

OKLAHOMA GEOLOGICAL SURVEY

CARL C. BRANSON, *Director*

GUIDE BOOK IX

Guide to Roman Nose State Park
BLAINE COUNTY, OKLAHOMA

by

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Norman

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FOREWORD

This guide book is the second in a projected series on State Parks. The first is Guide Book to Robbers Cave State Park and Camp Tom Hale, by Dearl T. Russell (Guide Book VII). A guide book on Beaver's Bend State Park is in preparation, and books on Quartz Mountain State Park and Alabaster Caverns State Park are planned.

The material here presented is made available by collaboration of many scientists in the Survey and in University of Oklahoma instructional departments. It is hoped that the citizens of the State will find additional interest in these recreational areas through use of the guide book series.

Carl C. Branson, Director

TABLE OF CONTENTS

	Page
CHAPTER I. INTRODUCTION	
Location	5
Information	5
Acknowledgments	5
CHAPTER II. HISTORY	
Exploration	6
Indians	7
Settlement and statehood	8
Outlaws	10
Roman Nose State Park	13
Other areas in Blaine County.....	13
CHAPTER III. GEOLOGY	
General geology	13
Scenic geology	18
CHAPTER IV. BOTANY	19
CHAPTER V. ZOOLOGY	24
BIBLIOGRAPHY	29

LIST OF ILLUSTRATIONS

	Page
Plate I. Geologic map of Roman Nose State Park, Blaine County, Oklahoma	Op. 14
II. Leaves of trees in Roman Nose State Park.....	21
III. Common herbs, vines, and flowers in Roman Nose State Park.....	22
IV. Grasses, flowers, and yucca in Roman Nose State Park.....	23
Figure 1. Map showing location of Roman Nose State Park and other features of Blaine County, Oklahoma	4
2. View of Roman Nose State Park looking west toward the lodge..	6
3. Geologic Time Table	14
4. Stratigraphic column of rocks exposed in the park and adjacent area	15
5. View of Little Spring looking southwest	16
6. View of Middle Spring looking west.....	17
7. View of Big Spring looking northwest.....	18
8. View of a recent sink hole on Anna Foley farm, looking north.....	18
9. Block diagram showing ecologic areas of Roman Nose State Park..	20

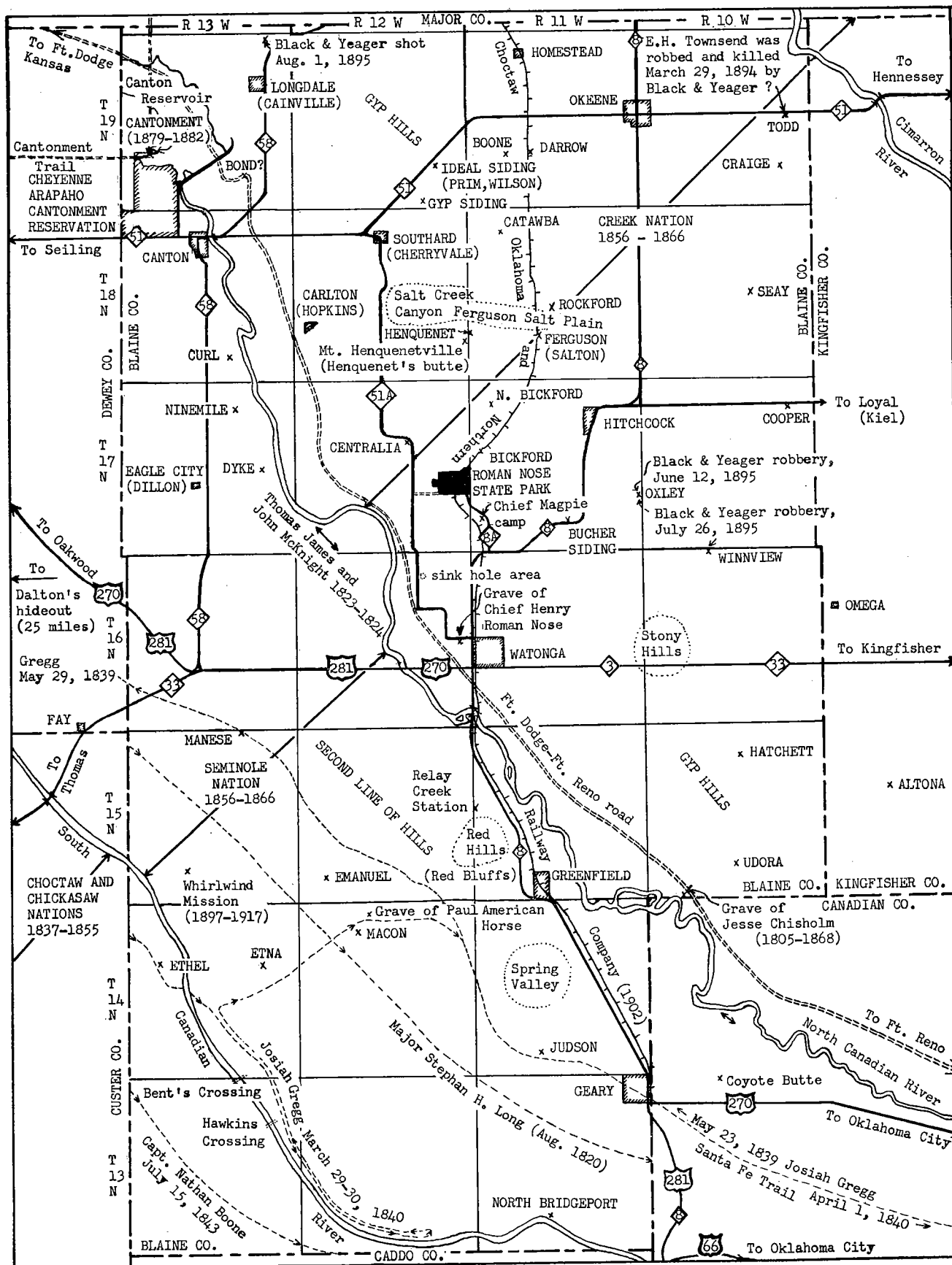


Figure 1. Map of Blaine County showing location of Roman Nose State Park and other points of interest.

GUIDE TO ROMAN NOSE STATE PARK

*by**Robert O. Fay*

CHAPTER I

INTRODUCTION

The purpose of this report is to acquaint the reader with the history, geology, botany, zoology, and recreational facilities of Roman Nose State Park.

Location

The park is located in the gypsum hills region of central Blaine County, Oklahoma, about 80 miles northwest of Oklahoma City on State Highway 8A. It is almost wholly in one square mile of section 24, Township 17 North, Range 12 West, and covers 540 acres. It is easily accessible from Watonga, Oklahoma, which is seven miles south of the park via State Highway 8. Other highways that pass through Watonga are Federal Highways 270 and 281 and State Highways 33 and 3. To the north, State Highway 51 passes the edge of Southard and one can take State Highway 51A south from Southard. This highway does not run directly to the park but an east-west section line road connects with the park area one mile to the east (see figure 1).

The park lies entirely within the Roman Nose Canyon valley system cut into white gypsum and red shale bluffs by Bitter Creek and its tributaries. Three springs at the western end of the park offer a continuous supply of fresh water to the region, especially to the swimming pool. If it were not for the springs the area probably would have never been settled by man.

Information

Anyone desiring information can write to the Park Superintendent, Roman Nose State Park, Box 227, Watonga, Oklahoma. For information concerning the lodge, telephone 691 or write directly to the lodge, Watonga, Oklahoma.

Acknowledgments

The following people and societies have helped a great deal in the compilation of this work: Mr. Harlan Tomlinson, Park Superintendent, Roman Nose State Park; Mr. Gerald T. Curtin, *Watonga Republican* newspaper owner, who solicited help from many citizens in the area, some of whom belong to the Blaine County Historical Society; the Oklahoma Historical Society, Oklahoma City; Dr. Arrell M. Gibson, Archivist of the University of Oklahoma who helped with preparation of the history and with books in the Frank Phillips Collection on Oklahoma and Indian history; Dr. George J. Goodman, Department of Plant Sciences and Oklahoma Biological Survey, University of Oklahoma, who contributed the botanical information; Dr. Robert E. Bell, Department of Anthropology, University of Oklahoma; and various members of the Zoology Department and Oklahoma Biological Survey, University of Oklahoma, including Dr. Carl Riggs on fishes, Dr. Charles C. Carpenter on amphibians and reptiles, Dr. George M. Sutton on birds, Dr. Robert D. Burns on mammals, Dr. Cluff C. Hopla on insects, and Dr. Harley P. Brown on invertebrates.

CHAPTER II

HISTORY

Roman Nose State Park is located in the cross timbers and gypsum hills region of the red-bed country in Blaine County, northwestern Oklahoma. The park area has long been a famous camping place for Indians, outlaws, cavalymen, and settlers, many of whom followed trails along the North Canadian River. Early explorers and Indians followed the rivers because there was abundant fresh water and game and it was easy to find one's bearings. The ever-flowing fresh water springs of the park area offered a better supply of water than did the adjacent rivers, so it was natural that people would congregate in this region. The Spaniards were the first white men to cross the region and they found many Indians already living along the rivers.

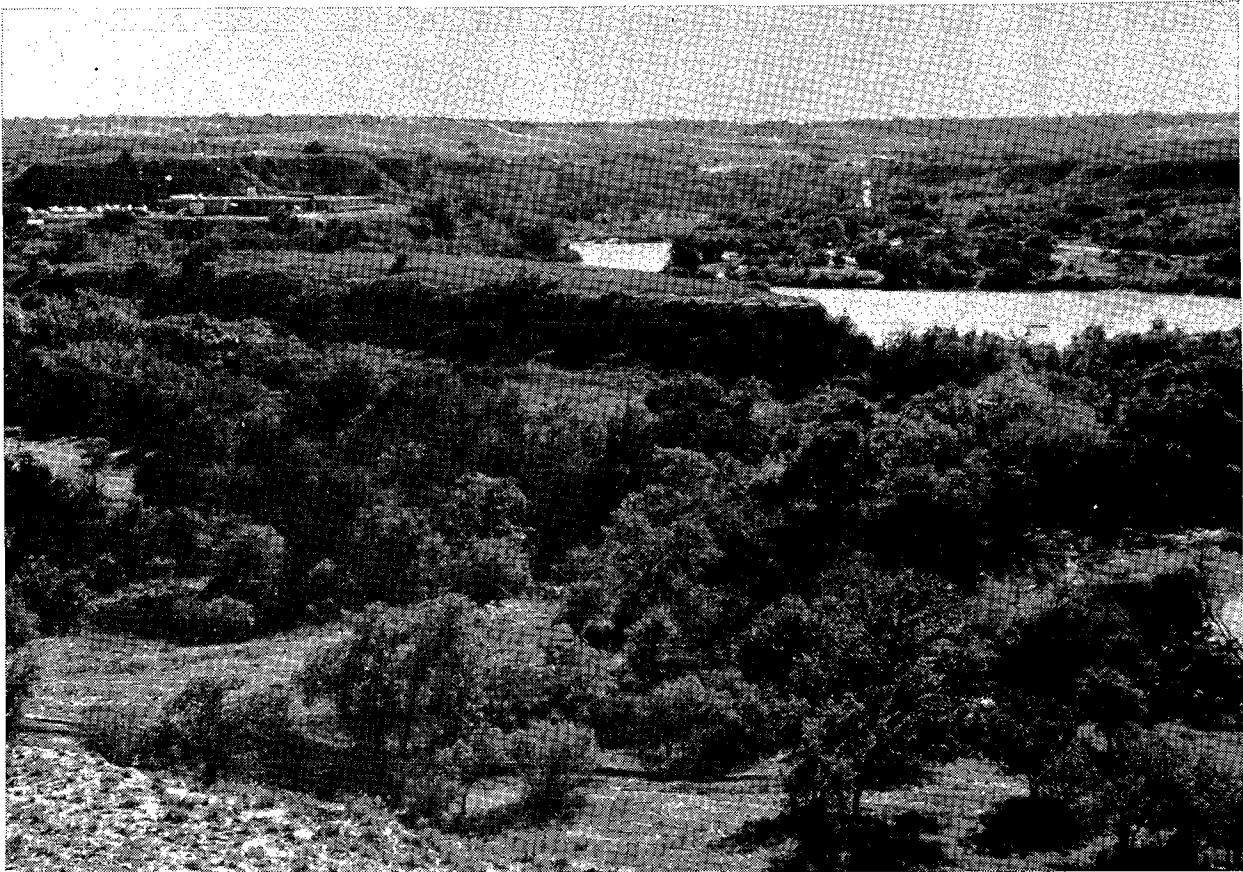


Figure 2. View of Roman Nose State Park looking west toward the lodge

Exploration

The area from Florida to Kansas to California was claimed by Spain early in the sixteenth century due to explorations by Alvar Nuñez de Vaca (1528-1536), Francisco Vazquez Coronado (1539-1542), and Hernando de Soto (1539-1542). The French and British joined the Spanish in North America around 1600 and the French had a Louisiana Territory that extended along the Mississippi Valley, north of the Red River and including the Missouri River Valley region. This territory was lost to Spain in 1763. In 1800 Spain ceded Louisiana to France and on December 17, 1803 the United States purchased the Territory. Exact western and southwestern limits of the Territory remained in dispute until 1819 (Adams-Onís Treaty) when Spain and the United States agreed that the boundary extended from the mouth of the west bank of the Sabine River to the 32nd parallel, from here north to the Red River, west along the south bank of that stream to the 100th meridian, thence north to the Arkansas River.¹ Thus the southern and western boundaries of what is now Oklahoma minus the Panhandle were established.

