M. R. Hamilton

Sul Ross State Teachers College

(AT ALPINE)

(This Institution Is a Member of the American Association of Teachers Colleges, of the Association of Texas Colleges, and of the Southern Association)

BULLETIN 48

WEST TEXAS HISTORICAL AND SCIENTIFIC SOCIETY:

PUBLICATIONS

NUMBER 5

Published Quarterly at the Sul Ross State Teachers College, Alpine, Texas, December 1, 1933.

Entered as second class matter March 2, 1920, at Alpine, Texas under Act of August 24, 1912.

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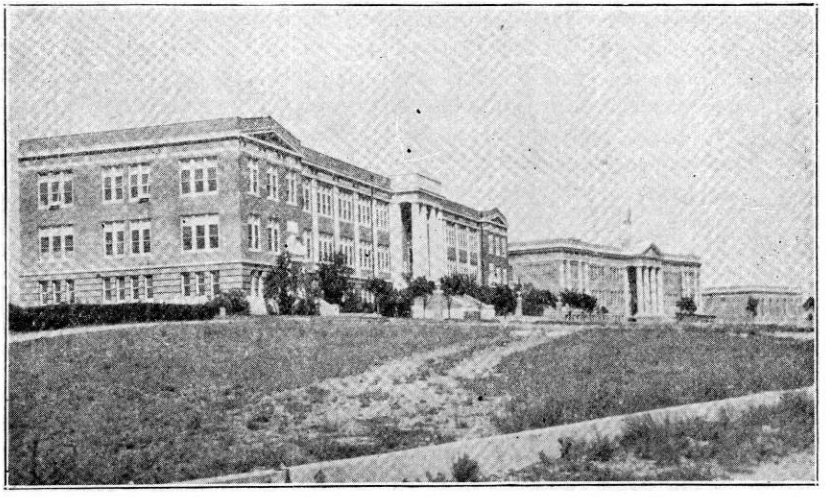

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Sul Ross State Teachers College

The Museum maintained by this society is housed in the fireproof Administration Building

Alpine, Texas,
December 1, 1933.

TO THE DIRECTORS OF THE WEST TEXAS HISTORICAL AND SCIENTIFIC SOCIETY

GENTLEMEN:

According to your instructions, the attached manuscripts are submitted for your consideration. Inasmuch as this material is related to several branches of work being undertaken by this Society, it is recommended that it be published as the fifth publication of this organization.

We wish to express our appreciation to the several members of the Society who have assisted in the collection of this material.

Respectfully submitted,

Committee on Publication:

VICTOR J. SMITH
CLIFFORD B. CASEY
HENRY T. FLETCHER

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TABLE OF CONTENTS

THE TRANS-PECOS IN TEXAS HISTORY

By CLIFFORD B. CASEY

PRE-HISTORY AND EARLY SPANISH ACTIVITIES

The Trans-Pecos of Texas has been occupied by man for many centuries, as a large and ever increasing amount of evidence indicates. The most valuable of recent archaelogical and anthropological discoveries furnishes decided evidence that the region has been occupied not only by the basket-maker, the postbasket-maker, and the pre-pueblos cultures, but by cultures prior to and contemporaneous with the basket-maker.

During 1929 a group of private citizens, looking for buried treasure, began the excavation of a legendary cave on the slopes of Bishop's Cap mountain some forty miles from El Paso, Texas. Twelve feet below the floor level of the cave, bones were found which attracted the attention of Roscoe P. Conkling of the American Smelting and Refining Company. Mr. Conkling, with the aid and advice of the Los Angeles Museum, took charge of the excavation thereafter. Since the original find, in 1929, sufficient bone remains have been found in the cave to cause William Alanson Bryan of the Los Angeles Museum to say, "I do not hesitate to pronounce the find as probably the most important pre-history discovery ever made in America."[1] In the cave they have found the skeletal remains of man in close relationship with the ground sloth, the extinct horse, the cave-bear, the camel, the dire wolf, and other extinct animals and birds.[2]

Professor Edgar B. Howard of the University Museum, University of Pennsylvania, has been supervising, for three years, the excavation of a cave in the Guadalupe Mountains. He has found a strata of a basket-maker culture, and four feet beneath this strata has encountered definite evidence of a Prebasket-maker culture. The find consisted of several fire hearths associated with the bones of the extinct bison, bones of at least three different birds long extinct in the region, the bones and skull of the musk ox, and an unusually large type of spear point known as the Folsom Spear Point.

Two finds of recent date in the immediate Big Bend section

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[1] William Alanson Bryan, "The Recent Bone-Cavern Find at Bishop's Cap Mountain, New Mexico," in **Science**, LXX, No. 1802, pp. 39-41.

[2] **IBID.** Frank Thone, "Did Earliest Americans Hunt Sloth?" in **Science News Letter**, October 19, 1929, pp. 237-239.

Roscoe P. Conkling, "Discoveries in Bone-Cave at Bishop's Cap Mountain," Manuscript in the possession of Mr. Conkling, El Paso, Texas.

[3] Letter, Howard to Casey, March 8, 1932, Alpine, Texas.
F. M. Setzler, **Notes**, March 2, 1932, Alpine, Texas.

of the Trans-Pecos area indicate, without doubt, the existence of basket-makers. F. M. Setzler, Assistant Curator of the United States Museum, in 1931, excavated a dry-shelter cave on the Knight ranch, ten miles south of Valentine, Texas. At this location he found definite evidences of a culture prior to or contemporaneous with the basket-maker culture of the Southwest.[4] And more recently, Professor Victor J. Smith of Sul Ross State Teachers' College, Alpine, Texas, conducted a party which examined an unusually large dry-shelter cave in the vicinity of Van Horn, Texas. This party unearthed basketry, sandals, bone tools, and a throwing stick, all of which give rather definite evidence of a basket-maker culture. Pottery, flint tools, and weapons of later Indian cultures were conspicuously absent in each of these finds.

These pre-history cultures of the Trans-Pecos area were followed by the postbasket-maker, the pre-pueblo, and the pueblo cultures. The last of these, the pueblo Indian culture, was evident in the region when the Spanish first entered the Trans-Pecos in the sixteenth century.[5] Soon thereafter, however, a more aggressive and troublesome type of Indian appeared in the region. The Mescalero Apache, the Kiowa, and the Comanche of the plains are good examples of this type of Indian.

Rugged adventurers, in the service of Spain, were the first Europeans to set foot on the Trans-Pecos. Just forty-three years after Columbus discovered America, in 1535, Cabeza de Vaca and his three associates of the ill-fated Narvaez expedition entered the region, and, without doubt, spent some time with the Indians at the junction of the Conchos River and the Rio Grande in the vicinity of the present Presidio, Texas.[6] The de Vaca account of the vast inland region fired the Spanish imagination and provoked the Coronado expedition of 1542-1543. It is doubtful, however, whether this expedition descended the Pecos River as far south as the northern limits of the Trans-Pecos Texas.

The failure of the Coronado expedition to find a great native people worthy of exploitation caused a temporary lull in the activities of Spain in the region. Successful mining operations to the north of Mexico City, however, during the succeeding

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[4]Setzler, in **Address** delivered before the West Texas Historical and Scientific Society, March 2, 1932, Alpine, Texas.

[5]A. V. Kidder, **Southwestern Archaeology**, 74-77.
Cabeza de Vaca, **La Relacion.**
Gonzalo Fernandez Oviedo y Valdez, **Historia General y Natural de las Indias**, III, 584-618.
A. F. Bandelier, **The Journey of Cabeza de Vaca**, 148-155.
Diego Perez de Luxon, **Expedition into New Mexico Made by Antonio de Espejo** (Hammond-Rey ed.), 52-104.

[6]Luxan, **Expedition Into New Mexico**, 52-104.
Bandelier, **The Journey of Cabeza de Vaca**, 148-155.

thirty years resulted in Spanish contacts with the Indians of the upper Conchos River within the present Chihuahua. These Indians told the Spaniards of a populous and rich land beyond, to the north. These stories aroused a renewed interest, and eventually resulted in a number of expeditions into the region. The most important of these were: the Rodriquez-Chamuscado missionary endeavor, the Espejo relief expedition, and the de Sosa and Onate colonizing expeditions. The details of these are well known to all students of early Texas history.

The Onate expedition, last of the above mentioned, proceeded north from Paso del Norte going beyond the present limits of Texas into the Pueblo region of what is now New Mexico, where they established the first permanent Spanish settlement in the southwest portion of the present United States.[7] The Trans-Pecos of what is now Texas soon thereafter was neglected by the Spaniards because a shorter and more accessible route to the settlements of New Mexico was found by crossing overland from the headwaters of the Conchos River north to Paso del Norte on the Rio Grande.

Practically a hundred years intervened after the settlement of New Mexico before another expedition of importance entered the Trans-Pecos Texas. Some time prior to 1680 the Jumano Indians, east of the Pecos River, had sent messengers to the Spanish Governor of New Mexico praying that missionaries and military aid be sent to their people. The Pueblo Indian revolt of 1680 caused the surviving Spaniards of New Mexico to retreat southward to the vicinity of Paso del Norte, and there to establish a mission and a civil settlement on the Texas side of the Rio Grande. It was from this place in the year 1683 that Governor Cruzate dispatched an expedition under the leadership of Mendoza to the aid of the Jumanos. Mendoza descended the Rio Grande along the Mexican side of the river to the mouth of the Conchos. At this point the party crossed the river and followed a northeasternly route across the Big Bend of Texas to the Pecos River, which they crossed, and continued eastward for possibly one hundred or more miles, where they spent some time with the Indians of the region. By a circuitous route, to the south, Mendoza returned to the Pecos River and then back to the Rio Grande near the present Presidio, Texas, where he formally took possession of the north bank of the Rio Grande as a part of New Mexico.[8]

Incited by the reports of Mendoza's expedition and of other minor expeditions to the region beyond the Rio Grande, Spain

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[7]Herbert E. Bolton, **Spanish Explorations in the Southwest**, 197-280.

[8]Bolton, **Spanish Explorations**, 313-343.

V. J. Smith, "The Route of Mendoza" in **Publications of the West Texas Historical and Scientific Society**, II, 59-68.

probably would have occupied Central and East Texas from New Mexico by way of the Trans-Pecos had it not been for the report of French activities along the Gulf coast, coincident with the receipt of the Mendoza report. It may be suggested, therefore, that the ill-fated La Salle expedition prevented the Trans-Pecos Texas from becoming the highway over which Spain would have settled Central and East Texas. Suffice it to say that after 1685 Spanish activities in the Trans-Pecos were confined to a somewhat impotent attempt to hold in check the troublesome Mescalero Apache, Kiowa, and Comanche Indians who soon thereafter reached the Rio Grande in their movement into the Southwest.[9]

The royal governors of Coahuila, and Nueva Vizcaya, in 1727, in an effort to punish some of these troublesome Indians who were crossing the Rio Grande and using the Santa Rosa Mountains as a base of operations, fitted out a joint expedition in charge of Captain Berroteran of San Bautista, Captain Leysola of San Pedro del Gallo, and Captain Musquiz of Rio Grande del Norte. These officers were instructed to examine the region at the junction of the Conchos and the Rio Grande, and to follow the Indians until they were punished for their many offenses. Scouting parties were sent out in order to determine the best routes to follow, and to gain information essential for outlining a plan of attack. After spending several months in examining the regions involved, the leaders of the proposed expedition turned in their expense accounts and reported that the lack of water and food over the territories which must be crossed made it impossible to anticipate success, and that the Indians could not be followed until contacts were established with friendly Indians of the region. Thus the expedition was abandoned after almost a year of fruitless effort.[10]

ANGLO-AMERICAN APPEARANCE WEST OF THE PECOS

The beginning of Anglo-American interest in and contact with the Spanish settlements in the Trans-Pecos region is obscure. Possibly the first citizen of consequence from the United States to visit the territory was Lieutenant Zebulon Pike, who, after having explored the region of the headwaters of the Arkansas and the Red Rivers in the Spring of 1807, was taken prisoner by the Spanish authorities. The Spanish governor of New Mexico, into whose hands Pike and his associates were delivered, was unwilling to assume the responsibility of determining the fate of Pike and his men. Consequently, under military escort, they were dispatched from Santa Fe to Chi-

[9] Arcivo General de Mexico, **Historia**, LII, 1-45.
[10] **IBID.**, 1-78.

huhua City. They went by way of Paso del Norte, and very likely visited the site of the present El Paso, Texas.[11]

Between the years of 1807 and 1826 more than a dozen Anglo-American traders, who were interested in the so-called Santa Fe trade, entered the northern part of the Trans-Pecos Texas.[12] After 1826 an occasional Anglo-American trader or trapper appeared in the region. It was not, however, until about the time of the Mexican War, 1846-1848, that Anglo-Americans came in groups and the actual occupation by peoples from the United States began. The development of trade between the United States and Mexico by the Santa Fe and Chihuahua Trails, the Mexican War, and the discovery of gold in California were the chief factors in speeding up the Anglo-American occupation of the Trans-Pecos Texas.

The Santa Fe Trail was in free operation after 1822. From Santa Fe, New Mexico, the route of the trail ran south by Paso del Norte, Chihuahua, and on into Mexico City. This was a long route and the Mexican government, during the 1830's, in an effort to shorten the distance between Mexico City and St. Louis, Missouri, agreed to reduce import duties and to provide military protection for any initial enterprise seeking to open up a shorter route.[13] An expedition left Chihuahua City in the spring of 1839 in response to this move on the part of the Mexican government. The party followed the Conchos River to its mouth, crossed the Rio Grande and traversed the Trans-Pecos Texas by way of the Old Salt Trail, then continued northward on their way to St. Louis. This expedition was the beginning of the so-called Chihuahua Trail, and, at the same time, it incidentally created a demand which resulted in the establishment of an Anglo-American settlement on what is now the Texas side of the Rio Grande, near the mouth of the Conchos River.

During the spring of 1848 John W. Spencer and Ben Leaton, freighters on the Santa Fe Trail, while in Chihuahua City trading for horses, met John D. Burgess. Following a brief preliminary association the three decided to go to Presidio del Norte at the junction of the Conchos River with the Rio Grande and there to go into business at the intersection of the Santa Fe and Chihuahua Trails in order that they might traffic with the freighters from the States. The party, after making preliminary arrangements with the Mexican authorities in

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[11]Zebulon Pike, **Exploratory Travels Through Western Territories of North America**, 263-264.

[12]S. F. Twitchell, **Leading Facts of New Mexican History, II**, 97-98.
T. M. Marshall, "St. Varin's Expedition to the Gila in 1826," in **The Quarterly**, Southwest Historical Association, XIX, 251-260.

