 6, 1911	37 Stat. 1715.....	800.00
Walnut Canyon.....	Arizona.....	Nov. 30, 1915	39 Stat. Proc. 41.....	960.00
Bandelier.....	New Mexico.....	Feb. 11, 1916	39 Stat. Proc. 44.....	22,075.00
Old Kasaan.....	Alaska.....	Oct. 25, 1916		38.30

¹ Estimated area.

ADMINISTERED BY THE WAR DEPARTMENT.

Big Hole Battle Field ¹	Montana.....	June 23, 1910		5
Cabrillo.....	California.....	Oct. 14, 1913	38 Stat. 1965.....	1

¹ Set aside by Executive order.

DISTRIBUTION BY STATES.

With exception of the Sieur de Monts National Monument, in Maine, and the Sitka and Old Kasaan National Monuments in Alaska, the national monuments are located in the Rocky Mountain and Pacific States.

The following list shows the monuments in each State:

Alaska (2):	Montana (2):
Old Kasaan.	Big Hole Battle Field.
Sitka.	Lewis and Clark Cavern.
Arizona (8):	New Mexico (6):
Grand Canyon.	Bandelier.
Montezuma Castle.	Capulin Mountain.
Navajo.	Chaco Canyon.
Papago Saguaro.	El Morro.
Petrified Forest.	Gila Cliff Dwellings.
Tonto.	Gran Quivira.
Tumacacori.	Oregon: Oregon Caves.
Walnut Canyon.	South Dakota: Jewel Cave.
California (4):	Utah (4):
Cabrillo.	Dinosaur.
Devil Postpile.	Mukuntuweap.
Muir Woods.	Natural Bridges.
Pinnacles.	Rainbow Bridge.
Colorado (2):	Washington: Mount Olympus.
Colorado.	Wyoming (2):
Wheeler.	Devils Tower.
Maine: Sieur de Monts.	Shoshone Cavern.

KINDS OF MONUMENTS.

The National Monuments Act contemplates the creation of three distinct kinds of monuments: (1) Historic landmarks or places of historic interest such as the Big Hole Battle Field, or the spot on Point Loma which marks the place where Cabrillo first sighted the coast of southern California; (2) historic monuments, comprising prehistoric structures such as Montezuma Castle, Gila Cliff Dwellings, or historic buildings of which the Hydah Village at Old Kasaan is an illustration; and (3) natural monuments, comprising a variety of objects of scientific interest such as caves, natural bridges, Muir Woods, and the Grand Canyon.

The term "natural monument" was used nearly a century ago by the celebrated traveler, Alexander von Humboldt, who in describing certain trees met with during his travels in the Tropics referred to them as "monuments de la nature." The term is now applied, abroad at least, to any natural object which might properly be regarded as a monument of nature's handiwork, whether it be a glaciated boulder, a grove of trees, a swamp containing rare plants, a breeding colony of birds, or a landscape remarkable for its erosion or glaciation. In Prussia steps have been taken for the systematic preservation of natural monuments (Naturdenkmalpflege), including objects which have either scientific or historic interest, and in 1906 a special officer known as the State commissioner for the care of natural monuments was appointed under the minister of education to supervise the work of monument preservation. It is interesting to note that this action was taken in the same year in which the national monuments act was passed by Congress. The monuments under the central of the Prussian bureau may or may not belong to

the State. They may be the property of municipalities or of individuals, but they are cared for by the Government. The duties of the commissioner consist primarily in locating and marking the monuments and in organizing and securing the cooperation of individuals and local authorities in their preservation.¹

In the following list the 34 monuments are distributed under the three headings above mentioned:

HISTORIC LANDMARKS.	NATURAL MONUMENTS.
Sitka. Big Hole Battle Field. Cabrillo. El Morro. (Sieur de Monts.) (Devils Tower.)	Capulin Mountain. Colorado. Devil Postpile. Devils Tower. Dinosaur. Grand Canyon. Jewel Cave. Lewis and Clark Cavern. Mount Olympus. Muir Woods. Mukuntuweap. Natural Bridges. Oregon Caves. Papago Saguaro. Petrified Forest. Pinnacles. Rainbow Bridge. Shoshone Cavern. Sieur de Monts. Wheeler.
HISTORIC MONUMENTS.	
Bandelier. Chaco Canyon. Gila Cliff Dwellings. Gran Quivira. Montezuma Castle. Navajo. Old Kasaan. Tonto. Tumacacori. Walnut Canyon.	

NAMES OF THE MONUMENTS.

The designations of the monuments, some of which at first sight appear formidable and difficult to pronounce, will be found on closer examination to be both interesting and appropriate. Most of the names refer either to the character of the monument or its geographical location. Gila Cliff Dwellings, Grand Canyon, Jewel Cave, Natural Bridges, Pinnacles, and Petrified Forest suggest at once the character of the reservations, while Colorado, Sitka, Mount Olympus, and Oregon Caves indicate their location. El Morro (the castle) if mentioned by its local descriptive name "Inscription Rock," is at once divested of its unfamiliar form, and the designation Dinosaur becomes plain to anyone who has seen specimens or read descriptions of the wonderful extinct reptiles whose remains are here found in such numbers.

Finally, there are a few names of eminent explorers whose memory has been perpetuated by association with the monuments. On the Pacific coast, Cabrillo, discoverer of California, is commemorated by a monument located on the point which he first sighted when approaching the harbor of San Diego. On the Atlantic coast the name of Sieur de Monts, patron of Champlain and commander of the expedition which discovered Mount Desert Island on the Maine coast, has been associated with the reservation on this island. A cavern in Montana, situated not far from the route followed by Lewis and Clark, bears their names, thus recalling the first exploring expedition

¹ For full account of this work and similar work in Denmark and France see Conwentz, H., *Care of Natural Monuments*, Cambridge, 1909, and the publications of the Prussian bureau, 1906-1916.

across the continent; and the Wheeler monument in Colorado, a striking geological feature discovered during the survey under the direction of the late George M. Wheeler of the Corps of Engineers, likewise bears his name. A monument containing some of the prehistoric ruins explored by Bandelier commemorates the work of this eminent archæologist, and John Muir, explorer and naturalist, could have no more fitting monument than the grove of noble redwood trees now known as Muir Woods.

REGULATIONS.

The following regulations for the protection of the national monuments were promulgated by the department on November 19, 1910, to be applicable generally. Previously (September 10, 1908) these regulations had been prescribed for the government and protection of the Muir Woods National Monument.

1. Fires are absolutely prohibited.
2. No firearms are allowed.
3. No fishing permitted.
4. Flowers, ferns, or shrubs must not be picked, nor may any damage be done to the trees.
5. Vehicles and horses may be left only at the places designated for this purpose.
6. Lunches may be eaten only at the spots marked out for such use, and all refuse and litter must be placed in the receptacles provided.
7. Pollution of the water in any manner is prohibited; it must be kept clean enough for drinking purposes.
8. No drinking saloon or barroom will be permitted.
9. Persons rendering themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed.

PERMITS FOR ARCHÆOLOGICAL EXPLORATION.

The uniform rules and regulations promulgated by the Secretaries of the Interior, Agriculture, and War, under date of December 28, 1906, to carry into effect the general provisions of the act for the preservation of American antiquities, provide (par. 3) that—

Permits for the excavation of ruins, the excavation of archæological sites, and the gathering of objects of antiquity will be granted, by the respective secretaries having jurisdiction, to reputable museums, universities, colleges, or other recognized scientific or educational institutions, or to their duly authorized agents.

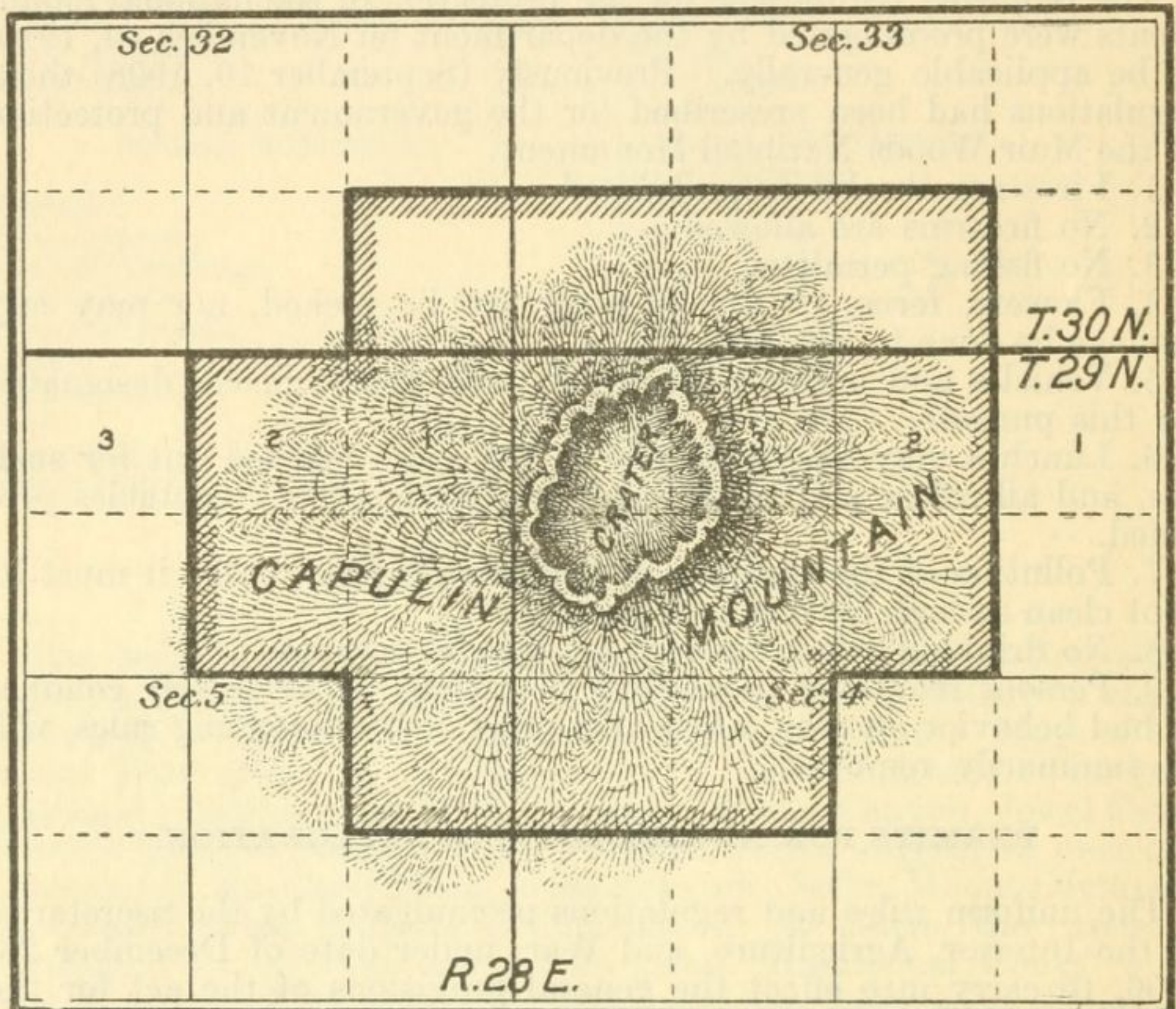
APPROPRIATIONS.

The first general appropriation for protection of the national monuments was contained in the sundry civil act approved July 1, 1916, and is in amount \$3,500. The Indian appropriation act approved May 18, 1916, carried \$3,000 for the improvement of the Navajo National Monument and the general deficiency act approved September 8, 1916, provided \$15,000 for road construction in the Mukuntuweap National Monument.

NATIONAL MONUMENTS ADMINISTERED BY THE INTERIOR DEPARTMENT.

CAPULIN MOUNTAIN NATIONAL MONUMENT.

This monument, located in Union County, northeastern New Mexico, was created August 9, 1916, and embraces 680.37 acres immediately surrounding Capulin Mountain, which is regarded as the most perfect extinct volcano in North America. It is 6 miles southwest of Folsom, on the Colorado Southern Railroad, and 3 miles north of Dedman, on the Rock Island. It is but 2 miles north of



Capulin Mountain National Monument, New Mexico, embracing lots 2, 3, and 4, SW. $\frac{1}{4}$, NE. $\frac{1}{4}$, S. $\frac{1}{4}$ NW. $\frac{1}{4}$, N. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 4, lots 1 and 2, S. $\frac{1}{4}$ NE. $\frac{1}{4}$, NE. $\frac{1}{4}$ SE. $\frac{1}{4}$, sec. 5, T. 29 N., R. 28; SE. $\frac{1}{4}$ SE. $\frac{1}{4}$, sec. 32, SW. $\frac{1}{4}$ SE. $\frac{1}{4}$, S. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 33, T. 30 N., R. 28, all east of the New Mexico principal meridian, containing 680.37 acres; created August 9, 1916.

the Ocean to Ocean Highway, and automobiles can drive to the base of the mountain.

Capulin Mountain is in a region which bears evidences of much volcanic activity now extinct, several other craters being within a radius of 10 miles from Folsom. The crater cone of Capulin Mountain is composed in part of lava flow, in part of cemented breccia, and in part of unconsolidated cinders, which latter are fine and make climbing difficult. The altitude of the mountain is 8,000 feet, its height above the surrounding plain being 1,500 feet. The crater is 1,500 feet in diameter, 75 feet in depth from the lowest point of the rim, and 275 feet from the highest point. Numerous "blister cones" are found on the crusts of the more recent lava flows, consisting of

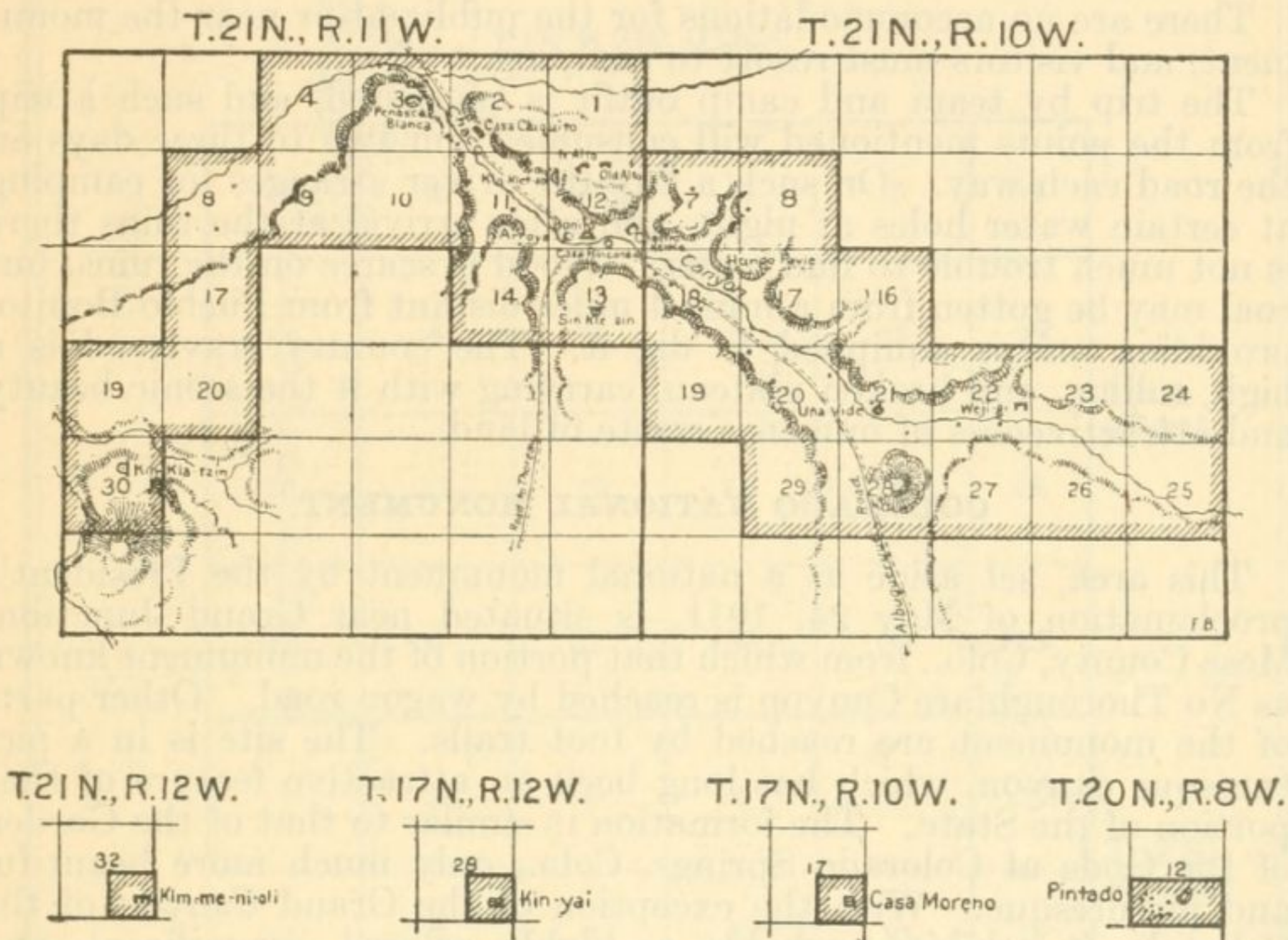
irregularly shaped blocks of lava appearing in various forms, some being conical, while others are globular or elliptical. In places the cavities of these cones are large enough for a man to make his way through.

The monument is a favorite picnic ground for parties from near-by towns.

Mrs. H. W. Jack, of Folsom, was appointed custodian of the monument on August 15, 1916.

CHACO CANYON NATIONAL MONUMENT.

The remarkable relics of an unknown people in Chaco Canyon, N. Mex., embrace numerous communal or pueblo dwellings built of



Chaco Canyon National Monument, N. Mex., embracing secs. 7 and 8 and 16 to 29, inclusive, T. 21 N., R. 10 W.; secs. 1, 2, 3, 4, and 8 to 14, inclusive, and 17, 19, 20, and 30, T. 21 N., R. 11 W.; S. $\frac{1}{2}$ sec. 12, T. 20 N., R. 8 W.; SE. $\frac{1}{4}$ sec. 32, T. 21 N., R. 12 W.; SE. $\frac{1}{4}$ sec. 28, T. 17 N., R. 12 W.; SE. $\frac{1}{4}$ sec. 17, T. 17 N., R. 10 W.; New Mexico principal meridian; created March 11, 1907.

stone. Among them is the ruin known as Pueblo Bonito, containing, as it originally stood, 1,200 rooms, the largest prehistoric ruin yet discovered in the Southwest. Numerous other ruins, containing from 50 to 100 or more rooms, are scattered along Chaco Canyon and tributaries for a distance of about 14 miles and upon adjacent territory to the east, south, and west many miles farther. The most important of these ruins are as follows: Pueblo Bonito, Chetro Kettle, Arroyo, New Alto, Old Alto, Kin-Klet Soi, Casa Chiquita, Penasco Blanco, Kin-Kla-tzin, Hungo Pavis, Unda Vidie, Weji-gi, Kim-me-ni-oli, Kin-yai, Casa Morena, and Pintado.

But little excavating has been done upon this monument, and what has been done was done for the most part more than 10 years ago.

The ruins, which are the principal and in fact the only features of the monument, are in good condition. The fact that but little excavating has been done in them leaves the monument in condition for preservation of the ruins practically in their entirety for such historical purposes as imparting ideas of the life of the peoples who inhabited them, their development, etc.

The reservation can only be reached by team, mountain hack, and camping outfit from Farmington, N. Mex., on the Denver & Rio Grande Railroad, 65 miles to the north, and from Gallup or Thoreau, N. Mex., on the Atchison, Topeka & Santa Fe Railway, 75 miles and 65 miles, respectively, to the south. This service may be procured at from \$6 to \$8 per day, with driver, exclusive of the cost of feed and subsistence.

There are no accommodations for the public at or near the monument, and visitors must resort to camping.

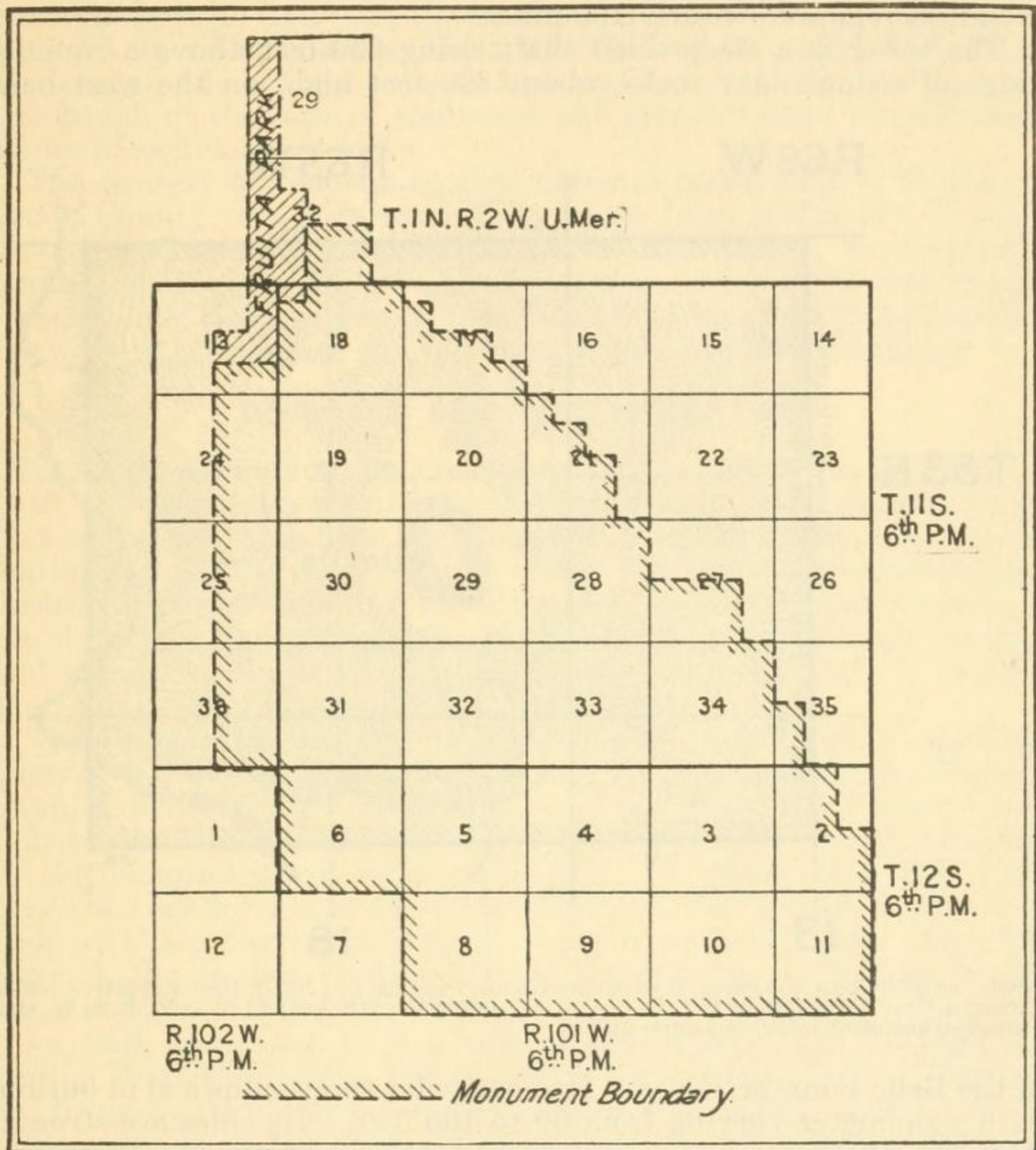
The trip by team and camp outfit is suggested, and such a trip from the points mentioned will consume from two to three days on the road each way. On such a trip the driver arranges for camping at certain water holes at night, and after arrival at the ruins there is not much trouble to find water. Wood is scarce on the ruins, but coal may be gotten from a mine 4 miles distant from Pueblo Bonito, providing one is equipped to dig it. The country traversed is a high, rolling, and broken plateau, carrying with it the scenic beauty and attractiveness of immense waste of land.

COLORADO NATIONAL MONUMENT.

This area, set aside as a national monument by the President's proclamation of May 24, 1911, is situated near Grand Junction, Mesa County, Colo., from which that portion of the monument known as No Thoroughfare Canyon is reached by wagon road. Other parts of the monument are reached by foot trails. The site is in a picturesque canyon, which has long been an attractive feature of that portion of the State. The formation is similar to that of the Garden of the Gods at Colorado Springs, Colo., only much more beautiful and picturesque. With the exception of the Grand Canyon of the Colorado, it exhibits probably as highly colored, magnificent, and impressive examples of erosion, particularly of lofty monoliths, as may be found anywhere in the West. These monoliths are located in several tributary canyons. Some of them are of gigantic size, one being over 400 feet high, almost circular in cross section, and 100 feet in diameter at base. There are also many caverns within the monument which have not been explored. There are many fine springs in the park, which furnish water to visitors. During the winter hundreds of deer come down into the park.

Mr. John Otto, of Fruita, Colo., has acted as custodian of this monument since June 7, 1911, and has single handed surveyed and built several good roads and trails and has carved steps in the monoliths which form the chief scenic features of the monument. Mr. Otto spends practically all of his time in the monument and is continually at work in making the monument more attractive and accessible.

By order of February 19, 1915, the President modified the original proclamation to the extent of authorizing the Secretary of the Interior to issue permits to the town of Fruita to occupy and use certain lands in this monument in township 11 south, range 102 west, sixth principal meridian, for the construction, operation, and maintenance of a conduit and related works for municipal water supply and power development.



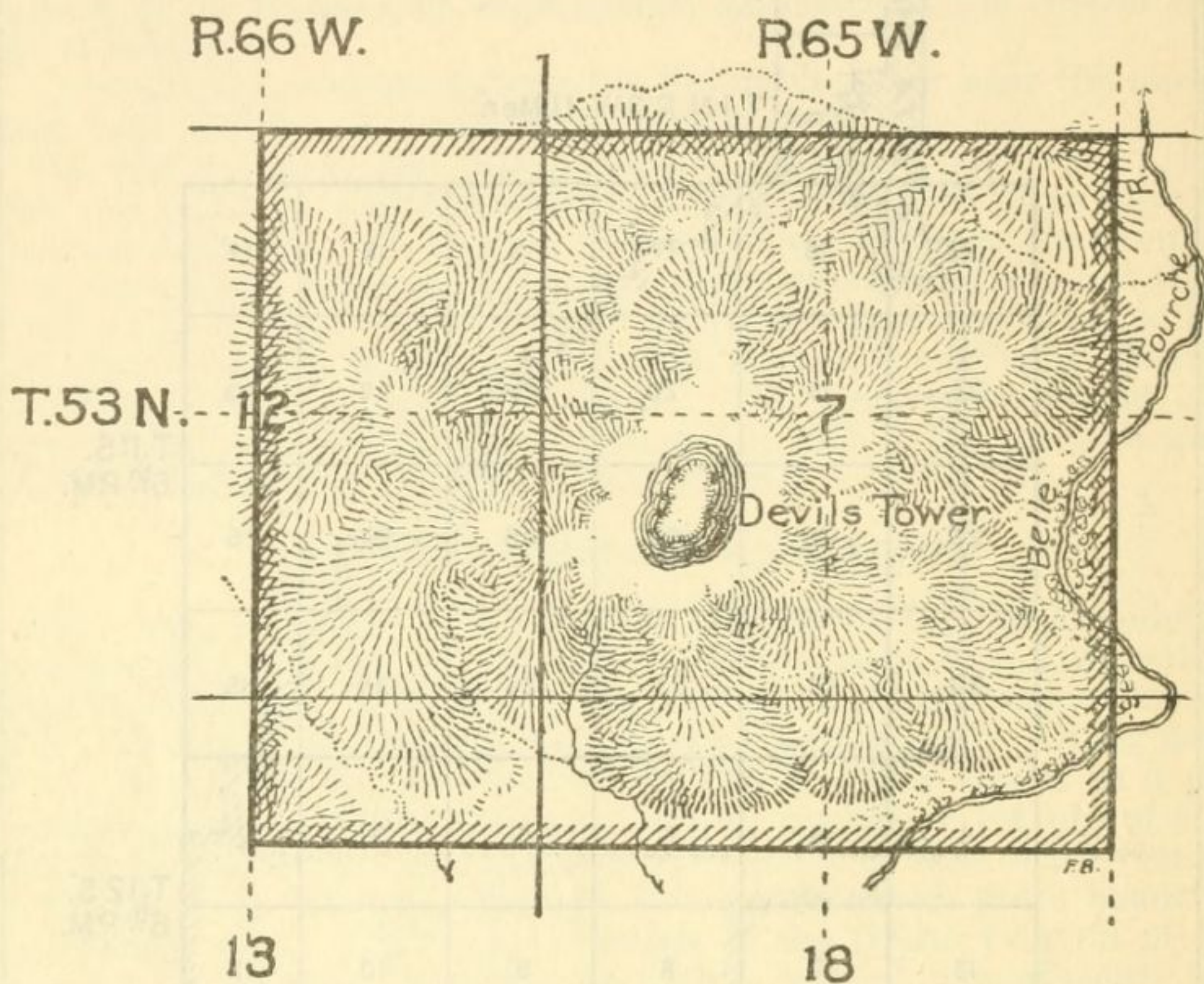
Colorado National Monument, Colo., embracing parts of Tps. 11 and 12 S., Rs. 101 and 102 W. of the sixth principal meridian, and part of sec. 32, T. 1 N., R. 2 W. of the Ute meridian, Colorado, containing 13,833.06 acres; created May 24, 1911.

DEVILS TOWER NATIONAL MONUMENT.

The extraordinary mass of igneous rock known as the Devils Tower is one of the most conspicuous and notable features in the Black Hills region, and has been known and utilized doubtless from time immemorial by the aborigines of the plains and mountains, for the American Indian of the last century was found to be directing his course to and from the hunt and foray by reference to this lofty

pile. In their turn the white pioneers of civilization, in their exploration of the great Northwest, which began with the expedition of the Verendryes, pathfinders of the French Colonies of Canada, in 1742, utilized the tower as a landmark, and still later the military expeditions into the Sioux and Crow Indian country during the Indian wars of the last century carried on operations within sight of the Devils Tower or directed their march by the aid of its ever-present beacon, for the tower is visible in some directions in that practically cloudless region for nearly 100 miles.

The tower is a steep-sided shaft rising 600 feet above a rounded ridge of sedimentary rocks, about 600 feet high, on the west bank



Devils Tower National Monument, Wyo., embracing sec. 7 and the N. $\frac{1}{2}$ NE. $\frac{1}{4}$, the NE. $\frac{1}{4}$ NW. $\frac{1}{4}$, and lot No. 1, sec. 18, T. 53 N., R. 65 W.; the E. $\frac{1}{2}$ sec. 12 and the N. $\frac{1}{2}$ NE. $\frac{1}{4}$ sec. 13, T. 53 N., R. 66 W., sixth principal meridian; created September 24, 1906.

of the Belle Fourche River. Its nearly flat top is elliptical in outline, with a diameter varying from 60 to 100 feet. Its sides are strongly fluted by the great columns of igneous rock, and are nearly perpendicular, except near the top, where there is some rounding, and near the bottom, where there is considerable outward flare. The base merges into a talus of huge masses of broken columns lying on a platform of the lower buff sandstone of the Sundance geologic formation. Ascent can be made by the general public to the top of the base which surrounds the tower proper; it is not possible, however, for ascent of the tower to be made. The tower has been scaled in the past by means of special apparatus, but only at considerable risk.