¹The boundary extended up the south bank of the Arkansas to its source, thence north to the 42nd parallel and westward along that parallel to the Pacific Ocean. By this same treaty, Florida was purchased by the United States from Spain.

From the foregoing it is apparent that the area that now includes Blaine County was first claimed by Spain, then France, Spain again, France again, and finally was purchased by the United States in 1803. Little was known of Louisiana Territory at this time and many expeditions were initiated. Some of these passed through what is now Blaine County (see figure 1). Major Stephen H. Long traveled down the South Canadian River valley in August 1820. Thomas James and John McKnight traveled up the North Canadian River in 1823 and back down in 1824, after penetrating eastern Beaver County. Josiah Gregg, from May 23rd to May 29th, 1839, passed along the ridge north of the South Canadian River in what is now Blaine County while enroute to Santa Fé from Fort Smith via the South Canadian River. On his return trip Gregg crossed the South Canadian River near the old post office of Ethel on March 29, 1840, and returned by his old route to the east. In 1843 Captain Nathan Boone, son of Daniel Boone, was sent from Fort Gibson with part of the First Regiment of the United States Dragoons to protect people along the Santa Fé trail traveling through "No Mans Land," now the Panhandle of Oklahoma. On his return trip southward and eastward he crossed the southwest corner of what is now Blaine County on July 15, 1843, camping that night on Deer Creek one-half mile from the mouth of the creek. Indians he met on the Cimarron River had told him about salt and a salt plain in what is now Blaine County, but he decided not to visit the area. The earliest reference to the manufacture of salt in Blaine County is that given in accounts of the life of Jesse Chisholm, who died and is buried in Blaine County (see figure 1). Chisholm had manufactured salt in the Salt Creek Canyon area before the Civil War, and it is recorded that his operation here continued until 1867. He traveled by wagon carrying his store with him. On March 4, 1868, Chisholm died at the Johnny Left-hand Spring in Blaine County, after eating some bear meat cooked in a brass kettle.²

Indians

The Great Plains area, including Oklahoma, was occupied by Indians of a number of pre-Columbian cultures including Clovis (13,000 to 10,000 years ago), Folsom (10,000 to 5,000 years ago), Scottsbluff (9,074 to 9,974 years ago), and Plainview (6,940 to 7,260 years ago). These peoples would be classed as Paleo-Indian types who hunted for a living. Following these cultures came Indians who are identified as belonging to the Archaic Period, 3,000-1,500 B. C.³ These Archaic people were largely hunters but gradually they began to cultivate the soil. A transition period, 1,500 B. C.—500 A. D., in which the Indians began to settle in villages and farm the land, is directly related to the rise of the Caddoan culture. Early archeological evidence shows that this Caddoan culture began in Oklahoma. Some of the Caddoans built mounds, such as at Spiro (1,100-1,300 A. D.). Other did not. The Gibson focus (500-1,200 A. D.) and Fulton focus (1,200-1,500 A. D.) indicate that these early Caddoan peoples were settled in villages and were farmers. The modern Caddo, Wichita, and Pawnee Indians are descendants of this early culture. From the 16th to the 18th century the Kiowas, Comanches, Cheyennes, Arapahoes, and Osage Indians migrated into this region from the north and northeast. French and Spanish trading activities represented the only white contact with tribes of this area before American acquisition of Louisiana Territory.

Following the Louisiana Purchase, the United States created a huge Indian Territory in the central and southern portion of this acquisition, and took steps to move those Indians east of the Mississippi to this region. Practically all of present day Oklahoma was assigned to the Five Civilized Tribes, and by treaty and in some cases by force, the Cherokees, Choctaws, Creeks, Chickasaws, and Seminoles were removed from their historic tribal domains in the east to new homes in the west.⁴ With reference to figure 1 for the Blaine County area, the Cherokee Nation extended down to the northern limit of what is now Blaine County, the Creek Nation from this line south to the North Canadian River, the Seminole Nation from the North Canadian River to the South Canadian River, and the Choctaw-Chickasaw Nations south of the South Canadian River.

During the Civil War the Five Civilized Tribes for the most part supported the Confederacy. As a penalty for this, each tribe was forced by the treaties of 1866 to surrender portions of certain tribal lands in the Indian Territory to the United States. Thereupon the government undertook to assign certain portions of these surrendered lands to the various plains tribes which were committed by treaty to accept a given reservation and live thereon. The Blaine County area was assigned to the Cheyenne-Arapaho down to the South Canadian River on August 10, 1869. In 1872 the Wichita, Caddo, and Delaware Indians were assigned to the area south of the South Canadian River, part of which would include the remainder of Blaine County.

² The grave is 100 yards east of Left Hand Spring in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 32, T. 15 N., R. 10 W., on east bank of the North Canadian River. References to the above people or expeditions are listed in the bibliography.

³ Subdivided into three periods (A-3,000-2,250 B. C., B-2,250-1,750 B. C., C-1,750-1,500 B. C.).

⁴ Choctaw Nation (1816-1832), Cherokee Nation (1817-1838), Creek Nation (1826-1834), Seminole Nation (1833-1842). A Nation was construed to be a domestic dependent nation of the United States, each having its own separate law.

The Cheyenne Indians became divided early into a northern tribe in the Dakotas, Wyoming, and Nebraska, and a southern tribe of the plains of Kansas and farther south. The Arapahoes were early friends of the Cheyennes and always remained friendly towards them. The Southern Cheyennes became settled but the Northern Cheyennes seemed to be constantly at war with other Indian tribes. They were friendly with the white people up to 1855 and then became hostile until about 1879. Some of the more famous battles between Indians and soldiers were fought by the Northern Cheyennes and have become legends of the west: Fort Laramie, Wyoming (1854); Ash Hollow, western Nebraska (1855); Sand Creek, Colorado (1864); Arickaree, eastern Colorado (1868); Washita River, western Oklahoma (1868); and Little Big Horn, Montana, or "Custer's Last Stand" (1876). Some of the Indians living in Blaine County have recounted the stories of these battles and their stories are preserved in *Indian Pioneer Papers*, listed in the bibliography.

Of importance here is the battle of Arickaree or the fight of Beecher Island as it is called. Chief Henry Roman Nose, after whom Roman Nose State Park is named, led 600 Indians, mostly Sioux, Cheyenne, and Arapaho, in the attack against the 51 soldiers stationed on the sand bar island in the stream on September 17-19, 1868. According to U.S. Army records and the Cheyenne historian George B. Grinnell, Roman Nose was killed at Beecher's Island. Yet, local people tell of Roman Nose returning after the battle to what is now the Roman Nose State Park area and of using this as winter quarters for his people. Roman Nose used to tell how he feigned death on the battlefield all day and how his wife took him away and nursed him back to health. Verification that Roman Nose survived Beecher's Island is supplied by people who knew him: Barnard (p. 67) states that Roman Nose with 30 warriors protested the cutting of cedars in the gyp hills by cowboys on the Z. H. Ranch, six miles southwest of Okeene in 1884; Ruth *et al.* state that Roman Nose died about 1917; the *Watonga Republican* newspaper, April 22, 1955, states that Roman Nose is buried in the Indian Cemetery one-half mile west of the northwest corner of Watonga. His son, John Roman Nose and John's two children are buried just north of the park area on land still owned by the Roman Nose family.

In spite of their treaty of 1869, the Northern Cheyennes were not ready to settle down as prescribed by the government. Due to tribal unrest, the army decided to erect another fort along the military road that extended from Fort Reno by Fort Supply, to Fort Dodge, Kansas. This new post erected on March 6, 1879, in what is now northwestern Blaine County, was called Cantonment, a military word meaning a fort or place in which troops are stationed. It was abandoned by the army on June 14, 1882, and the Mennonites converted it into a missionary school for the local Indians. Reverend Rodolphe Peter spent 24 years here ministering to the Cheyennes and Arapahoes. His achievements included the *Cheyenne Dictionary*, one of the more scholarly works on the American Indian language. In 1892 the present Cheyenne-Arapaho Cantonment Indian Reservation was allotted to the Indians and in 1898 the government set up an industrial school for Indians. It was abandoned in 1949. The buildings are in semi-ruin but still can be seen on the west bank of Canton Reservoir.

The Whirlwind Indian Day School, named after a Cheyenne Chief "Old Whirlwind", was established in 1897 in southwestern Blaine County. It originally started at Darlington, was moved to Fay, and finally to the Whirlwind site. According to Botkin it was operated by the Episcopal Church mostly for Cheyenne children. In 1917 it was abandoned and nothing remains but a cemetery and a well.

Settlement and statehood

After 1889, the government adopted the policy of extinguishing Indian tribal title to reservation lands, assigning each tribal member an allotment in severalty, and opening the surplus to settlement. In 1890, preparatory to opening the Cheyenne-Arapaho reservation, the government designated the area that is now Blaine County north of the South Canadian River as "C" County. With the run of April 19, 1892, the name was changed to Blaine County, after James G. Blaine, a Senator from Maine. The area south of the South Canadian River was opened by lottery in the summer of 1901. Thus Blaine County became a part of Oklahoma Territory. Indian Territory to the east and Oklahoma Territory to the west then combined on November 16, 1907, into Oklahoma, proclaimed the forty-sixth state by President Theodore Roosevelt. During this period and a little earlier, many post offices, stage coach routes, and railroads were established. According to Rainey the Southern Stage Company operated a line in 1885 between Fort Reno and Cantonment, with one relay station in between called Relay Creek station, a few miles northwest of what is now Greenfield.⁵ There was a Concord Stage that ran from Wichita, Kansas, to Cantonment to Kingfisher, with a branch line from Monette Springs to Watonga.

⁵ Located at the corner of the SW $\frac{1}{4}$ sec. 18, T. 15 N., R. 11 W., on the north side of the east-west section road.

The Choctaw, Oklahoma and Northern Railway Company built a railroad from Geary to Alva in 1902, running through what is now the park area. The Rock Island took it over in 1906 and abandoned it in 1926. The post office of Bickford, just northwest of the park area, was established November 2, 1904. This was also the site of the Roman Nose Gypsum Company, now abandoned. A local mail route, a star route, ran from El Reno to Judson to Etna. In all, approximately 37 post offices or towns were established from 1892 to 1905, many of which are now abandoned. Some of the names of these towns have been changed, the original name being indicated on the map (figure 1) by parentheses around it. Many of the towns were named after people, in some instances only using their first name. The following list summarizes this information:

<i>Post Office</i>	<i>Date</i> <i>Established</i>	<i>First Postmaster</i>	<i>Location and Remarks</i>
Bickford	11-2-1904	Clifton A. Howell	SE-SW-18-17-11
Bond	8-3-1894	Edwin H. Templeton	Discontinued 7-31-1906.
Cainville	8-1-1900	William Cain	Changed to Longdale 11-28-1903.
Canton	5-19-1905	James M. Rogers	NE-9-18-13
Cantonment	7-17-1879	William Hershey	NW-29-19-13. Discontinued 9-15-1917. Mail to Canton.
Carlton	12-1-1902	James W. Haigler	NW-NE-30-18-12. Formerly Hopkins.
Catawba	10-26-1893	James W. Tarrell	SW-SW-5-18-11. Discontinued 8-31-1902. Mail to Rockford.
Centralia	12-24-1898	Mary O. Whitecomb	Never in operation.
Cherryvale	12-24-1896	Robert N. Hopkins	NW-NW-10-18-12. Changed to Southard 9-6-1905.
Cooper	8-9-1892	Richard C. Rhyne	NE-NE-11-17-10. Discontinued 1-31-1906. Mail to Hitchcock.
Curl	6-4-1901	Robert E. Twining	NE-34-18-13. Changed to Harper, Dewey Co. 10-25-1901.
Darrew	5-1-1905	Lola W. Pratt	SE-SW-20-19-11
Dillon	7-26-1902	Lewis A. Everhart	SW and E $\frac{1}{2}$ -21-17-13, Changed to Eagle City 9-4-1909.
Dyke	8-11-1894	John R. Dyke	NE-23-17-13. Discontinued 9-15-1906. Mail to Dillon.
Emanuel	3-4-1904	Emanuel Newborn	NE-NE-31-15-12. Discontinued 3-31-1906. Mail to Watonga.
Ethel	8-29-1902	Charles H. Moore	NW-NW-NW-17-14-13. Discontinued 9-14-1907. Mail to Swan. Named after Mrs. Roy Burns.
Etna	8-20-1898	William Black	NE-NE-14-14-13. Discontinued 10-15-1913. Mail to Geary.
Ferguson	8-21-1901	Robert N. Hopkins	SW-NE and NW-SE-28-18-11. Formerly Salton, named after Senator Thompson B. Ferguson in 1907. Discontinued 7-7-1903. Mail to Etna.
Forney	6-4-1901	Henry Forney	Never in operation.
Gath	9-13-1893	James E. Thompson	1-13-11. Named after Edmond Guerrier.
Geary	10-12-1892	William Wilson	E $\frac{1}{2}$ and SW-33-15-11.
Greenfield	1-30-1900	Henry Greenfield	SW-3-15-10. Discontinued 9-1-1907. Mail to Omega.
Hatchett	5-2-1903	William L. Hatchett	W $\frac{1}{2}$ -NW-11-17-11.
Hitchcock	10-9-1901	John W. Payne	E $\frac{1}{2}$ -SE-5-19-11.
Homestead	1-26-1893	John J. P. Mourquand	NW-NE-30-18-12. Changed to Carlton 12-1-1902.
Hopkins	2-20-1900	Grace J. Hopkins	NW-33-14-11. Discontinued 10-31-1908.
Judson	8-9-1892	Edward C. Barclay	Mail to Geary.
Longdale	11-28-1903	Robert L. Eaton	SE-11-19-13. Formerly Cainville.
Macon	1-5-1897	Isaac Robinson	14N-12W. Discontinued 5-6-1899.
Manese	10-17-1893	Thomas J. Manese	NE-3-15-13. Discontinued 10-31-1906. Mail to Fay.
Max	3-25-1902	Huston C. Winchester	Discontinued 10-31-1904. Mail to Hatchett.
Mulkin	1-16-1902	Lida Mulkin	Discontinued 10-31-1902. Mail to Bridgeport.
Ninemile	3-6-1889	Charles W. Copron	SE-SE-SE-3-17-13. Discontinued 12-30-1899. Mail to Dyke.
Okeene	1-2-1893	David Rupert	W $\frac{1}{2}$ -SW-18-19-10 and E $\frac{1}{2}$ -13-19-11.
Oxley	11-23-1893	Allen B. Lasswell	NE-NE-25-17-11. Discontinued 10-31-1901. Mail to Winnview.
Rabbit	5-18-1905	Beaty W. Creamer	
Rockford	4-10-1894	Adam Lockhart	N $\frac{1}{2}$ -SE-21-18-11. Discontinued 3-15-1902. Mail to Ferguson.
Salton	Former name of Ferguson up to 1907.		

<i>Post Office</i>	<i>Date Established</i>	<i>First Postmaster</i>	<i>Location and Remarks</i>
Seay	6-25-1892	James A. Marsh	NE-22-18-10. Discontinued 1-30-1904. Mail to Okeene.
Southard	9-6-1905	Emma L. Arndt	NW-NW-10-18-12. Formerly Cherryvale. Named after Colonel G. H. Southard.
Todd	8-22-1893	Edward H. Townsend	Discontinued 6-1-1895. Mail to Okeene.
Udora	2-20-1895	Stanley Ward	SE-28-15-10. Discontinued 9-30-1911. Mail to Geary.
Watonga	3-23-1892	John H. Dillon	19-16-11. Named after an Arapaho Indian policeman lieutenant, Watangaa.
Winnview	6-23-1892	Joseph B. Winn	S $\frac{1}{2}$ -33-17-10. Discontinued 4-29-1905. Mail to Hitchcock.

The first oil well in Blaine County was drilled at Darrow in 1906 and went to a depth of 3,300 feet, but was dry and abandoned. The owners would drill a while and then go into town and promote a while. When promoting they would place a cedar log in the hole. When the price of shares got down to \$1.00 or less, the promoters left Darrow in the dark of night, stating that they couldn't get the stump out of the hole.

The first gypsum (stucco) mill in Oklahoma Territory was the Ruby Stucco Mill in the NE $\frac{1}{4}$ section 35, T. 18 N., R. 12 W. about three miles west and one mile south of Ferguson. The mill was built in 1902 at the base of a high cliff capped by the Nescatunga gypsum, which was quarried. The rock gypsum was loaded into four to six cars and these were rolled down a narrow-gauge track to the mill, the weight of the load being used to pull up empty cars to the top of the hill along another track. Usually ten to twelve men worked in the quarry and twelve to fifteen farmers with four-horse teams took the sacked gypsum to Salton and loaded it on railroad cars. Ruby Stucco deeded the mill and land (NW $\frac{1}{4}$ and NE $\frac{1}{4}$ and SE $\frac{1}{4}$ sec. 35) to the U. S. Building and Manufacturing Company in 1903; the mill was shut down for repairs in 1910 and never reopened. It burned down in 1915 and was sold for junk.

Mr. Jeff Saunders had a salt works in the Salton area in 1894, producing about 4,000 pounds of salt in 10 hours by heating the brine in two vats, each ten feet by four feet. He sold the salt at 25 cents a hundred pounds to local people and \$1.00 to \$1.25 to people who lived some distance away in order to defray shipping expenses.

Most of the people of the county relied on cattle and wheat for their livelihood.

Outlaws

Due to unsettled conditions during and after the Civil War period, this area became famous as the lair for notorious outlaws. These include Quantrill, James brothers, Belle Starr, Younger brothers, Daltons, the Doolin gang, and Al Jennings. These people took advantage of the unsettled nature of Oklahoma Territory and Indian Territory, using places in these territories for their hideouts.

According to local stories only three gangs were in this region in the 1890's. Two of these gangs supposedly have "buried treasure" in the Roman Nose State Park area, the Dalton and the Yeager gangs. The Doolin gang probably operated in the area and it is difficult to know what crime to attribute to what gang. Most of the stories about "buried treasure" originated from the outlaws themselves while they were in jail and the stories may not be reliable.⁶

Black-Yeager gang

According to Glenn Shirley, A.B. MacDonald, Marquis James, and Everett Nix, this group of highwaymen consisted of Isaac Black, his wife Pearl Black, S. T. Watson, Jenny Freeman, and Dick Yeager, the leader.

Yeager was born in Indiana in 1863 and his baptismal name was Nelson Ellsworth Wyatt. He was the second child in a family of seven boys and one girl. His father was John F. Wyatt and his mother Rachel Jane Quick. The family staked a claim ten miles northeast of Guthrie in 1889.

Wyatt's spree began on June 3, 1891, when he shot up Mulhall while drinking. A few people were wounded by this outburst and a warrant was issued for his arrest. Wyatt fled to Kansas.

⁶ For a bibliography of outlaws see Adams 1954 and Shirley 1955.

July 4, 1891—He stole some gloves at Pryors Grove, 12 miles north of Greenburg, Kansas, and shot and killed Deputy Sheriff Andy Balfour. He fled to Indiana where he was captured and returned to jail at Guthrie, Oklahoma.

January 1, 1892—He broke jail and was given the name of Zip because of his ability to escape quickly.

September 1893—He changed his name to Dick Yeager because of thick settlement of the Cherokee Outlet and the danger of recognition of his real name. Most of his activities consisted of holding up post offices, stealing horses or cattle, and holding up local people, in Blaine, Kingfisher, Major, and Woodward Counties.

March 29, 1894—He may have been the one who robbed and killed Mr. E. H. Townsend at Todd, Blaine County. This may have been done by the Doolin gang instead.

April 4, 1895—He was accused of robbing and killing Mr. Fred Hoffman, treasurer of "D" County.

June 12, 1895—He robbed the post office at Oxley, Blaine County.

June 15, 1895—Jenny Freeman was captured and sentenced to several years in jail at Guthrie. S. T. Watson escaped but was caught 25 miles from Anadarko, sentenced to prison, and after serving his term was released. Mrs. Black was either caught with Jenny Freeman and sentenced with her the same way or she escaped one night and took up a new life in western Oklahoma under an assumed name.

July 26, 1895—Black and Yeager robbed the store at Oxley and then one at Winnview, Blaine County.

August 1, 1895—Black and Yeager were shot 1½ miles north of Longdale. Black was killed and Yeager fled to Logan County where he was captured and removed to Sheridan, Kingfisher County.

On August 4, 1895, he was removed to jail at Enid where he died on September 7, 1895. He was buried in a pauper's grave south of Enid.

Most of the stories of "buried treasure" originated while Yeager was in jail but from the account of his forays it is doubted that he ever had much money at any one time. One of the known hideouts was a cave at the head of Salt Creek Canyon, and another was in Roman Nose State Park where a doctor was taken from Watonga blindfolded one night to treat one of Yeager's men.

The Dalton gang

The only authoritative source known about this gang is that which is written by Emmett Dalton, the only survivor. The group consisted of Bob Dalton the leader, Grat Dalton, Emmett Dalton, George Newcomb alias Bitter Creek, Charley Bryant alias Black Faced Charlie, Bill Powers alias Tom Evans, Charley Pierce, Dick Broadwell, William McElhanie, and Bill Doolin.

Their identity as a gang did not begin until after April 1890 and it ended abruptly October 5, 1892. They had only one hideout, at which they lived most of the time, the one on the Jim Riley Ranch (at that time). It was on the South Canadian River bluff, some 60 miles southwest of the Dalton place near Kingfisher, about 200 miles from Wagoner, and 15 miles from the Jim Riley Ranchhouse, on the south fringe of the range.⁷

Some of the Dalton gang worked as cowboys for Jim Riley, working under assumed names and riding the south line. The Daltons had many short-term hideouts and one important retreat in the high black crags of the Wichita Mountains, but the Dewey County hideout was their only home. It apparently has never been discovered, although one map shows two definite locations of known Dalton hideouts in the area (S of center, section 1, T. 17 N., R. 18 W. and NW¼ NE¼ section 3, T. 17 N., R. 17 W.). Neither of the hideouts are 15 miles from the Riley Ranchhouse. On the left hand side of figure 1 an arrow indicates the general area of the dugout about 25 miles west of the Blaine County line. There could be "hidden treasure" (several thousand dollars in silver) buried in the South Canadian River bank just down from the dugout at this point.

The Daltons passed through Blaine County many times and it is possible that they stopped in the Roman Nose Park area. One local story tells about \$100,000 to \$150,000 worth of jewelry and money hidden in the park area and that Emmett Dalton returned with a map to locate it but it was never found. The closest reference to the Daltons being near the park area is that of Emmett Dalton where he mentions that they almost had a fight with some marshals in Salt Creek Canyon in the spring of 1891. Their escapades can be summed up as follows.

May 9, 1891—They held up the Santa Fe train at Wharton (now Perry) and stole \$14,000. They split the money evenly and spent it.

August 3, 1891—Charlie Bryant was captured and killed on a train near Waukomis.

September 15, 1891—They held up the M. K. & T. train at Leliaetta, taking \$19,000, \$3,000 of which was silver.

⁷ The old Riley Ranchhouse was near the center of the line between secs. 16 and 17, T. 18 N., R. 17 W., about 4 miles west of Taloga, Dewey County, Oklahoma. The Riley post office was about five miles to the northwest.

- June 1, 1892—They held up the Santa Fé train at Red Rock and got away with \$11,000. It was after this that Powers and Broadwell buried their share of silver in cans below the dugout in the bank of the South Canadian River. It was many hundreds or perhaps several thousand dollars, part of their share of the loot from the two previous holdups. It may still be there or it may have been taken by Doolin or someone else, but this is not known.
- July 15, 1892—They held up the "Katy" express at Adair and stole \$17,000. The gang split up at this point and McElhanie was never heard of again. Doolin, Pierce, and Newcomb formed a new gang with Doolin as leader.
- October 5, 1892—Bob Dalton, Grat Dalton, Bill Powers, and Dick Broadwell were killed at Coffeyville, Kansas, in an attempted bank robbery. Emmett Dalton was captured, sent to Lansing Prison, Kansas, and pardoned in 1907. He entered the construction business in California and wrote a few books. He made one motion picture about the Dalton gang and died on July 13, 1937. He was buried alongside of his brothers at the Coffeyville cemetery.

The Doolin gang

These outlaws consisted of Bill Doolin the leader, George Newcomb, Charlie Pierce, Bill Dalton, Tom Daugherty alias Tom Jones alias Arkansas Tom, George Waightman alias Red Buck, Ol Yountis, Bill Raidler alias Little Bill, Dick West alias Little Dick, Jack Blake alias Tulsa Jack, Dan Clifton alias Dynamite Dick, Bud Smith; and three women, Annie McDoulet alias Cattle Annie (16 years old), Jennie Stevens alias Little Breeches (15 years old), and Rosa Dunn alias The Rose of Cimarron, sister of Bill and Bee Dunn.