[13]Carlysle G. Raht, **The Romance of the Davis Mountains**, 47.

Chihuahua City and at Presidio del Norte, returned to the United States to outfit themselves for the enterprise. They did not return to Presidio del Norte, however, until 1850, and by then the territory north and east of the Rio Grande had been legally transferred to the United States by the provisions of the Treaty of Guadalupe Hidalgo, 1848.[14] The transfer of Texas from Mexico to the United States doubtless influenced Spencer, Leaton, and Burgess in their decision to establish headquarters for their activities on the Texas side of the Rio Grande rather than in Presidio del Norte. At any rate, by November, 1851, they had purchased and were in occupation of land on the Texas side of the river across from the Mexican settlement. The land thus occupied was purchased from Mexican-Indians who held the land under Mexican land grants.[15] In addition to the small tracts purchased from the Mexicans the Anglo-Americans filed with the State of Texas on other unoccupied land near by.

Spencer gained control of the land just across the river from Presidio del Norte and established a horse ranch. Lack of a dependable market for horses and Indian raids in which many horses were driven off caused the undertaking to prove unprofitable, and, after 1854, his horses were replaced by cattle which were driven from northern Mexico. The cattle business proved to be more satisfactory because the cattle could not be driven away so easily by the Indians, and, possibly of more significance, because, in 1854, Spencer secured a "beef contract" to supply the United States army post which had just been established at Fort Davis.

Ben Leaton, another of the trio, settled down the river some four or five miles from Spencer's Ranch, where he occupied, for a few years, an extensive adobe structure which stands today and is known as Fort Leaton. From this place Leaton engaged in a somewhat questionable relationship with the troublesome Indians on both sides of the river.

John D. Burgess, the third of the group which founded Presidio, Texas, became the chief freighter for the settlement, and used Spencer's Ranch as headquarters for a few years until he came into possession of Fort Leaton. After 1854 his freighting business developed rapidly because of the establishment of the United States Army posts west of the Pecos River.

Spencer's Ranch, as the chief settlement on the Texas side

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[14]Notes on the life of John W. Spencer. Private file of Clifford B. Casey, Alpine, Texas.

Passport No. 33, Registrado 1, Libro 1, issued to John W. Spencer at Franklin, Texas, June 27, 1850. Private file of John W. Spencer's son, Ricardo Spencer, Ojinaga, Chihuahua.

[15]Notes on the life of John W. Spencer.

of the river across from Presidio del Norte, came to be known, served as a supply station for traders, freighters, and Indians, and consequently developed into a permanent and well organized village, which was called Presidio after about 1865. Thus we may say that Presidio, Texas, was founded in November, 1851, when John W. Spencer moved across the river from Presidio del Norte and set up his ranch headquarters. [16] By 1866, Presidio, Texas, was, for the most part, a Mexican settlement. There were then only five Anglo-Americans in the community, each of whom had half-breed families from Mexican wives. Today the proportion of Mexican and Anglo-American is about as it was in 1866. Of a population of possibly fifteen hundred, more than twelve hundred are Mexican.[17]

The site of the present El Paso was occupied by Anglo-Americans about the same time as was Presidio. The Doniphan expedition was, in a sense, a forerunner of the Anglo-American settlement of El Paso. The United States troops under Colonel Doniphan occupied the region across the Rio Grande from Paso del Norte from December 27, 1846, to February 8, 1847. The War with Mexico was not as influential in the settlement of El Paso as was the Gold Rush to California. During 1846 four citizens of the United States passed through Paso del Norte on their way to upper California, and in 1849 the first large emigrant train from Texas to California, under the leadership of Captain Mays of St. Louis, Missouri, passed through Paso del Norte.[18] Thereafter many traveled by this route, and because of the great distances they were often compelled to spend weeks in the vicinity of Paso del Norte reprovisioning. Supplies were scarce, thus difficult to secure; consequently some of the emigrants settled on the Texas side of the river and opened stores to supply the need, and thus a settlement of Anglo-Americans on the Texas side of the Rio Grande came into existence. When the United States Boundary Commission reached this region in 1850, there were three definite settlements within the limits of the present El Paso, Texas. These were: the Coontz' ranch, Stevenson's ranch, and another cluster of buildings known as Magoffinsville. By 1852, the locality was of sufficient importance to be given a post office, which was called Franklin in honor of Franklin Coontz, one of the original settlers, and the first postmaster. The name of the post office remained Franklin until 1859, when the town was

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[16] Notes on life of John W. Spencer.

[17] Richard C. Daly, **Daly to Harry Warren,** Deputy Collector of Customs, Presidio, Texas.
Notes on the Life of Richard C. Daly.

[18] Mabelle E. Martin, "California Emigrant Roads Through Texas" in **The Quarterly,** XXVIII, 287-301.
Grace Long,—Anglo-American Occupation of the El Paso District, 36.

re-christened El Paso.[19] El Paso was not incorporated, however, until 1873.

About the time of the appearance of the two civil settlements of Presidio and El Paso, the United States found it necessary to establish military posts in order to protect the mail routes and the lives of the overland emigrants. The post at El Paso, called Camp Concordia, later Fort Bliss, was established in February, 1848. Fort Davis, on Limpia Creek, was occupied in October, 1854; Fort Stockton, at Comanche Springs, established in 1854; Fort Quitman, some ninety miles below El Paso on the Rio Grande, and Camp Pena Colorado, near present Marathon, Texas, were occupied in about 1856.[20] Within easy reach of these army posts civil communities sprang up, and by 1860 the Trans-Pecos was dotted with settlements. These tended to interfere with the activities of the Indians, and during and after the Civil War the increase of Indian depredations in the region called for renewed effort on the part of the United States troops of the various forts and posts. By about 1885, however, the United States troops, with the aid of the Texas Rangers and the settlers in the region, had driven the last of the war-like Indians from the Trans-Pecos. Consequently, Fort Stockton was abandoned in 1886, and Fort Davis in 1891.

The Emigrant, the Santa Fe, and the Chihuahua Trails, the mail routes, the stage lines, and the army posts were not sufficient, however, to cause a great number of settlers to come to the Trans-Pecos. Heavy financial risk, lack of sufficient water, and danger from Indian depredations served as an effective check upon the growth of the population. But after 1870 the more courageous of the ranchmen of south and west Texas began to cross the Pecos in search of wide-open ranges. The effective eviction of the troublesome Indians, through the combined efforts of the Texas Rangers and the soldiers of the United States army posts, coincident with the coming of the railroads to the Trans-Pecos in 1882-1883, greatly altered the situation in the interests of prospective settlers, and within ten years thereafter most of the state and railroad lands were taken up for the grazing of cattle, sheep, and goats.

Between the years of 1872 and 1882 the Southern Pacific and the Texas and Pacific Companies waged a heated contest for the rights to construct a trans-continental railroad by the southern route. The Southern Pacific won in the fight for a right-of-way across the Indian reservation in southern Cali-

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[19] Anson Mills, **Forty Years in El Paso**, 15-17.
Spencer Passport signed at Franklin, June 27, 1850.

[20] M. L. Crimmins, "The border Command at Fort Davis" in **Publications of the West Texas Historical and Scientific Society, I**, 7-20.

fornia.[21] The Texas and Pacific did not give up, however, and continued its construction activities into Western Texas in the hope of reaching the mountain pass to the southeast of El Paso in advance of the competing line. This resulted in a renewed effort on the part of the Southern Pacific in combination with the Galveston, Harrisburg, and San Antonio Railway Company. The three companies, competing in this manner, gave to the Trans-Pecos of Texas two major railroads in the early eighties. The Southern Pacific connected with the Galveston, Harrisburg, and the San Antonio in January of 1883 and instituted a through service from El Paso to San Antonio. The Texas and Pacific reached Sierra Blanca, Texas, in 1882, and there connected with the Southern Pacific, which had reached there in advance. The Texas and Pacific was granted the right to use the tracks of the Southern Pacific from Sierra Blanca to El Paso, thus giving a through service from Fort Worth to El Paso.[22]

A third major railroad entered the Trans-Pecos in 1912, when the Kansas City, Mexico, and Orient Railroad crossed the Pecos River and connected with the Southern Pacific at Alpine, Texas. Arthur E. Stillwell, President of the Orient lines, had proposed to connect with the Orient of Mexico at Presidio, Texas. This, however, was not done until 1930, following the purchase of the Orient by the Santa Fe system.

POLITICAL DEVELOPMENT OF THE TRANS-PECOS

The Trans-Pecos, like Texas as a whole, has been under many political jurisdictions. As a part of New Spain, and of Mexico after 1821, the political status of the region, according to Spanish and Mexican maps, was very uncertain. The first maps and the earliest historical references to the territory include it in what was called tierra incognita.[23] Later the Trans-Pecos came under a general term, Provincias Internos. And it was not clear or definite to which of the interior provinces it belonged.[24] At different times, and by various maps, the region is shown as being divided between New Mexico, Nueva Vizcaya (Chihuahua), and Nueva Estremadura (Coahuila). It is definitely known, however, that Mendoza, in 1683, took possession of the region as a part of New Mexico.[25] It is evident that during the Spanish and Mexican periods the greater

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[21]Robert E. Rugel, **The Story of the Western Railroads**, 179-183.

[22]S. B. McAlister, **Building the Texas and Pacific Railroad**, 57-60, 138, (M. A. Thesis).

[23]J. C. Iselin (editor), **Algemeines Historiches Lexicon, III**, 496.

[24]H. E. Bolton, **Texas in the Middle Eighteenth Century**, 1-2.

[25]Bolton, **Spanish Explorations in the Southwest**, 317.

part of the Trans-Pecos was considered as a part of Chihuahua.[26]

On December 18, 1836, following the establishment of the Republic of Texas, a legislative act was passed declaring the Rio Grande to its source, thence north to the forty-second parallel, to be the western limit of the republic. At this time the Trans-Pecos, a vast region unoccupied except for Indians, was attached to Bexar district along with all other territory west of San Antonio. This status remained unaltered until the close of the Mexican War.

In the meantime Texas was admitted into the Union as a state with no very definite agreement as to its boundary limits on the northwest. Texas proceeded, however, to dispose of the region on the basis of the legislative act of 1836, and in March of 1848 created Santa Fe County, making it include all of the territory north and west from the mouth of the Pecos River to the forty-second parallel, thus to embrace all of the Trans-Pecos. This designation never functioned, however, because of opposition from the Mexican-Indian population of what is now eastern New Mexico. In December, 1849, a readjustment was made, by legislative act, and the original county of Santa Fe was reduced in size with Worth, El Paso, and Presidio Counties created to the south. Of the four counties thus created only two are to be considered in our discussion of the Trans-Pecos, since, by the so-called Compromise of 1850, Worth and Santa Fe Counties became a part of New Mexico.[27]

El Paso County was re-created by an act of the Texas legislature of January 4, 1850, and began to function on April 17, 1850, with San Elizario as the first county seat. The county seat was removed to El Paso in 1883.[28] The Commission which was sent out to organize these counties found it impossible to organize Presidio County, and, in 1852, Presidio County was attached to El Paso County for civil and criminal jurisdiction until Presidio County should be properly organized. January 2, 1858, the Seventh Legislature again provided for the organization of Presidio County by designating James Dawson as sole commissioner with full powers to organize the county and to cause an election of county officers to be held.[29] For some unascertained cause, possibly lack of people, Dawson failed to

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[26]C. E. Castaneda, **Three Manuscript Maps of Texas**, 38-43.

Maps in Texas University Library: M972-1834t, GM972-1756e, GM972-1828, GM972-1814c, GM972-1837, M972-17331s, M976.407-1836y, M976.401-1744d.

[27]Binkley, **The Expansionist Movement in Texas**, 178.

Gammel, Laws of Texas, III, 462, 464.

[28]Park W. Pitman, **Historical Sketch of El Paso County.** Files of El Paso County, El Paso, Texas.

[29]Gammel, Laws of Texas, III, 969-970, IV, 34-35.

organize the county. A third attempt to organize the county on July 19, 1870, likewise failed. A fourth attempt, however, on May 12, 1871, succeeded, and Presidio County was organized with Fort Davis as the county seat. After the coming of the Southern Pacific railroad, in 1885, the county seat was removed to Marfa, Texas. December 31, 1871, Pecos County was created with Fort Stockton as the county seat. The county was organized in April, 1875. The territory included in Pecos County was taken from the north and east of the original Presidio County.[30] An act of April 14, 1883, created Reeves County from the northwest portion of Pecos County. It was organized with Pecos as the county seat in 1884.

After the removal of the county seat of Presidio County from Fort Davis to Marfa, in 1885, dissatisfaction in the north and east part of the county resulted in the creation of four new counties, the territory to be taken from Presidio County. These were: Brewster, Jeff Davis, Foley, and Buchel Counties. Brewster County was organized in February of 1887 with Murpheyville as the county seat. A county election later in the year, however, changed the name of the town of Murpheyville to Alpine. This change in name was officially recognized by the Post Office Department of the United States. February 3, 1888.[31] Jeff Davis County was organized in May of 1887 with Fort Davis as the county seat. The proposed counties of Foley and Buchel were, at first, attached to Brewster County for civil and criminal purposes, but later, in 1897, they were abolished and the territory was added to that of Brewster County.[32]

Pecos County, which was created in 1871, proved to be unwieldly because of its size, and in 1905, a new county was created from its southern limits and named Terrel with Sanderson as the county seat.[33]

In El Paso County there were but few settlements of any consequence outside the immediate influence of the city of El Paso; consequently the citizens of Sierra Blanca and Van Horn felt that their tax money was being unfairly distributed, since the greater part of the county funds was being expended for the benefit of the citizens of El Paso. A controversy arose, and as a consequence two new counties came into being. Cul-

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30Pecos County records. **Letter,** County Clerk to Casey, March 26, 1932. Gammel, VI, 206-207, 975-976, 988-989.
IBID, IX, 411-412.

31Records Post Office Department. **Letter,** 3-9-32, Postmaster General's Executive Assistant to R. E. Thomason. Files of Clifford B. Casey, Alpine, Texas.
Gammel, Laws of Texas, IX, 802-803, 824-825.