The great columns of which the tower consists are mostly pentagonal in shape, but some are four or six sided. The average diameter is 6 feet, and in general the columns taper slightly toward the

top. In places several columns unite in their upper portions to form a large fluted column. The columns slope inward toward the top. They are not much jointed, but are marked horizontally by faint ridges or swellings, which give the rock some appearance of bedding, especially toward the top of the tower. In the lower quarter or third of the tower the columns bend outward and merge rapidly into massive rock, which toward the base shows but little trace of columnar structure. This massive rock circles the tower as a bench, extending out from 30 to 40 feet. On the southwest face the long columns curve outward over the massive, basal portion and lie nearly horizontal. The rugged pile of talus extends high up the lower slopes of the massive bench at the base of the tower and also far down the adjoining slopes of sedimentary rocks.

The nearest settlement to this national monument is Tower, in Crook County, which is reached by stage from Moorcroft, Wyo., a distance of 32 miles. Moorcroft is on the Chicago, Burlington & Quincy Railway. The tower may also be reached by conveyance from Hulett, Wyo., which in turn is reached by stage from Aladdin, the western terminus of the Wyoming & Missouri River Railway.

DINOSAUR NATIONAL MONUMENT.

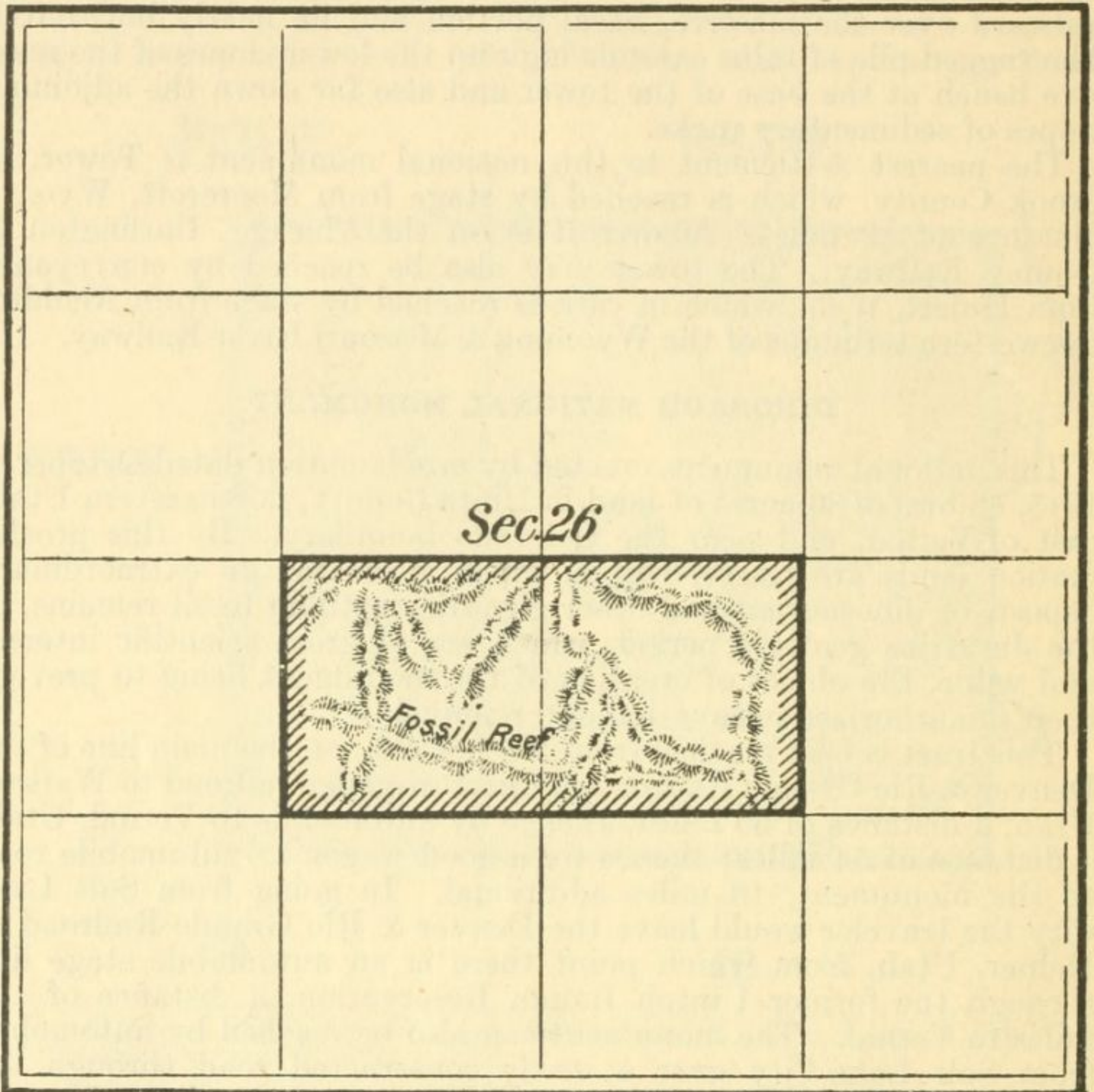
This national monument, created by proclamation dated October 4, 1915, embraces 80 acres of land in Uinta County, northeastern Utah, east of Vernal, and near the Colorado boundary. By this proclamation lands are reserved upon which is located an extraordinary deposit of dinosaurian and other gigantic reptilian fossil remains, of the Juratrias geologic period, which are of great scientific interest and value, the object of creation of the monument being to prevent their unauthorized excavation and removal.

This tract is best reached from Mack, Colo., on the main line of the Denver & Rio Grande Railroad, by narrow-gauge railroad to Watson, Utah, a distance of 65 miles; thence by automobile to Vernal, Utah, a distance of 54 miles; thence by a good wagon or automobile road to the monument, 18 miles additional. In going from Salt Lake City the traveler would leave the Denver & Rio Grande Railroad at Helper, Utah, from which point there is an automobile stage line through the former Uintah Indian Reservation, a distance of 120 miles to Vernal. The monument can also be reached by automobile from Salt Lake City over a newly constructed road through the Uintah Basin via Jensen, Utah, the trip occupying one day. Surveys are being made for new railroad construction in the vicinity of the monument, and doubtless access will in the near future be made much easier.

The Uintah Basin has been known since 1870 to be rich in fossil remains, and several expeditions by scientists into the Basin prior to 1908 met with much success in locating portions of dinosaur skeletons. In the latter year the first expedition sent out by the Carnegie Museum, of Pittsburgh, found such promising material that a special search for remains of dinosaurs was undertaken in 1909 by the museum, with result that in August of that year Prof. Earl B. Douglass, in charge of the expedition, found in a somewhat peculiar sandstone formation a complete skeleton of a dinosaur, in excellent preservation, which was the first complete skeleton ever discovered.

Excavation incident to removal of the skeleton resulted in location of the most extensive and wonderful deposit of fossils of extinct animal life of this geologic period known to science.

According to the theory advanced by most scientists who have visited the monument, many dinosaurs and other prehistoric animals must have floated down some ancient river, from a source unknown, and become embedded in a sand bar. There they lay for countless years until they were covered to a great depth in the sand. Then



Dinosaur National Monument, Utah, embracing the NW. $\frac{1}{4}$ of the SE. $\frac{1}{4}$ and the NE. $\frac{1}{4}$ of the SW. $\frac{1}{4}$ of sec. 26, (unsurveyed) in T. 4 S., R. 23 E., Salt Lake Mer; created October 4, 1915.

came a seismic upheaval which forced the sand bed among the mountain tops.

The Carnegie Museum filed a claim under the mineral laws to the location, and at considerable expense conducted extensive quarrying operations. This quarry has been a continuous surprise in the great number of species of these remains and the number of almost complete skeletons and skulls which it has produced, perfect skulls being especially rare among the relics of dinosaurs.

By decision of August 6, 1915, the department held that the lands within the Carnegie Museum's placer claim could not be obtained

under the mining laws, and recommended to the President the desirability of creating a national monument to embrace the tract in which this fossil deposit is located, in order that the remains might be preserved for the use of scientific institutions and for the benefit of the general public. This action resulted in the proclamation of October 4, 1915. The department has, however, granted a permit to the museum to continue its excavations during the year 1916, and to remove the specimens found.

The work under the direction of the museum has reached gigantic proportions, and a great quarry has been gradually developed. As fast as the bones are uncovered, if there is danger of their being broken off, they are covered with plaster of paris, and as soon as they are taken out they are covered with burlap steeped in wet plaster of paris, so that when this wrapping sets the bones are protected from any danger of being broken in transit. Every foot of the quarry has been surveyed and platted, and a chart prepared showing where every bone was located. The rock is chiseled with the greatest care, removing from the bones a thin layer at a time. The work is often very difficult because sometimes the bones will be found jumbled together, surrounded by a hard casing of sandstone. Each bone is painted brown, as it rests in the stone, so that it can not by any possibility be mistaken by a workman for rock. The greatest achievement so far accomplished has been the uncovering of the largest *Brontosaurus* known to science. Two years were consumed in removing the bones of this one monster from the rock. The work of shipping the specimens is most arduous, as they must be hauled by wagon 65 miles to the railroad.

EL MORRO NATIONAL MONUMENT.

A feature of great historic interest and importance is the so-called El Morro or Inscription Rock, some 35 miles almost due east of Zuni Pueblo in western-central New Mexico.

El Morro is an enormous sandstone rock rising a couple of hundred feet out of the plain and eroded in such fantastic forms as to give it the appearance of a great castle, hence its Spanish name. A small spring of water at the rock made it a convenient camping place for the Spanish explorers of the sixteenth, seventeenth, and eighteenth centuries, and the smooth face of the "castle" well adapted it to receive the inscriptions of the conquerors of that early period.

The earliest inscription is dated February 18, 1526. Historically the most important inscription is that of Juan de Onate, a colonizer of New Mexico and the founder of the city of Santa Fe, in 1606. It was in this year that Onate visited El Morro and carved this inscription on his return from a trip to the head of the Gulf of California. There are 19 other Spanish inscriptions of almost equal importance, among them that of Don Diego de Vargas, who in 1692 reconquered the Pueblo Indians after their rebellion against Spanish authority in 1680.

It is not too much to say that no rock formation in the West or perhaps in the world is so well adapted to the purpose for which this table of stone was used—at least history does not record any collection of similar data. Here are records covering two centuries, some of which are the only extant memoranda of the early expeditions and

explorations of what is now the southwestern part of the United States. On these smooth walls, usually under some projecting stratum, inscriptions were cut by the early conquerors and explorers, which have made this rock one among the most interesting objects on the continent.

Here, in this remote and uninhabited region, in the shadows of one of nature's most unique obelisks, wrapped in the profound silence of the desert, with no living thing to break the stillness, it is hard to realize that 300 years ago these same walls echoed the clank of steel harness and coats of mail; that with the implements of Spanish conquest the pathfinders in the New World were carving historical records upon the eternal rock.

Locally Inscription Rock and El Morro are known as separate and distinct monumental rocks. The latter, translated The Castle, is the rock standing out in bold relief to the east, while Inscription Rock is the name applied to the formation to the west, which is a part of the mesa. On the south side, in the angle formed by the two, one extending east and the other south, is a great chamber or cavern, a natural amphitheater where secure refuge from storm or human foe could easily be secured. It is here, too, that the only spring within many miles wells up as if to make the natural fortification doubly secure. Upon these walls are many of the best preserved Spanish inscriptions, although there are quite a number 200 feet east, under the shadows of a stately pine tree and on the north side of El Morro. Most of them are as plain and apparently as legible as the day they were written; especially is this true of the older ones, carved during the sixteenth and seventeenth centuries.

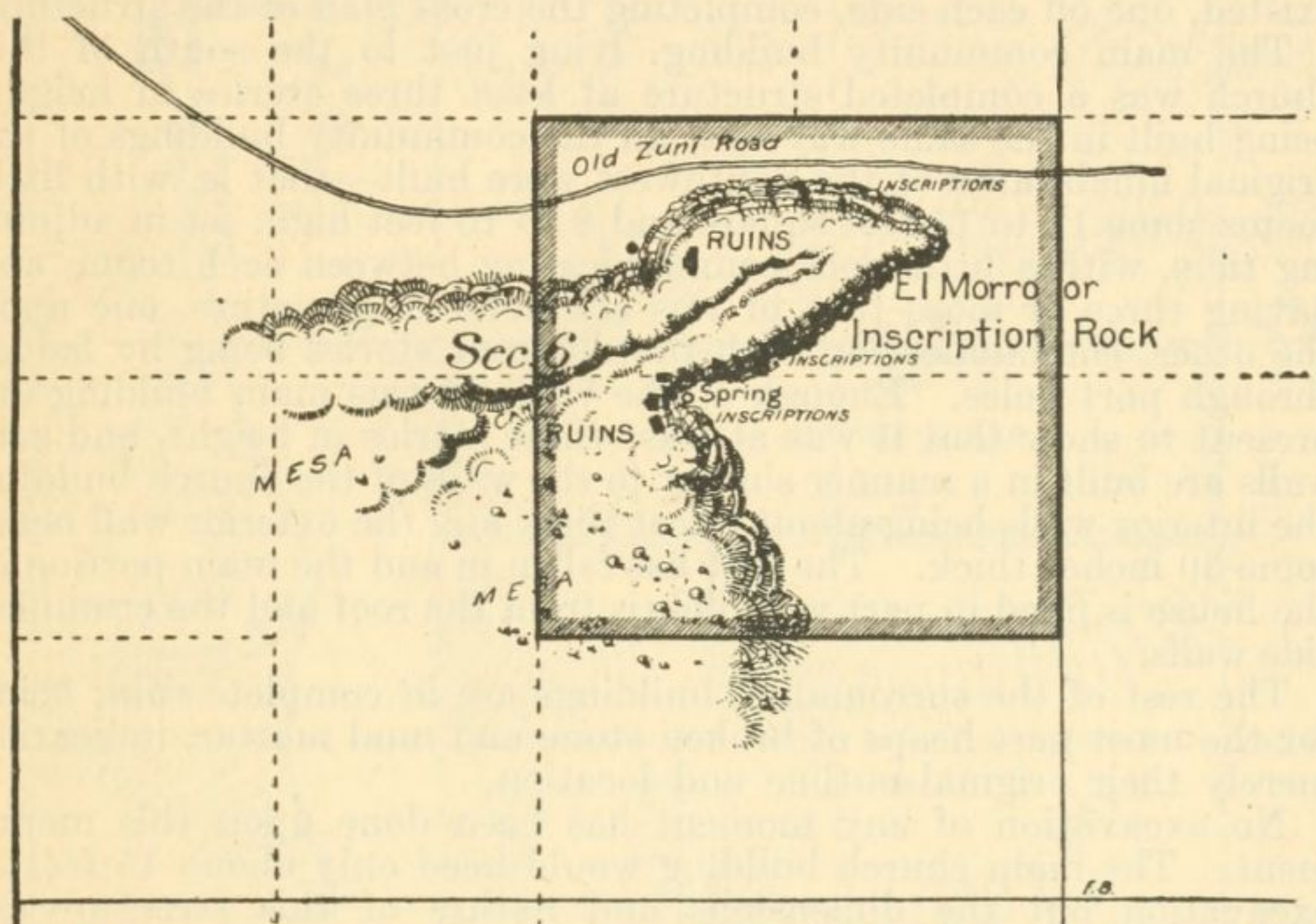
The existence of extensive, prehistoric ruins on the very summit of Inscription Rock is another feature of interest. On the top of the rock a deep cleft or canyon divides the western end of the formation. On each of these arms is the remnant of large communal houses or pueblos. Some of the walls are yet standing, and the ground plans of the structures are well defined. That on the south arm, and almost overhanging the cavern and spring, is approximately 200 by 150 feet. Some of the buildings must have been more than one story in height.

The remarkable natural defenses of the site and the existence of the spring doubtless induced the builders to select this odd location. At some distant day it may be desirable to excavate these ruins and thus add to this historic spot attractions for the scientist as well as the general public who are interested in scenic and natural curiosities.

This monument is usually visited from Thoreau or Gallup, N. Mex., the points from which access is most easily had. These points are on the main line of the Atchison, Topeka & Santa Fe Railway, and the visit to the monument is made by team and camp outfit. The trip is made in four days, in five for better comfort, and the cost for team, mountain hack, and driver, not including cost of provisions and feed of team, is from \$6 to \$8 per day. Good livery may be had at both of said points.

The main (Chicago to San Francisco) line of the Atchison, Topeka & Santa Fe Railway is the only railroad through the district, and one would have to travel hundreds of miles overland to reach the monument by any other railroad. The monument is approximately 40 miles by stage from Thoreau, N. Mex., and 55 miles by like conveyance from Gallup, N. Mex.

The country traversed in a visit from Gallup or Thoreau is a high, rolling plateau of fair scenic beauty. Plenty of water holes are present along the road, and firewood can be had in abundance at most any place. Some forest is encountered on the road from Gallup. The monument can be visited at all seasons of the year, the summer, of course, being the most delightful time. The winters in the section are not cold or severe, and visits could be made at that time comfortably. A visit to this monument can be enlivened by incorporating with it a trip to the Pueblo of the Zuni Indians, there visiting the United States Indian school and village. This visit can be made without detouring any extent while going to the monument. The village mentioned is spoken of in the records of the visits of the first Spanish explorers to the region in the latter part of the fifteenth and



El Morro National Monument, N. Mex., embracing the S. $\frac{1}{2}$ NE. $\frac{1}{4}$ and N. $\frac{1}{2}$ SE. $\frac{1}{4}$ sec. 6, T. 9 N., R. 14 W., New Mexico meridian; created December 8, 1906.

first part of the sixteenth centuries, and is the oldest continuously occupied Pueblo Indian village in existence so far as is known.

During January of 1917 the National Park Service caused to be constructed a substantial fence $1\frac{3}{8}$ miles in length at the base of Inscription Rock for the protection of the inscriptions against depredations of cattle, and as an inclosure for visitors' stock; and in order to secure an ample supply of water has caused the ancient spring to be thoroughly cleaned out.

GRAN QUIVIRA NATIONAL MONUMENT.

The Gran Quivira has long been recognized as one of the most important of the earliest Spanish church or mission ruins in the Southwest. Near by are numerous Indian pueblo ruins of community buildings occupying an area of probably 80 acres in extent, which, with sufficient land to protect them, were reserved by the proclamation creating this monument.

The outside dimensions of the church ruin, which is in the form of a short-arm cross, are about 48 by 140 feet. The main walls of this edifice are from 4 to 6 feet in thickness and constructed of a dense limestone laid in courses in a natural mud bond, the interior section of the walls being a coarse aggregate of mud and broken rock, and the exterior faces of the walls being laid up nicely in courses of selected stone. The present height from the ground inside this chamber to the top of the wall is some 23 to 25 feet, but an old excavation at one end of the chamber into the débris that partially fills the same shows that the floor of this chamber was perhaps 12 to 15 feet under the present surface, making the original walls from the foundation some 40 feet in height. The west end of this chamber is arched in the form of a nave, and near the west end two side rooms existed, one on each side, completing the cross plan of the structure.

The main community building, lying just to the south of this church was a completed structure at least three stories in height, being built in the same way that all the community buildings of the original inhabitants of the Southwest were built—that is, with little rooms some 12 to 15 feet square and 8 to 10 feet high, set in adjoining tiers, with a little door communicating between each room, and having three or more tiers of this character of structure, one upon the other, communication with the different stories being by ladder through port holes. Enough of the walls of this main building are present to show that it was at least three stories in height, and said walls are built in a manner similar to the walls of the church building the interior walls being about 5 feet thick and the exterior wall being some 30 inches thick. The roof has fallen in and the main portion of the house is filled in part with débris from the roof and the crumbled side walls.

The rest of the surrounding buildings are in complete ruin, being for the most part heaps of broken stone and mud mortar, indicating merely their original outline and location.

No excavation of any moment has been done upon this monument. The main church building would need only about 15 feet of excavation, but the dimensions and nature of this structure are plainly evident and nicely preserved in its present state, the walls being only partially crumbled at the top in different sections. Only enough excavation on the main community building, lying immediately to the south of the church, has been done to disclose the fact that it was about three or more stories in height, and to get the actual dimensions and number of rooms, considerable work of that character would be required, although from its present condition a very good suggestion of its original outline and dimensions can be had.

The altitude at the ruins is about 6,800 feet and the ruins themselves are built upon an eminence visible for a great distance, commanding a vast expanse in all directions.

They are not fenced, but lie out on the open, rolling prairie which is used only as a grazing country for sheep and cattle.

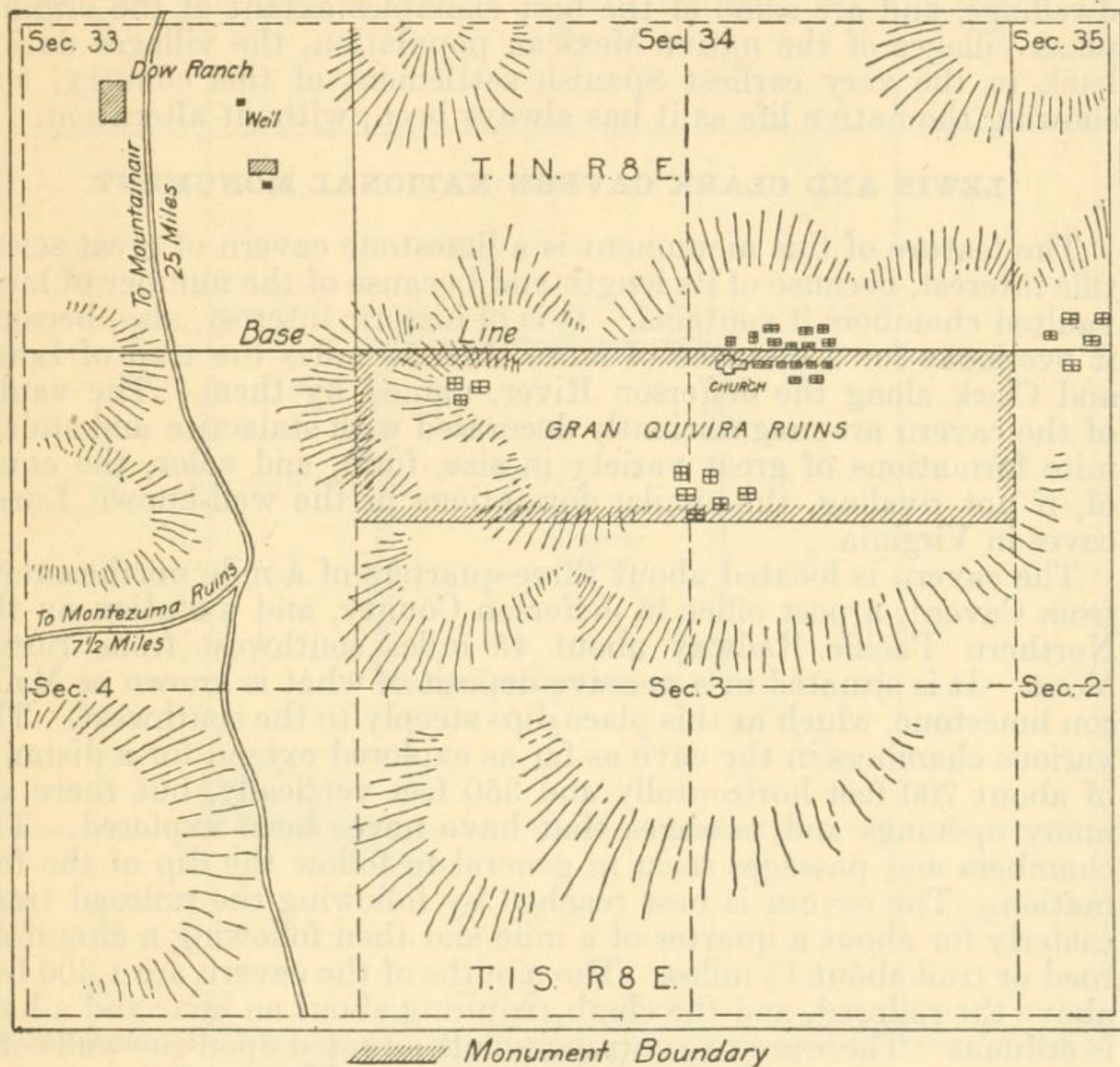
For the reason that water has not been developed in this vicinity the country is not inhabited for many miles around.

On September 12, 1910, the Interior Department requested the Department of Agriculture to assume temporary charge of patrol and protection of this monument, in view of the better facilities at

the disposal of the Forest Service in the Manzano National Forest, inasmuch as the monument is remote from location of any field officer of the Interior Department; and this charge was accepted by the Department of Agriculture. A ranger of the Forest Service of that department visits the monument every few weeks.

The Business Men's Association of Mountainair, N. Mex., is very active in preservation of the monument and in prevention of vandalism, the site being visited (except in winter) by some member of the association at least once every two weeks.

On account of the altitude of the monument the region is subject to heavy snows between the middle of December and the latter part



Gran Quivira National Monument, N. Mex., embracing unsurveyed N. $\frac{1}{2}$ of N. $\frac{1}{2}$ sec. 3, T. 1 S., R. 8 E., New Mexico principal meridian; created November 1, 1909.

of March, so that visits to the monument during those months are not practicable. At other seasons the monument is best reached by stage or automobile by a good road from Mountainair, which is 24 miles distant on the Santa Fe Railway. Service of both classes may be obtained in Mountainair at any time, the parties operating automobiles for benefit of tourist traffic having established a schedule, so that parties of four people can visit the monument for \$12 for the round trip; and parties of three persons or less, \$10 for the round trip. There are no accommodations at the ruins, but water can be found along the route. The automobile trip occupies one day.

Other points of exceeding interest to tourists are located in the immediate vicinity of Mountainair and the Gran Quivira National Monument, though not upon Federal reservations. These are the ruins of Montezuma, of a nature similar to the Gran Quivira and some 8 miles to the northwest thereof; the region of Abo and the Painted Rocks, having a rather interesting geological origin, showing geologic studies in highly colored formation for a thickness of some 4,000 feet; the ruins and ancient Mexican villages of Cuarai, Punta, and Manzano, as well as Tajique and Chilili. These points are approximately the same distance in a northerly direction from Mountainair and have ancient ruins of churches and community dwellings, and are some of the best examples extant of the original plaza villages of the native Mexican population, the villages dating back to the very earliest Spanish settlement of this country, and showing the native life as it has always been, without alteration.

LEWIS AND CLARK CAVERN NATIONAL MONUMENT.

The feature of this monument is a limestone cavern of great scientific interest, because of its length and because of the number of large vaulted chambers it contains. It is of historic interest, also, because it overlooks for a distance of more than 50 miles the trail of Lewis and Clark along the Jefferson River, named by them. The vaults of the cavern are magnificently decorated with stalactite and stalagmite formations of great variety in size, form, and color, the equal of, if not rivaling, the similar formations in the well-known Luray caves in Virginia.

The cavern is located about three-quarters of a mile northeasterly from Cavern, a post office in Jefferson County, and a station on the Northern Pacific Railway about 45 miles southwest from Butte, Mont. It is situated in a massive deposit of what is known as Madison limestone, which at this place dips steeply to the southwest. The various chambers in the cave as far as explored extend for a distance of about 700 feet horizontally and 350 feet vertically, but there are many openings and passages that have never been explored. The chambers and passages seem in general to follow the dip of the formation. The cavern is best reached by following the railroad track easterly for about a quarter of a mile and then following a circuitous road or trail about $1\frac{1}{2}$ miles. The mouths of the cavern are 1,300 feet above the railroad, and the climb, requiring about an hour and a half, is arduous. There are two entrances both situated upon the walls of a deep canyon about 500 feet below the rim. The smaller entrance, which is merely a hole about 6 feet in diameter opening into the upper part of a large passage, can not be used as a means of access to the cavern unless ropes are employed. The entrances are about 125 feet apart.

From the main entrance broad stairs lead irregularly to a depth of about 175 feet, from which level several of the most interesting parts of the cavern are accessible in a nearly horizontal direction. To get lower in the cavern a small tortuous passage is followed for 100 feet or more, and descent is made by ladders.

Depredations by vandals which threatened serious harm to the formations in the cavern made it necessary for the department to

The second proclamation establishing this monument is as follows:

Whereas the unsurveyed tract of land containing an extraordinary limestone cavern and embracing 160 acres, situated in township one north, range two west of the Montana principal meridian, Montana, and which was created the Lewis and Clark Cavern National Monument by proclamation dated the 11th day of May, 1908, has recently been definitely located by an official survey thereof, made under the direction of the Commissioner of the General Land Office, and such survey having determined that the tract in question lies wholly within the limits of the grant of the Northern Pacific Railway Co., but has not yet been patented to that company;

And whereas by its quitclaim deed the said Northern Pacific Railway Co. relinquished unto the United States all its right, title, and interest to lot 12, section 17, township 1 north, range 2 west of the Montana principal meridian, Montana, the same being the original tract proclaimed a national monument for the purpose of maintaining thereon the said Lewis and Clark Cavern National Monument, under the condition that the instrument of relinquishment shall become void and the premises immediately revert to the grantor should the monument no longer be maintained.

Now, therefore, I, William H. Taft, President of the United States of America, by virtue of the power in me vested by section two of the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities," do hereby set aside and confirm as the Lewis and Clark Cavern National Monument the said tract, embracing one hundred and sixty acres of land, at and surrounding the limestone cavern in section seventeen, township one north, range two west, Montana, subject to the conditions set forth in the relinquishment and quitclaim deed No. 18129E, dated February 14, 1911, of the Northern Pacific Railway Company, the said tract being in square form and designated as lot twelve in the survey and deed, with side lines running north and south and all sides equidistant from the main entrance of the said cavern, the center of said entrance bearing north forty-nine degrees, forty-two minutes west, fifty-three and thirteen hundredths chains distant from the corner to sections sixteen, seventeen, twenty, and twenty-one, as shown upon the diagram hereto attached and made a part hereof.

Warning is hereby expressly given to all persons not to appropriate, injure, or destroy any of the natural formations in the cavern hereby declared to be a national monument, nor to locate or settle upon any of the lands reserved and made a part of said monument by this proclamation.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

[SEAL.] Done at the city of Washington this sixteenth day of May, in the year of our Lord one thousand nine hundred and eleven, and of the independence of the United States the one hundred and thirty-fifth.

MONTEZUMA CASTLE NATIONAL MONUMENT.