Their hideout was called the "Rock Fort" and was southeast of Ingalls on the Bill and Bee Dunn farm, Payne County, Oklahoma. They lived here and at Ingalls with their girl friends. Ingalls is 11 miles east of Stillwater and 35 miles northeast of Guthrie. They were credited with stealing a total of \$169,000 but supposedly much of this was spent at the World's Fair in Chicago. Bill Doolin once told about hiding some money near Mulhall, but it was evidently a ruse to divert a jailer's attention long enough to hit him and escape. The activities of this gang overlap in time with those of the Black-Yeager gang and it is possible that some crimes may have been committed by one and attributed to the other. Not attempting to list their forays, the following short list of dates tells when they were captured or killed.

- November 28, 1892—Yountis was killed near Orlando, Oklahoma.
- 1894—Annie and Breeches were sentenced to two years at South Farmington Reformatory, Massachusetts. After being released Annie supposedly died of consumption in Boston or New York 18 months later. Breeches served one year and returned to Sinnett, Oklahoma, around November 12, 1896.
- June 8, 1894—Bill Dalton was killed near Elk, 25 miles northwest of Ardmore, Oklahoma.
- June 19, 1894—Bud Smith was killed at Watonga.
- April 4, 1895—Tulsa Jack was killed near Ames, Oklahoma.
- May 2, 1895—Newcomb and Pierce were killed near the Rock Fort.
- September 6, 1895—Raidler was shot and captured 18 miles south of Elgin, Kansas. He was sentenced to ten years at Columbus, Ohio, but was paroled shortly thereafter because of gunshot wounds and he died a few years later.
- March 5, 1896—Red Buck was killed near Arapaho, Oklahoma.
- August 25, 1896—Doolin was killed near Lawson, Oklahoma. Lawson is now known as Quay, eight miles northeast of Ingalls.
- December 4, 1896—Dynamite Dick was killed west of Newkirk, Oklahoma.
- April 8, 1898—Dick West was killed four miles south of Guthrie, Oklahoma.
- August 16, 1924—Arkansas Tom was killed in Joplin, Missouri. He had been captured after the fight at Ingalls in 1893, and was in and out of prison. The Rose of Cimarron married one of the men who shot Bitter Creek and moved to the state of Washington, where she died.⁸

It is evident that after reading about their forays at Dover, and in Woodward County, and adjacent areas, these outlaws were familiar with Blaine County and they could have used some of the canyons or caves as temporary hideouts.

⁸ Personal communication, April 28, 1959, John H. Melton, Stillwater, Oklahoma, who interviewed Rosa Dunn before she died.

Roman Nose State Park

On June 20, 1935, businessmen from Watonga, Okeene, Hitchcock, Canton, Geary, Greenfield, and rural citizens provided the original \$6,000 to purchase 480 acres which formed the original park area. On July 23, 1935, the citizens of Watonga voted a \$17,000 bond issue, part of which was used to repay the original buyers. Mr. A. R. Reeves, secretary of the State Park Commission met with the Watonga Chamber of Commerce and plans were made to develop the park by the National Park Service in cooperation with the Oklahoma Planning and Resources Board. The Civilian Conservation Corps workers constructed the first facilities and in 1937 the park was opened to the public. Some more land was added so that it now covers 540 acres, 22 of which is Lake Boecher, named after Senator Roy Boecher of Kingfisher. Lake Watonga covers 76 acres outside of the park area and is operated by the State Game and Fish Department. This is one of the few areas in the state where one can catch trout.

On April 22, 1956, the Oklahoma Planning and Resources Board formally opened the lodge, which is operated by the state. Up to that time \$749,000 was spent on the park, and \$169,000 on the lodge. The park area includes a swimming pool for 300 people, a modern bath house, several picnic areas, a community building and youth camp area with 12 cabins for large groups, several large springs, four modern family size cabins (18 feet by 28 feet) with electricity and hot water, two concession stands, fishing, boating, and horseback riding facilities, and several miles of blacktop road (see geologic map for locations). The lodge has 20 guest rooms and a spacious dining area overlooking the gypsum hills, with an adjoining area and patio for dancing. Hayrides, parties, and dances are given here by various groups or sometimes sponsored by the lodge.

Other areas of interest

For those who like to water ski, fish, or go boating and hunting, there is the Canton Reservoir about 15 miles to the northwest. The U. S. Army Engineers built the earthen dam in 1948 at a cost of \$10,327,000. It is 14,300 feet long and 73 feet high, with a 778 foot wide concrete spillway on the west end. The lake covers 7,720 acres when the shore line is about 44.2 miles around. The fish caught here are catfish, crappie, and bass. There is a 13,000 acre hunting area to the north.

At Okeene is the headquarters for the International Association of Rattlesnake Hunters. They hold their hunts on a Sunday early in April, concentrating in the Salt Creek Canyon area of the gypsum hills. The snakes are sold to canneries at 50 cents a pound, and to zoos and medical laboratories. At Southard, north of the park area, is the U. S. Gypsum Company plant that employs about 300 people. They annually produce about 100,000,000 square feet of gypsum wall board, lath, and sheeting and one quarter million tons of gypsum rock and plaster, and make about 180 different products.

CHAPTER III

GEOLOGY

General geology

Geology is the study of the earth. In the park area, the main features of geologic interest are the rocks, canyons, springs, and caves.

The type of rock seen in the park area is sedimentary; that is, it was formed from sediment that was deposited in water and later consolidated into rock. More than 220 million years ago the area was under water which was probably part of a shallow sea that extended up from the Gulf of Mexico. As sediment was carried into this shallow sea by rivers it was deposited on the sea floor. Most of the mud became consolidated into a rock called shale. The iron oxide in the mud imparted a red color to the shale. Wherever the sea water evaporated, thick deposits of salt (halite, NaCl), gypsum (CaSO₄·2H₂O), anhydrite (CaSO₄), or dolomite (CaMg (CO₃)₂) were deposited. Gypsum and anhydrite are white and look alike, but gypsum can be scratched with the finger nail and anhydrite cannot. Dolomite is a brownish-gray color and it fizzes when touched with acid (HCl). Some of these dolomites contain fossils, or remains of organisms that once lived in the shallow sea. The common one seen is a clam shell termed *Pleurophorus*.

ERA	PERIOD (SYSTEM)	EPOCH (SERIES)	AGE IN MILLIONS OF YEARS	SUCCESSION OF LIFE		
				PLANTS	ANIMALS	
CENOZOIC	QUATERNARY				age of man	
	TERTIARY			age of modern seed plants	age of mammals	
MESOZOIC	CRETACEOUS		60	modern trees	age of reptiles first mammals and birds	
	JURASSIC			earliest angiosperms		
	TRIASSIC			conifers, Ginkgo		
PAL E O Z O I C	PERMIAN	OCHOAN	220	ferns, scouring rushes, scale trees, conifers abundant	age of amphibians first reptiles	
		GUADALUPEAN				
		LEONARDIAN				
		WOLFCAMPIAN				
	PENNSYLVANIAN					
	MISSISSIPPIAN					
	DEVONIAN		ancient ferns, scale trees, gymnosperms			amphibians
	SILURIAN		primitive land plants recorded			air-breathing animals
	ORDOVICIAN		only algae recorded			fishes and invertebrates recorded
CAMBRIAN		all known plant and animal life is in the ocean				
PRECAMBRIAN			550 ?	fossils rare and primitive		
<p>The estimated age of the earth is 4.6 billion years. The oldest age determination made on a rock is 3.2 billion years.</p>						

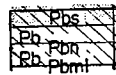
Figure 3. Geologic Time Table

PERMIAN SYSTEM
 Guadalupian Series
 El Reno Group

EXPLANATION



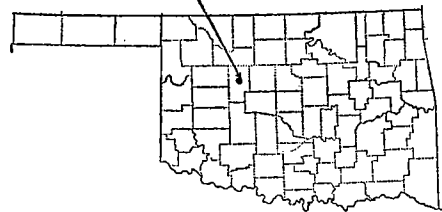
DOG CREEK SHALE
 (Red-brown shale with thin beds of gray-green siltstone and silty dolomite. Pdc: dolomite member. Top not exposed in park.)



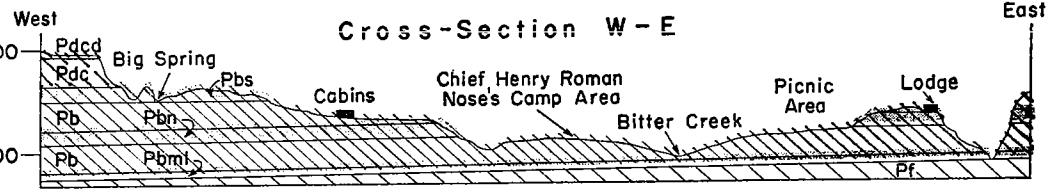
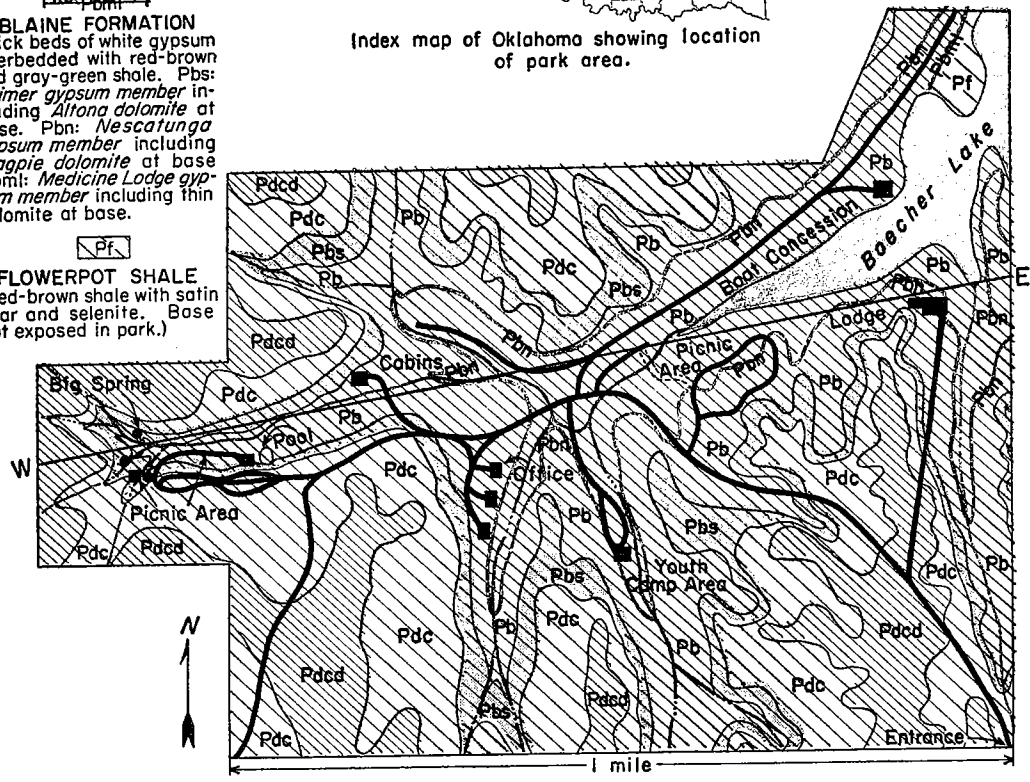
BLAINE FORMATION
 Thick beds of white gypsum interbedded with red-brown and gray-green shale. Pbs: *Shimer gypsum* member including *Altona dolomite* at base. Pbn: *Nescatunga gypsum* member including *Magpie dolomite* at base. Pbmi: *Medicine Lodge gypsum* member including thin dolomite at base.



FLOWERPOT SHALE
 (Red-brown shale with satin spar and selenite. Base not exposed in park.)



Index map of Oklahoma showing location of park area.