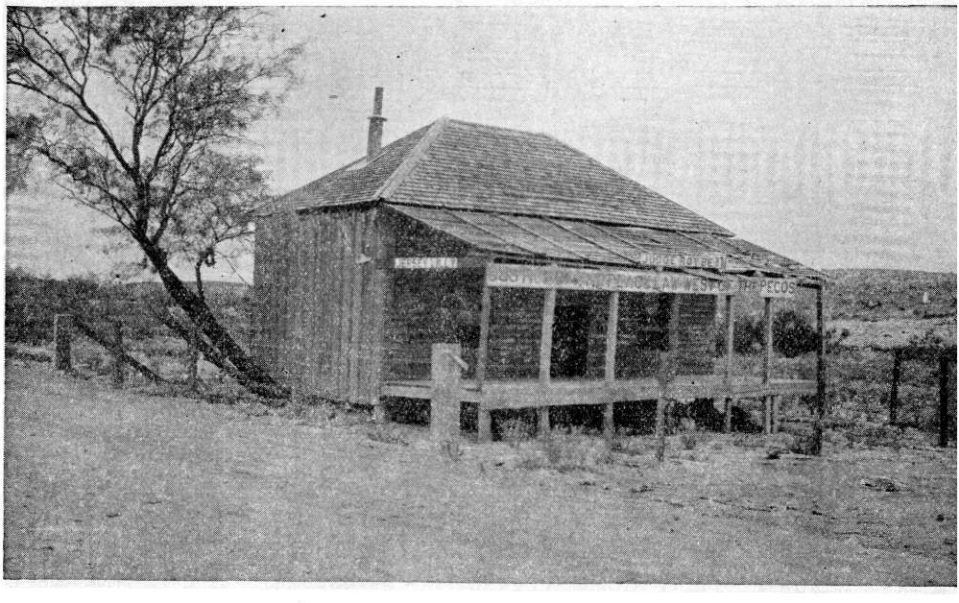
32R. L. Batts, "Defunct Counties in Texas" in **The Quarterly, I, 90.**
Gammel, X, 1169-1170.

33General Laws of Texas, Regular Session, Twenty-ninth Legislature, 96-97.

bertson County was created and organized in 1911, with Van Horn as the county seat. Hudspeth County, however, was not created until 1917, when it was organized with Sierra Blanca as the county seat.[34]

There are, at present, nine counties with all of their territory west of the Pecos River. There is, however, one county which has only a small part of its jurisdiction extending beyond the Pecos to the west. Val Verde County, which was created and organized in 1885 with Del Rio as its county seat, took its territory from three previously existing counties: Kenney, Crockett, and Pecos. Thus Val Verde County, which for the most part is east of the Pecos River, exercises jurisdiction over a small district of the Trans-Pecos Texas.

[34]General Laws of Texas, Thirty-second Legislature, 53-54. General Laws of Texas, Thirty-fifth Legislature, 39-42.



The Law West of the Pecos.
Former Headquarters of Judge Roy Bean, Langtry

BEGINNINGS OF THE GREAT McDONALD OBSERVATORY

BY BARRY SCOBEE

For future references it may be well to record now, concurrently with the activities, while events and personalities are fresh in mind, some of the initial steps in the founding of the great McDonald Astronomical Observatory in the Davis Mountains. The institution was made possible by the bequest of the late W. J. McDonald of Paris, Texas.

William Johnson McDonald was born in 1845, of Scotch forebears. He died at his home on Yam Hill, Paris, in 1926, leaving the bulk of his estate to the University of Texas for the specified purpose of building an astronomical observatory. The amount was often referred to as a million dollars. The will was contested, but the University was successful in retaining the bequest. In the summer of 1932 the sum on hand was authoritatively named as about $850,000.

When the news first swept the state that McDonald had left the bequest for an observatory, there was an instant question asked at Fort Davis—and no one knows how many other places in the state!—Why not locate it on the Davis Mountains? What place in Texas could be more suitable? Then came the contest in court, and the subject faded from the public mind, to be revived again after the court decision. Then numerous communities made offers of land for the erection of the structure.

In the summer of 1932 a search was begun for a suitable and desirable location among the many offered sites, by representatives of the University of Texas. These representatives were astronomers from Yerkes Observatory at William Bay, Wisconsin, which is the property of the University of Chicago. This was the result of an arrangement between the two universities which may best be set forth here by quoting from a pamphlet entitled "The McDonald Observatory," prepared by Dr. Otto Struve, director of Yerkes, for the University of Chicago.

"The cost of up-to-date equipment for astronomical research has steadily increased during the last hundred years. When in 1824 the most powerful telescope in the world, a ten-inch refractor, was purchased by the University of Dorpat, the price paid to Joseph Fraunhofer, the famous German optician, was approximately 10,600 guldens, or $3,100. The total cost of the Yerkes forty-inch refractor, installed in 1865, including optical parts, mounting, and dome, was $166,000. The one hundred-inch Hooker reflector on Mount Wilson, completed in 1919, cost approximately $650,000; and the proposed two hundred-inch

telescope, now in process of construction for the California Institute of Technology, will probably cost several millions of dollars.

"It is obvious that few, if any, of the existing American universities will be able to keep pace with this rapid increase in cost of astronomical instruments. There are now approximately eighty more or less active observatories in North America. Each is equipped with telescopes that range from a few inches to a hundred inches in aperture. The total amount of money invested in this equipment is appallingly great, especially since much of this investment has never given adequate returns in the form of valuable scientific results. . . . There can be no doubt that the spirit of rivalry of our universities in striving to posses the largest or the most powerful telescope in the world has brought about an overproduction of telescopes that now rank as small or moderate in size, and a consequent division of effort which might have been more usefully coordinated.

Since the advancement of astronomy must depend upon large and expensive equipment, the most natural course would be one of co-operation between several institutions in the construction and operation of one large instrument in place of several small and inefficient ones. This simple fact has been realized for a long time. The astronomical agreement between the University of Chicago and the University of Texas is, to my knowledge, the first definite attempt in this direction. The agreement owes its inception to the active interest and wholehearted co-operation of the two presidents, Dr. Hutchins of Chicago and Dr. Benedict of Texas, and its completion to the broad-minded and progressive attitudes of the governing boards of the two institutions. The arrangement provides that the Regents of the University of Texas will build the telescope, the revolving dome, and buildings, from a part of the bequest. All salaries of the staff will be paid by the University of Chicago and the operating expenses will be shared by the two universities." (This agreement is for a period of thirty years.)

In the summer of 1932, Dr. C. T. Elvy of the Yerkes staff and Theodore H. Mehlin, visiting offered sites in Texas, reached Alpine, and Dr. Horace W. Morelock, President of the Sul Ross Teachers College, Alpine, and A. F. Robinson, Secretary of the Alpine Chamber of Commerce, brought the two visitors to Fort Davis to see the Davis Mountains. Walter S. Miller, a leading citizen of Fort Davis, interested in every public enterprise, joined the party. Two cars went to Juniper Flat, on the Folkes Ranch, sixteen miles from Fort Davis. Mr. Miller told friends afterward that when Dr. Elvey saw a nearby hill that was called for a short time "Little Flat-Top," he exclaimed:

"No need to go any further—I want to make observations on that mountain first."

A little later Dr. Elvey and Mr. Mehlin returned to Fort Davis to make visibility and other tests on the mountain. They set up their 60-pound telescope July 13 and continued for about a week. They left to inspect other proffered and suggested sites, and returned to resume tests here August 10, remaining several days and making tests this time on an adjacent and higher mountain, which is now Mount Locke, the chosen site whereon building is now under way. At this time these two men were traveling in a maroon-colored car, or one-seated van, with the lettering on the sides, "McDonald Observatory, University of Texas."

Later in November of the same year Dr. Otto Struve, having heard Dr. Elvey's report on the Davis Mountains, came to see for himself, accompanied by Mrs. Struve and Dr. Elvey. Dr. Elvey had already been appointed director of the McDonald Observatory. This party made further tests on Mount Locke, their eyes, however, making frequent trips to the summit of Spring Mountain, four or five miles away to the northward and much higher. Finally the party moved their equipment, camp, and food supplies to the summit of Spring Mountain. Edwin Fowlkes, Jr., and his brother, Mannie, conveyed the party and its outfit on horses. On the afternoon of Nov. 29, W. S. Miller, Dr. C. E. Eaton and Barry Scobee, all of Fort Davis, drove to the Fowlkes Ranch at the foot of Spring Mountain and proceeded on foot to the summit to visit the astronomical group and take an accumulation of mail. The genial star-gazers persuaded the trio to remain to supper. There were only three sets of eating utensils. The visitors needed little persuasion. The visitors ate first, while everyone squatted out of the thin and penetrating wind around a big blazing fire of dry wood. And how the guests asked questions! Dr. Struve made a significant remark: "I wish the Observatory were right here now." And he added that the Davis Mountains were perhaps unexcelled in the United States for a combination of the requirements for an observatory—transparency, tree or bush covered summits to keep down radiation and dust, a minimum of twinkling, as well as other technical points. Thus it was not actually settled for many months. The three townsmen remained that night to look at Polaris through the 60-pound telescope, and had to make their way down the mountain about the darkest night that any of them had ever traveled over rocks and through bush. They reached the ranch house at 10 o'clock and awakened Edwin and Mannie to use the telephone—telling wives not to be worried, they'd be home pretty soon now. But in the end Spring Mountain was not chosen for the site because its distance and height would

have increased the cost of the observatory structure—longer hauling, more road building. And there appears to be no sense of disappointment among the astronomers that it was not chosen, for in several respects, it is understood, Locke was found to be superior.

Early in January, 1933, Charles J. Stilwell, vice president of the Warner & Swasey Company of Cleveland, Ohio, and L. M. Cole of Dallas, Texas, representatives of the company, arrived in Fort Davis to inspect Mount Locke, consider the possibility of a road thereto, and observe other aspects of the situation, with a view to making a bid on the observatory. The Warner & Swasey Company are manufacturers of precision machine tools and builders of observatories and telescopes. After these visitors there were various prospective sub-contractors in the succeeding months.

The University of Texas wished to secure 200 acres of land on and around the summit of Mount Locke. The mountain lies largely in the old U-Up-and-Down Ranch, which was founded by the late G. S. Locke of Concord, New Hampshire. Locke spent many years here in the pioneer days. The ranch was still in his estate. His granddaughter, Mrs. Violet Locke McIvor, of Concord, N. H., donated the desired 200 acres willingly and graciously.

Up to this time the mountain had not borne a name. Various citizens discussed what name would be suitable. Some suggested "U-Up-and-Down," because a U up and a U upside down had been the Locke cattle brand, it having been registered by him in the Jeff Davis county brand book April 29, 1891, and used until 1930, when the ranch leaseholder discontinued its use. This name would have been unique, but perhaps clumsy. Another person said Indian Peak. W. S. Miller suggested Peak Locke. He kept trying to get in the name of Locke to do honor to the old pioneer and in appreciation of the gift of land. In January, 1933, several Fort Davis men made a trip to the Plains to attend a meeting of the West Texas Chamber of Commerce. Among them were Mr. Miller and Mr. Merrill. Mr. Merrill, like Mr. Miller, is a public-spirited citizen, resident in the country now half a century, always in the vanguard of worthwhile enterprises. On the return drive Mr. Miller mentioned a name that he had been thinking about for some time, but had not spoken it to anyone. He spoke it now for the first time. "What do you think of the name Mount Locke for the observatory peak?" he asked. Mr. Merrill gave his hearty endorsement. The name was adopted at once by the public, and so far as known there has been no objection to it. It is catchy, easily remembered, a historical name, and incidentally has been printed already countless times in newspapers and magazines. Think of its use in years to come!

Through various negotiations and plannings the late Walter W. Negley was friendly to the enterprise and very helpful. He was the lease holder of the U-Up-and-Down ranch. Herbert D. Bloys, county clerk, donated valuable help in preparing deeds and other legal papers.

Dr. Struve had said in November that further visibility tests would be made in the spring, when, he was told, there would be high winds and dust in all probability. On April 6, 1933, Dr. George Van Biesbroeck of the Yerkes staff, accompanied by a youth named Frederick Granberg, arrived to conduct the dusty weather tests and to locate the site for the dome. The thermometer dropped nearly to zero on Mount Locke April 10, and much of the time of the astronomer's stay there was blowing dust or still-dust haze; yet Dr. Van Biesbroeck said visibility was not much interfered with at that height, and termed the place as "astronomer's paradise."

Mount Locke is 6,791 feet above sea level, according to engineers. It is almost exactly northwest of Fort Davis, a distance of ten miles as the eagle flies and seventeen miles by the newly built Davis Mountain State Park Highway. This road has been built to date only about a mile and a half beyond Mount Locke. The State Highway Commission contemplates completing it in due time.

When University authorities desired to have a road surveyed to the summit of Mount Locke, connecting with the park highway, or the "Scenic Drive," as it is often called, the Jeff Davis county commissioners—Judge E. H. Fowlkes, J. W. Merrill, W. L. Kingston, Herbert L. Kokernot, and Will D. Reynolds—agreed with citizens to employ Robert G. White of Tyler, Texas, a State highway engineer, to survey the route to the top. White had been locating engineer for a while on the park highway adjacent until that work was temporarily suspended. White made the survey, aided by Gerald Draper of Valentine and Roy Mulhern and W. W. Maecey of Fort Davis. The engineer laid out about 8,000 feet of road to reach the top.

Following the survey, University officials went before the state legislature, then in session, and with the assistance of State Senator K. M. Regan of Pecos got through a resolution permitting the State Highway Department to build the road and pave it. In the week of July 16 a state force of men and machinery began the road slashing and grading under the foremanship of J. M. Short. The job was completed about the middle of October, 1933. The paving will not be done until the road has settled after a rainy season. The paving will be primarily for the purpose of keeping down dust that later might interfere with visibility when the telescope is in use.

In the spring and early summer of 1933 lines were run to lay out the 200 acres of the Locke land for the Observatory site. J. W. Merrill, who for many, many years was the county surveyor of Jeff Davis, later one of the commissioners, then judge, and now again commissioner for years, shouldered his tripod and transit again and ran the lines free of charge. Several of these survey trips had to be made, and men who assisted without charge at one time or another were W. S. Miller, Harold G. Thompson, Jim W. McElroy, Espy Miller, and last but not least Warren D. Bloys, secretary of Chamber of Commerce, another man of the community who has given unstintedly and extensively of his time in public enterprises, and most devotedly to the Observatory.

Some time after these 200 Locke acres were laid out and the astronomers knew where the borders were, the community was requested for 200 acres additional. The reason for this was that the astronomers desired to be in a position at any time to isolate the Observatory—that is, the dust travel and the smoke of campfires would interfere with visibility and deposit a film on the surface of the mirror; so enough land was desired to prevent a too near encroachment. A further gift was obtained from the ranch of Edwin H. Fowlkes, adjoining the Locke boundary fence. On August 2, Mr. Merrill and Mr. Miller, this writer, and Dan Wiggins climbed the mountain and ran the east line of the second 200 acres. Later Mr. Merrill, Mr. Miller, and this writer returned to run the west line so that authorities could be certain of getting the water well within the boundaries of the Observatory land.