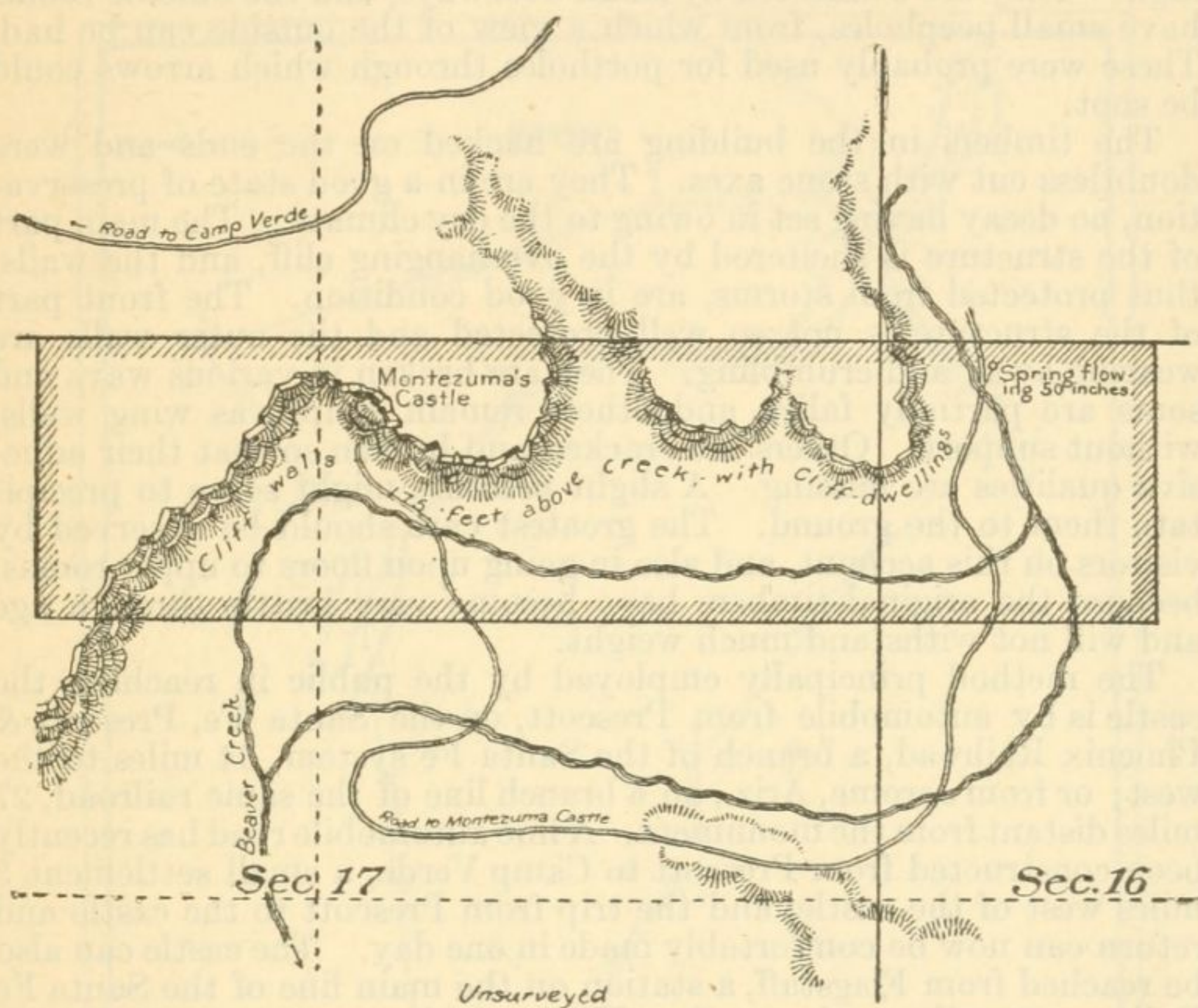
This national monument is situated 3 miles east of Camp Verde, in the northeastern part of Yavapai County, Ariz., and contains an assemblage of cliff dwellings, from the principal of which, known as Montezuma's Castle, the monument is named. This structure is of very great interest not only because of its picturesqueness but for ethnological and other scientific reasons. It is strictly a cliff dwelling, with the added importance that it is also a communal house. Although very small as compared with the great ruins of Chaco Canyon, Canyon de Chelly, Mesa Verde, the Mancos, and other localities in the Southwest, it is so unique in location and structural design and so perfectly preserved that it may be said to have no equal in the United States.

The character of the material used in the Verde cliff ruins, adobe, rubble, and a soft calcareous stone, has rendered the progress of disintegration and ruin somewhat rapid, though many centuries must have elapsed since the passing of the race. The Mojave Apache Indians, who occupied the valley at the advent of the white men, have no tradition respecting the existence of the people who formerly occupied this region. Montezuma's Castle, it is stated, is the only

single perfect specimen and type of the architectural skill of the prehistoric cliff dwellers of this valley.

The monument embraces a prehistoric cliff-dwelling ruin of unusual size situated in a niche or cavity in the face of a vertical cliff 175 feet in height. The formation exposed along the face of the cliff is a compact tufa or volcanic ash. About half way up the cliff there is a bed of soft, unconsolidated tufa which has suffered considerable erosion, leaving irregular-shaped cavities. The bed of soft material is overlain by a harder formation which has withstood erosion and thus formed an overhanging sheltering reef.

The cliff-dwelling ruin known as Montezuma's Castle is situated in one of these cavities, the foundation being about 80 feet above the



Montezuma Castle National Monument, Ariz., embracing the NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 16, the N. $\frac{1}{2}$ NE. $\frac{1}{4}$ and NE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 17, T. 14 N., R. 5 E., Gila and Salt River meridian; created December 8, 1906.

base of the cliff. The unique position and size of the ruin give it the appearance of an ancient castle and doubtless accounts for the present name. Access to the castle or ruin is made from the base of the cliff by means of wooden ladders placed against the face of the cliff and anchored thereto with iron pins.

The structure is about 50 feet in height by 60 feet in width, built in the form of a crescent, with the convex part against the cliff. It is five stories high, the fifth story being back under the cliff and protected by a masonry wall 4 feet high, so that it is not visible from the outside. The walls of the structure are of masonry and adobe, plastered over on the inside and outside with mud. The cliff forms the back part of the structure, the front and outer walls being bound

to the cliff with round timbers 6 to 10 inches in diameter, the outside ends projecting through the outer walls and the other end placed against the cliff. These timbers serve as joists for the several stories, the floors being made by placing small poles at right angles to the larger timbers and covering with a thatch of willows, on top of which there is a covering of mud and stones 8 inches thick.

From the appearance of the walls now standing, the structure originally contained 25 rooms, 19 of which are now in fairly good condition. Besides the main building, there are many cave chambers below and at each side of the castle. These small chambers are neatly walled up in front and have small doorways.

The rooms average about 6 by 8 feet in size and are about 7 feet high. They are connected by small doorways, and the outside rooms have small peepholes, from which a view of the outside can be had. These were probably used for portholes through which arrows could be shot.

The timbers in the building are hacked on the ends and were doubtless cut with stone axes. They are in a good state of preservation, no decay having set in owing to the dry climate. The main part of the structure is sheltered by the overhanging cliff, and the walls, thus protected from storms, are in good condition. The front part of the structure is not so well protected and the outer walls are wearing away and crumbling. They are broken in various ways and some are partially fallen and others remain simply as wing walls, without support. Others are cracked and broken so that their adhesive qualities are missing. A slight pressure might serve to precipitate them to the ground. The greatest care should be observed by visitors on this account, and also in going upon floors to upper rooms, because the original timbers have become very brittle through age and will not withstand much weight.

The method principally employed by the public in reaching the castle is by automobile from Prescott, on the Santa Fe, Prescott & Phoenix Railroad, a branch of the Santa Fe system, 54 miles to the west; or from Jerome, Ariz., on a branch line of the same railroad, 27 miles distant from the monument. A fine automobile road has recently been constructed from Prescott to Camp Verde, a small settlement 3 miles west of the castle, and the trip from Prescott to the castle and return can now be comfortably made in one day. The castle can also be reached from Flagstaff, a station on the main line of the Santa Fe Railway, 58 miles to the north. The roads, however, are very heavy, and the trip can not be made by automobile without considerable difficulty. Tourists frequently make the trip from Flagstaff by team, as it affords an opportunity of going through the large pine forest lying to the south of Flagstaff. There are two garages in Prescott making a specialty of taking parties to the castle. Each furnishes a driver who acts as a guide.

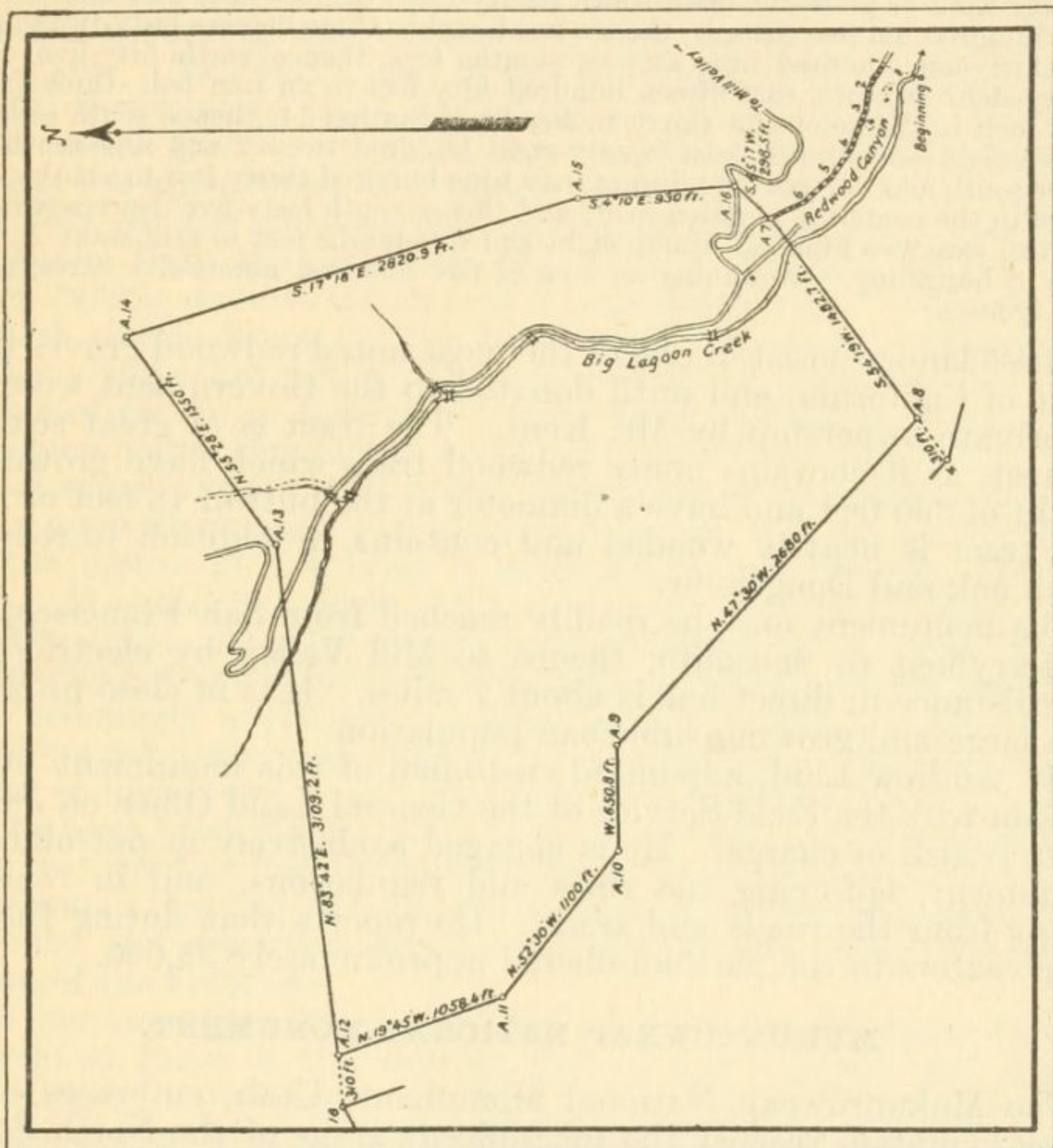
Visitors to the Castle should avoid periods of high water, because the cliff in which the castle is located rises from the bed of Beaver Creek, and for a distance of some 300 yards the water comes in contact with the edge of the cliff. For this reason the castle is practically inaccessible at times of high water.

MUIR WOODS NATIONAL MONUMENT.

The Muir Woods, named in honor of the late John Muir¹ (1838–1914), explorer, naturalist, and writer, were established as a national monument by proclamation of January 9, 1908. The monument was created to preserve a remarkable grove of redwood trees on a tract of land presented to the Government for this purpose by William Kent and his wife, Elizabeth Thatcher Kent, of Chicago, Ill.

The deed conveying this land to the United States described it as follows:

Beginning at a stake, A. 7, driven in the center of the road in Redwood Cañon and located by the following courses and distances from the point of commencement



Muir Woods National Monument, Cal., in T. 1 N., R. 6 W., Mount Diablo meridian; created January 9, 1908.

of the tract of land which was conveyed by the Tamalpais Land and Water Company to William Kent by a deed dated August 29th, 1905, and recorded in the office of the county recorder of Marin County, California, Book 95 of Deeds, at page 58, to wit: North eighteen degrees thirty-two minutes, east two hundred thirty-two and sixty-four hundredths feet, north sixty-six degrees thirty minutes, west one hundred and sixty-seven and thirty-four hundredths feet, north eighty-six degrees twenty-five

¹ The name was selected by the donor, William Kent, who declined to accept the President's suggestion that the reservation should be named the Kent Monument. For the correspondence regarding the gift and the name, see the Sierra Club Bulletin, Vol. VI, pp. 287–288, 1910.

Recollections of Muir by several friends and a bibliography of his works may be found in the John Muir memorial number of the Sierra Club Bulletin, vol. X, Jan., 1916.

minutes, west ninety-eight and sixty-two hundredths feet, north seventy degrees no minutes, west two hundred and forty-one and seven hundredths feet, north fifty-seven degrees twenty-nine minutes, west one hundred seventy-eight and three-hundredths feet, north forty-six degrees twenty-two minutes, west two hundred thirty-five and thirty-nine hundredths feet, and north twenty-four degrees twenty-five minutes, west two hundred twenty-five and fifty-six hundredths feet; thence from said stake, A. 7, the point of beginning, south fifty-four degrees nineteen minutes, west fourteen hundred eighty-two and seven-tenths feet to Station A. 8, from which Station 4 of the survey of the tract of land conveyed to William Kent as aforesaid bears south fifty-four degrees nineteen minutes, west three hundred ten feet distant; thence from said Station A. 8 north forty-seven degrees thirty minutes, west twenty-six hundred eighty feet; thence due west six hundred fifty and eight-tenths feet; thence north fifty-two degrees thirty minutes, west eleven hundred feet; thence north nineteen degrees forty-five minutes, west ten hundred fifty-eight and four-tenths feet to Station A. 12, from which Station 16 of the survey of the tract of land conveyed to William Kent as aforesaid bears south eighty-three degrees forty-two minutes, west three hundred ten feet distant; thence north eighty-three degrees forty-two minutes, east thirty-one hundred nine and two-tenths feet; thence north fifty-five degrees twenty-eight minutes, east fifteen hundred fifty feet to an iron bolt, three-quarters of an inch in diameter and thirty inches long, Station 14; thence south seventeen degrees eighteen minutes, east twenty-eight hundred twenty and nine-tenths feet; thence south four degrees ten minutes, east nine hundred thirty feet to a stake, A. 16, driven in the center of a graded road; and thence south forty-five degrees seventeen minutes, west two hundred ninety-eight and five-tenths feet to said stake A. 7, the place of beginning. Containing an area of two hundred ninety-five acres, a little more or less.

These lands consist of one of the most noted redwood groves in the State of California, and until donated to the Government were held in private ownership by Mr. Kent. The tract is of great scientific interest, as it contains many redwood trees which have grown to a height of 300 feet and have a diameter at the butt of 18 feet or more. The tract is heavily wooded and contains, in addition to redwood, much oak and Douglas fir.

The monument may be readily reached from San Francisco, Cal., by ferryboat to Sausalito, thence to Mill Valley by electric train. The distance in direct line is about 7 miles. It is in close proximity to a large and growing suburban population.

Mr. Andrew Lind, appointed custodian of this monument in connection with the Field Service of the General Land Office on July 11, 1910, is still in charge. He is engaged exclusively in patrolling the monument, enforcing the rules and regulations, and in removing debris from the roads and trails. He reports that during the past year visitors to the park numbered approximately 35,000.

MUKUNTUWEAP NATIONAL MONUMENT.

The Mukuntuweap National Monument, Utah, embraces among other mountain scenery the magnificent gorge of the North Fork of the Virgin River called the Mukuntuweap¹ Canyon by the Powell Topographic Survey of Southwestern Utah (Kanab sheet), known locally as Zion Canyon. The monument is located in the eastern part of Washington County. It was formed apparently by some powerful upheaval of nature which divided the mountain as it formerly existed at its crest. From the top of the walls forming this canyon the country slopes away and not toward it, as is usually the case. This upheaval of nature left standing vertical walls on either

¹ The meaning of this name is variously given as "Rocky land," "Yellow land," or "Home of the Gods." Maj. Powell, who first published the name, says: "The Indians call the canyon Mu-koon-tu-weap, or Straight Canyon." (Exploration Colorado River of the West, p. III, 1875.)

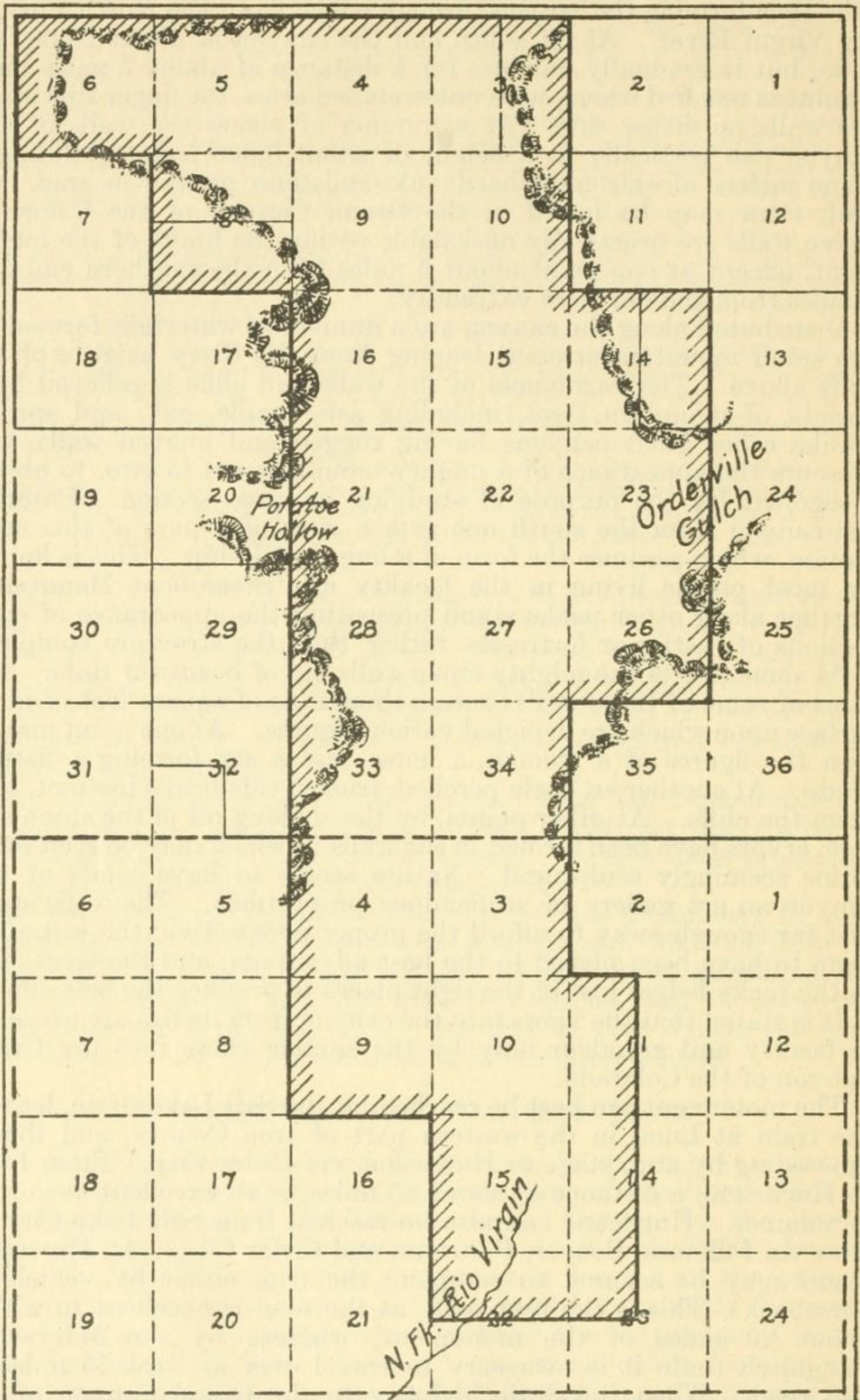
side, thus forming the canyon through which flows the North Fork of the Virgin River. At its south end the canyon is about 2,500 feet wide, but it gradually narrows for a distance of about 7 miles until a point is reached where, with outstretched arms, the finger tips touch the walls on either side. At a number of places the walls of this canyon rise vertically to a height of about 3,000 feet, exhibiting a plane surface of extremely hard pink sandstone, greater in area, it is said, than may be found in the Grand Canyon of the Colorado. These walls are practically unscalable within the limits of the monument, except at one point about 5 miles from the southern end and 8 miles from the northern extremity.

Distributed along the canyon are a number of waterfalls formed by the small mountain streams leaping from the dizzy heights of the cliffs above. The barrenness of the walls and cliffs is relieved by a variety of mountain trees, including ash, maple, oak, and spruce. Unlike other great canyons having rugged and uneven walls, this presents the appearance of a mighty mountain cut in two, to obtain a segment for the purpose of studying its cross section. Entering the canyon from the south one gets a view of a part of this cross section, which assumes the form of a huge battleship. This is known by most people living in the locality as "Steamboat Mountain." Farther along other peaks stand presenting the appearance of cross sections of castles or fortresses rather than the structure complete.

At some points the mighty stone walls are of beautiful tints. The faces of some of these walls contain thousands of square feet of plane surface upon which are depicted various figures. At one point may be seen the figures of a woman, a horse, and a pig, forming a distinct group. At another an eagle perched, true to this bird's instinct, high upon the cliffs. At other points, by the shelling off of the stone surface, crypts have been formed in the walls in which may be seen other forms seemingly sculptured. Nature seems to have made of this canyon an art gallery of stupendous proportions. The walls stand just far enough away to afford the proper perspective; the waterfalls seem to have been placed to the best advantage; and the trees cling to the rocky ledges just at the right places to produce the best effects.

It is stated that the views into the canyon from its rim are exceeded in beauty and grandeur only by the similar views into the Grand Canyon of the Colorado.

The monument can best be reached by the Salt Lake route, leaving the train at Lund in the western part of Iron County, and thence proceeding by auto stage to Hurricane, via Cedar City. From Lund to Hurricane, a distance of about 85 miles, is an excellent auto road in summer. Hurricane can also be reached from Salt Lake City by auto via Fillmore, Beaver, Parowan, and Cedar City. At Hurricane teams may be secured to complete the trip, either by vehicle or horseback. This is the best road, as the road is excellent to within about 20 miles of the monument, whereas by the Marysvale-Panguitch route it is necessary to travel over at least 55 miles of bad road. When the State highway to the Grand Canyon of the Colorado River shall have been completed this monument will be only about 25 miles from the main road from Salt Lake to the Grand Canyon. The National Park Transportation and Camping Co., W. W. Wylie, president, will operate permanent camps in the monument,



Monument Boundary

Mukuntuweap National Monument, Utah, embracing secs. 3, 4, 5, 6, 8, 9, 10, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, and 34, T. 40 S., R. 10 W., and all of the Mukuntuweap Canyon in T. 41 S., R. 10 W., Salt Lake meridian; created July 31, 1909.

and an automobile and transportation line thereto from Lund, Utah. Saddle horses will also be available.

Those desiring to make the trip by automobile may obtain detailed and definite information concerning roads, hotels, oil, gasoline, routes, distances, etc., by writing the "Publicity Bureau, Commercial Club, Salt Lake City," or from the Utah Automobile Association, at Salt Lake City.

The deficiency appropriation act approved September 8, 1916, made an appropriation, in the following terms:

For a proportionate share of the amount required to construct an interstate wagon road or highway through the Mukuntuweap National Monument, Utah, approximately fifteen miles, \$15,000.

Under the terms of this act road construction is now under way within the monument, and the State of Utah is rebuilding the road leading from Toquerville and Hurricane to the monument. It is expected that the entire route will be completed and in good condition for auto travel in the summer of 1917.

NATURAL BRIDGES NATIONAL MONUMENT.

This monument is located in the vicinity of Bluff, San Juan County, in the extreme southeastern portion of Utah, and was created originally by presidential proclamation of April 16, 1908. It embraces three separate tracts of land, the largest containing the three great natural bridges, viz: The Sipapu, known locally as the Augusta Bridge; the Kachina, called the Caroline; and the Owachomo, given the local name of the Little Bridge.¹ These bridges were discovered by Emery Knowles in 1895.

A second proclamation, issued by the President September 25, 1909, includes, besides the three bridges originally reserved, a much more extended territory, but within which, along the walls of the canyons in the vicinity of the bridges, are found many prehistoric ruins of cavern and cliff dwellings. There are also two cavern springs containing some prehistoric ruins, which are located approximately 13 and 19 miles southeast of the bridges, respectively. These cavern springs, included within the Natural Bridges Monument, are located upon the ancient and only trail to the bridges from the south, and are important way stations in the desert surrounding this monument. They are believed to have been originally excavated and used by the prehistoric inhabitants of the vicinity.

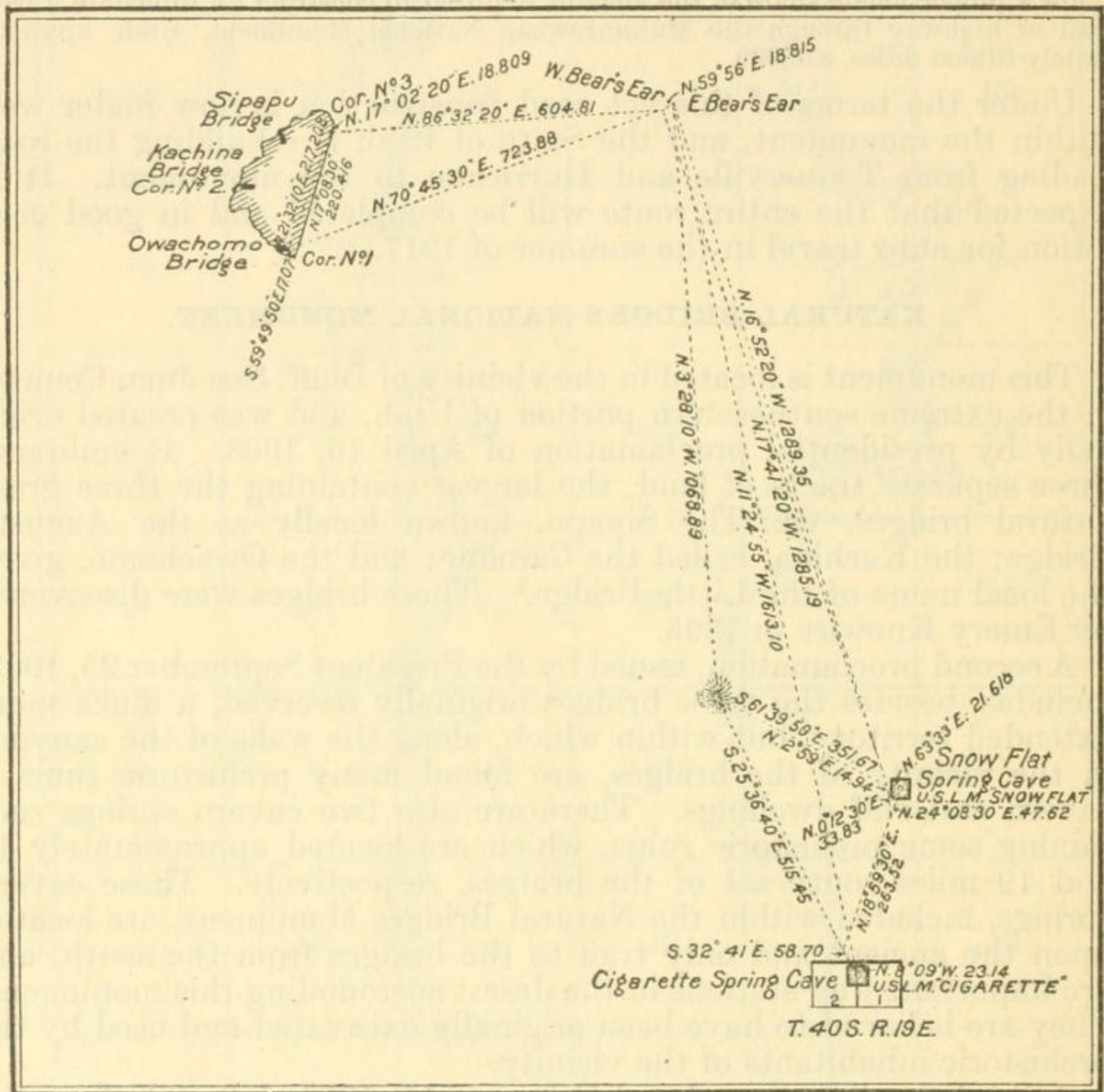
A third proclamation, dated February 11, 1916, definitely fixes the location of the objects of interest within the monument, as the result of a resurvey and relocation with reference to a recently established corner of the public-land surveys.

In order to reach the various points of interest it is necessary to use a pack train, with guides and complete camp outfit. The natural bridges spring from the high walls of White Canyon, through which part of the journey is taken, and are the result of remarkable and eccentric stream erosion. These bridges are understood to be

¹ Sipapu is said to mean "gate of heaven"; Kachina, "guardian spirit"; and Owachomo, "rock mound." The English names are more prosaic. The Augusta Bridge was named in honor of the wife of Horace J. Long, a mining engineer who, in company with James Scorup, a cattleman, visited the bridges in March, 1903; the Caroline Bridge in honor of Mrs. James Scorup; and the Little Bridge, sometimes known as the Edwin Bridge, in honor of Col. Edwin F. Holmes of Salt Lake City, who equipped an expedition which visited the region in 1906 and obtained measurements, photographs, and sketches of the bridges.

among the largest examples of their kind, the greatest of the three having a height of 222 feet and being 65 feet thick at the top of the arch. The arch is 28 feet wide, the span is 261 feet, and the height of span 157 feet. The other two bridges are only a little smaller. All three are within a space of about 5 miles.