**GEOLOGIC MAP OF ROMAN NOSE STATE PARK
 BLAINE COUNTY, OKLAHOMA**

by
 Robert O. Fay

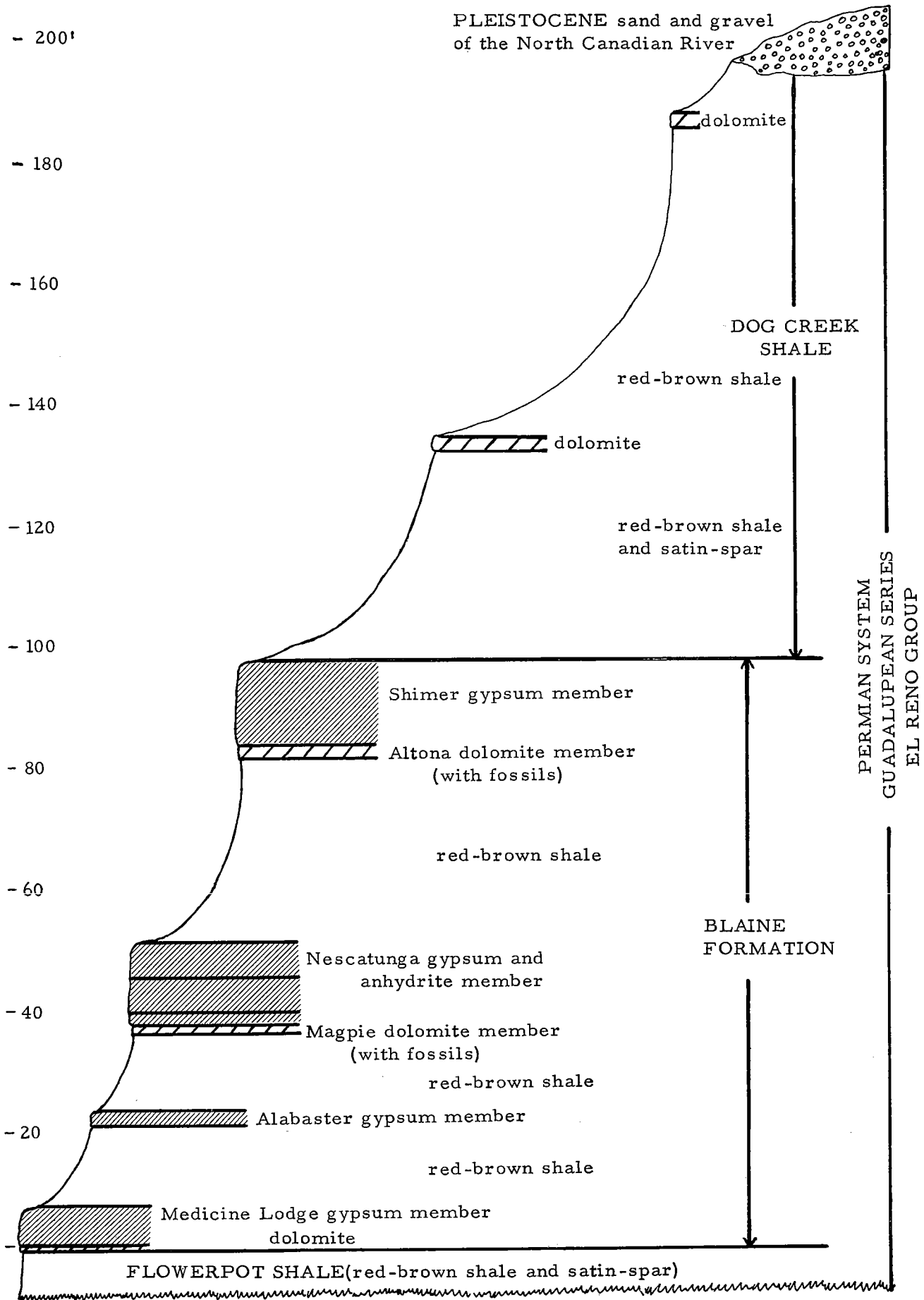


Figure 4. Stratigraphic column of rocks exposed in the park and adjacent areas

Near the end of Permian time (see figure 3) these deposits were elevated above sea level and streams have begun to erode through them. The thick white ledges seen in the park are composed of gypsum or anhydrite with a thin dolomite ledge beneath each (see figure 2). Between each gypsum-dolomite ledge is a thick deposit of red-brown and gray-green shale (see Plate I and figure 4). The ledges, being more resistant to stream erosion, form cliffs.

All rocks are classified according to their age or time of formation (see figure 3). Each fundamental unit of rock that can be mapped is termed a *formation*. It represents more or less the same type of rock deposited about the same time under the same conditions. Geologists early recognized many thousands of formations and it became necessary to group them into natural categories. Immediately it became necessary to distinguish between groupings of rocks and groupings of corresponding time during which these groups of rocks were deposited. After many years, a dual system of names was evolved to help solve these problems. With reference to time, the Geologic Time Table (figure 3) shows the current names used. An *era* is the largest group of time. *Eras* are separated by major events in earth's history, such as widespread mountain building or uplift of parts of continents. For example, the Ouachita Mountains and Appalachian Mountains were uplifted near the close of the Paleozoic era. Smaller groupings of time within eras are termed *periods*, separated by smaller disturbances, and a subgroup of a period is termed an *epoch*. The rocks deposited during an epoch are referred to as a *series* of rocks, and those deposited during a period are termed a *system* of rocks. These names appear in parentheses at the top of the Geologic Time Table and refer to groupings of rocks.

A number of formations, closely related, are classified into a *group* or *stage* of rocks. A number of stages comprise a *series* and a number of series comprise a *system*. For example, the *rocks* of the park area belong to three formations which are closely related. These are placed together to form the El Reno group of rocks. The El Reno group is one of several that form the Guadalupean series and the latter is one of four series that make up the Permian system. All of the names used, such as El Reno, Guadalupean, Permian, are derived from names of geographic features.



Figure 5. View of Little Spring looking southwest

There are many different types of formations of gypsum or shale, therefore many different geographic names are applied to formations in order to distinguish them. For instance, in the park area, the formation beneath Lake Watonga is termed the *Flowerpot shale*, named after Flowerpot Mound, Barber County, Kansas, where the shale was first studied. The next formation above the Flowerpot is termed the *Blaine formation*, named from Blaine County. This formation is characterized by having many thick gypsum units in it. Each unit is named so that it is possible to distinguish the various gypsums. A subdivision of a formation is termed a *member*. For instance, the *Medicine Lodge gypsum member* of the Blaine formation is the basal unit of the Blaine formation, together with an unnamed dolomite at the base. The dolomite and this gypsum were deposited first, before the higher gypsums, shales, and dolomites of the Blaine were deposited. About 15 feet higher occurs a thin gypsum bed, and about 15 feet higher than this one occurs the *Magpie dolomite member*. Immediately above the Magpie is the *Necatunga gypsum and anhydrite member* and 35 feet above this occurs the *Altona dolomite member* and overlying *Shimer gypsum member* of the Blaine formation. The top of the Shimer gypsum member marks the upper boundary of the Blaine formation. The intervening shales are not named.

The *Dog Creek shale*, first studied at Dog Creek, Barber County, Kansas, occurs next above the Blaine formation. It is mostly red-brown shale with several thin dolomite ledges. The lower dolomite ledge, about 30 feet above the top of the Shimer, forms a flat, high, prairie-like country within the park area. The upper ledge, about 80 feet above the top of the Shimer, forms an escarpment or steep-faced ridge west and south of the park area. The top of the Dog Creek shale is not exposed in this region because it was eroded off by the North Canadian River.

Just west and south of the park area, the North Canadian River gravels and sands are exposed, forming the highest elevations in the area. They were deposited at a time when the river was at a higher elevation than at present. During what is termed the *Pleistocene epoch*, or last million or so years of earth's history, much of northern North America and the Rocky Mountains were under ice. As this ice periodically melted, the melt water formed rivers which carried much of the sediment toward the sea. A great deal of the sediment was deposited along the channels and floodplains of these ancient streams, and as the streams eroded down, this sediment was left at a higher elevation than the present streams. At least three equivalent terrace levels can be seen on both sides of the North Canadian River, with thin deposits of clay and silt west of the river and thick deposits of sand and gravel east of the river in the same terrace levels. The upper terraces may have several minor levels in each. The oldest Pleistocene channel deposits of the North Canadian River are present on the high ridge just west and south of the park area. These are at least late *Kansan* in age, the Kansan being the second oldest *age* of the Pleistocene epoch, because a few miles north of the park area these gravels are associated with a volcanic ash correlated with the Pearlette (late Kansan) ash of Kansas. The North Canadian River has shifted its channel laterally to the southwest, with the dip or inclination of the underlying rocks, and has been actively depositing and cutting down through sediment throughout the Pleistocene epoch. Much of the sand of the channel deposits east of the river has been later blown into sand dunes by the prevailing southwesterly winds.



Figure 6. View of Middle Spring looking west.

With each rainstorm or snowstorm a large quantity of water accumulates in these gravels and sands. Much of the water runs off the surface of the ground, eroding and cutting down into the rocks as it moves. Thus after many thousands of years the steep-walled canyons of Roman Nose State Park have been formed by the cutting action of Bitter Creek and its tributaries. The more resistant gypsum-dolomite layers form steep ledges because the intervening non-resistant shales erode faster.

Much of the water that seeps underground operates in an opposite manner. This water tends to work its way into cracks until it reaches the underground gypsum, salt, dolomite, and anhydrite. It will dissolve these minerals and rocks and form caves. The water flows out along canyon walls to form springs, such as Little, Middle, and Big Springs in the park area (see figures 5-7). All of these springs are formed at the base of the Shimer gypsum, their water is gypsiferous, and they vary in flow from 600 to 800 gallons per minute. One set of measurements taken on July 23-24, 1958, showed a flow of 80, 175, and 365 gallons per minute for Little, Middle, and Big Spring respectively, measured over a 90 degree weir. Big Spring flows from a cave that reportedly was used as a hideout by outlaws. A salt spring comes out at the head of Salt Creek Canyon, giving rise to the salt plain in that area. To the west and southwest of the park area, there are sink holes formed in the underlying rocks. They are formed by collapse into underground caverns cut by ground water into the gypsum. One such hole, shown in figures 1 and 8, recently developed on the Anna Foley farm several miles to the southwest and has become a local attraction.



Figure 7. View of Big Spring looking northwest



Figure 8. View of a recent sink hole looking north.
Near center of SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 2, T. 16 N., R.
12 W. on Anna Foley farm

Scenic geology

The entrance gate in the southeastern part of the park area is built upon the lower portion of the Dog Creek shale. Just after passing northward through the entrance, a deep ravine can be seen immediately to the east of the road, in the Shimer gypsum. This was used by Roman Nose as a natural stable for his horses. In ascending the slight hill north of the ravine, where the road forks, the ground is flat for some distance. The flat nature is due to an underlying dolomite of the Dog Creek shale, about 30 feet above the top of the Shimer.

At this fork, the northward-bearing road leads to the park proper and the northeastward-bearing road ends at the lodge. The lodge is built upon the Nescatunga gypsum and the prominent cliff above the lodge is formed in the Shimer gypsum. If one looks directly north across Boecher Lake from the lodge, he can observe the large red cedar tree, named the Medicine Tree, growing upon the Shimer gypsum escarpment. Boecher and Watonga Lakes are formed in the shale below the Nescatunga gypsum, in the Medicine Lodge gypsum, and in the underlying Flowerpot shale.

Most of the prominent cliffs seen in the park are in the Shimer gypsum, the Nescatunga becoming prominent only down near the lakes. The area of the springs and swimming pool is surrounded on three sides by the Shimer gypsum escarpment. The springs flow from the base of the gypsum and supply the swimming pool with water. The Altona dolomite (at base of Shimer) is the rock that was used in the construction of the swimming pool, walkways, steps, and parts of many buildings in the park area. The rock was quarried locally just east of the park area.

Chief Roman Nose's campsite was near the center of the park, in the low area where the roads meet and cross Bitter Creek, on the shale just beneath the Nescatunga gypsum. The Nescatunga gypsum is mostly covered in this area, but the road rises abruptly onto part of it northward and then trends northeastward to the boat concession stand. The high white cliff north of the road is composed of the Shimer gypsum.

In passing out of the park area to the southwest, the road ascends through the Dog Creek shale, including both dolomites. Above this occurs the sand and gravel of the North Canadian River, laid down during the Pleistocene epoch. Many ancient sand dunes can be observed above these gravels and sands. In proceeding westward to State Highway 51A it should be noticed that there is a natural westward slope of the land toward the North Canadian River, showing that the ancient river channel has had a net shift from east to west throughout its history.

CHAPTER IV

BOTANY

Botany is the science of plant life. There are upwards of 700 species or different kinds of plants known in Blaine County, several hundred of which occur in Roman Nose State Park. It would be impossible to list and figure all of these in a small booklet and reference is best made to the following works for more details: Phillips *et al.* for trees, Goodman for the flowering plants of spring and early summer, Featherly for grasses, and Waterfall for a checklist of the flora of Oklahoma. These publications are listed in the bibliography along with current prices.

The high flat portions of the park belong to the grasslands or upland prairie, which is developed upon the red shales of the Dog Creek and Blaine formations (see figure 9). Although more than 50 species of grasses alone may occur here, only the following are figured: prairie beardgrass or little bluestem (*Andropogon scoparius*), blue grama grass (*Bouteloua gracilis*), and buffalo grass (*Buchloe dactyloides*). Buffalo grass is three to eight inches tall, grama is six to eighteen inches tall, and beardgrass is two to four feet high. Yucca (*Yucca glauca*) and prickly-pear cactus (*Opuntia*) may also occur here. On the north side of the park, directly north of the lodge and on top of the grasslands is a lone red cedar (*Juniperus virginiana*). This is called the Medicine Tree because the Cheyenne Indians believed that the tree had magic healing powers and that it was grown there for an expressed purpose. It was a religious symbol to the Cheyennes and they went to the tree to pray or to gather buds for medicinal purposes. This species also occurs along the canyon brims of the gypsum hills.