Through all these months rumor after rumor was spread around that the Observatory would never be put in the Davis Mountains. Another town had offered a big sum of money. There was no water on Mount Locke. Austin determined to have it close to the State University. This and that. Even after the road to the summit was started there was still uncertainty.

Then on August 9 a notable event took place at Fort Davis. The President and Regents of the University visited the town and saw Mount Locke. They brought the news that they had just signed a contract with the Warner & Swasey Company of Cleveland for building the Observatory of Mount Locke and manufacturing the great telescope and mirror. Thus the desire of the experienced Yerkes astronomers to have the structure in the Davis Mountains, and the loyal support of President Benedict and the Regents of the University, overcame all opposition, if such there was, so that now the assurance of the visitors that the structure on Mount Locke was certain was sweet music to all Fort Davis.

In the University party were President Benedict; Beauford Jester of Corsicana, president of the University Board of Regents; and the board members, H. J. Lutcher Stark of Orange, Charles I. Francis of Wichita Falls, and Dr. K. H. Aynesworth of Waco; Dr. Hal G. Bybee of San Angelo, state geologist; and E. J. Compton, Frank F. Friend, Nolle Gregory, Jess Conklin, all with the University land department. The party was given a chuck wagon dinner at the foot of Mount Locke on the westerly side at the spot where, a little later, the deep well was being drilled. Joe W. Espy, another public-spirited citizen, furnished the chuck wagon and a first-class outdoor cook, Alec Dominguez, who was assisted by Secundino Rasso. Many townspeople were present, regular army officers from the C. C. C. camp in Keesey Canyon State Park, and various distinguished guests, including Bob Holliday of El Paso, a former Regent who had been very earnest in promoting the location of the Observatory in the Davis Mountains. Many said it was the very finest dinner ever eaten out of doors. And it was some dinner!

Most, if not all, of the University party climbed to the top of Mount Locke. Dr. Benedict and the Regents declared themselves satisfied with their selection, which had been, so far as they were concerned, sight-unseen. A bench, or shelf of the mountain, two or three hundred yards eastward of the Observatory site, had already been named Benedict Bench by Bob Holliday. There the houses of the resident astronomers are to be built. While on the summit W. S. Miller and this writer suggested to Beauford Jester that the adjacent mountain to the northeastward, that lay in the 200 acres from the E. H. Fowlkes ranch, be named Fowlkes in honor of the donor and a long-time resident of the country, now county judge. This was the hill that Dr. Elvey and others had first agreed to call "Little Flat-Top" for want of another name. Mr. Jester agreed at once, and the height was officially designated Mount Fowlkes, making two named peaks on the Observatory's 400-acre tract.

There was a question of water supply. It had been considered to pipe water from the springs on the skirts of Spring Mountain, four or five miles distant. White, the road engineer, had run a level from the springs. The cost was estimated at $18,000. Following the visit of the Regents, however, it was decided to drill a well. The spot selected was within a stone's toss of where the Regents sat under a tree and ate their dinner, not because of any sentimental reasons, but because Dr. Bybee considered it a convenient location. He and E. J. Compton were in charge of the work for the University. A. M. Barnes of Fort Stockton was engaged to

do the drilling. Water witches had tried their switches around-about. There had been water indications here, at considerable depth, but not so strong as elsewhere. Barnes said he would strike water at 827 feet and began to drill the last week in August. After months of drilling and enduring the vicissitudes of a well driller—it takes patience and even fortitude to drill a deep well!—Barnes struck water at 818 feet. Mr. Miller and this writer visited the job many times. Likewise did Dr. Bybee and Mr. Compton. These four were present with Barnes and his two helpers, Bill Goss of Fort Davis and Jim Sarvey of Fort Stockton, when water was first pumped with the well rig, on Wednesday, December 20, 1933. But to date no adequate test of the capacity has been made.

Events went forward. On November 10, Charles J. Stilwell, who as well as being vice-president of the Warner & Swasey Company is president of the Warner and Swasey Sales Company, arrived in Fort Davis on his second visit, accompanied again by L. M. Cole of Dallas, and by E. P. Burrell, director of engineering of the Warner-Swasey company and the designer of the McDonald observatory and telescope, and also by C. J. Patterson, president of the Patterson-Leatch Company of San Antonio, which has the sub-contract for laying the steel and the concrete foundation and erecting the steel and concrete piers 45 feet high which are to support the great telescope. These piers are being erected as this is written.

At the same time there arrived Dr. Van Biesbroeck again, accompanied by his daughter, Miss Micheline. Dr. Van Biesbroeck's duty was to decide the exact spot for the dome, select the sites for the residents on Benedict Bench, and to set the precise north-south direction, practically to a hair, for the axis of the telescope piers.

Ground was broken on November 13 for the foundation of the Observatory. The news items were put on the wire of the Associated Press. The steel and cement work has proceeded since. The foundation, laid on solid rock, is 62 feet in diameter. The steel and concrete piers 45 feet high stand thereon. The revolving steel dome will be placed on this foundation and will be, it is understood, 71 feet high. It will be coated with aluminum paint. With the foundation work ready to start Hugh Yantis arrived from Austin to superintend the construction for the University of Texas. In the future it may be interesting to know who had a hand in these very beginnings of construction. Here is a list supplied January 9, 1934, by H. J. Von Rosenberg, their employer: C. N. Jones, the foreman; J. W. Stafford, carpenter; W. T. Neeley and Bob Noble, carpenter's helpers, these four men being from San Antonio; C. F. Brown, Alpine, shot firer in blasting out rock for the founda-

tion hole; J. W. Newton and W. P. Philips, Valentine; Bill Goss, Fort Davis; B. Englebright, San Angelo; Mexicans of Alpine, P. Lianes, L. Bugarin, M. Nunez, and H. Hernandez; and Fort Davis Mexicans, Louis D. Dutchover, P. and F. Hernandez, and various Granado men with the initials J., G., A., F.; and E. W. O. Meeks of Fort Davis hauled the structural and re-enforcing steel, the cement, lumber, and contractor's equipment, much if not all from Marfa; while Edgar Martin of Alpine got out, washed, screened and hauled the sand and gravel, and also hauled the necessary water to the summit of the mountain. The sand and gravel and water came free of cost from the J. W. Merrill & Son ranch where it borders the U-UP-and-U-Down ranch, at the spring called Agua Blanca. Lewis Spencer of Alpine had the sub-contract to furnish the equipment and labor to do the excavating.

On December 7, P. E. Bliss, President of the Warner & Swasey Company, was here on a brief visit. In November a telephone line was put in from Fort Davis to the summit, Sam Luedecke of Fort Davis having charge of the work. Early in January Frank F. Friend and J. H. Conklin, surveyors for the University, were here marking definite lines and corners on the 400 acres, which, it is understood, will be fenced.

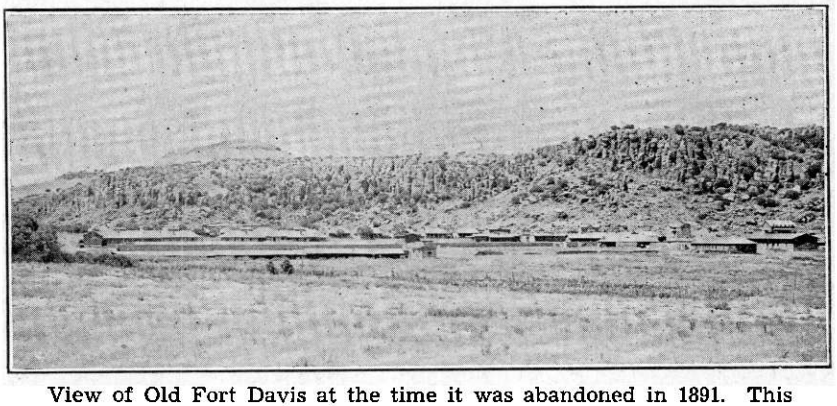
The contract price for the Observatory, including the telescope and mirror, was published as $325,000. It is expected something like $75,000 more will be spent by the University in fencing, putting up several cottages on Benedict Bench, getting water piped to the top of the mountain, putting in an electric plant, and doing other necessary things not included in the main contract. The well to date, without pumping power, has cost a little over $5,000.

The telescope will be of the reflector type with a mirror, rather than a refractor with lens. The mirror was cast by the Corning Glass Works, Corning, N. Y., which had the subcontract therefor, December 31, 1933. The operation, for which many preparations had been made, was reported successful. It was cast of pyrex. It is to be 80 inches in diameter, 12 inches thick at the edges, with a concavity of about one and one-quarter inches, and is estimated to weigh about three tons. Three months, according to latest statements, will be required for it to cool. The first estimate was six months, but Charles J. Stilwell said that better methods had been worked out, the last word in the industry. The cooling process will be by a gradual withdrawal of electric heat in a room fully guarded against any current of cooler air or sudden dropping of the degree of heat. When it is cool, it will be removed to Cleveland to be ground and polished by the Warner-Swasey works. The grinding will require something like two years, because

grinding can be done only a short time each day lest the heat generated distort or warp the glass. When ground and polished the concave surface will be coated with a reflective metal, probably aluminum. At first it was said silver would be the metal, but the latest word is that the aluminum has a greater reflective quality, costs less, and is more easily kept in condition.

Mr. Stilwell said that the moving of the finished mirror to Mount Locke is yet an unsolved problem, as it will be the greatest piece of finished glass ever moved such a long distance.

Fort Davis, Texas, January 12, 1934.



View of Old Fort Davis at the time it was abandoned in 1891. This old fort is 15 miles from the new observatory.

THE MAYS MASSACRE

BY E. E. TOWNSEND

The following information was collected as a result of efforts to locate the place of the massacre of the detachment of Lt. Ruben E. Mays of Col. John R. Baylor's regiment of the Confederate Army. Lt. Mays was stationed at Fort Davis, Texas, as commanding officer. The massacre occurred on August 11, 1861. Lt. Mays and most of his men were from Hallettsville, Texas. It is believed that the massacre took place in Brewster County.

The letter that follows was published in Baylor's account, which appeared in the *El Paso Herald* in 1905. It was written by Lt. W. P. White, commander of the post at the time of the unfortunate tragedy, to Dr. W. E. East of Hallettsville, Lavaca County, Texas. The letter is now in the possession of Miss A. D. Lay of Hallettsville.

"Fort Davis, Texas, Aug. 24, 1861.

'Dr. East:

Dear Sir:—

'On the 5th inst. Lt. R. E. Mays started after a party of Mescalero Apaches and on the 10th inst. overhauled them and captured 100 head of horses without a fight. On the 11th inst. he attempted to whip about 80 or 100 Indians with 14 men, and the whole party was killed except one, a Mexican by the name of Juan, who made good his escape and brought in the news.

'I sent 19 men as a relief scout which found relics enough to satisfy me that the whole party was dead, or worse than dead, taken prisoner; they found hats, boots, parts of pants and coats of all except a few of the party; the names are as follows: Lt. R. E. Mays, Thos. Carrol, of Halletsville, John H. Brown, Samuel R. Desper, Frederick Perkins, Samuel Shelby, John S. Walker, of Lavaca County, belonging to Capt. Walker's company, and John Turner, guide of the post, John Deprose, R. H. Spence, Joseph Lambert, Jack Woodland and two Mexican citizens; and the one Mexican is all that ever returned or been heard of, except John Deprose, whose body was found by the relief scout, which was as follows: Dr. Evans S. Weisinger, surgeon of the post, J. C. Allen, Martin Burke, John Cleghorn, Louis Kaufman, Benj. F. Kee, Joel Ponton, Eli Stevens and Felix Tucker of the company, Thos. Chandler, Thos. Baker, Thos. O'Niely, a Frenchman, and five Mexican citizens and the Mexican that escaped of the first party.

'The reason that I write you doctor, is that Rube used to talk more of you than any one else and I thought that you would probably know more about his business than any one else, and as he has some money coming to him from the government some one must attend to it and let the proper heirs have it. His horse was killed under him, I suppose, or near the same time the poor fellow fell. I have his watch in my possession, as he carried mine with him on the scout and his was not in running order. Lt. Mays had my watch, minie rifle, saddle and bowie knife, and if you or any of his relatives or friends want the watch I will freely give it up. All I want is just pay for my watch, etc. I have several letters to answer written to Rube, so I will close. Hoping to hear from you on this subject, I remain, your obedient servant,

'W. P. White.
2nd. Lt. Comd'g. Post.'

"The above letter gives the correct names of all the men killed belonging to the company. Lt. R. E. Mays resided at Hallettsville, was related to Dr. J. E. Lay, Joe Lay, and others of that family, now at Hallettsville, was also related to W. J. Mays, formerly of Lavaca County. Thomas Carroll was from Lavaca County and had relatives there. John S. Walker was related to the Walkers of Moulton, Perkins to the Livergoods of Lavaca County. Joseph Lambert resided at Fort Davis, and relatives live there now.

"Geo. Wythe Baylor,
Guadalajara, Mexico."

The following newspaper clippings from General George W. Baylor's Scrap Book was signed by him and published probably in the *El Paso Herald* about 1902 to 1905:

" . . . In 1861 the Second regiment of Texas mounted Riflemen was organized at San Antonio, and those companies present were sworn in for three years or for the war. Colonel John S. Ford was appointed colonel; John R. Baylor, lieutenant-colonel, and Hiram Waller, major. The companies with Col. Baylor were started up the overland stage route and stationed as follows: Capt. Hammer at Fort Clark, Capt. Walker at Fort Davis; and Capt. Peter Hardeman and Ike Stafford went on with Major Waller to El Paso.

. . . At that time Nicholas was the chief of the Mescalero Apaches and his home was on the eastern border of the Davis Mountains, on some of the numerous creeks that make their way through deep canyons to the open plains. . . .

"At the Post (Fort Davis) as sutler was Col. McCarthy, a generous, big-hearted Irish gentleman, and he conceived the plan of making an ally of the Apache chief instead of having him as an enemy. . . . Nicholas came in and Col. McCarthy was highly elated. . . . They arrived on time (in El Paso) and were received with great ceremony. Nicholas was wined and dined . . . Colonel Baylor . . . greeted the Chief in a handsome talk. Then Nicholas . . . arose and made a speech that was as pretty as it was hollow . . . (Quotation from speech) . . .

"We thought we had made a trusted ally . . . Colonel McCarthy gave Nicholas a hug "a la Mexicano." Next morning when the chief left, Col. McCarthy went with him and the usual guards on the stage. That night they reached Barrel Springs, 22 miles West of Fort Davis, being a small seeping spring between El Muerto and Fort Davis, where the mules were given water. As the coach stopped Nicholas grabbed the colonel's six-shooter and with a bold bound disappeared. . . . The guards were too much astonished . . . The next day the Apaches attacked the guards and stampeded the herd of beef cattle. An American and a Mexican who were guarding the herd were killed, proving that Nicholas . . . had forgotten the peace he had so solemnly made. . . .