There are two routes by which this monument may be reached, one by way of the Denver & Rio Grande Railroad, detraining at Dolores, Colo., thence by team to Bluff, Utah, via McElmo, Colo., and Aneth, Utah. This necessitates travel over a fairly good road



Monument Boundary

Natural Bridges National Monument, Utah, embracing a subtriangular tract, one small tract in unsurveyed area and one tract in secs. 1 and 2, T. 40 S., R. 19 E., Salt Lake Meridian; created April 16, 1908, boundaries modified as above September 25, 1909.

for a distance of approximately 80 miles before Bluff, Utah, is reached. The bridges are about 45 miles northwest of Bluff, thus making a total mileage to be traveled by horse of about 125 miles. The springs lie between Bluff and the bridges and can be visited without making any side trips. Most of this route may be traveled by auto—from Dolores, Colo., to Bluff, Utah. Pack animals and guides are necessary from Bluff to the monument.

The second route may be taken by leaving the Denver & Rio Grande Railroad at Thompsons Station, Utah, thence by stage or

team to Moab and Monticello, Utah, a distance of about 95 miles; thence to the monument (bridges), a distance of approximately 50 or 60 miles. At Monticello tourists should outfit for the trip to the bridges. Competent guides, with pack horses, etc., including all necessary equipment, may be hired there at reasonable figures. This second route is the better, as roads and trails are better than from any other point.

Tourists coming in through Colorado may, after reaching Bluff, Utah, go north via Grayson to Monticello, a distance of about 50 miles, and proceed to the bridges from the latter point. As stated, Monticello is the best outfitting point in that section of the country and the best guides are to be found there.

NAVAJO NATIONAL MONUMENT.

The Navajo National Monument, Ariz., as originally created by proclamation of March 20, 1909, embraced approximately 600 acres within the Navajo Indian Reservation, which was reserved tentatively and with a view to reduction to such small tract or tracts as might thereafter be found to contain valuable prehistoric pueblo or cliff dwellings, when the extent of the same could be determined by an examination on the ground and their locus definitely fixed by traverse lines connecting them with some corner of the public survey. Both of these conditions having been fulfilled, the monument was reduced by proclamation dated March 14, 1912, to three small tracts aggregating 360 acres. Within two of these tracts are located, respectively, two interesting and extensive pueblo or cliff-dwelling ruins in a good state of preservation and known as Betata Kin and Keet Seel, and a third cliff-dwelling ruin called Inscription House.

The new boundaries of the Navajo National Monument under the latter proclamation are shown in figure 2.

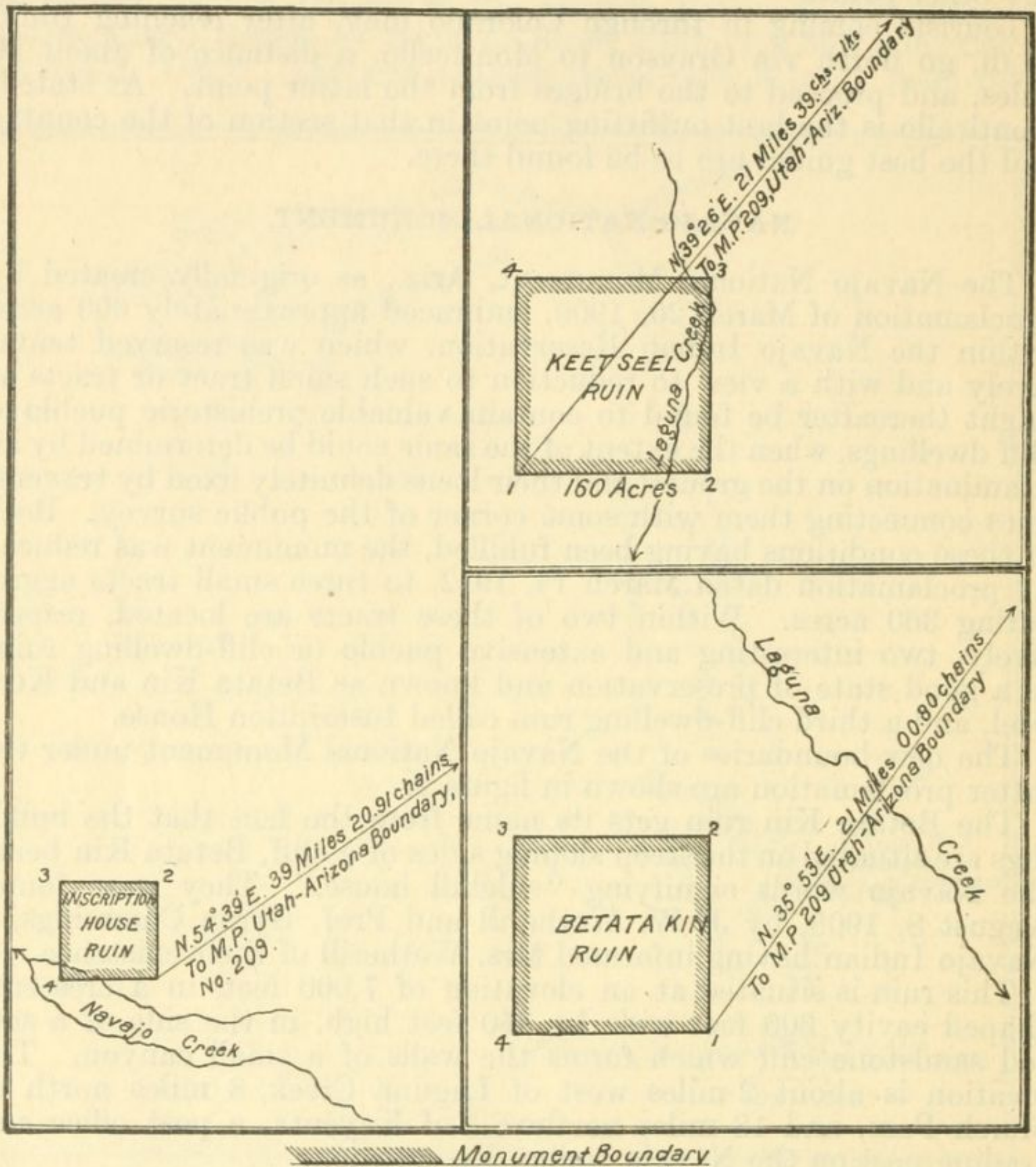
The Betata Kin ruin gets its name from the fact that the buildings are situated on the steep sloping sides of a cliff, Betata Kin being the Navajo words signifying "sidehill house." They were found August 8, 1908, by J. W. Wetherill and Prof. Byron Cummings, a Navajo Indian having informed Mrs. Wetherill of their existence.

This ruin is situated at an elevation of 7,000 feet, in a crescent-shaped cavity 600 feet wide by 350 feet high, in the side of a soft red sandstone cliff which forms the walls of a small canyon. The location is about 2 miles west of Laguna Creek, 8 miles north of Marsh Pass, and 18 miles northwest of Kayenta, a post office and trading post on the Navajo Indian Reservation.

An inspection of the walls of the ruin indicates that there were originally 106 houses or rooms. The walls of 51 rooms are now standing, 17 of which have well-preserved roofs. The walls of the houses are constructed of sandstone blocks, held together with mud and mortar. The roofs are made of spruce timbers, placed crosswise to form joists, the ends projecting through the outer walls. Smaller poles are placed at right angles with these and then covered with a thatch of willows and mud, which forms the roof. Inside, the floors are plastered with mud; and in nearly every room there is a small circular or square hole about 9 inches deep, which was evidently used for a fireplace. The rooms have doorways or openings in the

roofs and sides, the largest opening noted being 18 by 30 inches. The average size of the rooms is 6 by 6 by 6 feet.

The Keet Seel (Navajo for "broken pottery") ruins were discovered in March, 1894, by Richard Wetherill. They are situated at an elevation of 7,100 feet, in a crescent-shaped cave 400 feet long by 150 feet high, near the base of a soft red sandstone cliff on the



Navajo National Monument, Ariz., containing 360 acres, embracing the Keet Seel and Betata Kin ruins, located in two small tracts of 160 acres each, along Laguna Creek, and Inscription House ruins, on Navajo Creek, in a 40-acre tract, all within the Navajo Indian Reservation; originally created Mar. 20, 1909, boundaries modified as above Mar. 14, 1912.

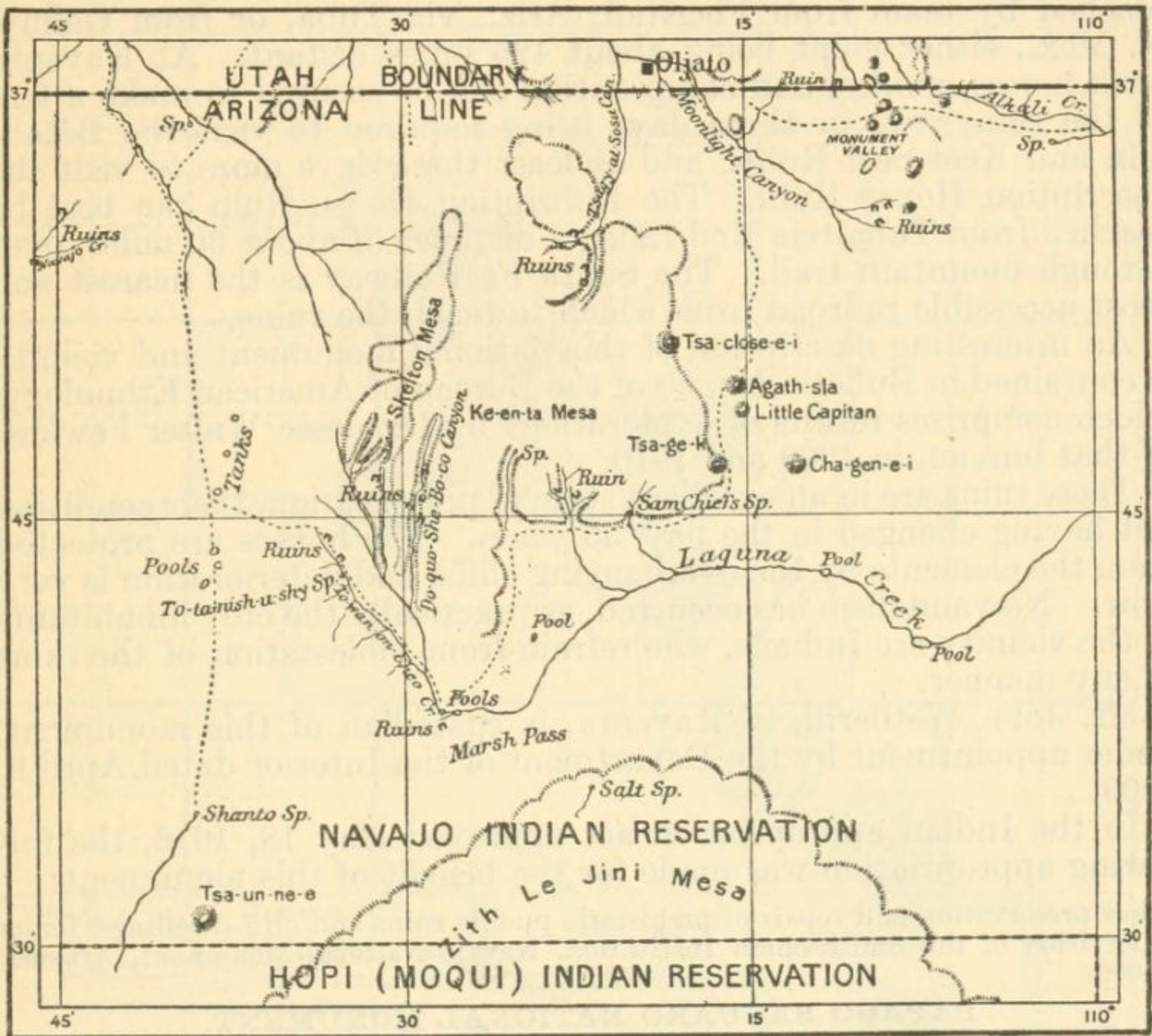
west side of Laguna Creek, 12 miles north of Marsh Pass and 24 miles northwest of Kayenta.

These ruins are very much similar in construction to the Betata Kin Ruins, but are in a much better state of preservation. This is doubtless due to the fact that the overhanging cliffs protect the buildings from the action of storms. In the ruins there are several two-story buildings and two circular-shaped rooms. There are 47 rooms with standing walls, the roofs having fallen in, and 56 rooms

covered over with well-preserved roofs. The construction of the roofs in these buildings is similar to those in the Betata Kin Ruins. The rooms are about 7 by 7 by 5 or 6 feet high. The openings or doorways are 18 inches by 30 inches, set about 2 feet from the floor of the structure.

The ruins are difficult to reach, it being necessary to scale a steep sandstone cliff for a distance of 30 feet in order to reach the base of the ruins.

Inscription House Ruin is located on Navajo Creek, about 20 miles west of the Betata Kin Ruin. This ruin is regarded as extraordinary,



Navajo National Monument, Ariz., embracing all cliff-dwelling and pueblo ruins between the parallel of latitude $36^{\circ} 30'$ and 37° north and longitude 110° and $110^{\circ} 45'$ west from Greenwich, with 40 acres of land in square form around each of said ruins, as originally created Mar. 20, 1909.

not only because of its good state of preservation, but because of the fact that upon the walls of its rooms are found inscriptions written in Spanish by early explorers and plainly dated 1661. It is located about half way up the side of a steep cliff in a crescent-shaped niche or cave 15 to 50 feet in depth by 500 feet in length and about 75 feet in height. There is very little sheltering cliff over the ruins, and they are in places easily reached by storms.

These ruins differ from the other ruins in the material used in their construction. The walls are constructed of mud bricks made by rolling bunches of straw in mud and then molding into shape. The bricks are about 4 inches square by about a foot or more in length

and are laid into the walls with mud mortar. The walls thus formed are tough and rigid and are free from cracks. Several of the rooms are made of reeds and tules, set vertical and plastered over and filled in with mud. The roofs of the buildings are made of the mud bricks placed on a framework of small poles covered over with reeds and tules. There are 64 rooms, 30 of which are roofed over. The rooms are small and mostly single story. Two of the buildings are two stories high. The doorways are small and are built with a small niche at the bottom.

The ruins can be reached only by saddle horse and pack outfit over a very rough trail from Marsh Pass or Kayenta. Kayenta can be reached by team from Flagstaff, Ariz., via Tuba, or from Gallup, N. Mex., either point being about 125 miles distant. At Kayenta pack horses, guides, and camp outfits can be secured to make a trip to the ruins, two or three days being required to visit the Betata Kin and Keet Seel Ruins, and at least three days more to visit the Inscription House Ruin. The Inscription House Ruin can best be reached from Tuba, via Red Lake, a distance of about 60 miles, over a rough mountain trail. The Santa Fe Railway is the nearest and most accessible railroad from which to reach the ruins.

An interesting description of this national monument and vicinity is contained in Bulletin No. 50 of the Bureau of American Ethnology, which comprises results of explorations by Dr. Jesse Walter Fewkes, of that bureau, in 1909 and 1910.

These ruins are in an excellent state of preservation, their condition not having changed in the past 35 years. The houses are protected from the elements by the overhanging cliffs, and deterioration is very slow. No vandalism has occurred, as practically the only inhabitants in the vicinity are Indians, who refrain from molestation of the ruins in any manner.

Mr. John Wetherill, of Kayenta, is custodian of this monument, under appointment by the Department of the Interior dated April 9, 1909.

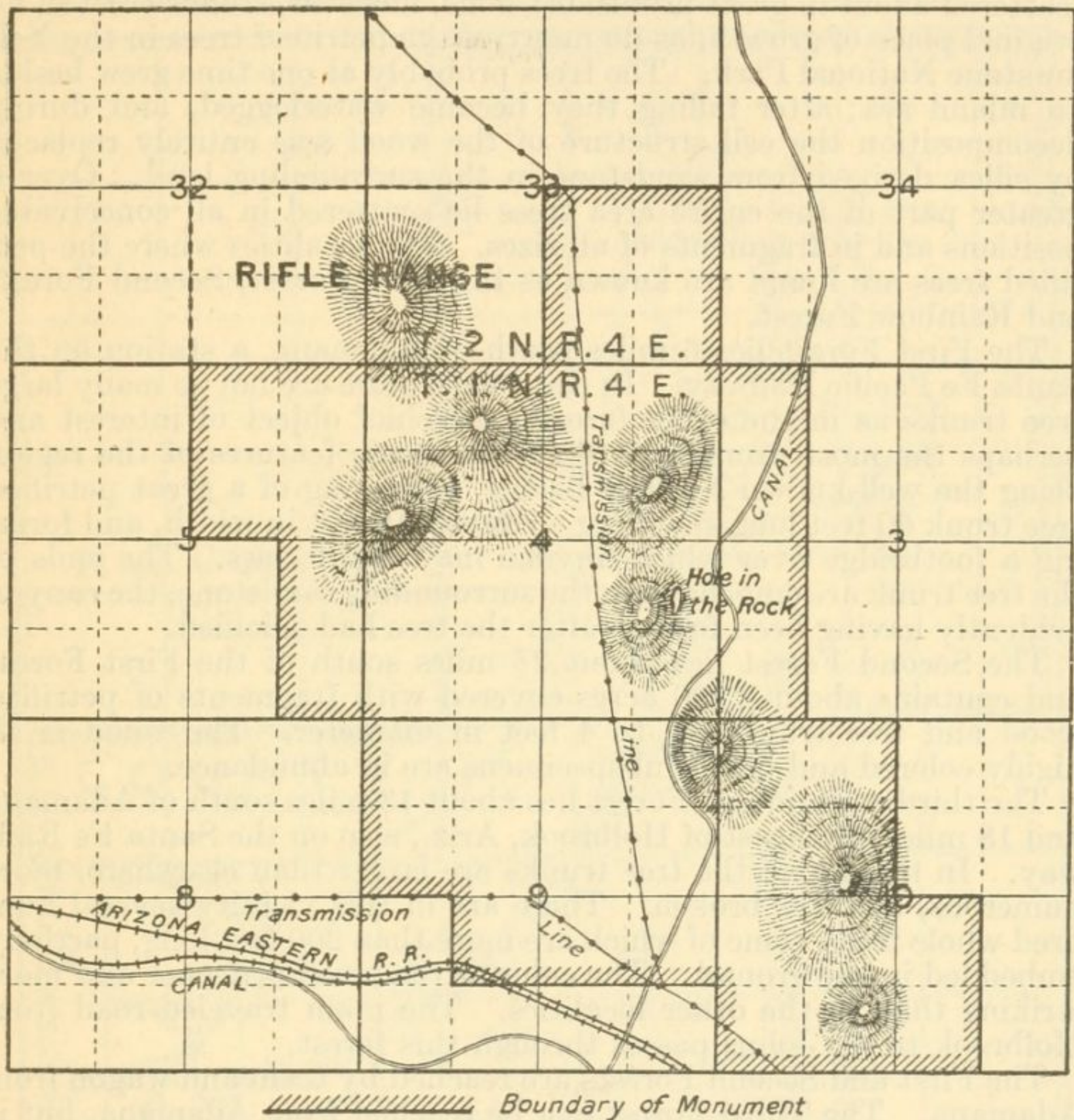
In the Indian appropriation act approved May 18, 1916, the following appropriation was made for the benefit of this monument:

For preservation and repair of prehistoric pueblo ruins and cliff dwellings, under supervision of the Smithsonian Institution, Navajo National Monument, Arizona, \$3,000.

PAPAGO SAGUARO NATIONAL MONUMENT.

This monument was created by proclamation of January 31, 1914, and embraces approximately 2,050 acres of rocky and desert land in Maricopa County, about 9 miles east of Phoenix, Ariz. Within the tract is found a splendid collection of characteristic desert flora, including many striking examples of giant cactus (saguaro) and many other interesting species of cacti, such as the prickly pear, Cholla, etc., as well as fine examples of the yucca palm, all of which are of great scientific interest and grow in this monument to great size and perfection. The saguaro is that variety of cactus which grows in a cylindrical form to a height of 30 or 35 feet, with from one to a dozen branches of the same character from the main stalk, generally near the top. There are also within the tract prehistoric pictographs which are found upon the faces of the rocks, adding to the interest of the reservation and to its ethnological and archæological value. Through the center of the tract, running northwest and southeast, is a

ridge of low hills rising from the flat desert to a height of 150 to 200 feet. The rocks in the ridge have been worn considerably by the elements, resulting in numerous caves and a few openings extending entirely through the rocks. One of these openings, known locally as "Hole-in-the-rock," is an aperture some 15 feet high and 25 feet long with an amphitheater approach to the hole on each side. These approach rooms are about 30 feet square, with the overhanging rock for a roof in each case. The monument is visited by several thousand



Papago Saguaro National Monument, Ariz., embracing the SE. $\frac{1}{4}$ of sec. 33, T. 2 N., R. 4 E.; W. $\frac{1}{2}$ of W. $\frac{1}{2}$ sec. 3, all sec. 4, NE. $\frac{1}{4}$ and E. $\frac{1}{2}$ of SE. $\frac{1}{4}$, sec. 5, W. $\frac{1}{2}$ and W. $\frac{1}{2}$ SE. $\frac{1}{4}$ sec. 10, N. $\frac{1}{2}$ N. $\frac{1}{2}$ SE. $\frac{1}{4}$ and NE. $\frac{1}{4}$ of SW. $\frac{1}{4}$ sec. 9, T. 1 N., R. 4 E., all east of Gila and Salt River meridian, containing 2,050.43 acres.

people each year as a picnic ground, as it is readily reached by automobile or team, over good roads, from Phoenix or Tempe, Ariz., distant respectively 9 and 3 miles. Phoenix is reached by rail by the Santa Fe, Prescott & Phoenix Railroad, a branch of the main line of the Santa Fe Railway from Ash Fork, Ariz. Phoenix and Tempe are also reached by the Arizona & Eastern Railroad, which branches from the main line of the Southern Pacific Railway at Maricopa, Ariz. The monument is well located to be viewed in connection with a trip over the great irrigation system of the Salt River Valley, better known as the Roosevelt project of the Reclamation Service.

PETRIFIED FOREST NATIONAL MONUMENT.

The Petrified Forest of Arizona lies in the area between the Little Colorado River and the Rio Puerco, 15 miles east of their junction, in Navajo and Apache Counties. It was originally established as a national monument by proclamation of December 8, 1906, and its boundaries were subsequently modified by proclamation of July 31, 1911.¹ This area is of great interest because of the abundance of petrified coniferous trees, as well as its scenic features. The trees lie scattered about in great profusion; none, however, stands erect in its original place of growth, as do many of the petrified trees in the Yellowstone National Park. The trees probably at one time grew beside an inland sea; after falling they became waterlogged, and during decomposition the cell structure of the wood was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees lie scattered in all conceivable positions and in fragments of all sizes. The localities where the petrified trees are found are known as the First Forest, Second Forest, and Rainbow Forest.

The First Forest lies 6 miles south of Adamana, a station on the Santa Fe Pacific Railway. In this forest there are not as many large tree trunks as in the other forests, the chief object of interest and perhaps the most prominent of all the scenic features of the region being the well-known Natural Bridge, consisting of a great petrified tree trunk 60 feet long spanning a canyon 45 feet in width, and forming a footbridge over which anyone may easily pass. The ends of the tree trunk are embedded in the surrounding sandstone, the canyon evidently having been formed after the tree had silicified.

The Second Forest lies about 2½ miles south of the First Forest and contains about 2,000 acres covered with fragments of petrified wood and tree trunks up to 4 feet in diameter. The wood is all highly colored and beautiful specimens are in abundance.

The third or Rainbow Forest lies about 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz., also on the Santa Fe Railway. In this forest the tree trunks are larger than elsewhere, more numerous, and less broken. There are in this vicinity several hundred whole trees, some of which are more than 200 feet long, partially embedded in the ground. The color of the wood is deeper and more striking than in the other localities. The main traveled road from Holbrook to St. Johns passes through this forest.

The First and Second Forests are reached by team and wagon from Adamana. The Third Forest can be reached from Adamana, but it is a long drive and is seldom made; the better method is by either team or automobile from Holbrook. The roads to the First and Second Forests from Holbrook are too sandy for automobile travel and the distance is too great to make the trip comfortably by team.

Prof. Lester F. Ward, of the Geological Survey, has stated that—

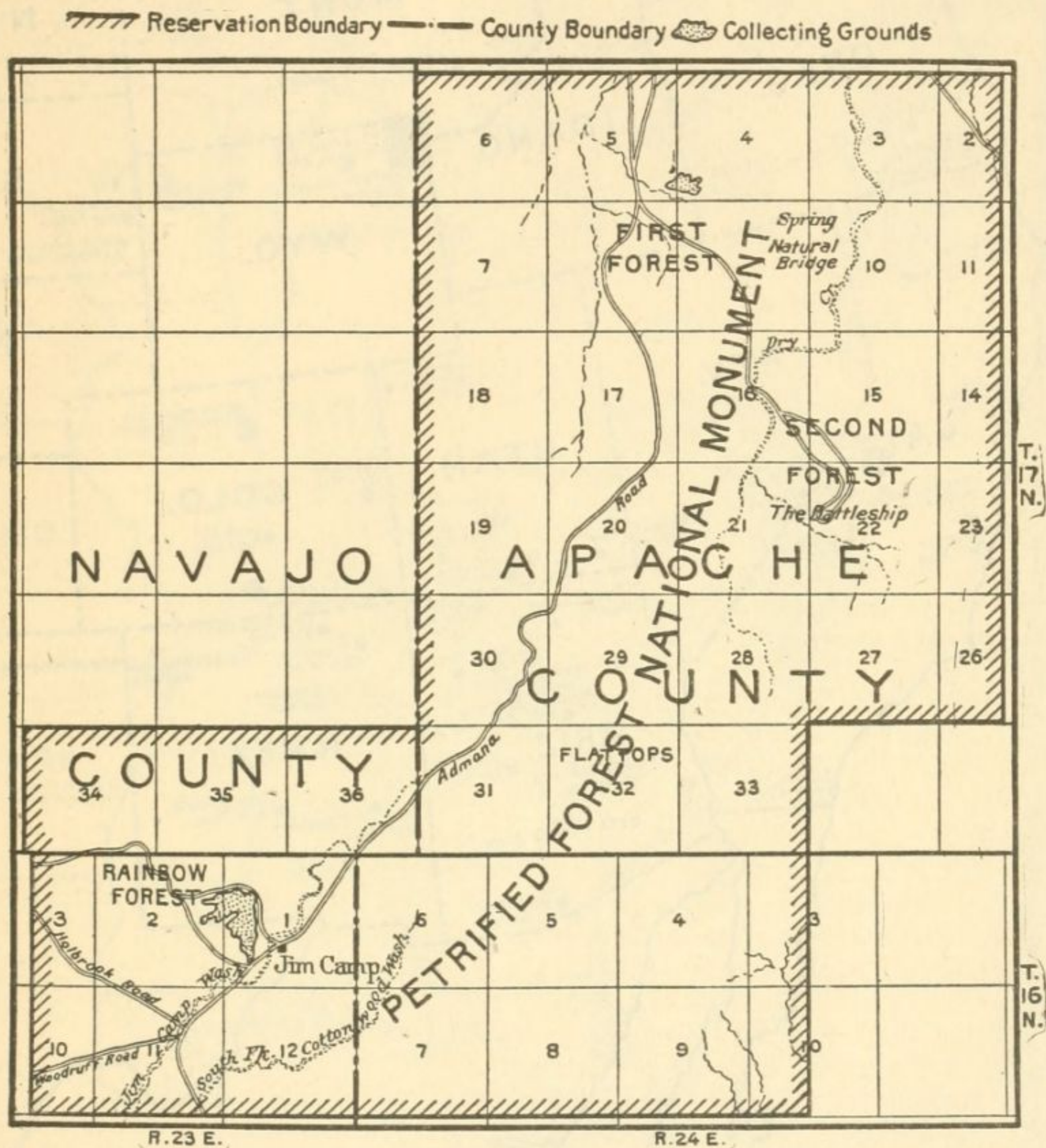
There is no other petrified forest in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost

¹ In 1895 the Legislature of Arizona passed a memorial to Congress recommending the creation of the Petrified Forest National Park. Bills to establish such a park were introduced by Hon. John F. Lacey in the Fifty-sixth Congress on Mar. 16, 1900 (H. R. 9634), in the Fifty-seventh Congress on Jan. 2, 1902 (H. R. 8326), in the Fifty-eighth Congress on Nov. 13, 1903 (H. R. 2529), and in the Fifty-ninth Congress on Dec. 18, 1905 (H. R. 8966). In each case the bill was promptly passed by the House but failed in the Senate. Finally the desired object was attained in 1906, shortly after the passage of the National Monuments act, when the forest was set aside as the fourth reservation under the new law.

places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery.