The majority of trees, shrubs, and vines of the park area occur in the gypsum hills portion, especially along valley slopes. The common trees of this area are Chickasaw plum (*Prunus angustifolia*), black walnut (*Juglans nigra*), red mulberry (*Morus rubra*), burr oak (*Quercus macrocarpa*), black-jack oak (*Quercus marilandica*) in sandy soil, chestnut oak (*Quercus muhlenbergii*), white elm (*Ulmus americana*), small flowered dogwood (*Cornus drummondii*), chittamwood (*Bumelia languinosa*), the official state tree or red bud (*Cercis canadensis*), and western hackberry (*Celtis reticulata*). The leaves of each of these trees and of others are distinct and easy to distinguish from each other. The red mulberry leaf varies in shape but is constant in the type of venation. The hackberry leaves usually have many insect galls on the underside. The shrubs and vines that grow in the gypsum hills are smooth sumac (*Rhus glabra*), fragrant sumac (*Rhus aromatica*), poison ivy (*Rhus radicans*), buckbrush (*Symphoricarpos orbiculatus*), Virginia creeper (*Parthenocissus quinquefolia*), chinaberry or soapberry (*Sapindus drummondii*), wild currant or Missouri currant or buffalo currant (*Ribes odoratum*), wild grape (*Vitis*), and green brier (*Smilax*). The smooth sumac is especially abundant near the springs. The large milky-white berries of chinaberry resemble chinaware. These two shrubs resemble each other and can be distinguished by the fact that smooth sumac has red berries and rough-edged leaves whereas chinaberry has white berries and smooth-edged leaves. Poison ivy may occur as a vine or small shrub and the characteristic leaflet of three leaves, with small pale green to yellowish berries should be avoided. Apart from leaf character, fragrant sumac can also be identified by the spicy fragrance given off from fresh cuts in the bark.

Along the stream sides and lakes there is western plains cottonwood (*Populus sargentii*), sandbar willow (*Salix interior*), black willow (*Salix nigra*), tamarisk (*Tamarix gallica*), and buttonbush (*Cephalanthus occidentalis*). Tamarisk is similar to red cedar, but each leaf is alternate with each other, is more delicate, and is paler green in tamarisk. Also red cedar has small blue berries and tamarisk does not.

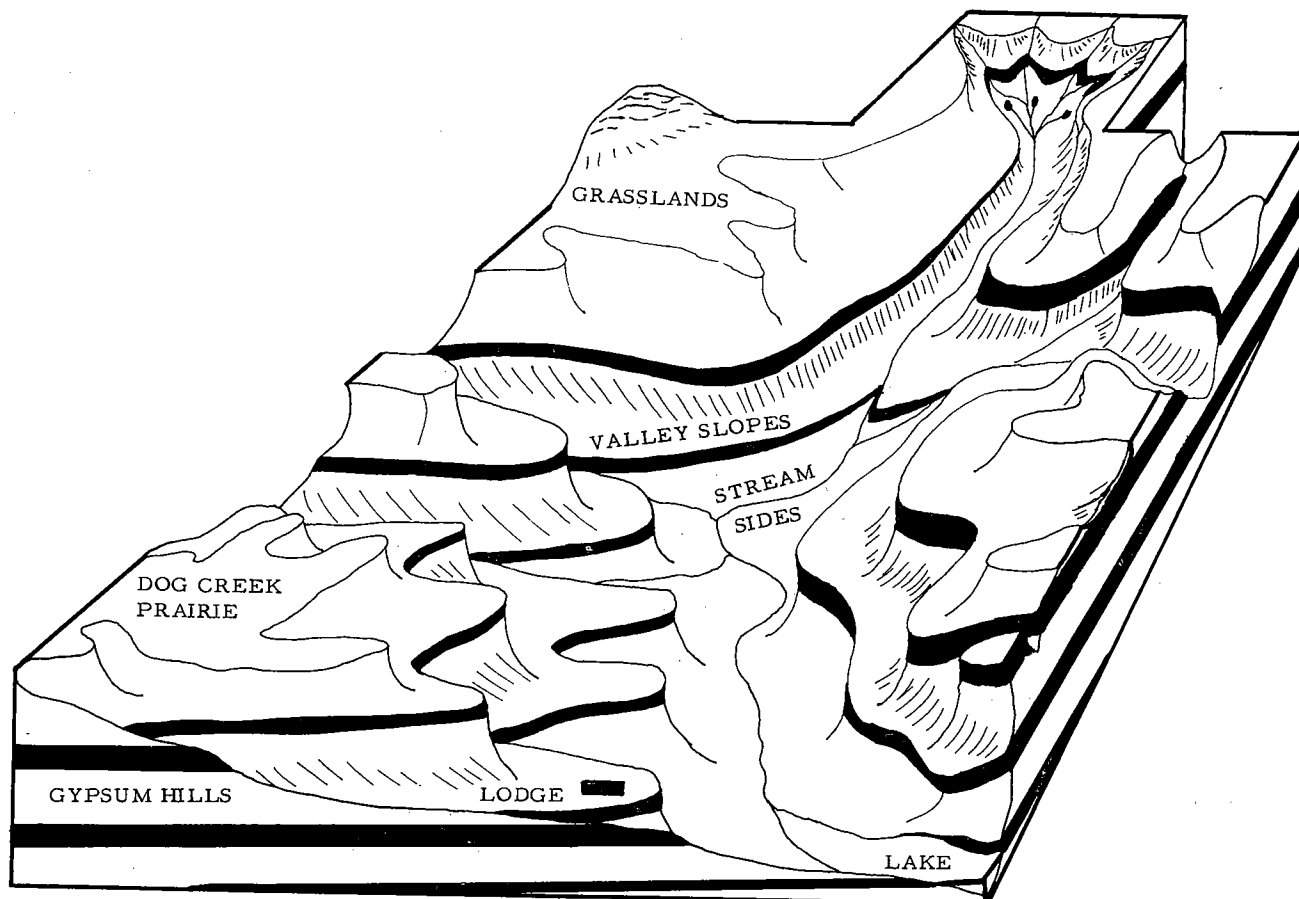
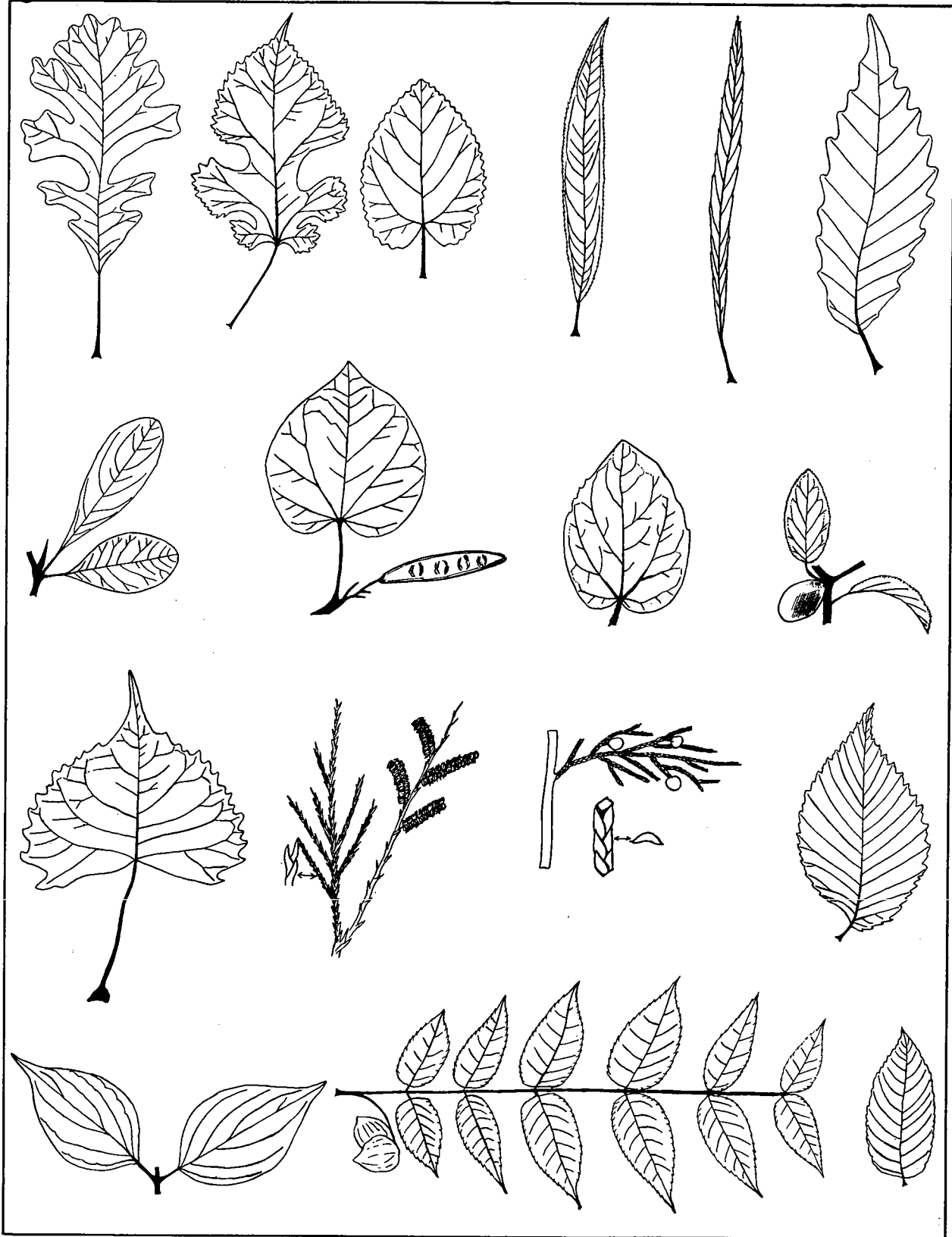


Figure 9. Block diagram looking west showing the ecologic areas represented in the park.

Some of the herbaceous flowering plants seen in the park are verbena (*Verbena*), spiderwort (*Tradescantia*), violet (*Viola*), anemone (*Anemone caroliniana*), poppy mallow (*Callirhoe involucrata*), sunflower (*Helianthus*), goldenrod (*Solidago*), milkweed (*Asclepias*), wild onion (*Allium*), aster (*Aster*), mistletoe (*Phoradendron flavescens*), water cress (*Nasturtium officinale*), *Mentzelia stricta*, *Hymenoxys linearifolia*, *Gaillardia suavis*, *Gaillardia pulchella*, phacelia (*Phacelia integrifolia*), and the evening primrose (*Oenothera*), of which there are several species. The leaves of *Mentzelia* are very rough, being covered with small stiff-barbed hairs, and the flower is yellow to yellow white. *Hymenoxys* is bright yellow and the rays of *Gaillardia pulchella* are purple with yellow tips. *Phacelia* occurs about two feet below the upper gypsum ledge. The evening primrose may be yellow, white, or pink depending on the species and the age of the flower.

Trees such as green ash or peach were planted in the park and are not listed because they are either not native or they are escapes from cultivation in the area. Mesquite (*Prosopis juliflora* var. *glandulosa*) is not native to Oklahoma, being an escapee from Mexico and south Texas. Please refer to plates 2-4 for illustrations of some of the above species.