"A party was hastily organized partly of soldiers and partly of citizens to follow the Indians and punish them. At the same time they were to try to recover the beeves. . . . Captain Walker sent 15 men and a Mexican guide who knew the country and had had a great deal of experience with the Indians. The Indians had taken the herd back of Dan Murphy's place, going first in a Southeast direction, and then crossing the Limpia Canyon and the overland stage road at the Alamos, 14 miles from Fort Davis. Some one coming up from Barela Springs, a stage stand below the mouth of Limpia Canyon, saw them as they crossed the road, and brought the news so that the scouts started down the road and struck the trail that led them off into the Davis Mountains on the north. It was their first trip and it proved their last to most of them as no one ever came back except the Mexican guide. The massacre was complete and was the sad result of placing any faith in the word of an Apache Indian . . . The trail was plain and fresh and the pursuers followed them swiftly, using up their horses pretty thoroughly in the rough country until they struck the head of Toyah Creek, probably where the Lasker ranch was, which is now owned by the McCutcheons. Old signs of an Indian village can still be seen at the mouth of the canyon where the creek comes out of the mountains, there being holes in the rock for pounding grain, etc. The main camp of the Indians was here. As soon as the Confederates saw the camp, they charged with a yell, but as they neared it, they saw they had got more than they bargained

for. . . . The Mexican's horse, luckily for him, fell down early in the race and he rolled over between some large Spanish daggers and played possum to perfection. The Indians, supposing him dead. passed on in pursuit, and night soon spread her mantle over him. He crept off and brought first news of the sad tragedy."

Further information as to the location of the massacre is found in another newspaper clipping probably from El Paso *Herald,* published about 1905. The account is as follows:

"It is nearly 44 years since Lieutenant Rueben E. Mays and a squad of his men, with a number of citizens of Fort Davis, were slaughtered by the Mescalero Apaches. After a long and persistent search for the facts of this bloody tragedy, the writer (Gen. Geo. W. Baylor?) through the kindness of old Confederates of that Company, has been able to get at the truth as near as ever can be until the sea shall give up its dead. John Buchanan, the worthy Clerk of Lavaca County, and a member of this company of the Second Texas Rifles, has taken a great interest in the matter and written a very interesting account that ought to be in our war records. The company was organized in April 1861, at Hallettsville, Texas, with one hundred brave young Texans. . . .

"Captain Walker left Lt. Mays and a portion of his Company at Fort Davis and came on to El Paso and a portion went to Fort Stanton under Lt. Pulliam. . . .

"Readers of the *Herald* will recall the account given the writer by Mr. Burnham of Ysleta, who was a driver of one of the old land stages between San Antonio and El Paso. His account was correct as to the killing of all the men except the Mexican guide, but wrong as to the direction (taken) by the Indians and in other respects.

"The Indians went toward the Rio Grande and crossed, taking refuge with their kindred, the San Carlos Indians in the State of Chihuahua. Burnhams account sent them northeast from Fort Davis to the head waters of Toyah Creek in what is now Jeff Davis County. John Freed gave the writer a very graphic account of the fight. In substance he said that when the Confederates spied the Indian camp the guide protested against making an attack and said if they did they would never come out of the canyon, where the Indian camp was, alive. Freed said the men dismounted and attacked at daybreak and he was left in charge of the horses and as soon as the firing began he knew from the sound that the Confederates were retreating to their camp. After the firing ceased he saw some coming on foot and began cutting rawhide hobbles and finished before

they got him. He mounted, etc., etc. The horses stampeded and willingly enough took the back trail and he was soon out of sight of his foes.' His hardships on the return for one or two days and nights without anything to eat or drink were something terrible. He got back safe with all the horses and returned with the scouts to the battlefield and helped bring in the bodies of the men killed.

"This statement dovetails in very nicely, but he stated also that the men were buried at the foot of the cliff or rocks northeast of Fort Davis. Subsequent history shows that Freed's acount was erroneous, that the horses were never brought in, the bodies never recovered, never buried."

Continuation of clippings from the *El Paso Herald* of 1905:

"The writer was at El Paso when old Nicholas came up to make a treaty with Gen. John R. Baylor. He was brought up from Fort Davis in the overland stage. Col. James McCarthy, uncle of Major James McCarthy who lately died at Eagle Lake, brought the old scoundrel up in the stage, and Don Santiago Magoffin gave him a splendid dinner. . . . The Confederates were much elated when old Nic swore eternal friendship . . . . When the stage stopped at Point of Rocks, a spring west of Fort Davis, to water their horses, Nic grabbed two sixshooters the Colonel had lying on a seat and it being night he was out of the stage and disappeared in the darkness before the surprised Colonel or driver could do anything. The next day the Mescaleros stole the beef herd and were followed by Lieut. Mays with the results as stated.

"It is now made known by a letter written at the time by Lieut. White, in the command of Fort Davis at the time, that Woodland's pistol was not found, only Lieut. Mays' pistol near his horse that was also killed . . . There was only one body found, that of John Deprose, and that could only be identified by the clothing, for the country was full of coyotes. The chances are that the Apaches threw the bodies into holes and covered them over with rocks or brush and if a party of Lavaca County people would go with Mr. Turk or Mr. Porton to Brewster County, locate the place where the fight occurred and make a careful search, the bodies will be found. It is quite certain the bones found in a cave near Alpine are not those of Walker's men as they followed the Indians several days before they overtook them.

"Juan Fernandez, the name of the Mexican guide who had lived as a prisoner with these same Indians for so many years, was always suspected of leading the men into an ambuscade, and the fact that he disappeared from Fort Davis and was at

the scalp dance given by these Indians at the San Carlos agency and saw one of the Indians with John Woodland's sleeve buttons seems to point that way; he could have been there to see about his share of the booty."

Another account of the massacre is given by Frank L. Fritter, a citizen of Brackettville, who was also a driver of an overland stage coach, a position that required courage. His account is one of great interest. Gathered just after the occurence from the Mexican who escaped (and the writer has always been strongly of the opinion that the Mexican drew largely on his imagination), his account agrees in some respects with the true accounts of the unfortunate fight. Fritter says the Mexican guide said that Judge James Magoffin, of El Paso and father of Judge Joseph Magoffin, with three confederate commissioners had engaged Chief Espajo and the war captains Nicholas and Antonio as scouts, and after they drew their blankets and supplies, they deserted and made this raid on the beef herd of the post. The Mexican went as trailer and when they overtook the Indians, Jack Woodland, who was with the party, told the Lieutenant in command that if they went into the canyon against such fearful odds they would never come out of the canyon alive.

The Lieutenant very wisely took the advice of this old frontiers-man and gave orders not to attack, but at that time every confederate private was a commander, and they said that they were not cowards and did not intend to run away.

Before they realized their danger, they were fired on from ambuscades on all sides. Many were killed outright and nearly every man was wounded, and all he saw were fighting as only brave men could, trying to secure shelter among the rocks. The Mexican assisted Mr. Woodland, who was wounded, to a kind of shelf under one of the hills where they lay concealed until after nightfall. Woodland then told the Mexican he wanted him to try to escape and carry the news to Fort Davis, saying, "I'm done for and cannot escape. I have two pistols loaded. I will fight them until my last load and then will kill myself rather than fall into their hands and be tortured. I will leave my pistol right here." The Mexican got in safe, and went back with the resuing party, Capt. Bill Adams and thirty men. They found the battlefield but no bodies. The guides looked for the pistol and found it where Mr. Woodland had put it. On the field some buttons, buckles, etc., were found.

They followed the Indian trail to the Rio Grande, lost it, and gave up the search. Later, during one of the Indian dances in Mexico, "celebrating their victory," the Mexican guide with others tried to find out all they could, but the Indians were not communicative. They saw John Woodland's sleeve buttons in

the possession of one of the Apaches, and there is no doubt but that it was the Mescalero Apaches that for years lived in the Davis Mountains.

Mr. Raht, in his *Romance of the Davis Mountains* (pages 146-47) gives this account of the Mays Massacre:

"With the coming of the troops, in 1854, Senor Manual Musquiz settled in the beautiful canyon, six miles from Fort Davis . . . Don Manuel made frequent trips to Presidio del Norte, and it was during one of these trips that old Nicholas, the chief of the Apaches, with two hundred and fifty warriors, attacked the ranch, killed three members of the Musquiz household, and drove away all the cattle.

As soon as the Indians left, a messenger was dispatched to Fort Davis for aid. Lieutenant Mayes was at that time stationed at the post with a detachment of twenty men. Not knowing the size of the raiding party, the lieutenant took up the pursuit with twelve soldiers and four civilians, at the same time sending for reinforcements to Fort Stockton, where the main body of the Confederate troops was then stationed.

The trail was plain. The Indians followed down the canyon to Mitre Peak, a well-known landmark, ten miles northwest of Alpine; from there they headed south toward Cathedral Peak, where they struck a well watered canyon, which led them to the Rio Grande.

Lieutenant Mayes, with his well-mounted detachment, pressed hard upon the heels of the Indians and overtook them the following day. Seeing a small band of Indians, Mayes engaged them in a running fight down a great canyon. This fight continued until the Indians reached a point in the canyon where the sides rose precipitously several hundred feet. All at once a storm of arrows from the rocks and trees overhead greeted the pursuers. Too late, Mayes saw the ambush. As he turned to retreat from the death trap, he found the passage blocked by a hundred warriors. The Indians, who had been luring them on, now turned and, reinforced by those who had been hidden in the rocks overhead, rushed upon the soldiers and closed the death trap.

But one man escaped—the Mexican guide, who sprang from his horse and fled up the sides of the canyon. Unobserved by the Indians, he managed to hide in a cave, where he lay all day and night. The Indians, knowing he was in the neighborhood, searched thoroughly for him, but finally they gave up the hunt and departed. The next day the guide made his way on foot to Presidio with the news of the massacre.

"A messenger was dispatched on horseback through Paisano Pass to intercept the Fort Stockton reinforcements. This he succeeded in doing; and although the troops pushed on with renewed speed at the news of the massacre, they were unable to overtake the Indians, who were by that time safe with their friends and relatives in Mexico".

The Burgess Water Hole
This historic site, near Alpine, has been marked with a bronze tablet.

THE GRAHAM STORY

On April 20, 1928, Joe Graham told me the following story. It had been told to him by Clemente Mena, who was then in Old Mexico. Sometime later I went to Graham's ranch on the Rio Grande with the expectation of going across to see Clemente or asking that he come to see me. Clemente had been raised in this part of the country, having spent most of his life at Fort Stockton. He had also lived at Fort Davis and Presidio. Some twenty or thirty years before I went to see Graham to get the details of this story, Clemente had worked for me. I found Clemente's son, Apolinar, working for Mr. Graham at the time of my arrival at the Graham ranch. Apolinar told me that his father was ill at his home some miles over in Mexico and advised that I not go to see him at that time. So Mr. Graham and Apolinar gave me in substance the story that follows:

"A good many years ago Clemente Mena was working for Mr. Lou Buttrill, whose ranch was located at the Big Spring on the north side of the Rosilla Mountains. Once when Clemente was in Fort Davis, or Marfa. he met Cleto Heredia*, an old trailer and scout, much older than Clemente. They had not seen each other for many years. When Clemente told Cleto where he was working. Cleto said that that was the place where the Confederate soldiers were killed by the Indians. Cleto claimed that he was the guide who escaped, and he told Clemente all about the fight. He said that he abandoned his horse in a canyon and walked back to Fort Davis. From there he was sent to Fort Stockton and returned with the burial party to help bury the dead. He did not say how many of the dead there were, but he did say that there were some dead Indians that they did not bury. Afterwards Clemente's wife and children found some skulls on the hill back of the house toward the mountain. They supposed that these were the skulls of the dead Indians that Cleto had told about. Clemente was raised in this part of the country. He had always known that it was Cleto Heredia who was with the Confederate soldiers and who had escaped the massacre."

*I knew Cleto Heredia from 1894 to 1897. He lived just below old Fortin near Presidio, and must have been sixty years old or more at the time. He was a native Texan and a loyal American citizen. I was in the U. S. Customs Service at that time and found him always ready to help an ofifcer. He told me of many exciting experiences that he had been through, and he may have told me of the Mays fight, but if he did it has entirely passed from my recollection. E.E.T.

THE DAWSON STORY

The story of the Mays Massacre which seems most reliable to me is the one told to me by Jack Dawson, whose father, James Dawson, a member of the burial party, had told the story to him. Jack Dawson was born in Edwards County, Texas, August 30, 1867. In the fall of 1881, he came to Musquiz Canyon, Jeff Davis County, and has been in this part of the state ever since that date. James Dawson, Jack's father drove his cattle westward from Uvalde, leaving there on March 3, 1881, with about six hundred head. He came by Fort Lancaster to Fort Stockton and thence to Three Rivers, New Mexico, by way of Musquiz Canyon. He was not satisfied with Three Rivers, so he returned to Musquiz Canyon, arriving there on August 31, 1881. (Jack's comment on the trip was that there were no gates to open and that the cattle came through in good shape, which speaks well for the traveling abilities of the longhorns.) The Dawson story is as follows:

"At the beginning of the Civil War, James Dawson and three Adams brothers, Cood, Bill, and Dave, were living in Nueces Canyon. Dawson, Cood, and Bill organized a company of volunteers, with Bill as Captain and enlisted in the Confederate Army. They were first sent to Fort Lancaster and then later moved to Fort Stockton. The companies, or detachments, stationed at these forts (Lancaster, Stockton, and Davis) consisted of only a few men, probably about twenty or thirty.

One day, in 1861, while Adams' detachment was at Fort Stockton, the Indians raided Fort Davis and drove off most of the soldiers' horses which were grazing under guard some distance from the Fort. Lt. Mays and his party went in pursuit to recover the horses. Among his party was a Mexican guide or trailer. Several days passed before any news of the party reached the fort. Finally the Mexican returned to Fort Davis and reported that the Indians had been overtaken after a hard march, that the whole party had ridden into an ambuscade, and that all were slain except himself. The Mexican was sent to Fort Stockton for help, for there were only a few soldiers left at Fort Davis.