Dr. Walter Hough, of the Smithsonian Institution, who visited this monument, states that—

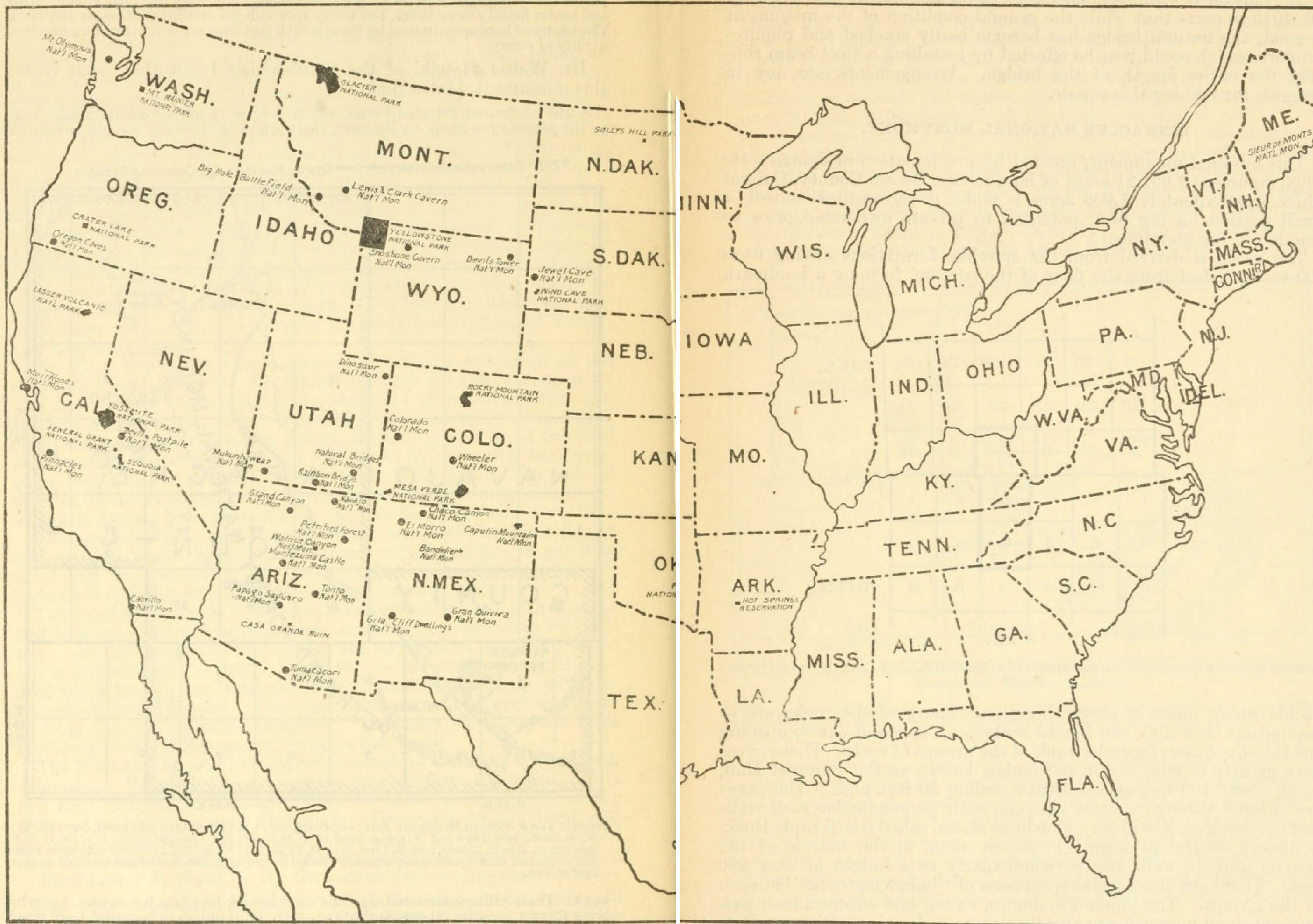
In the celebrated Petrified Forest, which is some 18 miles from Holbrook, Ariz., on the picturesque Santa Fe Railroad, there are ruins of several ancient Indian vil-



Petrified Forest National Monument, Ariz., embracing secs. 1, 2, 11, and 12 and E. $\frac{1}{2}$ secs. 3 and 10; T. 16 N., R. 23 E.; secs. 4 to 9 and W. $\frac{1}{2}$ secs. 3 and 10, T. 16 N., R. 24 E.; secs. 34, 35, 36, T. 17 N., R. 23 E., secs. 3 to 10, 15 to 22, 27 to 33, and W. $\frac{1}{2}$ secs. 2, 11, 14, 23, 26, T. 17 N., R. 24 E., Gila and Salt River meridian, containing 40.04 square miles, originally created December 8, 1906, boundaries modified as above July 31, 1911.

lages. These villages are small, in some cases having merely a few houses, but what gives them a peculiar interest is that they were built of logs of beautiful fossil wood. * * * The prehistoric dwellers of the land selected cylinders of uniform size, which were seemingly determined by the carrying strength of a man. It is probable that prehistoric builders never chose more beautiful stones for the construction of their habitations than the trunks of the trees which flourished ages before man appeared on the earth.

This wood agate also furnished material for stone hammers, arrowheads, and knives, which are often found in ruins hundreds of miles from the forest.



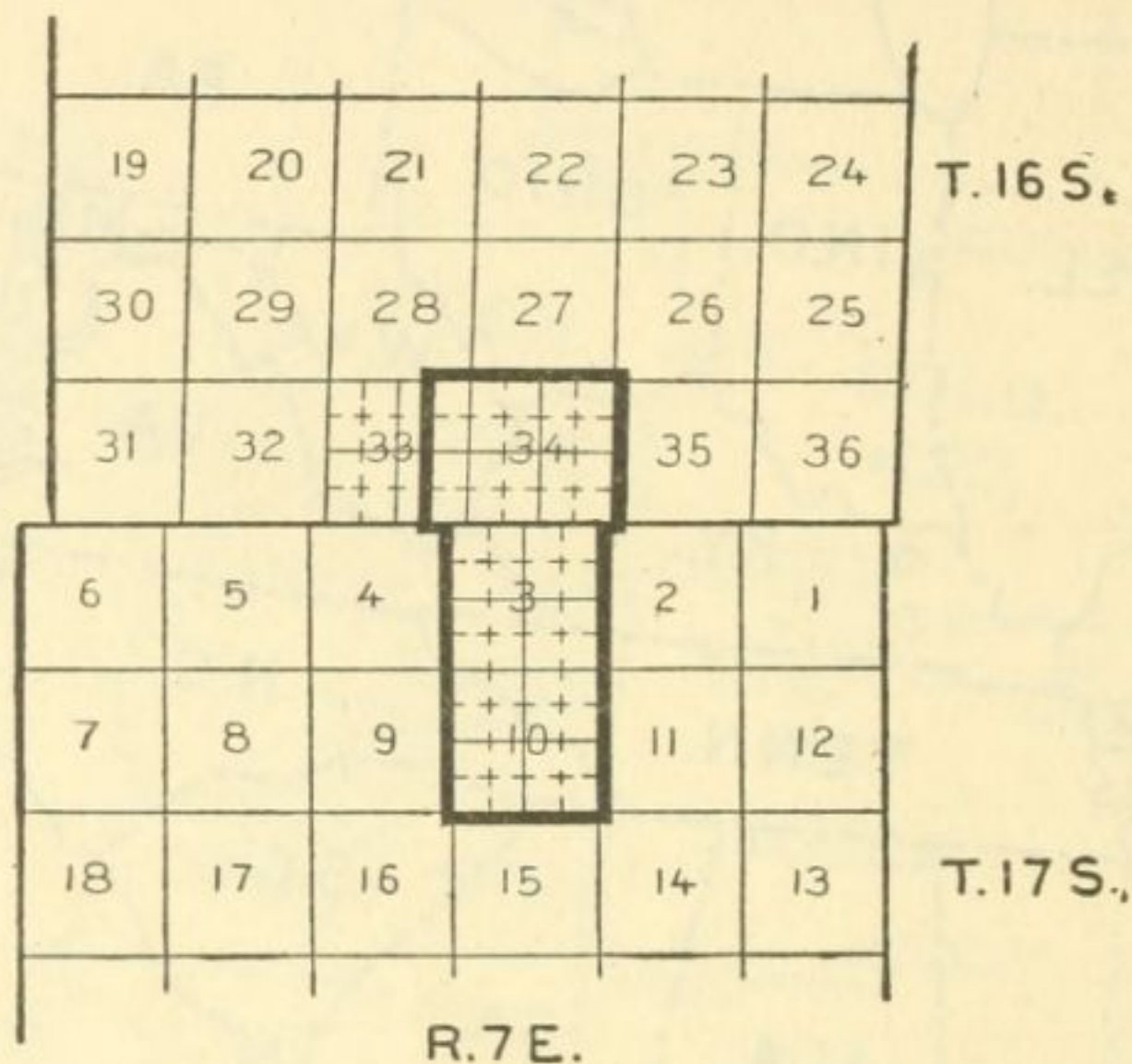
Map showing national parks and national monuments in the continental United States. There are two national parks in Alaska—the Sitka and Old Kasaan; one national park in Alaska—the Mount McKinley—and one national park in Hawaii.

Mr. Chester B. Campbell, custodian of the monument since January 16, 1913, reports that while the general condition of the monument is good, the natural bridge has become badly cracked and requires support, which could best be effected by installing a steel beam running the entire length of the bridge. Arrangements are now in progress for making this repair.

PINNACLES NATIONAL MONUMENT.

This national monument, created by proclamation of January 16, 1908, embraces 2,091.21 acres of land in San Benito County, Cal., of which approximately 1,900 acres is under governmental control, a small portion having been patented to private ownership prior to creation of the monument.

The name is derived from the spirelike formations arising from 600 to 1,000 feet from the floor of the canyon, forming a landmark



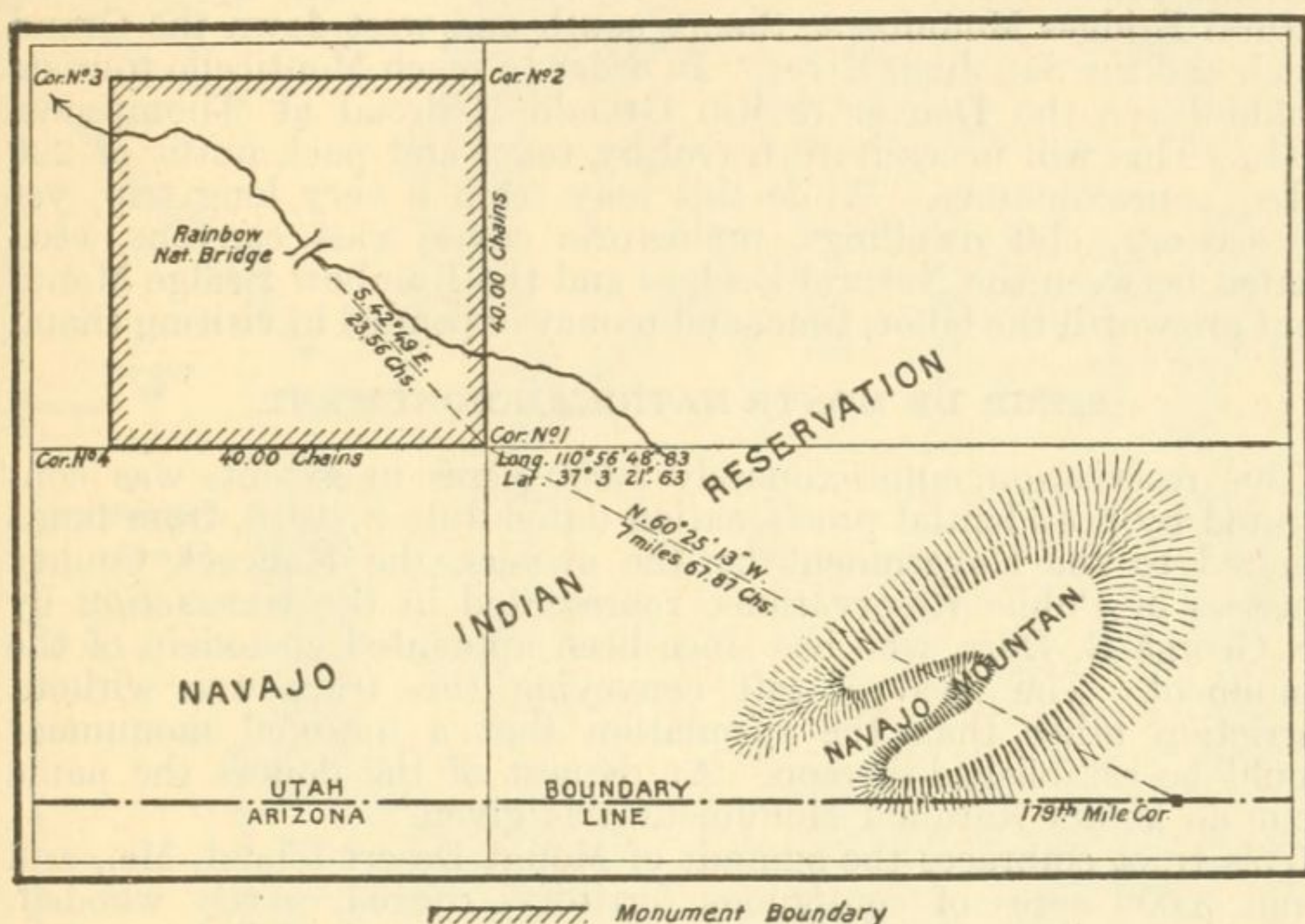
Pinnacles National Monument, Cal.; embraces parts of Tps. 16 and 17 S., R. 7 E., M. D. M.; created January 16, 1908.

visible many miles in every direction. Many of the rocks are so precipitous that they can not be scaled. A series of caves, opening one into the other, lie under each of the groups of rock. These caves vary greatly in size, one in particular, known as the Banquet Hall, being about 100 feet square with a ceiling 30 feet high. The caves are entered through narrow canyons with perpendicular rock walls and overhanging boulders. One huge stone, called the Temple Rock, is almost cubical in form. It stands alone in the bottom of the canyon and its walls rise perpendicularly to a height of over 200 feet. There are also several specimens of "balancing rocks" in each of the groups. The pinnacles, domes, caves, and subterranean passages of the monument are awe-inspiring on close inspection, and are well worth a visit by tourists and lovers of nature in its primitive state.

There are two groups of the so-called Pinnacles Rocks, known locally as the Big Pinnacles and the Little Pinnacles. The general

characteristics of the two groups are similar. Each covers an area of about 160 acres very irregular in outline. There are springs of good water in what are known as the Chalone and Bear Creek gorges. The wild life on this reservation is protected by special State laws. In 1909 California made the monument a State game preserve (ch. 428) and more recently has defined it as game and fish district No. 25 (Laws, 1915, ch. 379), in which all hunting is prohibited.

There are no stage lines to the monument. The best means of reaching the monument are by private conveyance over private roads from either Soledad or Gonzales, in Monterey County, Cal., stations on the main line of the Southern Pacific Railway distant, respectively, 12 and 14 miles; or from Hollister, in San Benito County (also on the Southern Pacific), distant 35 miles. There is a good public highway from Hollister to within about 6 miles of the monument,



Rainbow Bridge National Monument, Utah, embracing 160 acres of land in square form, the southeast corner of which bears from one hundred and seventy-ninth mile corner on the Utah and Arizona boundary N. 60° 25' 13" W. 7 miles 67.87 chains distant; created May 30, 1910.

from which a private road runs through several ranches for about 4 miles that is passable for automobiles. Between the end of the private road and the main gorge of the monument a road passable for teams leads up the bed of Chalone Creek. The route from Hollister is the most direct, as it leads to the east side of the pinnacles, where the gorges and caves are easily accessible, while the routes from Soledad or Gonzales lead to the west side and necessitate a journey, either by foot or saddle horse, to the eastern side to reach the caves and gorges.

RAINBOW BRIDGE NATIONAL MONUMENT.

This natural bridge is located within the Navajo Indian Reservation, near the southern boundary of Utah, a few miles northwest from Navajo Mountain, a well-known peak and landmark, and spans

a canyon and small stream which drains the northwestern slopes of this peak, and is of great scientific interest as an example of eccentric stream erosion. Among the known extraordinary natural bridges of the world, this bridge is unique in that it is not only a symmetrical arch below but presents also a curved surface above, thus presenting, roughly, the character of the rainbow, for which it is named. Its height above the surface of the water is 309 feet and its span is 278 feet.

The existence of this natural wonder was first disclosed to William B. Douglass, an examiner of surveys of the General Land Office, on August 14, 1909, by a Piute Indian, called "Mike's boy," later "Jim," who was employed in connection with the survey of the natural bridges in White Canyon, Utah.

The best and easiest way in which to reach the Rainbow Bridge National Monument is to outfit at Monticello, thence travel to the Natural Bridges Monument, thence south and west down the Grand Gulch and the San Juan River. In order to reach Monticello tourists should leave the Denver & Rio Grande Railroad at Thompsons, Utah. This will necessitate travel by team and pack outfit of 220 miles, approximately. While this may seem a very long trip, yet the scenery, cliff dwellings, prehistoric caves, vast canyons, etc., located between the Natural Bridges and the Rainbow Bridge Monument are worth the labor, time, and money expended in visiting them.

SIEUR DE MONTS NATIONAL MONUMENT.

This reservation, approximately 5,000 acres in extent, was constituted by presidential proclamation dated July 8, 1916, from lands donated to the Government by the owners, the Hancock County Trustees of Public Reservations, represented in the transaction by Mr. George B. Dorr, who has since been appointed custodian of the monument. The deed of gift conveying this tract was without restriction other than the stipulation that a national monument should be established thereon. At request of the donors the name *Sieur de Monts National Monument* was given.

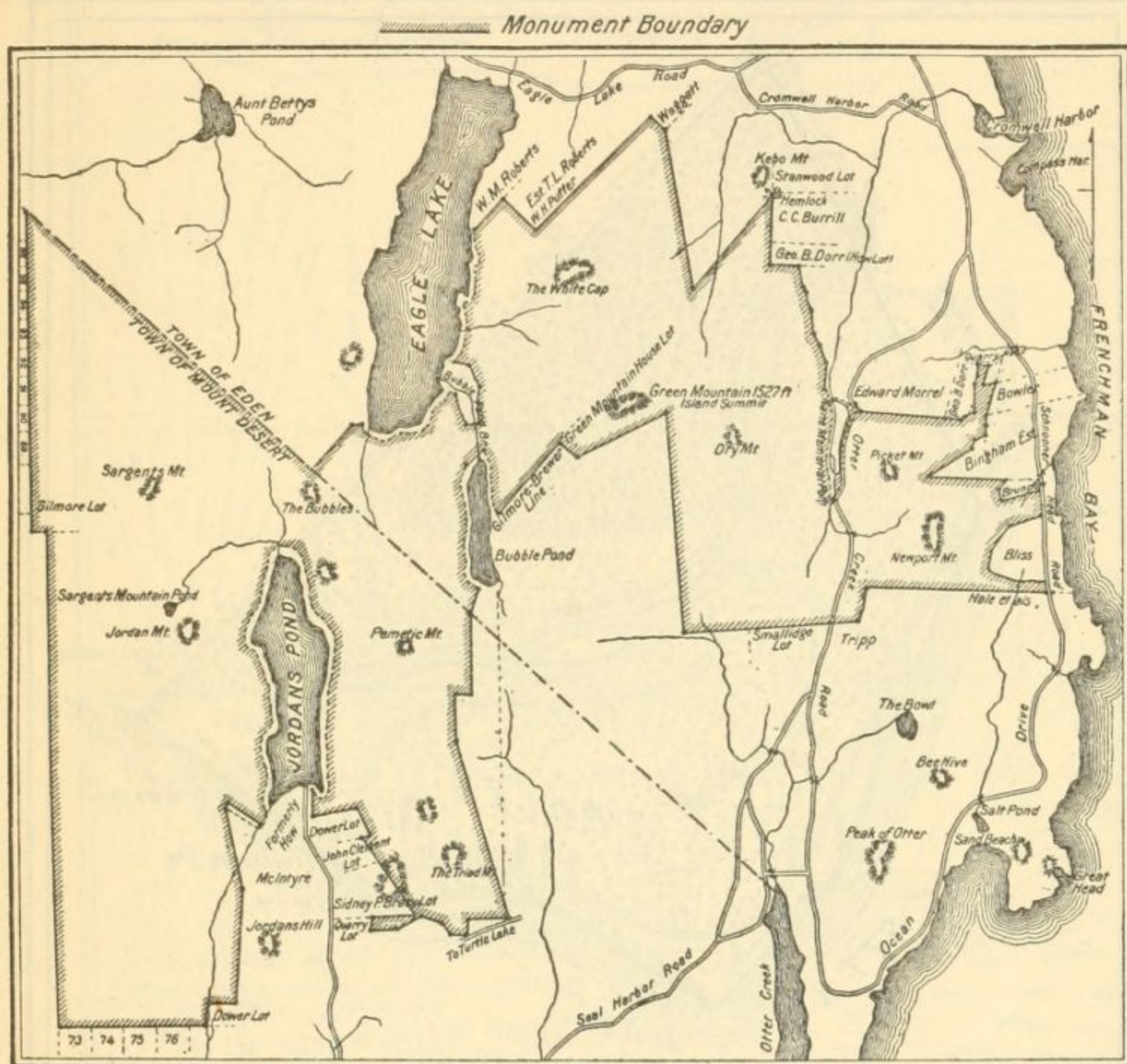
This tract embraces the summit of Mount Desert Island, Me., and about 5,000 acres of contiguous territory, rugged, partly wooded, and picturesque in the extreme; and is of great scientific interest in that its lofty summits, gorges, and drainage areas show in enduring granite the marks of the glacial trowel. Its fauna and flora are also of exceptional scientific interest and importance. The gift was made not alone for the purpose of preserving these features for public use and enjoyment, but to commemorate the discovery of Mount Desert Island by Samuel de Champlain, who, as the trusted lieutenant of *Sieur de Monts*,¹ first landed on this island while exploring the present Maine coast in September, 1604.

The monument can readily be reached from Bar Harbor, Me., or other coast resorts upon Mount Desert Island.

¹ Pierre de Guast, *Sieur de Monts*, 1560-1611, the patron of Champlain, was governor of Pons, France, and was commissioned by Henry IV of France to explore and establish colonies in America. He was in command of the expedition of 1604 and was at St. Croix when Champlain made his trip along the Maine coast and discovered Mount Desert Island.

SITKA NATIONAL MONUMENT, ALASKA.

This monument reservation, created March 23, 1910, under the act of June 8, 1906, embraces about 57 acres of comparatively level gravel plain formed by sea wash and by the deposits of Indian River, which flows through the tract, and is situated about a mile from the steamboat landing at Sitka. Upon this ground was located formerly the village of a warlike tribe—the Kik-Siti Indians—who, in 1802, massacred the Russians in old Sitka and thereafter fortified themselves and defended their village against the Russians under Baranoff and Lisianski. Here, also, are the graves of a Russian



Sieur de Monts National Monument, Mount Desert Island, Maine.

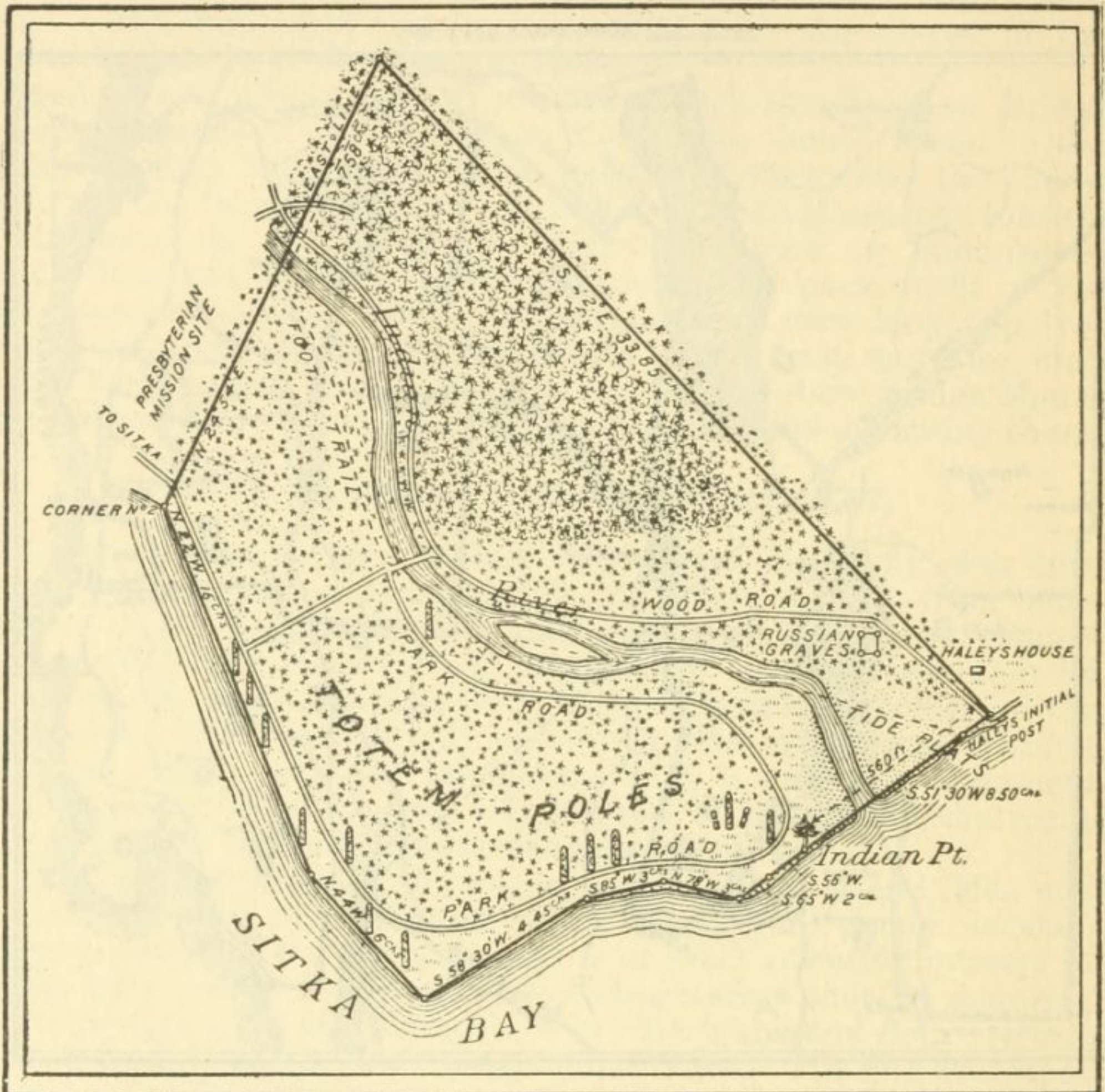
midshipman and six sailors who were killed in a decisive battle in 1804. A celebrated "witch tree" of the natives and 16 totem poles, several of which are examples of the best work of the savage genealogists of the Alaska clans, stand sentrylike along the beach.

The following is from a letter dated August 31, 1913, from Arthur G. Shoup, member of Alaskan Legislature, to J. W. Lewis, special agent, General Land Office, and now part of General Land Office files:

The great natural beauty of this park is extolled by every tourist who has ever visited Sitka, and it is partly on account of the exceptional opportunities that it affords for visitors from the States to see at once the timber growth, wild mosses and small verdure, and mountain streams of Alaska that our Government has so carefully guarded this reservation.

Referring briefly to the historical features of the Sitka National Monument, or Indian River Park, as it is called: It was here that the Russians under Baranoff in 1802 fought and won the "decisive battle of Alaska" against the Indians and effected their lodgment in southeastern Alaska that placated the then very active attempts of Great Britain to get possession of this part of the country. The Russian title thus acquired to the Alexander Archipelago was later transferred to the United States, and because of this battle ground being in the Sitka National Monument it is of great patriotic interest to every Alaskan.

Another interesting feature of this park is that it is the place where the natives used to conduct their weird trials and executions for witchcraft. The tree where the victims were hanged still stands as an object of awe to the descendants of the old schamen and a subject of curiosity to the whites.



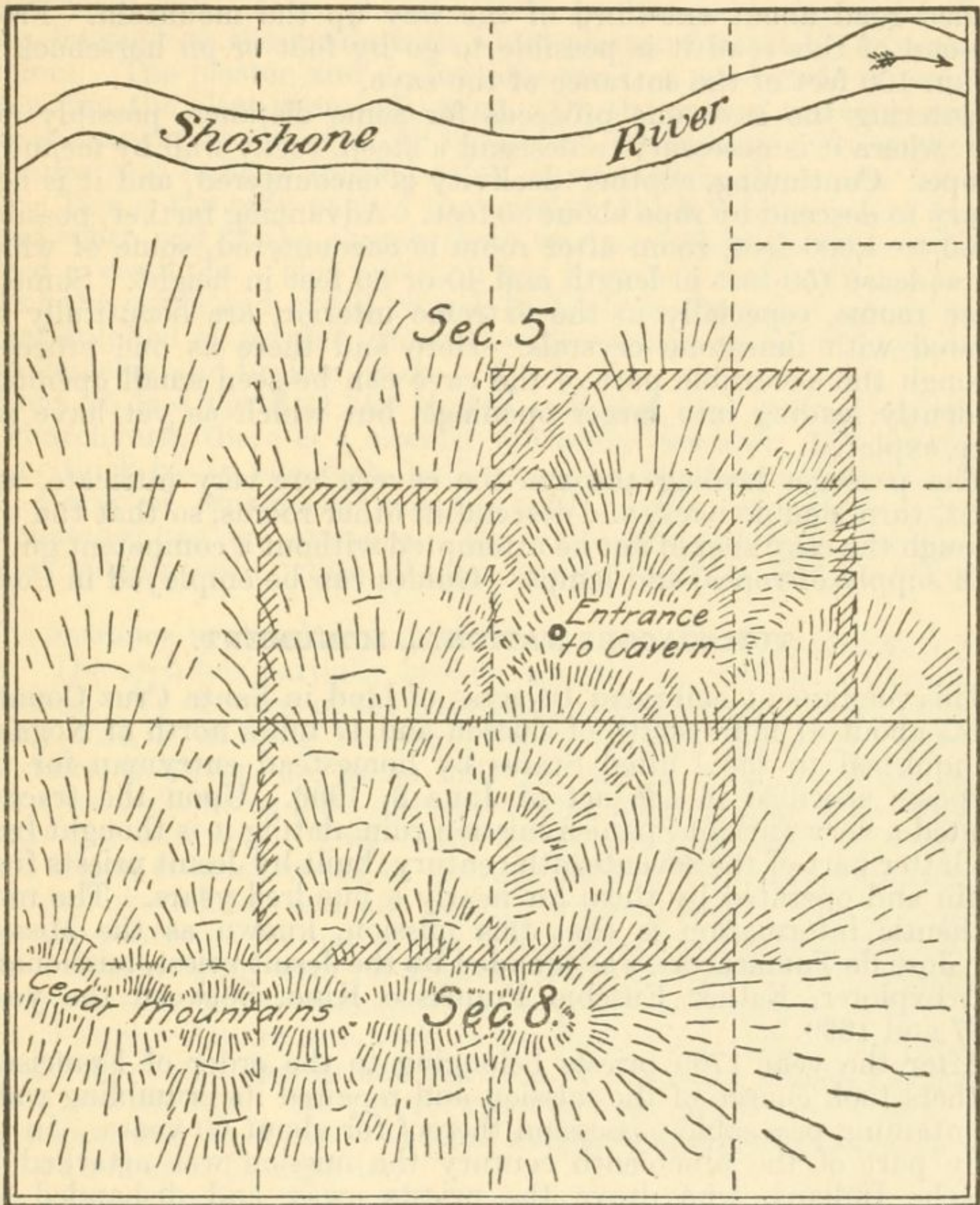
Sitka National Monument, Alaska, embracing a tract of land which includes the mouth of Indian River and adjacent territory near Sitka; created March 23, 1910.

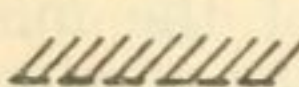
Estimate in amount \$1,000 was submitted by the governor of Alaska (as part of estimates for the fiscal year ending June 30, 1917, for administration of that Territory) for protection and preservation of the Sitka National Monument, including repair of the ancient totems and other historic relics, but failed to receive favorable consideration. However, considerable work has been done in the monument by the Alaska Road Commission, so that the roads in the tract are in very good condition for both wagon and pedestrian travel. The commission has constructed also a footbridge across Indian River at an outlay of \$2,500.

Much work remains to be done in the way of repairs to totems and clearing of foot trails. Practically all the totems need repairing to some extent and all are in need of painting.

SHOSHONE CAVERN NATIONAL MONUMENT.

The Shoshone Cavern National Monument embraces 210 acres of rough mountainous land lying about 3 miles east of the great Sho-



 *National Monument Boundary*

Shoshone Cavern National Monument, Wyo., embracing the SW. $\frac{1}{4}$ SE. $\frac{1}{4}$; W. $\frac{1}{2}$ SE. $\frac{1}{4}$ SE. $\frac{1}{4}$; SW. $\frac{1}{4}$ NE. $\frac{1}{4}$ SE. $\frac{1}{4}$; S. $\frac{1}{2}$ NW. $\frac{1}{4}$ SE. $\frac{1}{4}$; and SE. $\frac{1}{4}$ SW. $\frac{1}{4}$, sec. 5; the NW. $\frac{1}{4}$ NE. $\frac{1}{4}$ and NE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 8, T. 52 N., R. 102 W., sixth principal meridian; created September 21, 1909.

shone Dam, in Big Horn County, Wyo. It was created by presidential proclamation of September 21, 1909. The cavern entrance is located at the summit of a reef of rocks at the head of a canyon upon the north face of Cedar Mountain, about 4 miles southwesterly from Cody, Wyo., on the Chicago, Burlington & Quincy Railway. The

ascent to the entrance from the foot of the mountain is somewhat arduous. From the entrance the cavern runs in a southwesterly direction for more than 800 feet if measured in a direct line.