PLATE II



LEAVES OF TREES IN ROMAN NOSE STATE PARK

Reading from left to right:

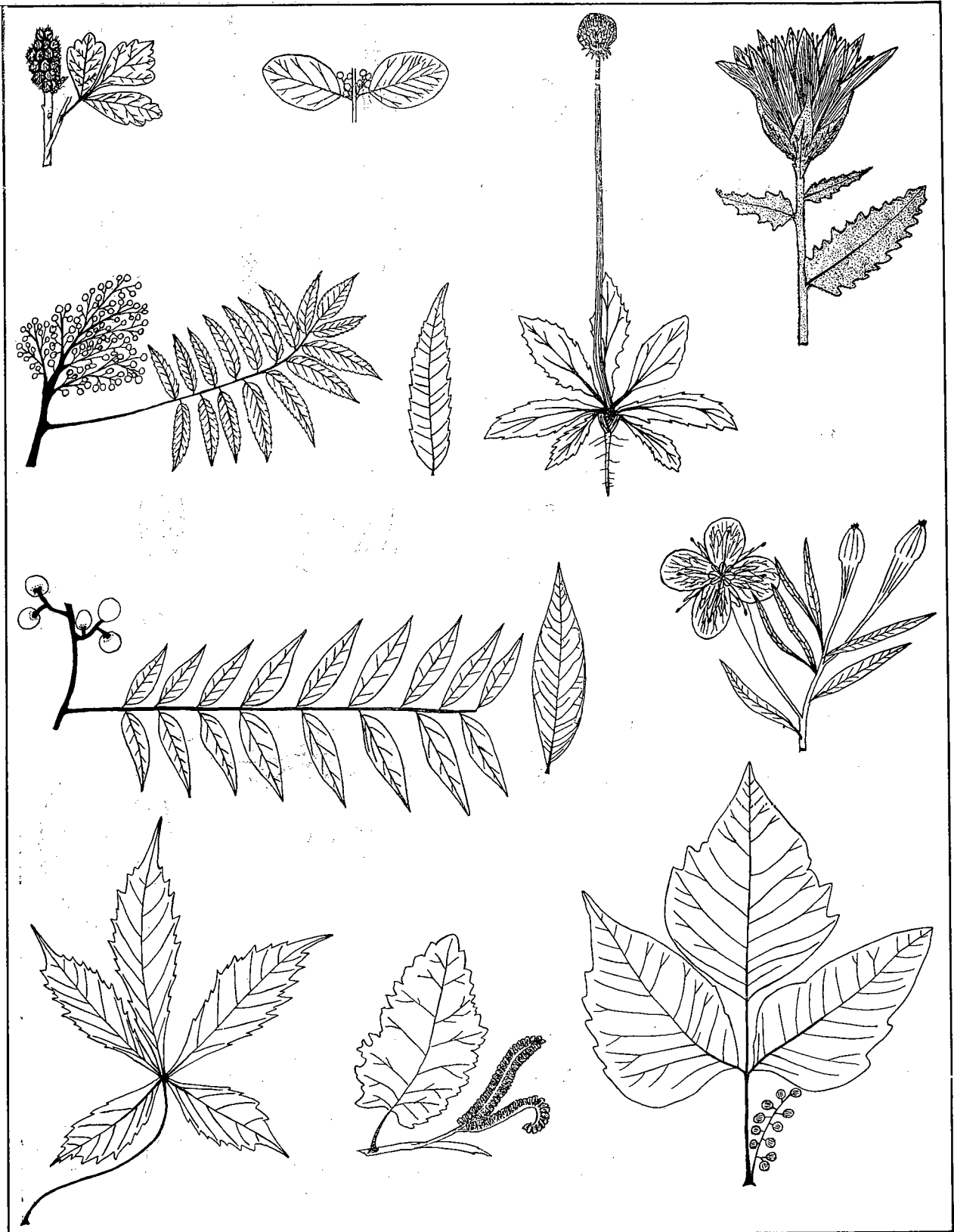
Top row: burr oak, red mulberry (2 figs.), black willow, sandbar willow, chestnut oak.

Second row: chittamwood, red bud, western hackberry, Chickasaw plum.

Third row: western plains cottonwood, tamarisk, red cedar, white elm.

Bottom row: small flowered dogwood, black walnut (2 figs.).

PLATE III



COMMON HERBS, VINES, AND FLOWERS IN ROMAN NOSE STATE PARK

Reading from left to right:

Top row: fragrant sumac, buckbrush, *Gaillardia suavis*, *Mentzelia stricta*.

Second row: smooth sumac (2 figs.), *Gaillardia suavis*.

Third row: chinaberry (2 figs.), evening primrose.

Bottom row: Virginia creeper, phacelia, poison ivy.

PLATE IV



GRASSES, FLOWERS, AND YUCCA IN ROMAN NOSE STATE PARK

Reading from left to right:

Top row: blue grama grass, buffalo grass, prairie beardgrass.

Bottom row: *Hymenoxys linearifolia*, *Yucca glauca*, *Gaillardia amblyodon*.

CHAPTER V

ZOOLOGY

Zoology is the study of animal life. Animals may be classified into two groups, those with a notochord usually replaced by vertebrae and those without a notochord or vertebrae. These are popularly termed the vertebrates and invertebrates respectively. Although about five percent of the known animals are vertebrates, these comprise the more conspicuous animals of the park area. Some of the more common classes of Vertebrata are the fishes (*Pisces*) which live in water, the amphibians (*Amphibia*) that breathe by gills in water during larval stage and through the skin and lungs when adults, the reptiles (*Reptilia*) that breathe through lungs throughout their lives and have scaly skin, the birds (*Aves*) which have fore limbs modified to form wings, and the mammals (*Mammalia*) that nourish their young from breast glands and have hair. The following lists are not complete for the park area and comprise only the more conspicuous animals seen.

Fishes

The tentative list of fishes from the Roman Nose State Park area includes those that have actually been collected and some that have been reported. The lakes have been stocked by the State Conservation Department. The fishes that can be caught here are rainbow trout (*Salmo gairdneri*), carp (*Cyprinus carpio*), red shiner (*Notropis lutrensis*), sand shiner (*N. deliciosus*), plains minnow (*Hybognathus placita*), fathead minnow (*Pimephales promelas*), parrot minnow (*P. vigilax*), black bullhead (*Ictalurus melas*), channel catfish (*I. lacustris*), mosquitofish (*Gambusia affinis*), plains killifish (*Fundulus kansae*), largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), orange spotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), and white crappie (*Pomoxis annularis*).

Amphibians

The amphibians of the park area include the plains spadefoot (*Scaphiopus bombifrons*), Great Plains toad (*Bufo cognatus*), red-spotted toad (*B. punctatus*), Rocky Mountain toad (*B. w. woodhousei*), cricket frog (*Acris gryllus*), spotted chorus frog (*Pseudacris clarki*), Strecker's chorus frog (*P. streckeri*), Great Plains narrow-mouthed toad (*Microhyla carolinensis olivacea*), bullfrog (*Rana catesbeiana*), and leopard frog (*R. pipiens*). Other forms likely to occur in the area are barred tiger salamander (*Ambystoma tigrinum mavortium*), Couch's spadefoot (*Scaphiopus couchi*), and the Texas toad (*Bufo compactilis*).

Reptiles

The reptiles are grouped under turtles, lizards, and snakes. The turtles are the common snapping turtle (*Chelydra s. serpentina*), yellow mud turtle (*Kinosternon f. flavescens*), ornate box turtle (*Terrapene o. ornata*), and spiny softshell (*Trionyx spinifera*). A form likely to occur in the area is the red-eared turtle (*Pseudemys scripta elegans*).

The lizards include the eastern collared lizard (*Crotaphytus c. collaris*) also called the mountain boomer, northern prairie lizard (*Sceloporus undulatus garmani*), Texas horned lizard (*Phrynosoma cornutum*), six-lined racerunner (*Cnemidophorus sexlineatus*), ground skink (*Lygosoma laterale*), and Great Plains skink (*Eumeces obsoletus*). Other forms likely to occur in the area are the western slender glass lizard (*Ophisaurus a. attenuatus*) and southern prairie skink (*Eumeces septentrionalis obtusirostris*).

Many snakes may be found under rocks and near the water. The western diamondback rattlesnake (*Crotalus atrox*) is poisonous and is the one hunted every year. Unless one looks for these and other snakes, it is rarely that one sees them. Usually if a person makes noise by tramping down brush or grass, the snakes will become frightened and glide away, as is the case with most wild animals. This is why it is difficult to take pictures of wildlife at close range. Other snakes in the area are blotched water snake (*Natrix erythogaster transversa*), diamond-backed water snake (*N. rhombifera*), Texas brown snake (*Storeria dekayi texana*), western checkered garter snake (*Thamnophis marcianus nigrolateris*), western ribbon snake (*T. sauritus proximus*), eastern hognose snake (*Heterodon p. platyrhinos*), plains hognose snake (*H. n. nasicus*), eastern yellow-bellied racer (*Coluber constrictor flaviventris*), pink coachwhip (*Masticophis flagellum testaceus*), rough green snake (*Ophedryx aestivalis*), Great Plains rat snake (*Elaphe guttata emoryi*), bullsnake (*Pituophis catenifer sayi*), milk snake (*Lampropeltis dolia* spp.), Great Plains ground snake (*Sonora e. episcopa*), and Texas night snake (*Hypsiglena torquata texana*). Other forms likely to occur in the area are the rat snake (*Elaphe obsoleta*), glossy snake (*Arizona elegans*), speckled kingsnake (*Lampropeltis getulus holbrooki*), prairie kingsnake (*L. c. calligaster*), flat-headed snake (*Tantilla gracilis*), plains black-headed snake (*T. n. nigriceps*), broad-banded copperhead (*Agkistrodon contortrix laticinctus*), and western massasauga (*Sistrurus catenatus tergeminus*).

Birds

Birds of many species inhabit the area, about 20 being found the year around, some only in summer, others only in winter, and others only in spring and fall. Some nesting and wintering species are also common as migrants.

Many of the year-round species are well known. In wooded areas are to be found the cardinal (*Richmondia cardinalis*), carolina wren (*Thryothorus ludovicianus*), Bewick's wren (*Thryomanes bewickii*), tufted titmouse (*Parus bicolor*), Carolina chickadee (*P. carolinensis*), downy woodpecker (*Dendrocopos pubescens*), hairy woodpecker (*D. villosus*), red-bellied woodpecker (*Centurus carolinus*), crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), screech owl (*Otus asio*), great horned owl (*Bubo virginianus*), Cooper's hawk (*Accipiter cooperi*), and red-tailed hawk (*Buteo jamaicensis*). In thicketed gullies lives the strictly non-migratory road-runner or chaparral cock (*Geococcyx californianus*). The loggerhead shrike or butcherbird (*Lanius ludovicianus*) inhabits hedgerows, shelter belts, and thickets and is more noticeable, if not more common, in winter than in summer. The bob-white quail (*Colinus virginianus*) inhabits thickets and forests edges. The killdeer plover (*Charadrius vociferus*) breeds in scattered pairs, often well away from water, and goes around in flocks in fall and winter. The western meadowlark (*Sturnella neglecta*), a grassland bird, is common in summer and abundant in winter. The horned lark (*Eremophila alpestris*), a very different bird from the meadowlark, inhabits overgrazed pastures and short-grass prairie. The belted kingfisher (*Megaceryle alcyon*), which breeds sparingly, rarely wanders far from water. The rock wren (*Salpinctes obsoletus*), one of the area's rarest birds, lives in the gypsum hills.

The species found principally in winter include the Harris's sparrow (*Zonotrichia querula*), white-crowned sparrow (*Z. leucophrys*), tree sparrow (*Spizella arborea*), song sparrow (*Melospiza melodia*), spotted towhee (*Pipilo maculatus*), robin (*Turdus migratorius*), purple finch (*Carpodacus purpureus*), slate-colored junco (*Junco hyemalis*), pink-sided junco (*J. mearnsi*), and black-headed junco (*J. oreganus*). The cedar waxwing (*Bombycilla cedrorum*) is sometimes abundant, especially when the hackberry crop is good. Yellow-shafted and red-shafted flickers (*Colaptes auratus* and *C. cafer*, respectively), as well as hybrids between the two species, are fairly common. The open grasslands is inhabited by four species of longspurs: the chestnut-collared (*Calcarius orantus*), Lapland (*C. lapponicus*), Smith's (*C. pictus*), and McCown's (*Rhynchophanes mccowni*). Among junipers and on wires along the highway the mountain bluebird (*Sialia currucoides*) is sometimes observed. Tiniest of the winter birds, the golden-crowned kinglet (*Regulus satrapa*) is especially fond of junipers. Birds of prey seen in winter are the marsh hawk (*Circus cyaneus*), sparrow hawk (*Falco sparverius*), ferruginous hawk (*Buteo regalis*), rough-legged hawk (*B. lagopus*), and short-eared owl (*Asio flammeus*). The last is a grassland bird, sometimes common when small rodents are abundant. The prairie falcon (*Falco mexicanus*) and sharp-shinned hawk (*Accipiter striatus*) are uncommon.

Among the migrants are the upland plover (*Bartramia longicauda*), a shorebird more apt to be found on high prairies than near water; the coot (*Fulica americana*), which is often called the mudhen; many kinds of ducks, notably the mallard (*Anas platyrhynchos*), pintail (*A. acuta*), gadwall (*A. strepera*), green-winged teal (*A. carolinensis*), blue-winged teal (*A. discors*), baldpate (*Mareca americana*), shoveller (*Spatula clypeata*), ring-neck (*Aythya collaris*), and lesser scaup (*A. affinis*); such geese as the Canada (*Branta canadensis*), white-fronted (*Anser albifrons*), lesser snow (*Chen hyperborea*), and blue (*C. caerulescens*); the pied-billed grebe (*Podilymbus podiceps*); the great blue heron (*Ardea herodias*); the sandhill crane (*Grus canadensis*), whose trumpeting can be heard a mile or more off; the white pelican (*Pelecanus erythrorhynchos*), a majestic bird in flight; the showy yellow-headed blackbird (*Xanthocephalus xanthocephalus*), which sometimes flocks with the Brewer's blackbird (*Euphagus cyanocephalus*); and numerous warblers, vireos, and sparrows.