Capt. Adams and his company, led by this same Mexican guide, came to the trail of the Indians and the Mays' party at Burgess Water Hole, four or five miles down the draw, northeast of the present town of Alpine. They followed this trail for many miles in a southeastern direction, having a chain of mountains on their right. The trail finally swung to the right in a more southern direction and brought them to a low gap in this mountain chain. They passed through the gap and from it

could look off down towards the Rio Grande country, where they could see many mountains. One Lone Peak was particularly noted. Shortly after passing through the gap, they came to a spring of water. Passing the Lone Peak, on the western side of a big basin, they found a long bluff with a spring where grapevines and bushes were growing. Here the ambuscade had been made, and here the bodies were found and buried on the flat. The company followed the Indian trail to the Rio Grande and then turned back. On the return journey the party came to the same low gap through which they had passed on their way down, but from the gap they continued north instead of following the back trail in a northwestern direction to the Burgess Water Hole. The northern line of march would take them almost straight to Fort Stockton.

On this march their water supply became exhausted. While suffering and hunting for water, they missed one of their party, a young doctor. In a short time they found his horse tied to a bush. He had gone up a little canyon in search of water. The command stayed there hunting for the doctor for three days. At the end of that time they were suffering so much from thirst and lack of food (Jack did not say that they were entirely out of water all the time) that Capt. Adams decided to abandon the search for the doctor and go on to Fort Stockton. However, as a last effort to find him, the Captain spread his men out in order to cover as much territory as possible and still keep them within sight of each other on the homeward march.

They had been going in this formation for some time when a big black tail buck jumped up in front of Mr. Dawson and ran over a little hill. As the party was badly in need of food, Mr. Dawson spurred his horse quickly forward. When he reached the top of the hill, and was about to shoot the buck, a movement on the ridge still farther ahead caught his eye. A second glance told him it was their long lost doctor who saw Dawson at about that time and began to run away from him. Dawson, of course, gave up the idea of killing the buck and set off in pursuit of the doctor. One of Dawson's companions in sight of the race joined in the pursuit. Together they had to run the man down and they captured him as if he had been a wild Indian. His clothes were soaked in mud from his having wallowed in a hole where the water was exhausted. After the doctor's recovery from this terrible experience (it was thought that he had no water during the whole time he was lost), he said that the last thing that he could remember was walling himself up with rocks in a little cave to keep the Indians from finding him dead or alive.

The Mexican guide, in telling the story of the fight to Capt.

Adams and his soldiers, said that when the fight began, he and one other man (Carl or Carlton, as Jack remembered the name, though it was prabably Thomas Carroll of Hallettsville) were off to one side or to the rear where they were in no immediate danger, but could see that the rest of the party were surrounded by an overwhelming force of Indians and were about to be destroyed. Carroll (or Carlton) called to the Mexican to go with him and help their friends. But the Mexican was unwilling to, for he said that they would all be killed and that they had better get away while they could. The American admitted this but said that he must go to them. So, with a six shooter in each hand, he rode into that swarm of murdering Apaches. The last that the Mexican saw of him the Indians were shooting at him from every side and his two guns were barking back a steady fire.

About that time the Indians set out after the Mexican, who lost no time in leaving that unhealthy place. After some time the Mexican ran his horse up a rough canyon as far as the horse could go. He abandoned the horse there and set out on foot for Fort Davis, traveling by night and lying up during the daylight hours."

This story, as told to me by Jack Dawson on February 25, 1927, seems, as I have said, the most reliable story of the Mays' Massacre that I have found. My reasons for thinking so are based on the following facts:

Just twenty years after the massacre, James Dawson moved back within the zone of operations covered by the different parties involved. He settled in Musquiz Canyon within twelve miles of the Burgess Water Hole, the place where his command had picked up the trail that led to the scene of the battle. Since his cattle ranged over this valley and watered at the Burgess Water Hole, he and Jack often rode the range together. Jack was a young fellow with a good memory; his father was probaably in his fifties. As the Indians were still raiding occasionally in that country, no doubt Jack and his father talked much of such things. It is reasonable to suppose that Jack often heard his father tell of his experience with the burial party. They never went together in a southeastern direction from the Burgess Water Hole except on one occasion. In 1884, they went south into the vicinity of the Chisos Mountains, where they saw, one afternoon, the Del Carmen Range, southeast of the Chisos and just across the Rio Grande in Mexico. When he beheld the Del Carmen, Mr. Dawson told Jack that they had followed the Indians to the river at the foot of that great range. He could not have been in error, for when once seen in the late afternoon, those wonderful changing colors on the sides of that great upheaval will not fade from the memory of man in a lifetime, nor would he be apt to mistake it for any other range.

As Jack grew up and worked cattle all over the country, he formed his own idea about the place of the massacre. Now, many others, as well as Jack and myself, know that if you take a southeastern course from the Burgess Water Hole, after traveling sixteen or seventeen miles, you will have gone through Altuda Pass and there will be a mountain range on your right. After getting through the Pass, you reach the head of Maravillas Creek. If you follow the valley, the route of least resistance, you will still be going southeast with a mountain range (the Del Norte) on the right. You will pass the first gap in this range about 40 miles from the Burgess Water Hole. It is called the Del Norte Gap. About twenty miles further on you will come to Javalina Gap. The next gap, about ten miles down the creek is Persimmon Gap. All these gaps are rather low and easy of passage. Lone Peaks can be seen from all three of them, but the only one which has a spring of water anywhere near the southern side is Persimmon Gap. Three or four miles south of it is Bone Springs.

Jack thinks the party went through Persimmon Gap and on into the Tornillo basin and found the dead men on the west side of the basin, at what we call Grapevine Spring. I do not know about this. I hardly believe that they would have passed a lone peak of any particular note—one that would have been remembered and spoken of as a land mark twenty years afterward. I rather think they went through Persimmon Gap and then turned more to the southwest toward Corozona Peak which they probably reached. (In connection with this idea, Jim P. Wilson of Alpine, has told me of an occasion when he and a party dug into some graves that they thought were Indian, but upon finding some American shoes, they quickly covered them up again. This was just south of Corozona Peak, about three or four miles west of Small Pox Spring.)

Javalina Gap is probably the highest one of the gaps noted above. There are two passes through the Del Norte range nearer to Burgess Water Hole than Persimmon Gap. The first one is Doubtful Canyon which is only twelve miles or so below Altuda Pass. It is a deep canyon with precipitous sides and continues all the way through the range and does not at all answer the description of the high gap. The next pass is a winding canyon, called Santiago, lying at the foot of Santiago Peak. I hardly think that this canyon is the one through which the party passed.

Another physical fact that bears out Mr. Dawson's statement of traveling north from "the Gap" is that Fort Stockton lies almost due north from both Persimmon and Javelina Gaps. On making that ride there is no living water to be found between Pena Colorado and Comanche Springs at Fort Stockton, a dis-

tance of sixty-five or seventy miles by the most direct route. This long dry stretch corresponds with the story of the long dry ride where the doctor was lost.

If Jack's hypothesis is correct and Capt. Adams' Company went from Fort Stockton to Grapevine Spring via Burgess Water Hole, they covered a distance of not less than one hundred and fifty miles between the two places. Add to this about thirty more and you would have the mileage (180) on the outbound trip to the Rio Grande. If they turned to the southwest after passing through Persimmon or any other nearby gap, on their way to the Corozona Mountains, then add twenty to thirty miles more on their outward trip, making a total of at least two hundred miles. Then for the return trip, the shortest possible route between the Rio Grande from any point near the Del Carmen Range and Fort Stockton is one hundred and fifty miles. This makes a total of at least three hundred and thirty miles.

From Fort Davis to Grapevine Spring via Burgess Water Hole and Persimmon Gap it is at least one hundred and ten miles. According to Lt. White, Lt. Mays left Fort Davis on the fifth, and the battle occurred on the eleventh, a total of seven days if both the fifth and eleventh are counted. He could have easily made that distance in that time notwithstanding any difficulty he might have had in trailing the Indians. After the massacre the Mexican could have taken a near cut and made it back to Fort Davis in about ninety miles. The Mexican rode seventy miles from Fort Davis to Stockton to advise Capt. Adams of the massacre. It probably took the Mexican the better part of three days to walk the ninety miles from the scene of the massacre to Fort Davis. The seventy miles to Fort Stockton on horseback probably consumed one day. Capt. Adams probably averaged thirty miles per day for eleven days. Hence there was about fourteen days between the time of the massacre and Captain Adams' return to his station at Fort Stockton. This does not allow for any time spent in looking for the lost Doctor.

On August 24, 1861, Lieut. White, evidently a very close friend of Lieut. Mays, wrote a letter to another close friend of Mays telling him of the death of Mays and other boys from the same town and county. It was natural that he should write to this friend in the town whence all these young men had come as quickly as he had confirmation of their death. As they were killed on the eleventh, there was fourteen days between the time they were killed and the time he wrote. Captain Adams could have saved some of the time allowed him in getting the word of the disaster back to Lieut. White, by sending a courier with a report direct from the scene of the fight.

The relief scout that Lieut. White speaks of sending out

probably joined Captain Adams' command at Burgess Water Hole, which is only about twenty-five miles from Fort Davis, instead of going with the Mexican the seventy miles to Fort Stockton and then returning the sixty miles to Burgess Water Hole. The Mexican undoubtedly knew where he would lead Adams to pick up the trail and he probably directed the relief scout to meet him at the Burgess Water Hole.

Mr. Dawson lived at his ranch in Musquiz Canyon and in Alpine over a period of many years. He was well known and respected for his honesty and sincerity, and I believe that both he and his son Jack have given this account as the father acutually experienced it and as the son received it from mouth to ear. General George W. Baylor, who was personally familiar with many of the men and things of that day unreservedly places the scene of the little battle somewhere in the Rio Grande country.

In addition to the preceding accounts, I have read several other versions of the loss of Lieut. Mays and his gallant detachment. Some of them are plainly in error and can be safely laid aside, but there is truth enough in the others to leave grave doubts as to the exact location of the place of massacre. The event was so tremendously episodical in the annals of the war west of the Pecos, and the cool nerve and daring of those wild riders from Lavaca County were so outstanding that more than one American has been tempted to try and perpetuate his own selfish glory by claiming to have been the only survivor, the lone messenger of eternal fame; however, the letter of Lieutenant White to Dr. East clearly eliminates all of these by stating that the Mexican guide was the sole survivor. Unquestionably Lieut. White had all the data at hand, and his greatest blunder was in failing to set down the place of battle.

So far as history records, there was not much fighting done by the Confederates in the Trans-Pecos area of Texas, and perhaps it would be correct to say that this was the greatest fight and more casualties were suffered than in any other fighting that may have taken place in this region.

To those of us who love the history, the romance, and the intriguing mysteries of our western hills, it is indeed distressing that we have not definitely located the place where this heroic band of southern soldiers died. It would be a beautiful and well deserved tribute if we could erect a marker at the sacred place where this little band of Texans, wearers of the gray, alone and far out on the frontier, with none to applaud, charged as gallantly as did the "noble six hundred" and died, leaving only the heritage of a duty well done.

I hope we may yet find this place of sacrifice, and I trust that any one who may have any information concerning it will communicate with the writer.

TWO THOUSAND MILES BY BOAT IN THE RIO GRANDE IN 1850

With a Biographical Sketch of the Army Actions of Captain John Love

By COL. M. L. CRIMMINS, Retired.

When the United States terminated the War with Mexico, the obligation was assumed to police the border in order to prevent hostile Indians from the United States committing depredations in Mexico. As this was a national affair, the United States army was necessarily used and this policing was kept up with more or less efficiency for nearly forty years. A most important and valuable survey of wagon routes to army posts on the border, which did much to open up the new territory, was made from San Antonio to El Paso, Texas, under the supervision of Lt. Col. Joseph E. Johnston in 1849, assisted by Lieuts. W. F. Smith, F. T. Bryan, and N. H. Michler, U. S. Topographical Engineers, and by Captain S. G. French, Quartermaster Corps, who so ably handled a huge caravan with 3000 animals, 800 of the wild mustangs being unbroken upon receipt. Major Jefferson Van Horne and his battalion of the 3rd U. S. Infantry furnished the military escort.

The cost of hauling supplies from Indianola, Texas to El Paso, a distance of about 900 miles, by ox mule team was tremendous. A barrel of flour at El Paso, for example, cost $92.00. It took about two months, under favorable circumstances, to make the trip; but high water, droughs, and Indian depredations often made the trip much longer.

In order to try to find a more economical means of transportation, an exploration of the Rio Grande was ordered, and Captain John Love, Quartermaster, Ist. U. S. Dragoons, Rio Grande, Texas, was put in charge of the arduous and dangerous expedition, which was made by row boat up and down the Rio Grande for over a thousand miles, a feat which has not since been duplicated. A round trip was made from Ringgold Barracks to near the mouth of the Concho River, near Presidio del Norte in the Big Bend of Texas, a distance of 1014 miles up the river.

Captain Love, a gallant officer, was born in Virginia and appointed to West Point Military Academy from Tennessee. On graduation he became the brevet Second Lieutenant Ist. Dragoons, July 1, 1831; 2nd. Lieutenant Feb. 21, 1842; and 1st Lieutenant June 30, 1846. He served at Fort Gibson, Indian Territory; in 1843 he went on the famous march with Captain Philip St. George Cooke which for awhile looked as if it might bring

unfriendly relations between the United States and the Republic of Texas; and in 1842 he served at Fort Scott, Kansas. It was on Captain P. St. George Cooke's military escort to the Santa Fe wagon train that he captured and disarmed Colonel Jacob Snively. Capt. Love acted as a staff officer during the negotiations with Colonel Jacob Snively of Texas, June 30, 1843, at Jackson's Grove, Kansas, when the "Texians" were disarmed because of the fact that they were in the United States Territory, en route to attack and rob a wagon train of Mexican power, with whom the United States was on friendly terms. This train was under the escort of Cooke, who had 185 Dragoons and two Howitzers. He was ordered not to allow the wagon train under his protection to be molested while in the territory of the United States. Three years later, when with General Kearny, enroute to Santa Fe, he was detailed to point out the exact spot where the party of Texans were disarmed. The incident is recorded in the journal of Lt. J. W. Abert, U. S. Topographical Engineer June 27, 1846, Appendix 6, Senate Executive Document No. 7, 30th Congress, 1st Session; and the location is shown on the map of the "Military Reconissance of the Arkansas, Rio del Norte, and Rio Gila by Lt. W. H. Emory, Topographical Engineer under the command of Brig. Gen. Stephen W. Kearny, 1847. H. Yoakum, J. H. Brown, Dudley G. Wooten, George P. Garrison and other Texas historians down to Harvey Fergusson, who recently published "Rio Grande," claim Snively was in Texas territory and his men unjustly disarmed.