The best method of reaching the entrance is by means of the canyon leading from the foot of Cedar Mountain to the southwest of Cody on the east side of that mountain and which descends its eastern slope. It is possible to go by automobile or team to the foot of the mountain, a distance of about 2 miles from Cody, and then by a graded road about one-third of the way up the mountain. From the end of this road it is possible to go by foot or on horseback to within 100 feet of the entrance of the cave.

Entering the cave one proceeds for some distance, possibly 500 feet, where it is necessary to descend a steep, rocky wall by means of a rope. Continuing, another declivity is encountered, and it is necessary to descend by rope about 30 feet. Advancing farther, possibly 3,000 to 4,000 feet, room after room is encountered, some of which are at least 150 feet in length and 40 or 50 feet in height. Some of these rooms, especially in the extreme interior, are beautifully incrustated with limestone crystals. Here and there as one proceeds through the accessible part of the cave can be seen small openings, evidently leading into larger openings, but which as yet have not been explored.

The passages leading through the cavern are very intricate, and twist, turn, double back, and descend in other rooms, so that the trip through the cave should not be attempted without a competent guide, with supply of ropes, and lamps. Guides can be employed in Cody.

TUMACACORI NATIONAL MONUMENT.

This monument embraces 10 acres of land in Santa Cruz County, Ariz., about 57 miles south of Tucson and 17 miles north of Nogales, relinquished to the United States by homestead entryman for the purposes specified in the act of June 8, 1906. Upon the tract is located a very ancient Spanish mission ruin, dating it is thought from the latter part of the seventeenth century, built by Jesuit priests from Spain and operated by them for nearly a hundred years. The most authentic information is that this mission, known as the Mission San Jose de Tumacacori, was founded by the Jesuit priest, missionary, and explorer, Father Eusebio Francisco Kino, between the years 1687 and 1690.

After the year 1769 priests belonging to the order of Franciscan Fathers took charge of the mission and repaired its crumbling walls, maintaining peaceable possession thereof for about 60 years. In the early part of the nineteenth century the mission was attacked by Apache Indians, who drove the priests away and disbanded the peaceable Papago Indians residing in the vicinity of the mission. When found by the Americans, about the year 1850, the mission was in a condition of ruin.

The ruins as they stand consist of the walls and tower of an old church building, the walls of a mortuary chamber at the north end of the church building, and a court or churchyard, surrounded by an adobe wall $2\frac{1}{2}$ feet thick and 6 feet high.

The walls of the church building are 6 feet thick, built of adobe and plastered both inside and outside with lime mortar 1 inch thick. The inside walls of the main church building received two coats of

this plaster, a first or inner coat being of a rather coarse character and the finishing coat being of a very fine, hard, and lasting character. The dome over the altar and the belfry tower are constructed of burned brick, this being one of the characteristics of the architecture of the mission, in which respect the construction differs from other early Spanish missions. Inside, the dimensions of the church are 18 feet wide by 75 feet in length. The part used for the altar is situated at the north end. It is 18 feet square, surmounted with a circular dome, finished on the inside with white plaster decorated or frescoed in colors. The plaster and decorations are in a good state of preservation, but the altar is entirely gone. On the east of the altar room there is a sanctuary chamber, 16 by 20 feet, 20 feet high, covered with a circular roof built of burned brick, supported in the center by an arch. This is the only part of the mission which is now roofed over. In the south end of the church there was an arched partition which formed a vestibule. This partition has been removed. The outside wall of the north end of the church building is decorated with white plaster studded at regular intervals with clusters made of fragments of broken slag and broken brick.

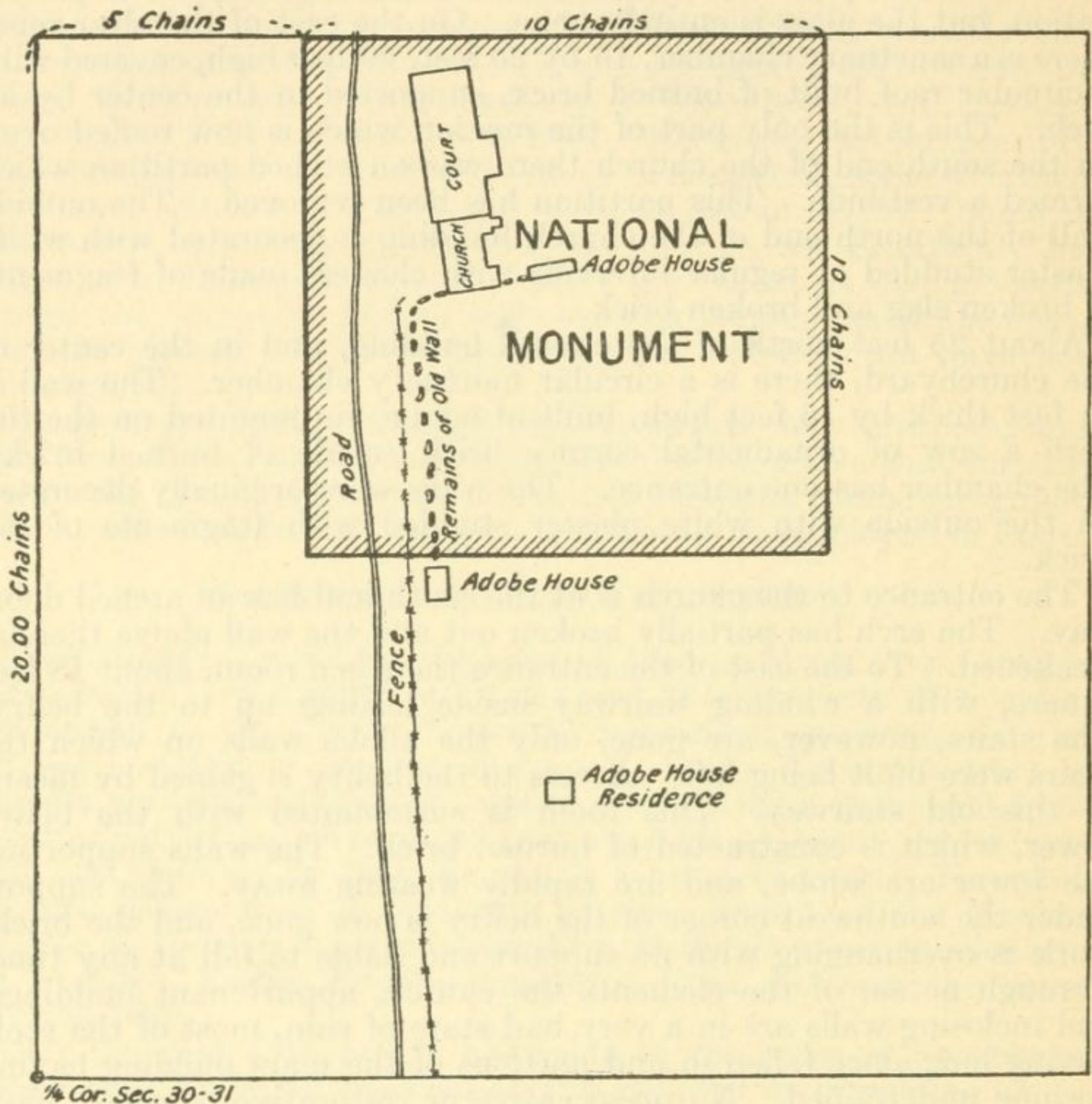
About 25 feet north of the church building, and in the center of the churchyard, there is a circular mortuary chamber. The wall is $3\frac{1}{2}$ feet thick by 16 feet high, built of adobe, surmounted on the top with a row of ornamental cornice brick (made of burned brick). The chamber has one entrance. The walls were originally decorated on the outside with white plaster studded with fragments of red brick.

The entrance to the church is at the south and has an arched doorway. The arch has partially broken out and the wall above thereby weakened. To the east of the entrance there is a room, about 18 feet square, with a winding stairway inside leading up to the belfry. The stairs, however, are gone, only the adobe walls on which the stairs were built being left. Access to the belfry is gained by means of this old stairway. This room is surmounted with the belfry tower, which is constructed of burned brick. The walls supporting the tower are adobe, and are rapidly wearing away. The support under the southwest corner of the belfry is now gone, and the brickwork is overhanging with no support and liable to fall at any time. Through action of the elements the church, appurtenant buildings, and inclosing walls are in a very bad state of ruin, most of the roofs having long since fallen in and portions of the main building having become undermined. No preservative or restorative measures have been taken, and until funds become available therefor much further deterioration is to be expected.

The plaster originally applied to the walls of the church building was of excellent quality, and where unbroken seems to be of almost imperishable character, but in many places it has been broken off and carried away, presumably for grinding up and reuse by unauthorized parties. Where the plaster has not been broken the walls are in good condition, but wherever removed rapid disintegration of the walls has resulted.

With exception of a narrow strip of land along the west boundary of this monument, the entire area lies within the private land claim Luis Maria Baca Float No. 3, which was confirmed to the heirs by

the Supreme Court of the United States on November 2, 1914. The mission is therefore on land the ownership of which is not in the Federal Government. Effort has been made during the past year by the department to secure conveyance to the Government of the land belonging to the heirs within the limits of the monument, but so far without result. Until title to this land can be vested in the Federal Government, no expenditure can be made by the department toward restoration or protection of the mission. It is altogether likely, in view of the precarious condition of the principal



Tumacacori National Monument, Ariz., embracing the E. $\frac{1}{2}$ NW. $\frac{1}{4}$ SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ and the W. $\frac{1}{2}$ NE. $\frac{1}{4}$ SW. $\frac{1}{4}$ SE. $\frac{1}{4}$, sec. 30, T. 21 S., R. 13 E., Gila and Salt River meridian; created September 15, 1908.

portions of the mission, that its damage beyond repair will take place before protective measures can be applied.

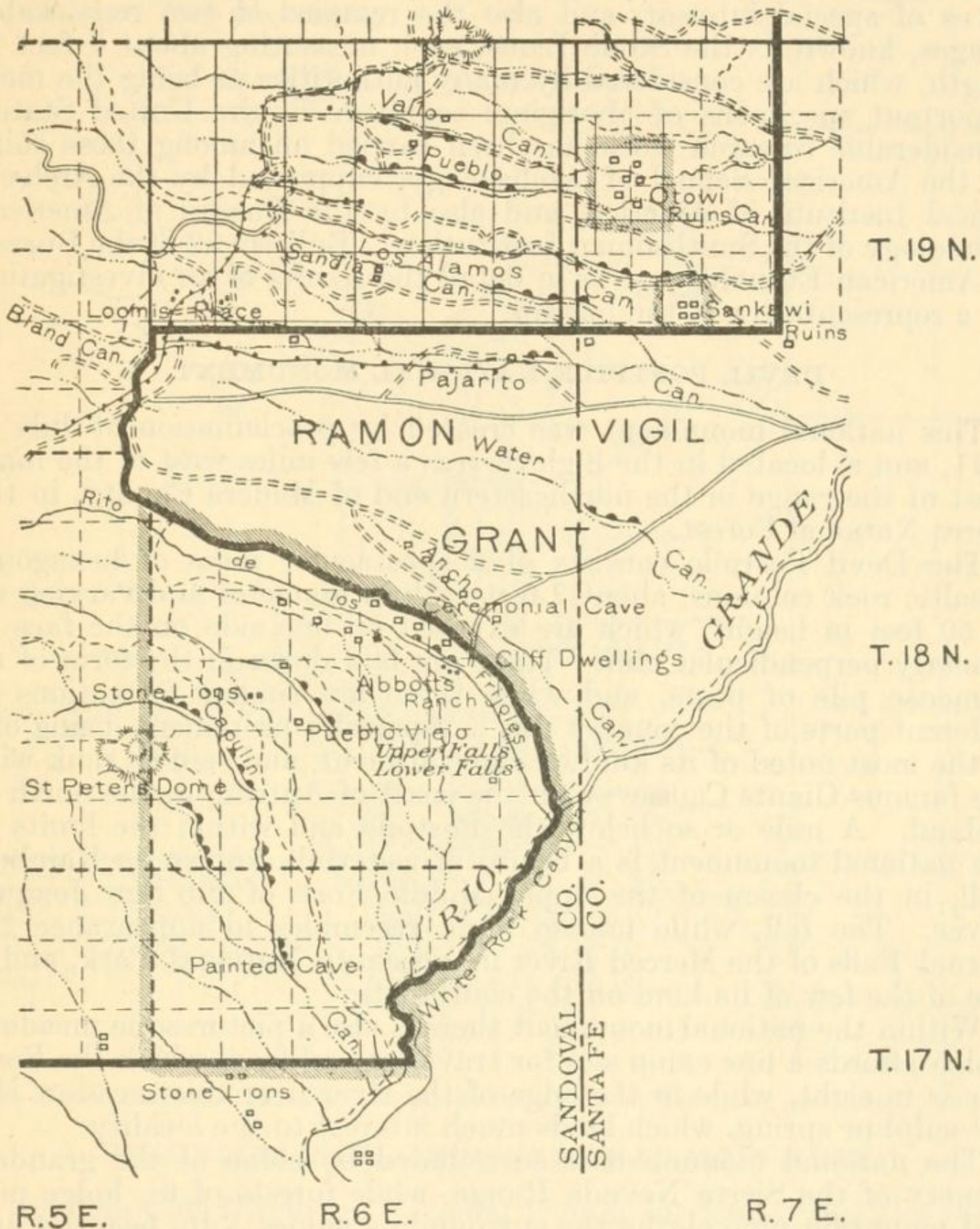
The State highway between Tucson and Nogales passes the mission and is a good automobile road. The Tucson-Nogales branch of the Southern Pacific Railway passes within a mile of the mission, the nearest railroad station being Tubac, 3 miles to the north. From Tubac the monument can be reached on foot.

The best means of travel for the public in reaching the monument is by auto mail hack which leaves Nogales, Ariz., every morning except Monday, arriving at the ruin at 10 a. m., and leaving by the same automobile for Nogales at 5.30 p. m. The round trip fare is \$1.50.

NATIONAL MONUMENTS ADMINISTERED BY THE DEPARTMENT OF AGRICULTURE.

BANDELIER NATIONAL MONUMENT.

This national monument, named in honor of the distinguished archæologist, the late Adolph Francis Alphonse Bandelier (1840-



Bandelier National Monument within the Santa Fe National Forest, N. Mex., created February 11, 1916.

1914), was created by proclamation dated February 11, 1916, and embraces approximately 22,075 acres of land within the Santa Fe National Forest, N. Mex. The nearest town is Buckman, on the Denver & Rio Grande Railroad, 18 miles from Santa Fe, N. Mex. The monument can readily be reached by automobile from Santa Fe, while a wagon road leads to it from Buckman.

Throughout the entire area prehistoric ruins of all kinds occur in vast numbers. On the sides of many of the canyons are found cliff dwellings, carved out of the soft tufa cliffs, and upon the mesa tops and in the valleys are numerous ruins of the many chambered community houses or pueblos, ranging from those of one or two rooms to large pueblos having over a hundred rooms. In addition to ruins of this sort, of which there are a great many, there are several artificial caves of special interest, and also the remains of two remarkable images, known as the Stone Lions, each measuring about 7 feet in length, which are considered by many authorities as being the most important specimens of aboriginal sculpture in the United States. Considerable research work has been carried on among these ruins by the American School of Archæology, supported by the Archæological Institute of America, and also by the Bureau of American Ethnology of the Smithsonian Institution. Bulletin 32 of the Bureau of American Ethnology gives in detail the results of an investigation by a representative of the bureau.

DEVIL POSTPILE NATIONAL MONUMENT.

This national monument was created by proclamation of July 6, 1911, and is located in the high Sierras a few miles west of the main crest of the range in the northeastern end of Madera County, in the Sierra National Forest.

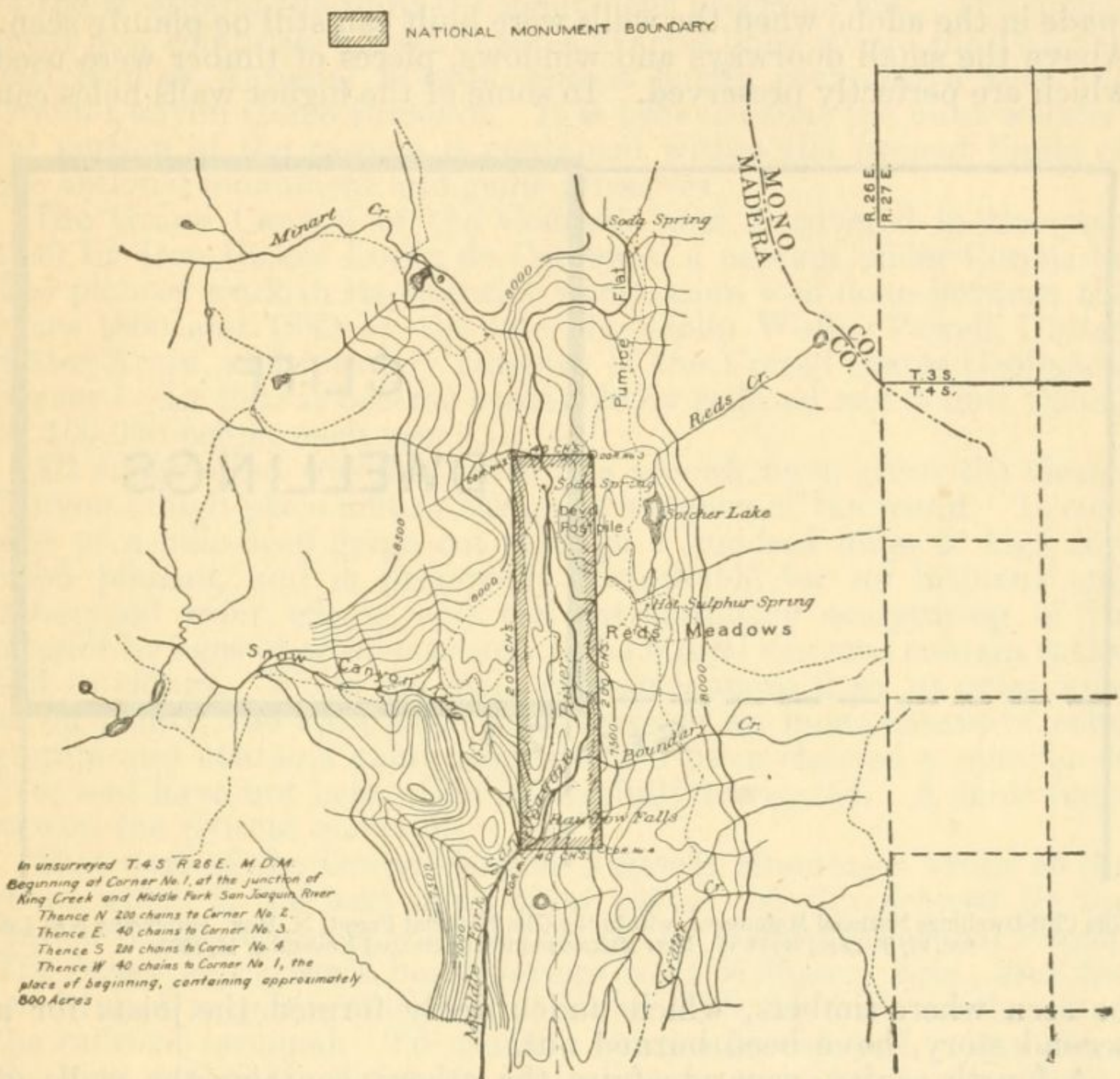
The Devil Postpile consists of a spectacular mass of hexagonal basaltic rock columns, about 2 feet each in diameter and varying up to 50 feet in height, which are exposed on one side on the face of a nearly perpendicular cliff. These are laid down in the form of an immense pile of posts, and while there are similar formations in different parts of the country this is especially prominent, being one of the most noted of its kind on the continent, and said to rank with the famous Giants Causeway on the coast of Antrim, in the north of Ireland. A mile or so below the Postpile and within the limits of the national monument is a beautiful waterfall, known as Rainbow Fall, in the chasm of the upper Middle Fork of the San Joaquin River. The fall, while not so high, resembles in appearance the Vernal Falls of the Merced River in Yosemite National Park, and is one of the few of its kind on the continent.

Within the national monument there is also a picturesque meadow, which affords a fine camp site for travelers and from which the Postpile is in sight, while in the edge of the river near this meadow is a hot sulphur spring, which lends much interest to the locality.

The national monument is surrounded by some of the grandest scenery of the Sierra Nevada Range, while forests of fir, lodge pole and mountain pine clothe the surrounding slopes. Its beauties and wonders will well repay the difficulties which are imposed upon the trip by the remoteness and relative inaccessibility of its location.

The Devil Postpile National Monument is most easily reached over the crest of the range from the east. From Laws, on the Southern Pacific, there is an automobile stage through Bishop to Mammoth, which lies at the foot of the range, and from Mammoth animals can be engaged for the trip by trail which takes only half a day over Mammoth Pass to the national monument. The latter can also be reached from Fresno, in the San Joaquin Valley on the west, either

by automobile stage to Northfork, Madera County, thence by a secondary road, passable for automobiles for some 10 miles farther, some 30 miles to Granite Creek, near the junction of the forks of the San Joaquin River, and from thence by trail only some 25 miles additional, or by the Southern Pacific and the San Joaquin & Eastern Railroads from Fresno to Cascada (or Big Creek, as the post office is called), where animals can be hired for the trip by trail over Kaiser Pass, or around the western flank of the Kaiser Ridge, about a two days' trip each way.



Devil Postpile National Monument, within the Sierra National Forest, Cal., created July 6, 1911.

GILA CLIFF-DWELLINGS NATIONAL MONUMENT.

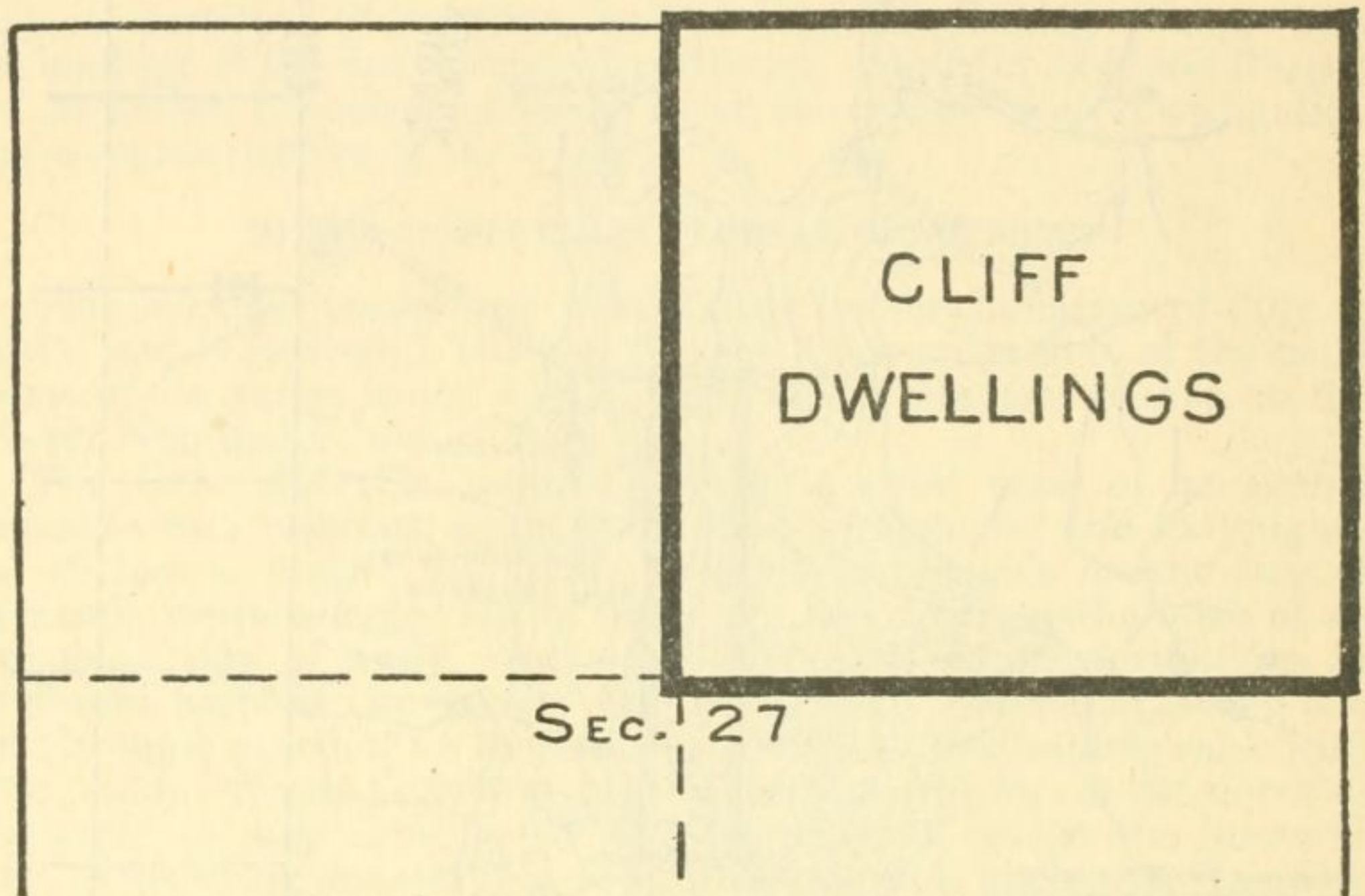
The Gila Cliff-Dwellings National Monument was created by proclamation dated November 16, 1907. These cliff-dweller ruins are neither very large nor very important, but are located in a district in which few prehistoric ruins are found.

The ruins are situated approximately 50 miles northwest of Silver City, N. Mex., and about 4 miles northwest of the Gila Hot Springs. The best way to reach them is by wagon and trail from Silver City via Pinos Altos.

The ruins are located in the mouth of a deep, rough canyon, known as the Cliff Dwellers Canyon, flowing into the West Fork of the Gila

River from the south. They occupy four natural cavities in the base of an overhanging cliff, which is about 150 feet high, and composed of a grayish yellow volcanic rock.

The largest cavity is nearly circular and about 50 feet in diameter. The arched rock forming the roof is about 10 feet above the center of the floor. In one corner is a small room 6 by 8 feet built of rock and adobe and provided with a small entrance window. Natural archways lead into two smaller tributary cavities. These are divided into a number of small rooms by walls built of adobe and small stones which are in such a good state of preservation that finger imprints made in the adobe when the walls were built can still be plainly seen. Above the small doorways and windows, pieces of timber were used which are perfectly preserved. In some of the higher walls holes can



Gila Cliff-Dwellings National Monument, within the Gila National Forest, N. Mex., embracing NE. $\frac{1}{4}$ of sec. 27, T. 12 S., R. 14 W., New Mexico meridian; created November 16, 1907.

be seen where timbers, which undoubtedly formed the joists for a second story, have been burned out.

A fourth cavity, separate from the others, contains the walls of small rooms in a good state of preservation. There is still another cavity, high on the face of the cliff, which has never been explored. As the cliff overhangs it is impossible to enter it by means of suspended ropes. It can be entered only by means of a ladder.

Part of the outer wall, which at one time evidently closed the openings into these cavities, is still partially preserved. The remainder shows that it was intended for defensive purposes, as small windows are the only openings.

When these cliff dwellings were first discovered by prospectors and hunters in the early seventies a number of relics in the shape of sandals, baskets, water vessels, cooking utensils, spears, etc., were found. Corncobs can still be found in numbers. Some of the walls have been destroyed by vandals.

A mummy was found here a number of years ago which eventually was placed in the Smithsonian Institution. Another mummy, found in 1912, also was forwarded to the Smithsonian Institution:

GRAND CANYON NATIONAL MONUMENT.

A considerable portion of the area set aside by the proclamation creating this national monument is covered by three different proclamations, one of which created the Grand Canyon Forest Reserve, one the game preserve embracing that part of the national forest north of the river, and the third the monument proclamation. The monument now comprises a tract of 806,400 acres lying within the Tusayan and Kaibab National Forests, and is partly coextensive with the Grand Canyon Game Preserve. It is believed that the most wonderful portion of the canyon is contained within the present limits of the national monument and game preserves.

The Grand Canyon of the Colorado was discovered in the year 1540 by Don García Lopez de Cardenas, a captain under Coronado. The pioneer work in its scientific exploration was done between the years 1869 and 1882 by the late Maj. John Wesley Powell, United States Army, and formerly Director of the United States Geological Survey.¹ In 1902 it became accessible by railroad and is now visited by 100,000 people each year.

All experienced travelers, with one accord, have given the Grand Canyon a high place among the great wonders of the world. It consists of a mile-deep gorge cut through a hundred miles of high forested plateau, and is principally remarkable for its brilliant and variegated color effects and the extraordinary sculpturing of its interior by ages of erosive action. The lateral canyons contain many cliff dwellings. While the main canyon is more than 10 miles wide at all points, the river itself runs through an inner chasm of solid granite and contains many rapids which have claimed a number of lives and have not been often successfully navigated. A cable ferry crosses the river at one point.