The summer birds are of several categories. Near the lake, in cattails, nest colonies of red-winged blackbirds (*Agelaius phoeniceus*); in willows nest green herons (*Butorides virescens*) and grackles (*Quiscalus quiscula*). About buildings near the lake nest eastern phoebes (*Sayornis phoebe*). In scattered trees on the prairie nest eastern bluebirds (*Sialia sialis*), scissor-tailed flycatchers (*Muscivora forficata*), eastern kingbirds (*Tyrannus tyrannus*), and western kingbirds (*T. verticalis*). The mourning dove (*Zenaidura macroura*) nests both in trees and on the ground. In thickets the painted bunting (*Passerina ciris*), field sparrow (*Spizella pusilla*) and Bell's vireo (*Vireo belli*) nest. In the woods the yellow-billed cuckoo (*Coccyzus americanus*), summer tanager (*Piranga rubra*), red-eyed vireo (*Vireo olivaceus*), and blue-gray gnatcatcher (*Polioptila caerulea*) nest. The orange-colored orioles of the region are either Baltimore orioles (*Icterus galbula*) or hybrids between that species and the western Bullocks' oriole (*I. bullocki*). The orchard oriole (*I. spurius*), a smaller, less brilliant bird but an excellent singer, is fairly common. The lark sparrow (*Chondestes grammacus*), like the mourning dove, nests both on and above the ground. The dickcissel (*Spiza americana*) nests in alfalfa fields and in shrubbery, and the grasshopper sparrow (*Ammodramus savannarum*) nests in open prairie. The Swainson's hawk (*Buteo swainsoni*), which nests sparingly, is sometimes common as a transient. The turkey vulture (*Cathartes aura*) nests in caves and hollow logs. The cowbird (*Molothrus ater*), which never builds its own nest, lays its eggs in the nests of several "host" species, most of them smaller than itself. The nighthawk (*Chordeiles minor*) lays its two eggs in a bare spot on the prairie. The cliff swallow (*Petrochelidon pyrrhonota*), barn swallow (*Hirundo rustica*), and rough-winged swallow (*Stelgidopteryx ruficollis*) all nest; the first in colonies in culverts, under bridges, and on cliffs; the second principally in culverts; and the last in burrows in banks or about bridge abutments. A bird to be looked for in summer in the gypsum hills is the poor-will (*Phalaenoptilus nuttalli*). —George M. Sutton, Department of Zoology and Oklahoma Biological Survey, University of Oklahoma, Norman.

Mammals

The mammals reported from the park area are opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), little shrew (*Cryptotis parva*), many bats including the western cave bat (*Myotis velifer*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), long-eared bat (*Corynorhinus rafinesquii pallascens*), freetail bat (*Tadarida mexicana*), the raccoon (*Procyon lotor*), weasel (*Mustela frenata*), prairie spotted-skunk (*Spilogale interrupta*), eastern skunk (*Mephitis mephitis*), badger (*Taxidea taxus*), red fox (*Vulpes vulva*), coyote (*Canis latrans*), bob-cat (*Lynx rufus*), thirteen-lined ground squirrel (*Citellus tridecemlineatus*), prairie dog (*Cynomys ludovicianus*), fox squirrel (*Sciurus niger*), pocket gopher (*Geomys breviceps*), many mice and rats including plains pocket mouse (*Perognathus hispidus*), Ord kangaroo rat (*Dipodomys ordii*), grasshopper mouse (*Onychomys leucogaster*), gray harvest mouse (*Reithrodontomys montanus*), deer mouse (*Peromyscus maniculatus*), wood mouse (*P. lecopus*), cotton rat (*Sigmodon hispidus*), eastern woodrat (*Neotoma floridana*), plains woodrat (*N. micropus*), muskrat (*Ondatra zibethica*), the rabbits, eastern cottontail (*Sylvilagus floridanus*) and black-tailed jackrabbit (*Lepus californicus*), and the white-tailed deer (*Odocoileus virginianus*). Many mammals are not seen because they hide during the day and come out at night.

Invertebrates (by H. P. Brown and C. E. Hopla)

A complete check list of the invertebrate species occurring in this or any other state park is out of the question. Even if one existed (and it does not), it would be out of date by the time it was printed and made available. Furthermore, no team of a dozen top scientists recruited from anywhere in the world would be capable of identifying all of the described species within the park, much less the undescribed species. We may safely estimate the total number as being far greater than the total number of vertebrate species in North America. Thus, in our check list of the invertebrates, we make no attempt to list species or genera, and call attention only to the families or larger groups of especial interest.

Roman Nose offers an intriguing combination of western, eastern, and cosmopolitan invertebrates. On the whole, the high, dry regions and the temporary pools which result from an occasional downpour are characterized by typical western and arid-land forms, whereas the lake, stream, and damp lowland exhibit eastern and cosmopolitan forms.

The check list below, based upon general habitats, may be helpful.

Caprock and grassy highlands

On prickly pear

stinkbug (Order Hemiptera, Family Pentatomidae)
scale (Order Homoptera, Family Coccidae)

On yucca, in seed pods

larvae of yucca moth (Order Lepidoptera, Family Prodoxidae)

Under rocks

tarantula (Order Araneida, Family Theraphosidae)
scorpion (Order Scorpionida, Family Vejovidae)
centipede (Order Chilopoda, Family Scolopendridae)
tiny land snails (Order Pulmonata, Family Pupillidae)

In grass

short-horned grasshopper (Order Orthoptera, Family Locustidae)
miscellaneous moths (Order Orthoptera), bugs (Hemiptera), hoppers (Homoptera), flies (Diptera), beetles (Coleoptera), bees and ants (Hymenoptera), and spiders (Araneida).

Clay banks above stream near swimming pool

Various spiders, wasps, and other invertebrates inhabit these cliffs or banks, but the most striking kind is a digger bee (Order Hymenoptera, Family Anthophoridae) which is gregarious. The numerous holes would make the bank resemble Swiss cheese in some places, except that the holes are provided with conspicuous tubes of clay extending outward and downward like so many elephant trunks. These may be seen any time of the year. The larvae spend the winter in cells at the inner ends of the tunnels. (Of course, many other invertebrates find the tunnels convenient shelters, too.)

Colonies of these anthophorida often occur in the adobe walls of buildings in the southwest.

Lowlands

Flying among the trees or in the open are the following

miscellaneous butterflies (several families are common; the Pieridae, or whites and yellows, and Nymphalidae are commonest in early spring.)
many families of Diptera, including various flies, gnats, and mosquitoes.
many families of Hymenoptera (wasps, ants, bees); commonest in early spring are the large paper wasps (Family Vespidae).
many families of beetles, bugs, and hoppers.
usually near the water are the dragonflies (Order Odonata, Families Libellulidae and Aeschnidae), damselflies (Order Odonata, Families Coenagrionidae—common—, and Agrionidae, colorful but less common), and mayflies (Order Ephemeroptera).

On the trees

bagworm cases (Order Lepidoptera, Family Psychidae) are conspicuous among willow twigs in winter.

galls are tumor-like growths of leaves or twigs on trees, shrubs, and leafy plants of all kinds.

They are caused by a number of different insects (e.g., Diptera, Hymenoptera, Homoptera), each species of insect causing the formation of a characteristic type of gall on a particular part of a particular kind of plant. Stem and leaf galls are common on oaks.

leaf beetles (Order Coleoptera, Family Chrysomelidae), diverse in size, shape, and color.

cicadas (Order Homoptera, Family Cicadidae) are much more often heard than seen, especially in late summer. Their brown nymphal skins are commonly seen on tree trunks.

scale insects (Order Homoptera, Family Coccidae) form whitish scales on the willow saplings.

ladybird beetles (Order Coleoptera, Family Coccinellidae) may be found dining upon scale insects or upon the aphids or plant-lice (Order Homoptera, Family Aphididae) likely to occur on the tender stems and leaves of almost any leafy plant.

Under the bark of dead trees and stumps

tunnels made by various wood-boring beetle larvae, most noticeable being the "engravings" of engraver beetles (Family Scolytidae)

egg-sacs of spiders of several families, including the common jumping spiders (Family Attidae or Salticidae)

pseudoscorpions or false scorpions (Class Arachnida, Order Chelonethida), like small scorpions but without tail or stinger.

flatbugs (Order Hemiptera, Family Aradidae)

beetles of many families.

mites (Order Acarina), of several families.

springtails (Order Collembola, Family Entomobryidae)

barklice (Order Corrodentia or Psocoptera, Family Psocidae)

ants (Order Hymenoptera, Family Formicidae)

termites (Order Isoptera, Family Rhinotermitidae)

slime molds (Phylum Protozoa, Class Sarcodina, Order Mycetozoa) look like films of wet slime, but crawl around like giant amoebas, feeding on small organisms and debris. Before drying up, they produce spores in a fungus-like manner.

On the ground

many families of spiders, mites, beetles; etc. Grasshoppers are abundant (mostly Locustidae), as are ground beetles (Family Carabidae) and ants (Formicidae). On bare patches of ground may be noticed speedy, metallic-green tiger beetles (Family Cicindelidae), and the holes of their larvae. The larvae lie in wait for prey with their heads at the mouths of their holes, but quickly drop out of sight when disturbed. All of the animals listed as present under bark, except for wood-borers and flatbugs, are likely to be found in and under leaf litter. In the damp soil under leaf litter one can also expect to find earthworms (Phylum Annelida, Class Oligochaeta) and, if a lens is employed, roundworms (Phylum Aschelminthes, Class Nematoda).

In and around dung

flies (Muscidae and other families)

beetles (Scarabaeidae and other families)

In and around dead animals

as with dung, the composition of the invertebrate population changes markedly with time. At first, bluebottle flies (Calliphoridae) and their larvae (maggots) are among the most prominent. Various kinds of beetles, including rove beetles (Staphylinidae), scarabs, histerids (Histeridae), carrion-beetles (Silphidae), and, finally, the bone-polishing dermestids (Dermestidae), are also of importance in the clean-up job. Ants are usually abundant at the scene.

Near the stream or lake

long-jawed orb-weaver spider (Order Araneida, Family Tetragnathidae), a slender spider which often assumes a stick-like pose; spins a large, symmetrical web among bushes and tall grasses.

wolf spider (Family Lycosidae)—abundant on the ground, especially near the water; drab in color, often carrying a sac of eggs attached to the tip of the abdomen.

pygmy locust (Order Orthoptera, Family Tetrigidae)—a drab little flightless grasshopper which frequently hops onto the water.

toadbug (Order Hemiptera, Family Gelastocoridae), looks and acts like a tiny toad; frequently hops onto the water.

Flying just above the surface of the water

flies of several kinds, and both families of damselflies listed above (Coenagrionidae most abundant); dragonflies chiefly of the family Libellulidae.

adult and subadult mayflies (Ephemeroidea) are most likely to be found on the vegetation near the water, but may be seen flying weakly.

In the water

- Swimming or running on the surface of the water
 whirligig beetles (Order Coleoptera, Family Gyrimidae)
 water striders (Order Hemiptera, Family Gerridae)
- Swimming freely in the water
 Protozoa of many sorts, requiring a microscope for study.
 rotifers of several kinds, requiring a microscope for study.
 water fleas (Class Crustacea, Order Cladocera), usually in quiet water.
 copepods (Class Crustacea, Order Copepoda), in stream and lake.
 crayfish (Class Crustacea, Order Decapoda), usually on the bottom. Note: the most unusual free-swimming crustaceans are the following three groups, which occur in temporary pools, but not ordinarily in the stream or lake: fairy shrimp (Anostraca), tadpole shrimp (Notostraca), and clam shrimp (Conchostraca).
 water mites (Class Arachnida, Order Acarina)
 water beetles of several families (Dytiscidae, Hydrophilidae, etc.).
 water bugs of several families (Corixidae, Belostomatidae, etc.)
 mosquito wigglers (Diptera, Family Culicidae)
- On the bottom or in the submerged vegetation
 hydra (Phylum Coelenterata, Class Hydrozoa)
 planaria (Phylum Platyhelminthes, Class Turbellaria)
 bristleworms (Phylum Annelida, Class Oligochaeta). Note: an interesting leech-like oligochaete can be found on the crayfishes. It does not appear to harm its host. The bristleworms and nematodes require considerable magnification for study.
 freshwater sponges and bryozoans, which will probably appear in the lake, also require microscopic study, although they can be readily seen with the unaided eye.
 naiads or nymphs of the mayflies, dragonflies, and damselflies listed as flying near the water.
 aquatic snail (Phylum Mollusca, Class Gastropoda, Order Pulmonata)
 mussel or clam (Phylum Mollusca, Class Pelecypoda, Order Prionodesmacea)
 fingernail clam (Class Pelecypoda, Order Teleodesmacea)
 (all of the animals listed above as swimmers may be found on the bottom or among the vegetation).

Parasitic

- On birds and mammals
 ticks, mites (Class Arachnida, Order Acarina)
 chewing lice (Class Insecta, Order Mallophaga)
 sucking lice (Class Insecta, Order Anoplura)
 fleas (Class Insecta, Order Siphonaptera)
- Inside vertebrates
 flukes (Phylum Platyhelminthes, Class Trematoda)
 tapeworms (Phylum Platyhelminthes, Class Cestoda)
 roundworms (Phylum Aschelminthes, Class Nematoda)
- Inside snails
 larval flukes (Phylum Platyhelminthes, Class Trematoda)

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