Love returned to Fort Leavenworth, Kansas, and remained there until 1845, when he went on the famous expedition to the South Pass of the Rocky Mountains in 1845. At this time companies A, C, F, G, and K, 1st U. S. Dragoons, under General S. W. Kearney, marched about 2200 miles in 99 days. This regiment later became the 1st U. S. Cavalry, late of Marfa, Texas. He was brevetted Captain for gallantry and meritorious conduct in the battle of Santa Cruz de Rosalas, Mexico, March 16, 1848. After the war with Mexico he was Assistant Quartermaster at Ringgold Barracks in 1849. He resigned in Feb. 1853 and during the Civil War rose to the rank of Major General of Indiana Legion. I know of no one else who has made the long trip of 1014 miles up and then down the Rio Grande by boat. The large size of his boat and the low water caused the trip to last five months, and he passed through parts of the river that have never been scientifically explored by water to this day*.

In order that the records of the achievement of this valiant officer may not be forgotten, the following official report is submitted:

*Bibliography: Philip St. George Cooke, "Scenes and adventures in the Army, 1856;" "Conquests of New Mexico and California, 1878;" "One Day's Work of a Captain of Dragoons," Magazine of American History, Vol. 18, July 1887. "New Mexico History and Civics," Lansing B. Bloom, 1933.

DOC. NO. I

ASSISTANT QUARTERMASTER'S OFFICE

Brazos Santiago, Texas, September 5, 1850

General: I have the honor to report that Captain Love has returned from his explorations of the Rio Grande.

He left Ringgold barracks. Texas, (nearly opposite Camargo, Mexico,) with the keel-boat, "Major Babbitt," and a crew of twelve men on the 11th of March, 1850. The "Major Babbitt" was fifty feet long, sixteen wide, and drew, with her crew, provisions, arms, etc., on board, eighteen inches of water. Captain Love was instructed to carry her to the highest attainable point on the Rio Grande; and I am satisfied he faithfully complied with the orders received. He found this point at a distance of 967 miles from Ringgold barracks, where his further progress in the keel-boat was stopped by the impassable falls, which he named "Brooke's Falls." On arriving at this point, Captain Love carried the skiff which accompanied his boat around these falls, launched her, and rowed her forty-seven miles to other falls, which he named "Babbitt's Falls." These are 1,014 miles above Ringgold Barracks, about 150 by land below El Paso, 25 by land below the mouth of the Concho, and 291 by water above the mouth of the Puerco, sometimes called the Pecos.

Beyond this point he found it impossible to proceed with the skiff either by land or water, and left it, the 15th day of July on this return. He arrived at Ringgold barracks on the 11th of August, where he turned over his boat to the quartermaster, and reported to me at this post on the 25th of August.

From Captain Love's rough notes, and from frequent conversations with him, I am enabled to present the following report of his expeditions. I would here observe that his distances were not taken with mathematical precision, yet I believe them to be sufficiently accurate for all practical purposes. All the distances given are by the river, unless specially mentioned as being by land. On the accompanying map[2] (the

[2]A search for this map (which was not published with the report) was made in December 1932 in the L of C.—Quartermaster general's map filed, U. S. Engineer's Map section and the files of the State dept. with a negative result.—Map Div. L of C.

skeleton of which was taken from Emory's, published in 1844,) I have put down the towns on both sides of the river, the rivers and creeks emptying into the Rio Grande, coal mines, etc., and the distances of every important point from Ringgold.

NAVIGATION OF THE RIVER

It would here be proper to remark that Captain Love made his expedition at a time when water was lower in the Rio Grande than had been known for several years, and therefore, it was a most favorable season to ascertain the practicability of its navigation at all times.

From Ringgold barracks to Kingsburry's falls, which are 169 miles above Ft. McIntosh (Near Laredo), and eleven below Presidio Rio Grande (where General Wool's column crossed into Mexico in 1846), there are obstructions in the river, which would prevent its navigation there about seven months of each year by steamboats of the class which now run between its mouth and Ringgold barracks. During the other five months—from June to November—when the river is generally high, steamboats of the largest class now running on the lower Rio Grande could go without difficulty to Kingsburry's falls. During the seven months of low, or rather ordinary waters, there are three and a half feet of water in the channel, which is about twenty-two feet wide. A smaller-class steamboat could be constructed (iron would probably be the best) to navigate the channel at all seasons of the year; those adapted for towing keel-boats would perhaps be preferable. This narrow channel only occurs at intervals; and Captain Love is of the opinion that it could be widened to admit the passage of the largest-class steamboats now on the river—say of the size of the United States "Corvette" and "Major Brown," which are about 150 feet long, 46 wide, and draw, loaded, three and a half feet—for $10,000. As Captain Love is a better sailor and frontiersman than a civil engineer, probably a nearer approximate to

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Editor's Note:—Two interesting historical maps, unsuited for reproduction here because of size and scale, were submitted with this manuscript by Col. Crimmins. These maps, photostatic copies of the original exploration by Maj. Emory, contain the following memorandum by Col. Crimmins:

Map 1. Rio Grande Bravo del Norte, Section of Boundary between the U. S. and Mexico agreed upon by the commission under the treaty of Guadelupe Hidalgo, surveyed in 1852 under the direction of Bvt. Major W. H. Emory, Corps of Topographical Engineers, Chief Astronomer and Surveyor—McClelland, Secretary of Interior.

Map II. Rio Bravo del Norte, Section of Boundary between the U. S. and Mexico agreed upon by the joint commission under the treaty of Guadelupe Hidalgo, surveyed in 1852 under the direction of Bvt. Major W. H. Emory, Corps of Topographic Engineers, Chief Astronomer and Surveyor—McClelland, Secretary of Interior.

the truth would be arrived at by doubling or trebling his estimate. Private steamboats of about the size of the above-mentioned government boats run at all seasons as high as Guerrero, 103 miles above Ringgold barracks.

KINGSBURY' FALLS

These falls entirely obstruct the navigation of the river for steamboats. Two keel-boats, the "Harry Love" and the "Major Brown," have been hauled over them with much difficulty. They are about 200 feet long, with a fall of four feet; and the rock which forms them is argillaceous limestone, which is easily removed with a crowbar. Captain Love is of the opinion that a channel could be cut through them, or rather that the present channel could be widened to admit the passage of the steamboats "Corvette" and Major Brown" for about $3,000. Captain Kingsburry (a practical engineer) who made an examination of them in 1819, under my instructions (see my report dated May 16, 1849) assured me that a channel could be cut through them to allow the passage of keel-boat, "Harry Love," (which was 75 feet long, 20 wide and drew 18 inches of water) for less than $500.

Captain Love was informed by an American merchant residing at the town of Presidio, Mexico, six miles from the falls, that, during five months of last year, when the water was unusually high, a steamboat drawing 3 1-2 feet could have run over them. This I think doubtful.

From Kingsbury's falls up the mouth of the San Pedro or the Devil's river a distance of 232 miles, there is nothing to obstruct the navigation of the river with steamboats of the largest class running on the lower Rio Grande[a]. Although the river was at its lowest known stage when Captain Love passed up, there were nearly four feet of water, with a wide channel.

The mouth of the Devil's river which is about 100 miles below the mouth of the Puerco, and 617 above Ringgold barracks is the head of steamboat navigation . . . Above this the Rio Grande runs between high mountains, is deep, rapid, and narrow. It, however, could be navigated with some difficulty by keel-boats to a point 65 miles above the "Grand Indian Crossing," or about 283 miles above the mouth of the Devil's river.

The garrison at Fort McIntosh (Loredo) is now supplied by keel-boats and a train of from 30 to 46 mule teams; the latter also supplies Fort Duncan (near Eagle Pass), which is 100 miles by the road above Loredo and 65 by the river above

[a]Editor's Note: The heavy fall of rock which now obstructs the grand canyon of Brewster County evidently fell after the date of the exploration.

Kingsbury's falls. If the obstructions at Kingsbury's falls were removed, Fort Duncan could be furnished by keel of steamboats, thus obviating the necessity of an expensive wagon train.

Should the river be rendered navigable, at the trifling expense above mentioned, to the mouth of Devil's river, it would then become an important question whether it might not be judicious economy to establish a depot at that point, and transport our stores from thence by land to El Paso instead of as at present, transporting them by wagon, at an immense expense, from Lavaca, on the Gulf of Mexico, to El Paso, a distance of 850 miles. Captain Love, who rode from El Paso to San Antonio, about a year ago, with despatches, believes that a good road could be made without much labor or expense from the mouth of Devil's river to El Paso and that the distance would not exceed 300 miles. This estimate is of course, in a measure conjectural, but I think the route indicated well worth an examination; and if Captain Love's opinion should prove to be correct the subject of a change in the manner of supplying El Paso, and perhaps Santa Fe, which is 320 miles above El Paso, would be well worthy the attention of the department.

MILITARY POSTS, TOWNS, SOIL, PRODUCTS, ETC.

Ringgold barracks is the first military station on the Rio Grande above Ft. Brown, and is garrisoned by two companies of the first infantry, under the command of Major Lamotte. This is a depot from which are supplied Ft. McIntosh, Ft. Duncan, the Texas Rangers, and other mounted troops stationed temporarily in the vicinity of those posts. All the supplies for this depot are transported from Fort Brown, at present, by the United States steamboat "Corvette."

The next military post on the Rio Grande is Ft. McIntosh, situated near the old town of Loredo, and is garrisoned by two companies of the first infantry, under the command of Captain Burbank.

Between Ringgold barracks and Fort McIntosh are several towns, viz: Camargo, situated on the San Juan river, three miles from its junction with the Rio Grande, having a population of about 2,000; Rio Grande City, a new and flourishing place on the American side, one mile above Ringgold barracks; Rome, a new town on the Texas side with a population of about 500, among whom are several enterprising merchants, who carry on considerable trade with the neighboring Mexican States; Mier, situated two miles from the Rio Grande, on the river Alcantro, with a population of about 2,000; Guerrero, six miles from the Rio Grande, on the Salaso, with a population of about 4,000. The soil on both sides of the river Rio Grande, between Ring-

gold barracks and Ft. McIntosh is very fertile, and under cultivation. The principal products are corn, beans, mellons, etc. Some tobacco planted this year for the first time looks well. Ebony, willow, mezquite, and hackberry grow along its banks. The grazing is excellent, supporting immense flocks of sheep and goats and vast herds of cattle. Large droves of wild horses and cattle are seen in every direction. Game is very abundant. There are large mines of bituminous coal near Guerrero. The distance between these two points—Ringgold barracks and Fort McIntosh—is 120 miles by land, and 216 by water.

The next military post is Fort Duncan (near Eagle Pass), garrisoned by three companies of the first infantry, under the command of Colonel Morris. It is about 100 miles by land and 234 by water, above Fort McIntosh. The only town of any size between Fort McIntosh and Duncan is Presidio Rio Grande, about 30 miles from Fort Duncan. It contains 2,000 inhabitants, and has a garrison of 200 men.

A little town is springing up just below Fort Duncan, which will probably become one of considerable commercial importance as it is near that point where the roads from Mapimi, Parras, Monclova, Santa Rosa, San Fernando, Nava, Presidio, etc., strike the Rio Grande.

The soil between Fort McIntosh and Fort Duncan is excellent; but in consequence of the frequent incursions of the Indians, only a small portion is under cultivation. The farmers turn their attention on a grand scale to the raising of sheep and goats—animals which the Indians never steal. Wild horses and game are abundant. Timber the same as below Fort McIntosh, with the addition of pecan. There are two inexhaustable mines of bituminous coal of superior quality on the Texas side of the river, specimens of which brought down by Captain Love, I have tested.

There are several rich silver mines on the Mexican side, some 40 or 50 miles back from Presidio Rio Grande, which were worked to advantage by the Spaniards, before their expulsion in 1829 even after paying a handsome percentage of the net proceeds to the Mexican government and the owners of the land. Nothing prevents their being worked now but the want of capital and perhaps energy.

There are no settlements, either American or Mexican, above Fort Duncan; neither will there be any, until settlers are afforded some protection against the Indians.

The country and soil between Fort Duncan and the mouth of Devil's river are represented by Captain Love as beautiful and rich beyond description, and watered by numerous streams

flowing into the Rio Grande from both sides. The principal are the Escondido, or San Fernando, Elm, Morel, Las Moras, Pecan, San Filippi, Bear, and Turkey. The whole country is susceptible of irrigation; but, from a single visit, it of course could not be decided whether a scarcity of rain in that region would render this mode of watering the soil necessary. The lands are well tembered at intervals with live oak, pecans, mulberry, hackberry, ash, mezquite, etc. There are many fine millsites on the streams and nearly all have excellent water-power. They abound with perch and the regular speckled trout of our northern mountain streams. The bear, antelope, deer, jugar, ocelot, ounce, puma, catamount, wildcat, woof, turkey, goose, duck, grouse, partridge, pigeon, squirrel, chachalaca, etc., were found in great abundance. Captain Love says that he frequently saw herds of black-tail deer numbering two and three thousand. He also saw the finest country in the world for grazing and believes it capabile of sustaining *almost any given number of* sheep and goats. From the mildness of the climate sheep, in this region, and in fact along the whole valley of the Rio Grande to its mouth, require no shelter during the winter months; and it is also unnecessary to cut hay for them as they graze the entire year. The sheep along the valley of the Rio Grande seem to be free from the disease so common at the north. From this fact, the small expense of taking care of them, and the first cost (about fifty cents per head), this will become a very lucrative business.

There is an extensive mine of bituminous coal, on the Texas side, about twelve miles above the Fort Duncan.

The face of the country between the mouth of Devil's river and Babbitt falls is generally mountainous and barren, though portions of it back from the Rio Grande, between the Devil's river and the Puerco, are good for grazing or for cultivation. A valley about ten miles between the Puerco and Rio Grande.

Captain Love saw no Indians during his expeditions, but he passed many places where they had recently been with large numbers of horses and cattle, and saw numerous small fires at night in the mountains, probably indicating their presence.

About fifty miles below the mouth of the Puerco there is a large cave containing several rooms, with natural arches overhead and capable of holding one thousand men. A narrow passage leading from it probably terminates in the side of the mountain, as a strong current of air rushes through the entrance. A short distance above the cave there are thirteen natural towers about two thousand feet high and two hundred in diameter.

The *Grand Indian Crossing* is one hundred and twenty-one

miles above the mouth of the Puerco. This is the ford where the Comanche and other tribes of Indians pass the Rio Grande, when making their incursions into Mexico, and it is the only crossing place for more than four hundred miles, as the river from the mouth of the Devil's river to Babbitt's falls (and probably a long distance above) is from twelve to eighteen feet deep. There are only four feet of water at the crossing. The city of Chihuahua is just one hundred and fifty miles from this point. The ford leading to the "crossing" runs along the valley between the Rio Grande and Puerco, mentioned above, is very wide, well beaten, and resembles a much traveled thoroughfare. It runs up this valley some two hundred miles, when it crosses the Puerco and goes off into the Indian summer range. It can be seen from the mountains ten or fifteen miles winding along the valley.