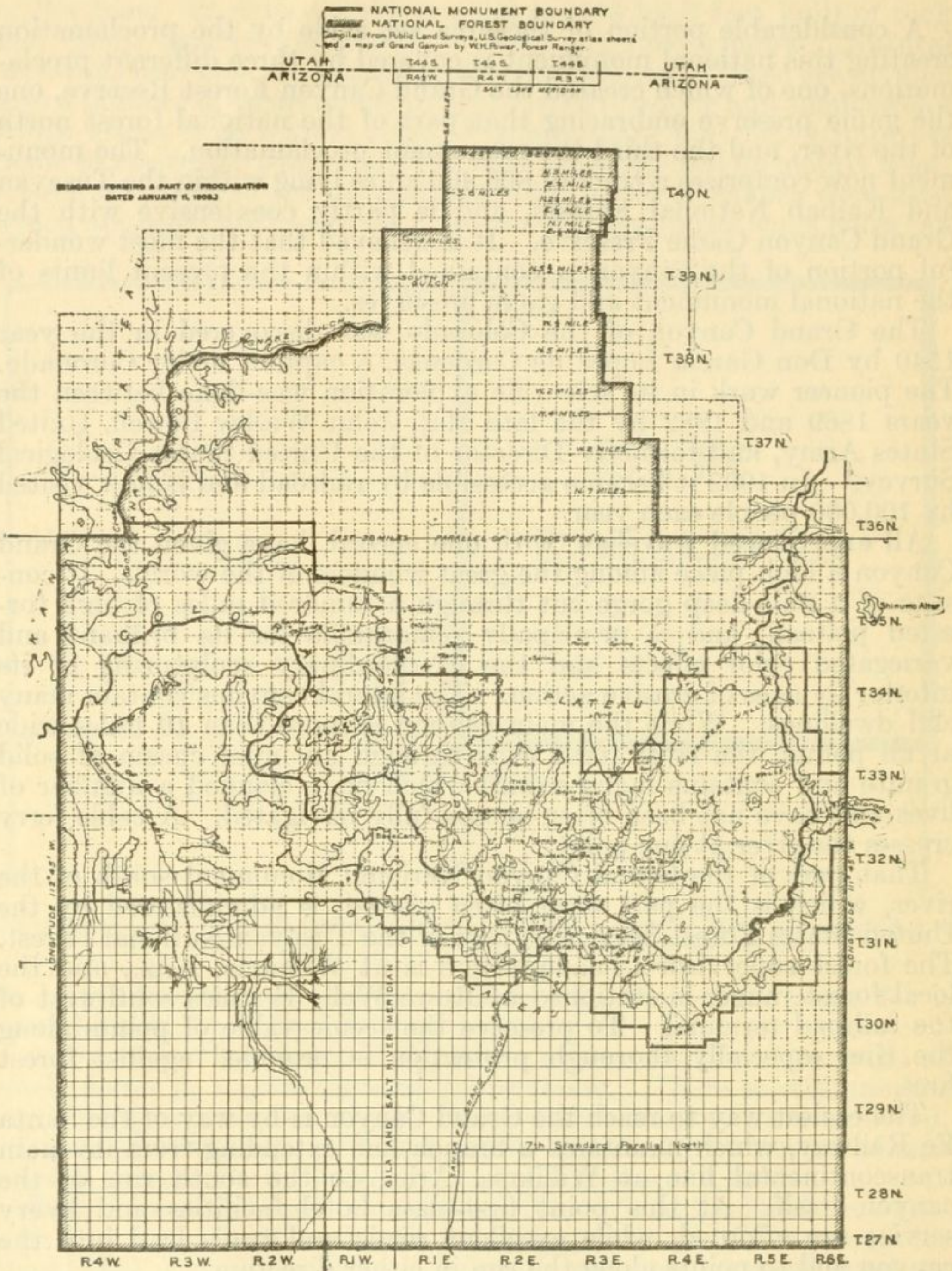
That part of the Grand Canyon National Monument south of the river, which is the part most often visited, is administered by the United States Forest Service as part of the Tusayan National Forest. The forest supervisor's headquarters is at Williams, Ariz., and the local forest ranger is stationed at Rowe Well, 3½ miles southwest of the railroad terminal. To preserve the scenic value of points along the rim, especially thorough protection is provided against forest fires.

The easiest way to reach the Grand Canyon is by way of the Santa Fe Railway, which maintains a branch line extending from its main transcontinental line at Williams, Ariz., to the south rim of the canyon itself. At this point first-class hotel facilities and livery service are afforded, while excellent roads and trails lead into the canyon and to points along the rim in either direction.

Transcontinental motorists are also visiting the canyon in increasing numbers. Good branch roads lead to the canyon from the main ocean-to-ocean highway.

¹ A monument to commemorate the work of Maj. Powell has been recently erected on the south brink of the canyon not far from the El Tovar Hotel. (For photograph see *Am. Forestry*, vol. 22, p. 205, April, 1916.)

Under the protection given by the Forest Service, under the authority of the proclamation establishing the Grand Canyon National Game Preserve, game animals have steadily increased. The preserve is now estimated to contain 10,000 head of blacktail deer and



Grand Canyon National Monument, within the Grand Canyon National Forest, Ariz.; created January 11, 1908.

a large number of bighorn or mountain sheep. Mountain lions and other predatory animals are systematically destroyed by forest officers.

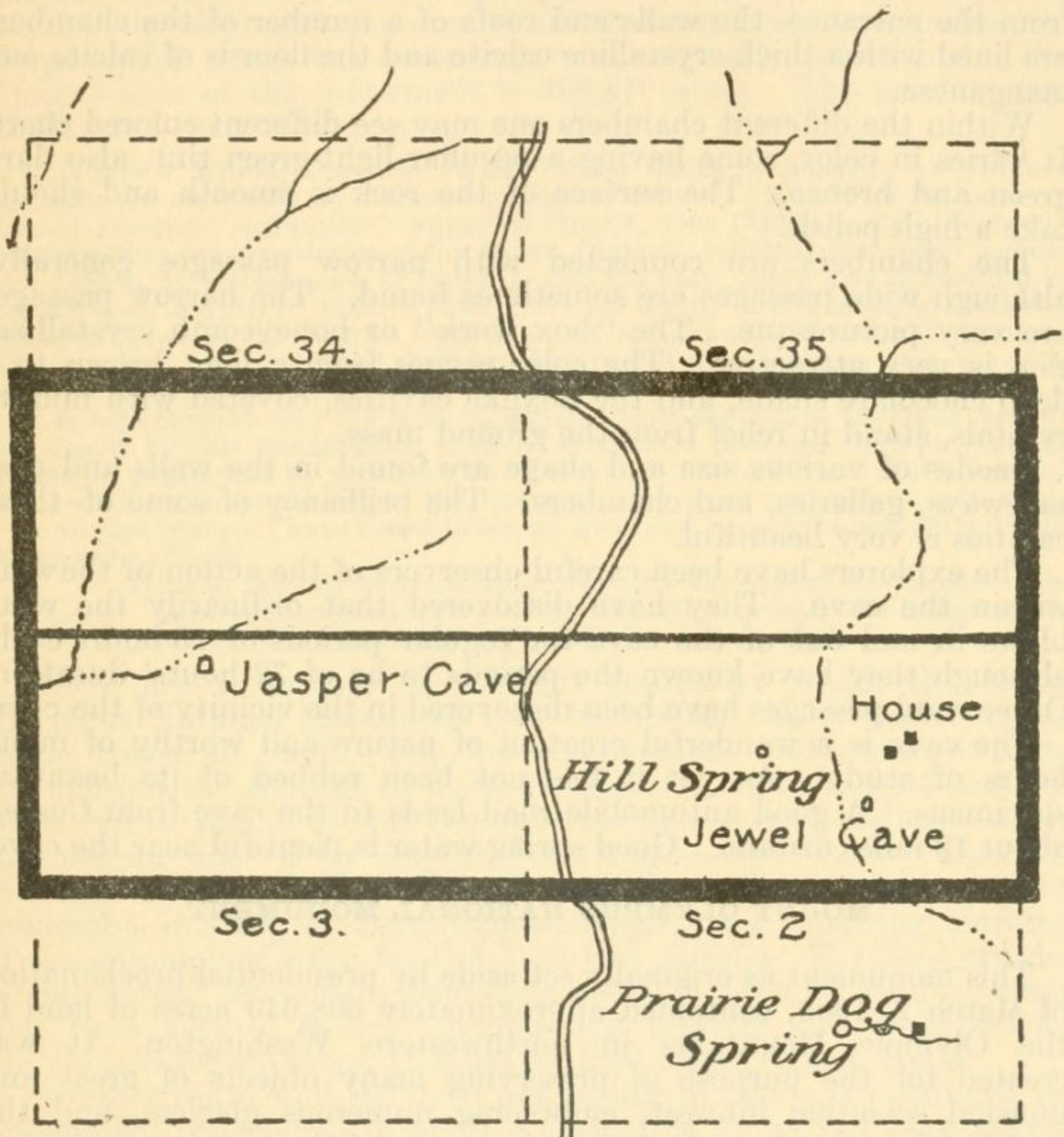
Steps have been taken to create a national park of the Grand Canyon of the Arizona, and a bill (H. R. 6331) providing for such purpose

was introduced in the Sixty-second Congress April 20, 1911. The bill, however, did not become a law. In the Sixty-fourth Congress similar bills (H. R. 20447 and S. 8250) were introduced, and in the Sixty-fifth Congress S. 390 will be given consideration.

JEWEL CAVE NATIONAL MONUMENT.

Jewel Cave National Monument was created by proclamation dated February 7, 1908.

Jewel Cave, which is located 13 miles west and south of Custer, the county seat of Custer County, S. Dak., was discovered on August 18,



Jewel Cave National Monument, within the Black Hills National Forest, S. Dak., Tps. 3 and 4 S., R. 2 E. Black Hills meridian; created February 7, 1908.

1900, by two prospectors, Albert and F. W. Michaud, whose attention was attracted by the noise of wind coming from a small hole in the limestone cliffs on the east side of Hell Canyon. In the hope of discovering some valuable minerals and the source of the wind, these men, in company with one Charles Bush, enlarged the opening.

The cave, as far as known, is located in limestone formation and is apparently the result of action of water. A prominent geologist who

visited this cave believes it to be an extinct geyser channel. The main passage has been explored a distance of over 3 miles, although it has been opened up for visitors only $1\frac{1}{2}$ miles, a short distance beyond Milk River, which is a stream flowing through a white limestone, which gives the water the appearance of milk.

The limits of the main passage and side galleries are as yet unknown. Explorations have been carried in a northerly direction and vertically 100 feet below the entrance.

On either side of the main passage are side galleries and chambers of various sizes. The first chamber, or gallery, is lithographic limestone and resembles the Gothic style of architecture. About 500 feet from the entrance, the walls and roofs of a number of the chambers are lined with a thick crystalline calcite and the floor is of calcite and manganese.

Within the different chambers one may see different colored chert. It varies in color, some having a peculiar light-green tint, also dark green and bronze. The surface of the rock is smooth and should take a high polish.

The chambers are connected with narrow passages generally, although wide passages are sometimes found. The narrow passages are very picturesque. The "box work" or honeycomb crystallization is very attractive. The color ranges from a light brown to a deep chocolate shade, and the boxlike cavities, covered with minute crystals, stand in relief from the ground mass.

Geodes of various size and shape are found in the walls and passageways, galleries, and chambers. The brilliancy of some of these cavities is very beautiful.

The explorers have been careful observers of the action of the wind within the cave. They have discovered that ordinarily the wind blows in and out of the cave for regular periods of 15 hours each, although they have known the periods to be of 72 hours' duration. Other wind passages have been discovered in the vicinity of the cave.

The cave is a wonderful creation of nature and worthy of many hours of study. As yet it has not been robbed of its beautiful specimens. A good automobile road leads to the cave from Custer, about 12 miles distant. Good spring water is plentiful near the cave.

MOUNT OLYMPUS NATIONAL MONUMENT.

This monument as originally set aside by presidential proclamation of March 2, 1909, contained approximately 608,640 acres of land in the Olympic Mountains in northwestern Washington. It was created for the purpose of preserving many objects of great and unusual scientific interest, embracing numerous glaciers, and the territory has also been from time immemorial the summer range and breeding ground of the Olympic elk, a species which is rapidly decreasing in numbers. These elk have been protected by special State laws, which prohibit killing them at any season for about 10 years, and now that their summer range is protected they are beginning to increase. In fact, while it is impossible to say how many elk are now found within the monument, it is probably safe to estimate the number in the whole Olympic region at double what it was in 1905, when the season was first closed and when the total number was estimated at 2,000.

Bills were introduced in the Sixty-second Congress on July 15, 1911, and February 13, 1912, providing for establishment as a national park the same tract of land as was set aside by proclamation of the President creating the Mount Olympus National Monument. These measures failed to pass, and in the Sixty-fourth Congress similar bills (S. 3488 and H. R. 6864) were again introduced in 1916.

The reservation was reduced by presidential proclamation of April 17, 1912, to 608,480 acres in order to permit certain claimants to land therein to secure title to the land. By proclamation of May 11, 1915, the monument was further reduced, and the lands eliminated thereby made part of the Olympic National Forest, in order to permit of their development, the area eliminated not being essential to the purposes for which the monument was originally established. The present area of the monument is 299,370 acres. The proclamation of May 11, 1915, reads:

I, Woodrow Wilson, President of the United States of America, by virtue of the power in me vested by section 2 of the act entitled, "An act for the preservation of American antiquities," approved June 8, 1906 (34 Stat., 225), do hereby proclaim that the boundaries of the Mount Olympus National Monument as fixed and defined by proclamation of March 2, 1909 (35 Stat., 2247), and as modified by proclamation of April 17, 1912 (37 Stat., 1737), are hereby further modified and established as shown on the diagram forming a part hereof, and said national monument as so modified and established shall be administered in accordance with the aforesaid proclamation of March 2, 1909.

It is not intended that the lands eliminated from the Mount Olympus National Monument by this proclamation shall be eliminated from the Olympic National Forest, as established by proclamation of March 2, 1907 (34 Stat., 3306), but such lands shall continue subject to the reservation for forest purposes therein made.

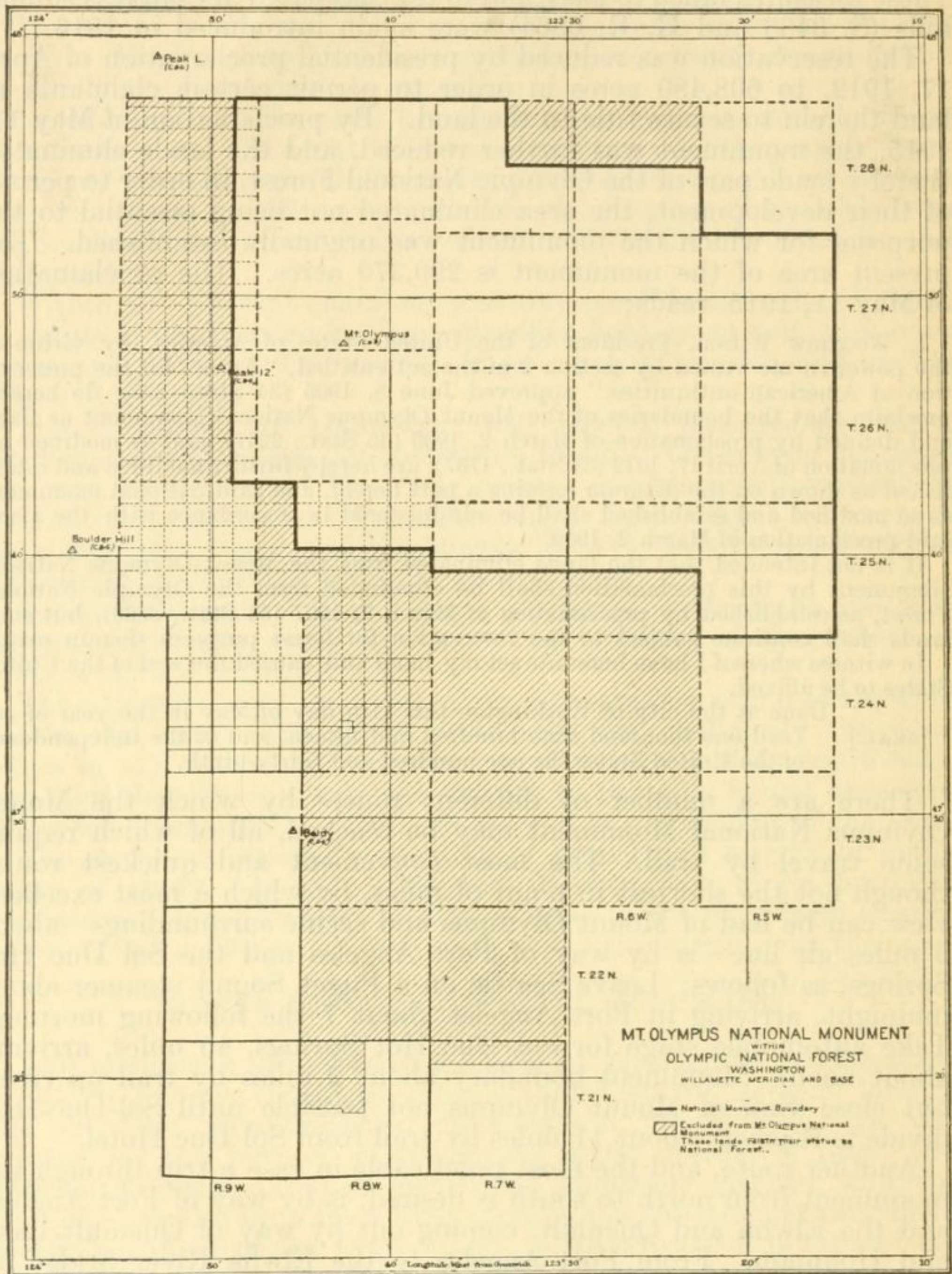
In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the city of Washington this 11th day of May in the year of our [SEAL.] Lord one thousand nine hundred and fifteen, and of the independence of the United States the one hundred and thirty-ninth.

There are a number of different routes by which the Mount Olympus National Monument may be reached, all of which require some travel by trail. The most convenient and quickest route, though not the shortest in point of miles, by which a most excellent view can be had of Mount Olympus and scenic surroundings—about 6 miles air line—is by way of Port Angeles and the Sol Duc Hot Springs, as follows: Leave Seattle on a Puget Sound steamer about midnight, arriving in Port Angeles about 7 the following morning. Take automobile stage for Sol Duc Hot Springs, 45 miles, arriving about noon. Monument boundary about 2 miles by trail up river, but close view of Mount Olympus not possible until Sol-Duc-Hoh divide is reached, about 11 miles by trail from Sol Duc Hotel.

Another route, and the most practicable in case a trip through the monument from north to south is desired, is by way of Port Angeles and the Elwha and Queniult, coming out by way of Queniult Lake and Hoquiam. From Port Angeles to the Elwha River bridge on the Lake Crescent road is a little under 11 miles, the morning stage reaching that point about 9.30 a. m. Horse or foot travel must then be resorted to over a mountain trail of more than ordinary steep pitches, exasperating ups and downs, and, on the Queniult side, some very narrow and rather dangerous grades for a total through distance to Queniult Lake of about 70 miles. A side trip to the Elwha-Queets divide at the base of Mount Olympus would add 12 miles

more. Other trail routes approach close to portions of the monument, but do not lead through or into the highest and most scenic interior, such travel being possible only on foot and by merely picking one's way along rough snowcapped ridges or through creek bottoms,



Mount Olympus National Monument, within the Olympic National Forest, Wash., originally created March 2, 1909; boundaries modified as above May 11, 1915.

along elk trails, etc. The two best trails from the east, or Hoods Canal, side are up the Dosewallips River and the North Fork of Skokomish River. The Dosewallips route is accessible from Seattle as follows: Take steamship *Potlatch* from Seattle at 9 a. m., reaching

Brinnon about 2 p. m. A wagon road extends up the Dosewallips River 7 miles from Brinnon, and a quite satisfactory horse trail continues to Sulphur Springs, 13 miles farther, which lands one within 5 or 6 miles of the monument boundary. Travel beyond that point is only possible on foot and with considerable personal exertion and rough going. At least 30 miles of very rough travel would be necessary to reach Mount Olympus, the highest point, 8,200 feet.

The North Fork Skokomish route may be reached from Seattle as follows: Take steamship *Potlatch* from Seattle at 9 a. m., arriving at Hoodspoint about 4.30 p. m. Automobile stage to Lake Cushman, 9 miles, same evening. A fair horse trail from the hotels at that point reaches the head of the river a few miles inside the monument boundary, a distance of nearly 20 miles, from which point an excellent view may be had of the Mount Anderson country. Cross-country travel to Mount Olympus is, however, impossible from this point, excepting on foot and with unusually careful and tedious mountain climbing.

The only feasible route from the west side is up the Hoh River over a horse trail, which is quite satisfactory in dry weather, extending 40 miles from the settlement of Forks. Forks is reached by automobile road from Port Angeles and from Clallam Bay, being about 62 miles from the former and about 30 from the latter. The horse trail on the upper Hoh ends at 4 or 5 miles inside the monument and perhaps 10 miles by a rough and somewhat dangerous foot-travel route from the top of Mount Olympus.

OLD KASAAN NATIONAL MONUMENT.

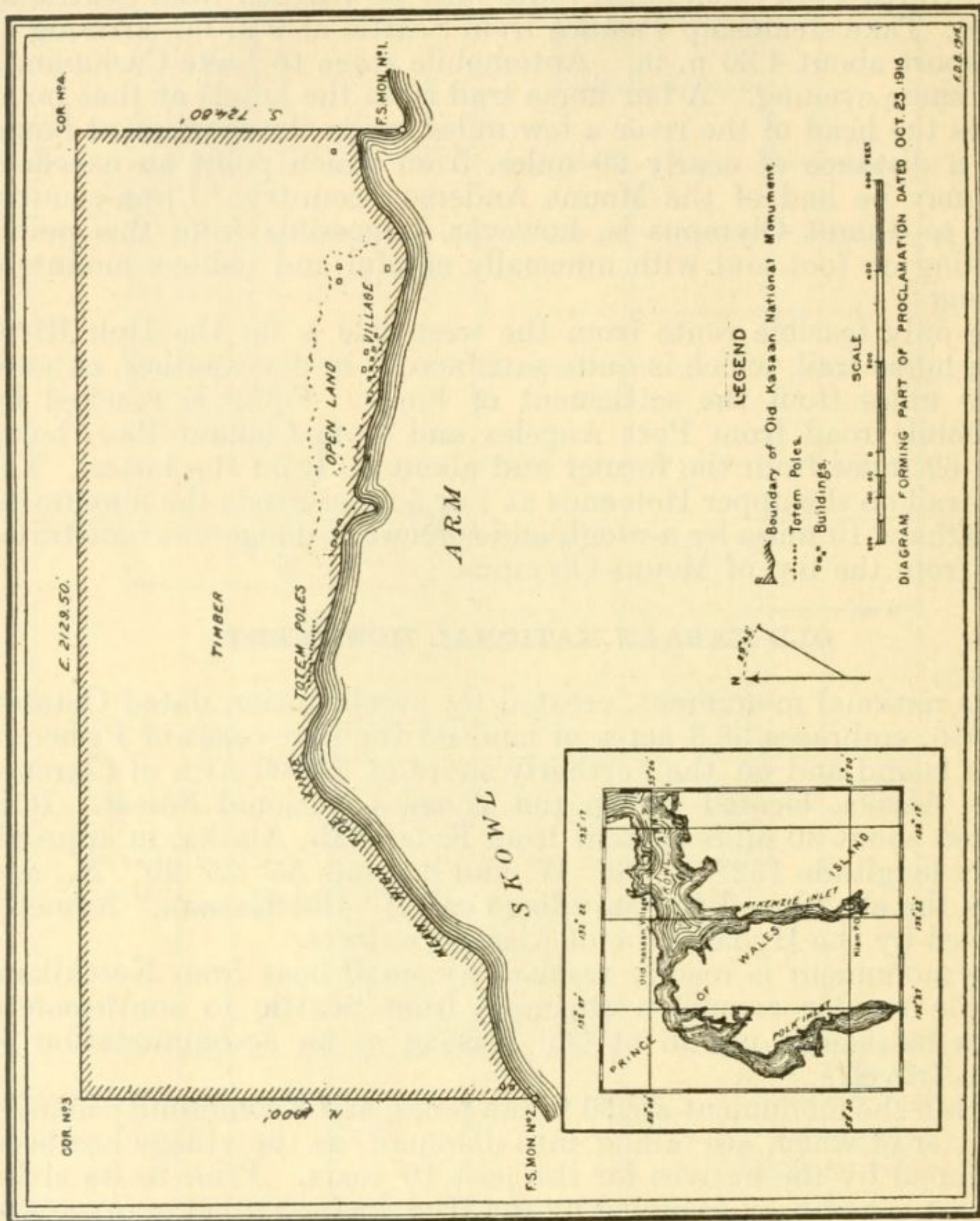
This national monument, created by proclamation dated October 25, 1916, embraces 38.3 acres of land on the east coast of Prince of Wales Island and on the northerly shore of Skowl Arm of Clarence Strait, Alaska, located within the Tongass National Forest. It is situated about 30 miles distant from Ketchikan, Alaska, in approximately longitude $132^{\circ} 23' 30''$ W. and latitude $55^{\circ} 25' 30''$ N., and covers the abandoned Indian village called "Old Kasaan," formerly occupied by the Hydah tribe of Alaskan natives.

The monument is readily reached by small boat from Ketchikan, and the regular excursion steamers from Seattle to southeastern Alaska frequently put in at Old Kasaan as an accommodation to tourist travel.

Within the monument are 50 totem poles, and 8 community houses, the latter of which are falling into disrepair, as the village has been abandoned by the natives for the past 10 years. Prior to its abandonment it had been occupied by the Hydahs for a great many years. The location is in one of the most beautiful spots in southern Alaska.

About 30 of the totem poles are in the village, the others being in a group about 500 feet westerly of the village. In the westerly portion of the village are six graves with monuments and small grave houses. Six others are situated in the easterly portion of the village. The community houses are rectangular buildings, the largest being 40 by 60 feet, made entirely from round, split, and carved timbers. The interior of these buildings is all in one room, in the center of which, in the larger buildings, is a two-decked pit, the inner pit being

about 24 feet square. This pit is lined on each side by a cedar plank 6 inches thick and 2 feet high, the floor of the upper deck being 3 feet wide and the outer sides being lined with 6-inch plank 24 inches high, similar to the inner pit. In the center of this pit is a graveled fireplace, 8 by 10 feet. Above this fireplace there is a hole in the roof for the escape of the smoke. Around the outside of the pit there is a floor space anywhere from 4 to 10 feet in width, depending upon the



Old Kasaan National Monument within the Tongass National Forest, Alaska.

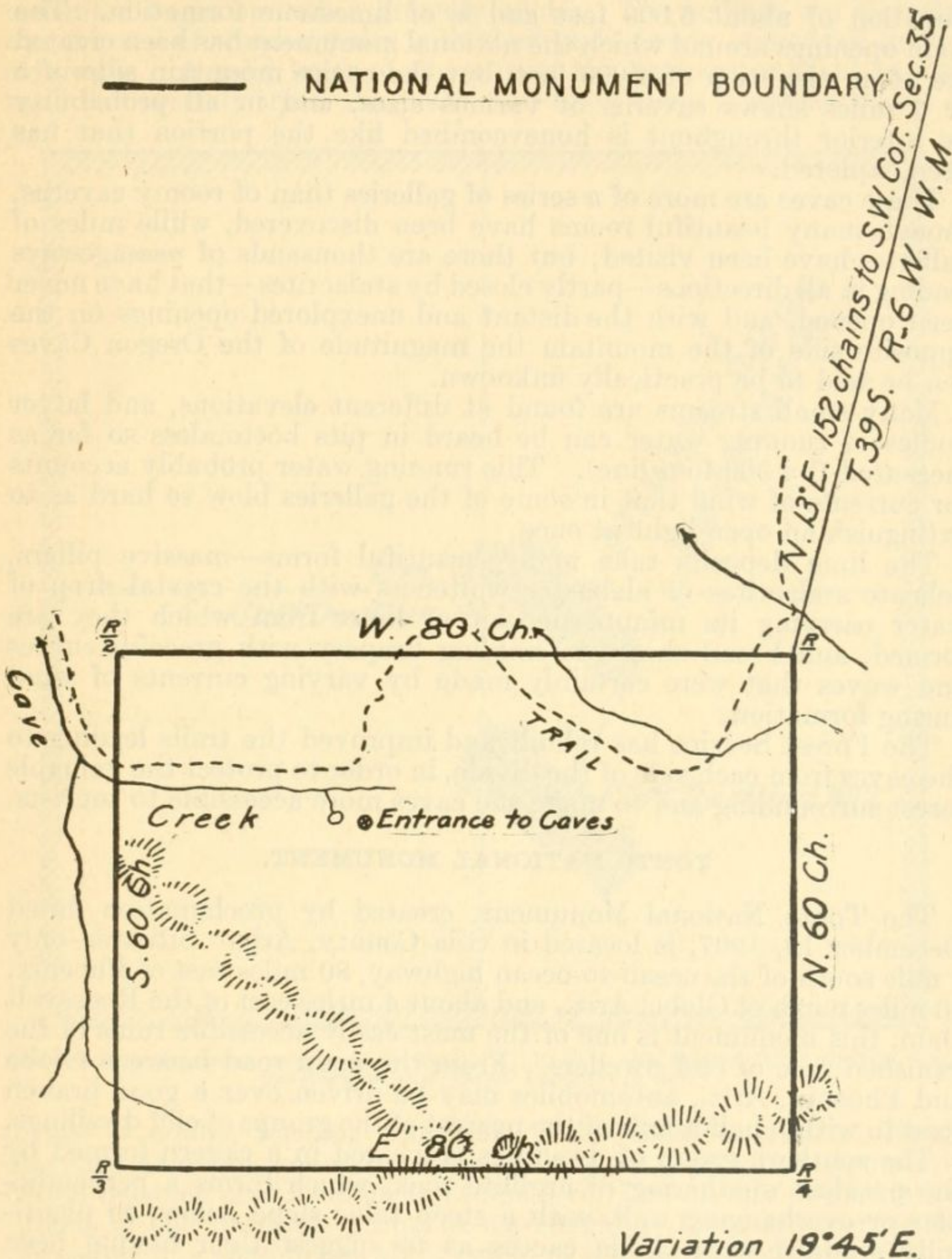
size of the building. On this floor space is found a number of sleeping booths consisting merely of boxes made of split cedar about the size of a piano box, on one side of which there is a horizontal opening for entrance. These pits were arranged for the accommodation of the occupants of the houses, in each of which always lived a large number of families.

The community houses are peculiarly illustrative of the architecture of the Alaskan native.

OREGON CAVES NATIONAL MONUMENT.

The Oregon Caves National Monument was created by proclamation of July 12, 1909.

The Oregon Caves, or "Marble Halls," of Josephine County, discovered by Elija Davidson in 1874, are located in the Siskiyou



Oregon Caves National Monument, within the Siskiyou National Forest, Oreg., created July 12, 1909.

National Forest about 30 miles south of Grants Pass in Cave Mountain, a peak of the Greyback Range that divides the headwaters of the Applegate and Illinois Rivers and connects with the Siskiyou Mountains near the north line of California.

Leaving the Southern Pacific Railway at Grants Pass, a fair wagon and automobile road runs as far as the Stephens Ranch on upper Williams Creek, a distance of 26 miles. From this point to the caves the trip must be made on horseback or afoot over a very good forest trail a distance of about 10 miles.

Cave Mountain, the peak which contains these caves, rises to an elevation of about 6,000 feet and is of limestone formation. The main openings around which the national monument has been created are at an elevation of 4,000 feet, but the entire mountain side of 5 or 6 miles shows caverns of various sizes, and in all probability its interior throughout is honeycombed like the portion that has been explored.

These caves are more of a series of galleries than of roomy caverns, though many beautiful rooms have been discovered, while miles of galleries have been visited; but there are thousands of passageways leading in all directions—partly closed by stalactites—that have never been opened, and with the distant and unexplored openings on the opposite side of the mountain the magnitude of the Oregon Caves can be said to be practically unknown.

Many small streams are found at different elevations, and larger bodies of running water can be heard in pits bottomless so far as measured (by 300-foot line). This running water probably accounts for currents of wind that in some of the galleries blow so hard as to extinguish an open light at once.

The lime deposits take many beautiful forms—massive pillars, delicate stalactites of alabaster whiteness with the crystal drop of water carrying its minute deposit of lime, from which they are formed, and broad sheets resembling drapery with graceful curves and waves that were certainly made by varying currents of wind during formation.

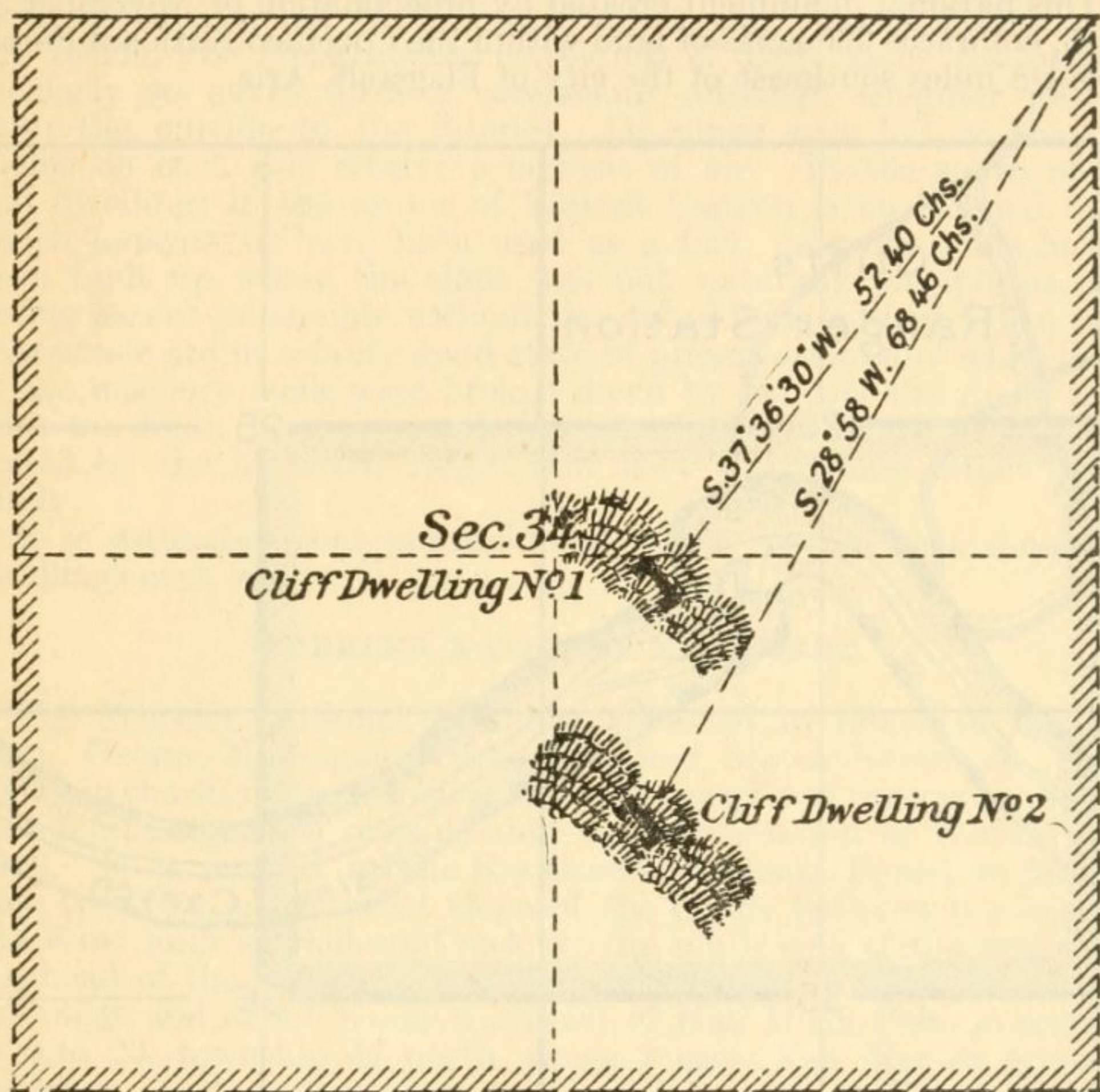
The Forest Service has rebuilt and improved the trails leading to the caves from each side of the divide, in order to protect the valuable forest surrounding and to make the caves more accessible to tourists.

TONTO NATIONAL MONUMENT.

The Tonto National Monument, created by proclamation dated December 19, 1907, is located in Gila County, Ariz. Situated only 1 mile south of the ocean-to-ocean highway, 80 miles east of Phoenix, 40 miles north of Globe, Ariz., and about 4 miles east of the Roosevelt Dam, this monument is one of the most easily accessible ruins of the vanished race of cliff dwellers. From the main road between Globe and Phoenix, Ariz., automobiles may be driven over a good branch road to within half a mile of the nearest of the groups of cliff dwellings.

The southern group of dwellings is located in a cavern formed by the peculiar weathering of argillite rock, which forms a perpendicular or overhanging wall, with a steep talus slope below, so plentifully studded with cholla cactus as to suggest their having been planted there by the cliff dwellers as a defense against their enemies. This natural cavern is about 125 feet across and the ledge upon which the dwellings are built is 35 feet wide at the widest point. From the outer edge of the footwall to the overhanging roof of the cavern the perpendicular distance is 30 or 40 feet. The dwelling, evidently communal, contained originally about 15 chambers, each

from 12 to 16 feet square and 6 feet in height. Ten chambers are in a fair state of preservation, and most of these are two or three storied, depending upon whether or not the inhabitants lived in the space between the second artificial roof and the cavern roof above. The construction of the dwellings shows careful planning and no mean knowledge of the art of masonry. The walls are of flat rocks cemented together with a gravelly adobe. The ceilings are cleverly constructed of wooden poles with their ends deeply embedded in the side walls. A solid layer of fibers from the Saguaro or giant cactus rests transversely upon the poles, and upon them is spread about 4



Tonto National Monument, unsurveyed sec. 34, T. 4 N., R. 12 E., Gila and Salt River meridian, Ariz., containing 640 acres; created December 19, 1907.

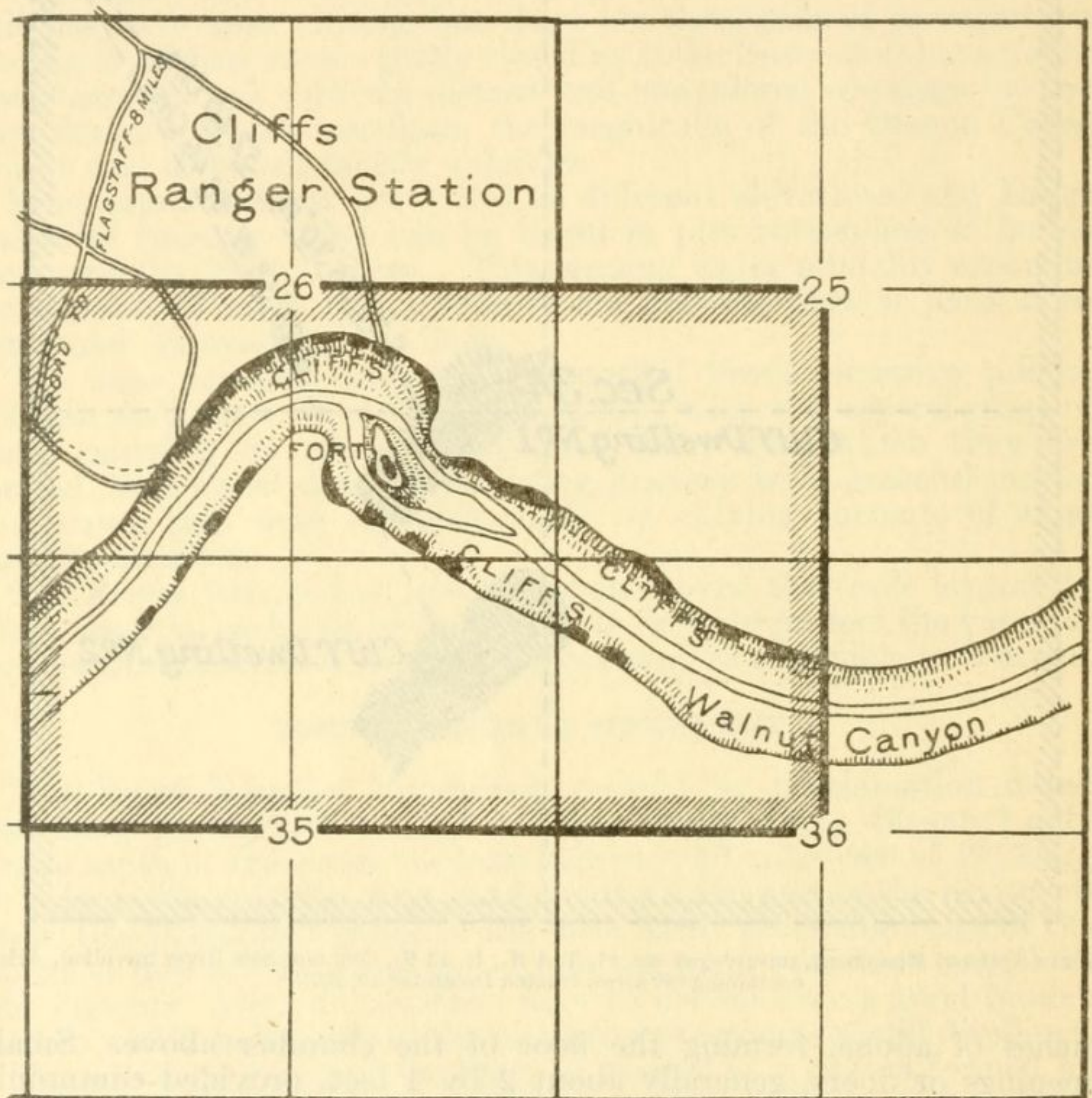
inches of adobe, forming the floor of the chamber above. Small openings or doors, generally about 2 by 4 feet, provided communication between chambers on the same level, but in only one instance (noted in the northern group of dwellings) is there an opening in the ceiling of a chamber to allow egress to the chamber above. There are occasional small holes in the side walls of the inner chambers, apparently for the purpose of ventilation, lighting, or communication, but so-called "arrow holes" in the outer walls, through which the beleaguered inhabitants are popularly supposed to have shot arrows at storming parties of their enemies, have every appearance of being

simply apertures left by the removal of the roofing poles. Fragments of metates, or primitive stone utensils for grinding corn, and even corncobs, are to be found among the ruins.

The northern group of dwellings includes two caverns. One contains about 12 rooms in a better state of preservation than those of the southern group, although badly vandalized. One large interior chamber is in a perfect state of preservation. The other cavern of this group contains eight single-storied chambers, poorly preserved.

WALNUT CANYON NATIONAL MONUMENT.

This national monument created by proclamation of November 30, 1915, embraces 960 acres of land within the Coconino National Forest, about 8 miles southeast of the city of Flagstaff, Ariz.



Walnut Canyon National Monument within the Coconino National Forest, Ariz., created November 30, 1915.

Within this area, and along both sides of Walnut Canyon, there are situated about 30 prehistoric cliff dwellings of great scientific and popular interest. These cliff dwellings are readily accessible, since a transcontinental railroad passes through Flagstaff, and the highway known as the "Ocean-to-Ocean and Old Trails Highway" now passes within a short distance of Walnut Canyon. At present a

local officer of the Forest Service who resides at the Cliffs Ranger Station, immediately north of this area, acts as custodian of these ruins. The scenic features surrounding the cliff dwellings are also quite notable, since the trail from the pine-covered mesa passes down an arroyo fringed with locust. This trail follows around the benches of the canyon walls, as most of the ruins are below the canyon rim. In places ladders have been constructed so that cliff dwellings otherwise inaccessible might be reached. The cliff houses themselves were built in under the outward sloping canyon walls. Apparently each must have been built for the accommodation of one large family, since the largest contains but 6 to 8 rooms. They were all constructed with selected stone and mortar, plastered on the inside, the construction consisting of large slabs set perpendicularly so as to form a continuous although irregular passage from the outside to the interior. Openings were left so that the rooms on each side receive a current of air. To the south of the cliff dwellings in the center of Walnut Canyon is an isolated butte which appears to have been used as a fort, masonry walls having been built up where the slope was not naturally precipitous, rendering ascent impossible without the aid of long ladders. The ruins as a whole are in a fairly good state of preservation, and while many of the masonry walls were broken down by vandals and many relics have no doubt been removed, the remaining walls are so well protected by the limestone ridges that they will remain intact indefinitely.

It is estimated that approximately 3,000 people visit these cliff dwellings each year.

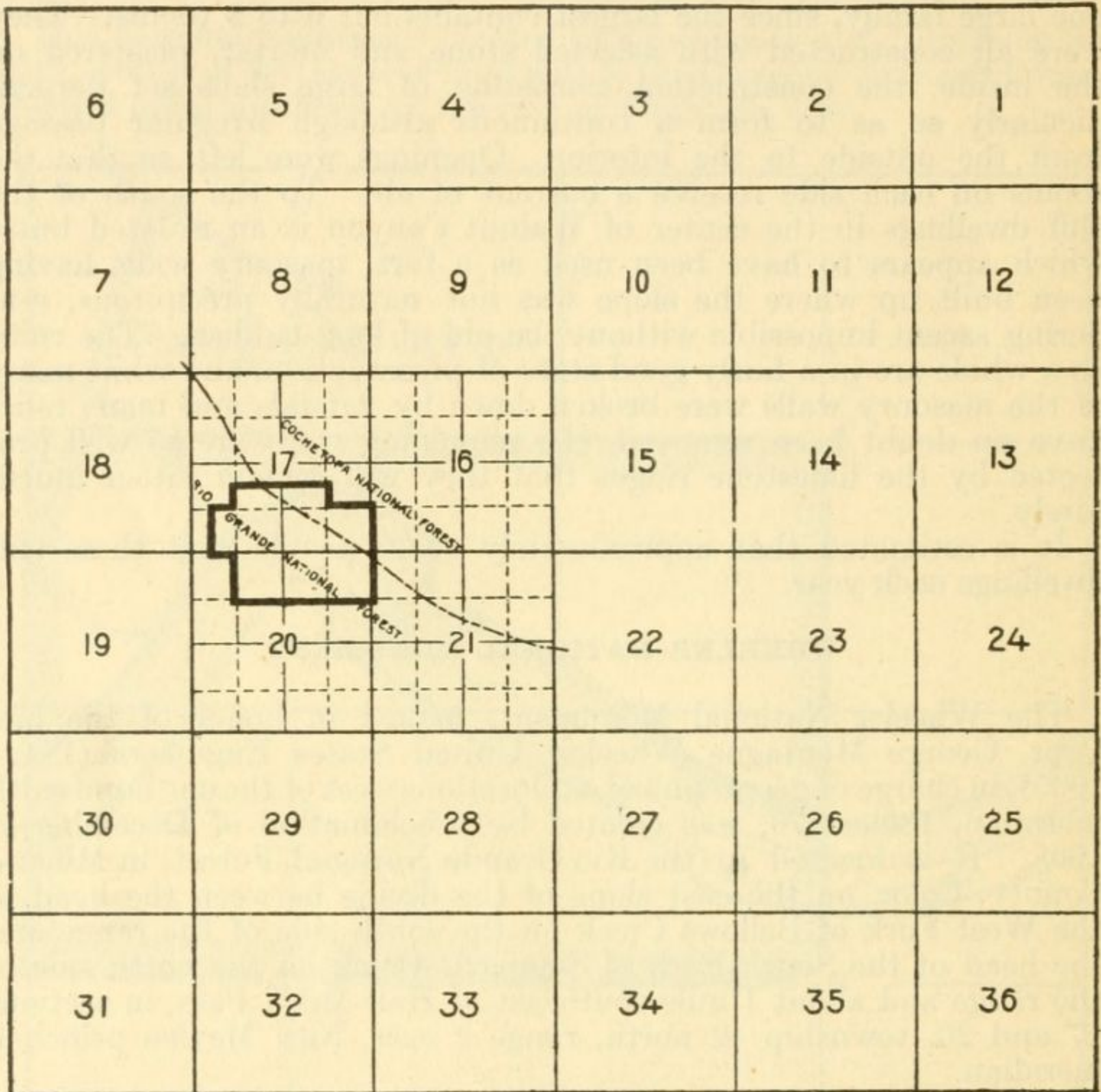
WHEELER NATIONAL MONUMENT.

The Wheeler National Monument, named in honor of the late Capt. George Montague Wheeler, United States Engineers (1842-1905), in charge of geographical explorations west of the one hundredth meridian, 1869-1879, was created by proclamation of December 7, 1908. It is located in the Rio Grande National Forest, in Mineral County, Colo., on the east slope of the divide between the head of the West Fork of Bellows Creek on the south side of the range and the head of the South Fork of Saguache Creek on the north side of the range and about 1 mile southeast of Half Moon Pass, in sections 17 and 20, township 42 north, range 2 east, New Mexico principal meridian.

The tract lies on the southern slope of the ridge which forms the crest of the Continental Divide. It is traversed from north to south by numerous deep canyons with very precipitous sides, the intervening ridges being capped by pinnacle-like rocks, making it practically impossible to cross the tract from east to west, even on foot. There are also many crevices cutting the ridges transversely, making an intricate network of ravines separated by broken, precipitous ledges and broken mesas.

It is probable that the formation found here is the result of a succession of outpourings of lava and showers of volcanic ash which have left a series of nearly horizontal strata of varying degrees of hardness. Numerous pebbles and breccia of a flintlike rock are embedded in the softer lavas, which were probably gathered up by the

flowing lava mud from the original bedrock. The formation is for the most part scoriaceous tufa and trachyte, with some rhyolite. The effect of erosion on this formation has been to cut it into sharply defined forms of many kinds. The harder broken rocks embedded in the lavas have acted as veritable chisels, greatly accelerating erosive action and making the lines and angles more sharply defined than would be the case in ordinary weathering. This erosion is still going on at a remarkably rapid rate, making the place very interesting from the geological point of view.



Wheeler National Monument, within the Cochetopa and Rio Grande National Forests, Colo., T. 42 N., R. 2 E., New Mexico meridian; created December 7, 1908.

The fantastic forms resulting from the rapid erosion make this spot one of exceptional beauty. The numerous winding canyons, broken ridges, pinnacles, and buttes form striking and varied scenes.

From the most reliable data it is believed that the ill-fated expedition of General John C. Fremont, in 1848, reached this immediate vicinity, when disaster came upon the party, compelling it to turn back. Skeletons of mules, bits of harness, and camp equipage are found here, lending force to the recorded data.

In order to reach the monument it is necessary to use saddle horses from Wagon Wheel Gap or Creede, points on the Denver &

Rio Grande Railroad. From these places the monument may be reached by two different routes; one by leaving the Rio Grande a short distance above Wagon Wheel Gap and following the old wagon road into Blue Creek Park, thence following the trail around to the monument by the way of the head of East Bellows Creek. By this route the distance is approximately 17 miles over a fairly good trail. The second route is to follow down the Rio Grande on the north side from Creede to about 1 mile below Wason, or 3 miles below Creede, thence taking the Forest Service trail, which is posted for the entire distance from where it leaves the river bottom below Wason to the monument. This is a good trail, and the distance is about 13 miles.

NATIONAL MONUMENTS ADMINISTERED BY THE WAR DEPARTMENT.

BIG HOLE BATTLE FIELD MONUMENT.

This monument, which includes 5 acres of land in Beaverhead County, Mont., about 55 miles southwest of Butte, is under the jurisdiction of the War Department. The tract was reserved for military purposes by Executive order of June 23, 1910, for the preservation of a monument to commemorate the battle fought here on August 9, 1877, between a small force of United States troops and a much larger number of Nez Perce Indians, which resulted in a complete rout of the Indians.

The nearest settlement to the monument is the town of Gibbons, Beaverhead County, which is reached by stage via Wisdom from Divide, a distance of about 45 miles. Divide is a station on the Oregon Short Line, some 25 miles south of Butte, Mont.

The battle in Big Hole Basin was one of the principal engagements in the Nez Perce campaign, which began in the summer of 1877 and lasted nearly four months. Some of the Nez Percés, led by Chief Joseph and other chiefs, refused to be bound by the terms of a treaty made with the Government a few years before, and to Gen. O. O. Howard was assigned the duty of placing the Indians on their reservation. Negotiations, which at first promised to be successful, were brought to a sudden end on June 13 by the massacre of about 20 whites in revenge for an Indian killed the year before. The Nez Percés started to leave their home in Idaho for their hunting grounds in Judith Basin in eastern Montana, but their route lay too near Fort Missoula and the towns in the southwestern part of the Territory. Early in August a party under Chief Joseph had turned south to cross the Lo Lo Pass back into Idaho when they were overtaken by Col. John Gibbon in command of a small force consisting of 17 officers, 132 men, and 34 civilians. Col. Gibbon attacked the Indians at daylight in Big Hole Basin by surprise and their camp fell into his hands in less than half an hour. During the fight, which continued all day and long after dark, the Indians captured a howitzer and a pack mule loaded with ammunition. Later in the night the Nez Percés escaped, leaving 89 dead, while Col. Gibbon, who was slightly wounded, lost 29 men killed and 40 wounded.

Turning south and east the Indians, now pursued by Gen. Howard, passed through Idaho and into the Yellowstone National Park.

They proceeded eastward across the park, emerging at Miller Creek and turning north crossed the Yellowstone, and later the Missouri at Cow Island. Being finally intercepted by Col. Miles in an engagement which occurred on October 5, 1877, near the north base of the Bear Paw Mountains and within 30 miles of the international boundary, most of the survivors surrendered. In the campaign between June and October, extending over a route of 1,500 miles or more in length, 15 engagements were fought, in which 127 whites were killed and 140 wounded. The total losses of the Indians are unknown, but 151 were killed, 88 wounded, and 489 were captured. The Indians lost more than one-half of their dead in the battle of the Big Hole and the whites nearly one-third of their dead and nearly one-fourth of their wounded in the same engagement.

CABRILLO NATIONAL MONUMENT.

The Cabrillo National Monument on Point Loma, just north of the entrance of San Diego Bay, was created October 13, 1913, to commemorate the discovery of California by Juan Rodriguez Cabrillo, who first sighted land at this point when he entered the bay on September 28, 1542. This tract of land, containing less than an acre (21,910 square feet), is located on the military reservation of Fort Rosecrans. Its dedication as a fitting site for a statue of Cabrillo¹ was recommended by the Order of Panama, an organization composed of representative citizens of southern California.

Point Loma is readily reached from San Diego by boat and also by motor or other vehicles.

¹ Little is known of the history of Cabrillo, a Portuguese navigator in the service of Spain, who was probably born about the end of the fifteenth century, and who commanded the first expedition which explored the Pacific coast of America north of Mexico. This expedition, comprising two ships dispatched by the viceroy Mendoza, reached California almost exactly 50 years after the discovery of America by Columbus, and 3 years after the landing of Hernando De Soto at Tampa, Fla. Cabrillo also discovered the Santa Barbara Islands and after continuing up the coast about as far as latitude 38° returned to San Miguel Island, where he died on January 3, 1543, and where he is said to have been buried. On the death of Cabrillo the command of the expedition fell to the chief pilot, Bartholomeo Ferrello, who again proceeded up the coast, discovering several prominent points and headlands. He reached his farthest north near the southern boundary of Oregon on March 10, 1543, when on account of lack of provisions and the condition of his vessels he was compelled to return.

APPENDIX I. SOME IMPORTANT DATES IN THE HISTORY OF NATIONAL MONUMENTS.

1526. Earliest inscription on Inscription Rock (El Morro).
1540. Discovery of the Grand Canyon of Arizona by Don Garcia Lopez de Cardenas.
1542. Discovery of California by Juan Rodriguez Cabrillo.
1604. Discovery of Mount Desert Island by Samuel de Champlain (Sieur de Monts Monument).
1661. Spanish inscriptions on the Inscription House Ruin (Navajo National Monument).
1774. Discovery of Mount Olympus by Juan Perez, who named it El Cerro de Santa Rosalia.
1788. Mount Olympus named by Capt. John Meares, who first saw it July 4.
1802. Battle of Alaska between the natives and the Russians under Baranoff (Sitka National Monument).
1854. First ascent of Mount Olympus.
1869. Exploration of the Grand Canyon of the Colorado by Maj. J. W. Powell.
1874. Discovery of Oregon Caves or Marble Halls by Elija Davidson.
1877. Battle of Big Hole, Montana.
1895. Discovery of Natural Bridges of Utah by Emery Knowles.
1900. Discovery of Jewel Cave, S. Dak., by Albert and F. W. Michaud.
1906. Passage of Monuments Act and establishment of first monuments.
1908. Discovery of Ruins of Betata Kin by J. W. Wetherell and Prof. Byron S. Cummings (Navajo National Monument).
1909. Discovery of Rainbow Natural Bridge, Utah, by William B. Douglass.

APPENDIX II. AN ACT FOR THE PRESERVATION OF AMERICAN ANTIQUITIES.

(34 Stat., 225.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the department of the Government having jurisdiction over the lands on which said antiquities are situated, shall, upon conviction, be fined in a sum of not more than \$500 or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

SEC. 2. That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected: *Provided*, That when such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tracts, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in behalf of the Government of the United States.

SEC. 3. That permits for the examination of ruins, the excavation of archæological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and War to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe: *Provided*, That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums.

SEC. 4. That the Secretaries of the departments aforesaid shall make and publish from time to time uniform rules and regulations for the purpose of carrying out the provisions of this act.

Approved, June 8, 1906.

APPENDIX III. AN ACT TO ESTABLISH A NATIONAL PARK SERVICE, AND FOR OTHER PURPOSES.

(39 Stat., 535.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created in the Department of the Interior a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary and who shall receive a salary of \$4,500 per annum. There shall also be appointed by the Secretary the following assistants and other employees at the salaries designated: One assistant director, at \$2,500 per annum; one chief clerk, at \$2,000 per annum; one draftsman, at \$1,800 per annum; one messenger, at \$600 per annum; and, in addition thereto, such other employees as the Secretary of the Interior shall deem necessary: *Provided*, That not more than \$8,100 annually shall be expended for salaries of experts, assistants, and employees within the District of Columbia not herein specifically enumerated unless previously authorized by law. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

SEC. 2. That the director shall, under the direction of the Secretary of the Interior, have the supervision, management, and control of the several national parks and national monuments which are now under the jurisdiction of the Department of the Interior, and of the Hot Springs Reservation in the State of Arkansas, and of such other national parks and reservations of like character as may be hereafter created by Congress: *Provided*, That in the supervision, management, and control of national monuments contiguous to national forests the Secretary of Agriculture may cooperate with said National Park Service to such extent as may be requested by the Secretary of the Interior.

SEC. 3. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service, and any violations of any of the rules and regulations authorized by this act shall be punished as provided for in section fifty of the act entitled "An act to codify and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine, as amended by section six of the act of June twenty-fifth, nineteen hundred and ten (Thirty-sixth United States Statutes at Large, page eight hundred and

fifty-seven). He may also, upon terms and conditions to be fixed by him, sell or dispose of timber in those cases where in his judgment the cutting of such timber is required in order to control the attacks of insects or diseases or otherwise conserve the scenery or the natural or historic objects in any such park, monument, or reservation. He may also provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations. He may also grant privileges, leases, and permits for the use of land for the accommodation of visitors in the various parks, monuments, or other reservations herein provided for, but for periods not exceeding twenty years; and no natural curiosities, wonders, or objects of interest shall be leased, rented, or granted to anyone on such terms as to interfere with free access to them by the public: *Provided, however,* That the Secretary of the Interior may, under such rules and regulations and on such terms as he may prescribe, grant the privilege to graze live stock within any national park, monument, or reservation herein referred to when in his judgment such use is not detrimental to the primary purpose for which such park, monument, or reservation was created, except that this provision shall not apply to the Yellowstone National Park.

SEC. 4. That nothing in this act contained shall affect or modify the provisions of the act approved February fifteenth, nineteen hundred and one, entitled "An act relating to rights of way through certain parks, reservations, and other public lands."

Approved, August 25, 1916.

APPENDIX IV. LITERATURE.

The following list of publications relating to the monuments is by no means exhaustive, but includes the more important publications on the principal reservations. The articles are mainly descriptive, but a few are technical, the object of the list being to include original sources of information as well as popular accounts. No attempt has been made to include all the titles in the voluminous literature on the Grand Canyon or the Cliff Dwellings.

GENERAL.

BOND, FRANK, The Administration of National Monuments: Proc. Nat. Park Conference, 1911, Dept. Int., pp. 80-101. 1912. [For sale by the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents.]

Statement of location, characteristics, administration, and needs of the 28 monuments then established.

CONWENTZ, H., Beiträge zur Naturdenkmalpflege, Band I-V. Berlin, 1906-1916.

Reports of the Prussian Bureau for the Conservation of Natural Monuments.

CONWENTZ, H., The Care of Natural Monuments with Special Reference to Great Britain and Germany, 12°, 185 pages, 10 figs. 1909.

Brief account and summary of efforts in several countries to protect natural monuments.

CURTIS, WM. ELEROY, Our National Parks and Reservations: Annals Acad. Pol. & Social Science, vol. 35, pp. 231-240, 1910; reprinted in Public Recreation Facilities. Phila. 1910.

Contains brief descriptions of 15 national monuments (pp. 237-240).

SCHMECKEBIER, L. F., Our National Parks: Nat. Geog. Mag., vol. 23, pp. 531-577, ill. June, 1912.

Contains a list of the 28 monuments then established, a map showing their location, 4 figs. of the Devil Post Pile and 3 of the Petrified Forest (pp. 575-577).

YARD, R. S., National Parks Portfolio, Dept. Interior, Nat. Parks Service. 1917. [For sale by the Superintendent of Documents, Government Printing Office, Washington, D. C.; price, 35 cents for 11 pamphlets loose in cloth cover; 55 cents bound in cloth. Ready about July 1, 1917.]

A collection of photographs illustrating the parks and monuments.

NATIONAL MONUMENTS.

BANDELIER.

HEWETT, EDGAR L., Antiquities of the Jemez Plateau, New Mexico: Bureau Am. Ethnology, Bull. 32, 55 pages, 16 pls., map. 1906. [For sale by Superintendent of Documents, Government Printing Office, Washington, D. C., for 25 cents.]

Full account of the antiquities now included in the Bandelier National Monument.

BIG HOLE BATTLE FIELD.

BANCROFT, H. H., Hist., Works of Hubert Howe Bancroft, vol. 31, Washington, Idaho, and Montana, 510 pages. 1890.

CHITTENDEN, H. M., The Yellowstone National Park, 8 ed., 1915.

Chapter XV, "Hostile Indians in the Park," contains a brief summary of the Nez Perce troubles of 1877 (pp. 122-130).

GIBBON, JOHN, Col. 7th Infantry, U. S. A. [Report of Battle of Big Hole, Montana, Aug. 9, 1877]: Rept. Secretary War, 1877, vol. 1, pp. 68-72. [Out of print.]

CABRILLO.

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