A garrison stationed at this point would enable us to prevent passage of the Indians into Mexico, and materially aid in carrying out our treaty stipulations with that nation relative to this subject. It could be supplied with some difficulty by keel-boats.

The Indians appear to be the natural enemy of the Mexican, for he kills him whenever he can find him, and frequently for no possible reason. The Mexicans have such a dread of Indians that they never stand their fire, but run at the very indications of their presence. The Indians have been troublesome to the Mexicans for the last two years, and have appeared in large bodies as far south as Durango. The military commander of that place, about a year ago hired at an extravagant compensation. a company of Americans, who were on their way to California. to fight a party of some two hundred who were in the neighborhood—this, at a time when there were a large garrison of regular troops in the city and several thousand citizens capable of bearing arms.

The establishment of another military post at the mouth of Devil's river, and one or two between it and Fort Duncan (Eagle Pass), would enable us not only more faithfully to perform our treaty stipulations with Mexico, but would cause that fertile country below the Devil's river to be settled by a peaceful population, and the rich prairies whitened by flocks of pioneer farmers from the old States.

I have the honor to be, general, most respectfully, your obedient servant,

W. W. Chapman
Brevet Major and Assistant Quartermaster.

Major General T. S. Jesup,
Quartermaster General, Washington, D. C.

REPORT ON ARCHEOLOGICAL FIELD WORK IN THE MADERA VALLEY AREA

By CHARLES KELLEY

The purpose of this paper is to present in greatly condensed form the results of spare time field work carried on during the summer of 1933 and part of the spring of the same year. Such conclusions as I am able to make are derived therefrom. The majority of the work during this period consisted in the locating, recording, and comparison (by means of specimens, their associations, hearth form, and type of site location) of the surface sites of the Madera Valley and the adjoining territory. A few pictographs and petroglyphs were also recorded and compared. Rock shelters are found only in the edges of the Area; hence little attention was paid to them, other than recording their location. Little excavation was attempted, though several promising sites have been selected for future investigations as to the stratifications, etc.

At present the results of the season's work include the finding and recording of some sixty-seven sites of former occupation of the American Indian; the examining and recording of representative local collections; and some research as to history, ethnology, and natural resources from the standpoint of the aborigines of the territory. From the sixty-seven sites located, a total of six hundred and fifty specimens were collected.

The Madera Valley Area is located in the southern portion of Reeves County in the drainage of Toyah Creek, a tributary of the Pecos River, but includes as herein described the greater portion of Reeves County with adjoining sections of Jeff Davis and Culberson Counties. It is an area of varied topography, ranging from the rocky foothills of the Davis Mountains in the extreme south to a region of rolling plains heavily scored by draws and small hills in the central and northern regions. It includes an area of limestone mesas and buttes rising abruptly from the plains in the southeastern part, forming the "Borilla Hills," probably the far western extremity of the Edwards Plateau.

In the steep caprocks of the Borilla Hills are found almost all of the rock shelters and pictographs sites of the Area. Along the draws and creeks of the rolling plains in the hilly central region are found principally sites showing seemingly only a short occupation, described herein as "Hunter Sites." However, the Madera Valley proper (the valley of Toyah Creek in the southeastern edge of Reeves County) is well watered by the perpetual San Solomon and Phantom Lake springs as well as many smaller and less perpetual ones. Here is found series of large sites evidencing a rather long occupation with a probable practice of agriculture. These are termed the

"Toyah Creek Sites" by virtue of their location. In the rocky foothills of the Davis Mountains to the south, the limestone foothills of San Martine to the southeast, and along several of the rocky draws extending down into the center of the Area, are found a great number of sites commonly known as "Sotol" or "Mescal" Pits.

The most prominent, although the smallest in number, are the Toyah Creek Sites. Five of these large camps have been located along Toyah Creek over about a twelve-mile stretch between the present hamlets of Saragosa and Toyahvale. They are characterized by their general location on high level ground along the creek, usually in the vicinity of sand dunes, by the presence of ash hidden deposits, hearthstones, and some bone and flint. These mounds are irregular in shape, usually on sand dunes, ranging from three to twenty feet in greatest dimension and as a rule raggedly oval or circular. A rather large percentage of the artifacts found differ in some ways from the artifact types of the other sites of the region.

The "Sotol Pits" locations found consist of some twenty-five locations having from one to twelve "pits" each, usually with attendant campsites and small hearths. The so-called "pits" are roughly circular rings of burnt and broken rock with ashy depressions in the center. The typical depression ranges from five to twenty-five or thirty feet in greatest diameter. They are usually located on rocky ridges near springs or on draws. Artifacts are, generally speaking, of crude workmanship and ordinarily scarce, whether from an actual lack of their existence or because of the fact that due to their easily recognized form they have been searched out by curio hunters, it is difficult to say.[1] These circular middens are popularly thought to be the accumulations resulting from preparation of the Sotol or Mescal plant for food over a long period of time. Historical records speak of such a usage in other parts of the South-West as well as in this vicinity, and it is significent of note that the Sotol sites here described are confined, almost without exception, to areas in which the Sotol is found. Recently certain investigators have disputed this theory of the origin and use of the pits on the grounds that excavation of the so-called "pits" shows that they are in an exact sense not pits at all and that they also contain besides the hearthstone and ash, much other camp refuse and are hence merely camp middens of a specialized type.[2] As the preparation of the Sotol for food as recorded by competent observers, however, does not call,

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[1]Raht, "Romance of the Davis Mountains and the Big Bend Country." "Howard Caves Along the Slopes of the Guadalupe Mountains, Fourth Annual Bulletin of the Texas Archeological and Palenological Society, pp. 8, 9.

[2]H. P. Mera, Laboratory of Anthropology, Santa Fe, New Mexico, Circular Letters.

necessarily, for the presence of an actual pit,[3] impractical in the extreme in the rocky territory in which they are located, and as any midden resulting from such usage would as a matter of fact tend to become the dumping ground for camp rubbish in general, there seems little room for this objection especially as there can be presented no logical reason nor applicable citation of historical occurrence for the depositing of middens in such a specialized form purely as a refuse heap.

Fifteen of the sites located were classified as Hunter Sites, the basis of the entire classification being, in general, hearth form. The Hunter Sites are typically large areas of small hearths, of varying shape and size, located along small arroyas and draws. They occur in numbers of three and four to twenty-five and over, there also being a noticeable grouping in the larger sites of the hearths in sets of two, three, four, and five indiscriminately. Artifacts are scarce in these sites, as are flint chips, evidencing only a short occupation. Artifacts show that the classification is a rather invalid one, showing them to be associated with the larger sites types (Toyah Creek, Sotol Pit, Rock Shelter) of the locality.

As has been said, Rock Shelter Sites are scarce in the Area. Nevertheless, eight such shelters showing habitation, though generally without midden deposits, were recorded, five of them containing pictographs.[4] As no excavations of any consequence were made, nothing may be said of the artifacts of the sites.

Four burial sites were located, only two of them being undisturbed. The undisturbed sites were not excavated and the disturbed sites presented little evidence; hence the data as to mortuary customs is lacking.

Of the remaining ten sites little can be said. For various reasons none of these could be considered at the time as belonging to any of the previously mentioned classifications and hence were termed X-Sites. One only of these sites is of exceptional interest. Site X-II, located out of the Area proper, in Loving County, just east of the Pecos River and some 18 miles north of Pecos, Texas, not only possessed some remarkable petroglyphs, but in addition disclosed several mortar holes of a peculiarly flattened and rounded diamond shape in the rock slabs of the side which are remarkable in that the same type is reported by Dr. Cyrus Ray of Abiline in a recent bulletin of the Texas Archeological and Palentological Society to be common in the drainage of the Colorado River of Texas in the vicinity of Colorado, Texas. Burial III, only a short distance from this site and evidently associated with it, is also similar

[3]James. **Indians of the Painted Desert**, p. 184.

[4]One of these shelters contained pictographs of a type very similar to those found on painted pebbles from the Pecos Rock Shelters.

to the multiple cust burials reported by Dr. Ray from the same general region as the peculiar mortar holes. It seems probable, therefore, that this site represents intrusive elements from other sites of the Area. The remaining undiscussed site is an unclassified bluff pictograph location.

Metates are associated with all the surface sites of the Area, but they vary greatly in form. The flat or true metate, however, seems to occur at all types of sites. The common metate type of the Toyah Creek locations, in which many such specimens are found, generally is a flattened oval bowl, approaching the circular, both double and single faced, generally unshaped, with usage over practically entire surface, and of varying sizes. There are many small metates present. The principal type for the Sotol Sites, in addition to the true flat metate, is one (often very large) generally with a small, cigar shaped bowl to which the usage is confined, both double and single. The bowl of this type is typically not so deeply worn as that of the Toyah Creek type, and, taking its characteristics as a whole, this metate is very easily distinguishable from the others and forms thus one of the major artifact differences of the various sites, although some specimens of a relative type have been found along Toyah Creek in small numbers. The Hunter Sites, where specimens are found, vary as to metate type, possessing in different sites and localities both of the aforementioned types. The metate in its true form (flat type) is found often in Hunter Sites, whereas in the eastern part of the area there seem to be no metates at all, though the portable mortar is common.

The martar seems as a rule to be confined principally to the Sotol and Hunter Sites, there being some indications, however, that a large number of mortar holes in the solid rock at Sites X-IX might possibly be associated with nearby Toyah Creek I. The shattered fragments of a portable unshaped mortar of igneous rock was found in Toyah Creek II; but since it is one of the few specimens of such rock found there and as no such specimens are found at other Toyah Creek Sites, it seems to have probably been intrusive, although its presence there cannot be overlooked. The Sotol Pit Sites, where conditions favor, possess deep circular mortar holes in the solid rock. From the Sotol Pits and related Hunter Sites have also come several portable mortars of igneous stone. The present collection contains only unshaped mortars of this type, but local collections illustrate a large number of well shaped, portable mortars, the high quality of workmanship of which forms them at times almost into stone bowls. One good specimen of the type was found deeply buried in a Sotol Pit during road excavation. From the eastern Hunter Sites, principally those of the Borilla Hills, come the heavy, un-

shaped mortars of limestone, appearing entirely different from the portable type of the Sotol Pits. This difference of the eastern Hunter Sites is also indicated by a few insufficient point differences.

Single-handed manos occur in large numbers in the Toyah Creek Sites and are also found in Sotol Sites and a few Hunter Sites, though in small numbers. They are in every case both shaped and unshaped, two-sided and one-sided, without any apparent site differentiation, except as to material, which is generally that common in the immediate locality with the exception of the Toyah Creek Sites, which exhibit many sandstone manos, this materila being found only to the north and east of the Area in the locality of the so-called "Sand-Dunes Culture." The presence of the pitted mano is evidenced only at Hunter XII where two double-pitted specimens were found. The manos of the various sites varied as to size, some exceedingly small specimens being found, in all other ways normal specimens. No definite pestles were recovered.

Hammerstones, both globular and discoidal and usually of quartizite or some similar material, are found in large numbers in both Sotol and Toyah Creek Sites but are rare in Hunter Sites. Hammerstones are rather uniform throughout all sites.

Hand axes are found of similar types in both Toyah Creek and Sotol Pit Sites, but are rare in Hunter Sites. They are very crude, usually only one edge of a pebble or large flake being given a primary chipping to form a striking edge, the remaining being as the original surface of core or pebble. From X-VII comes one perfectly worked hand axe of *Coup de Poing* type, this being, with one exception, the only one of this type to be found in this section. One very similar to the present specimen was found by Victor J. Smith in a deep recess of a rock shelter near Alpine.[5]

Scrapers of snub-nose, end, and side edge types are found in all types of sites seemingly without site differentiation. Rough flint blades, possibly knives, of leaf shape or of indefinite shape, occur in all type sites, there being, however, in the Toyah Creek Sites many finely worked blades, often rather large. Definite knives occur in all type sites with no apparent differentiation. There are no awls or drills in the present collections but such are present in various local collections in form of round flint blades with short (in one case long) finely worked stem on one side. In one drill is a long approximately cylindrical specimen some four or five inches long, roughly chipped. Points were scare, but enough were found to con-

[5]Smith, Victor J., **Report on Dry Shelter Excavation**, Circular 2, West Texas Historical and Scientific Society, Alpine, Texas.

clude that there is a definite type from the Sotol Pit Sites that is present in other type sites only in small numbers. Several other types appear to be variations of the basic shape. This type is roughly chipped; the edges of the blades leave the parallel to such an extent that the point proper is often quite flattened, giving in extreme cases almost a blunt point. The blade is thick, and the barbs are either lacking or are nearly perfectly rounded. The stem, in some cases, expands to the width of the blade and sometimes over, though often it is comparatively much smaller, though always large relative to the blade as a whole. The base is rarely indented, the common condition being that it protrudes convexly. The Toyah Creek Sites present no definite distinct types, the points there being exceedingly varied as to form. In Toyah II are found specimens of the small, often serrated "bird points" of the type found in the Mt. Livermore Cache. Points of this type are also reported by local collectors from a recorded Sotol Site.[6] It is well to notice that this form of point seems to have been a common one over a very large area and among widely separated tribes.

Pottery is exceedingly rare in this district. Shards found number only six, while local collections evidence few others. Those shards found have been identified by Mr. Paul Reiter, School of American Research, Santa Fe, New Mexico. One Shard found at X-VII was classed as Chupedero Black on White and is the type normally expected to appear in this district, the center of its distribution being in the neighborhood of Alamogorda, New Mexico. Three shards were found embedded a foot deep in the hearth ring of one of the pits of Sotol XVI. These were classified as El Paso Red Ware of Pueblo III or possibly Pueblo II period. The other two shards are a heavy, crude type found at Tovah V, and were classified by Mr. Reiter as "Brick," or "Brick Red," a ware about which little is as yet known, although it is generally found much farther south on the Rio Grande, this being the farthest north that specimens have been found.

It will be seen from the above report that conclusions regarding the area must of a necessity be exceedingly scanty, and, more so, exceedingly difficult to state with exactness. Several facts, however, do seem to clear subjects fairly to later investigations. First, there are in the Area three distinct types of sites. Superficially, at any rate, these are: 1. The Sotol Sites; 2. The Toyah Creek Sites; and 3. The Rock Shelter Sites. The Hunter Sites are fairly well associated with one or more of these types, and the X-Sites probably also. The Sotol Sites are marked off from the other sites by typical locations, hearth type, size of site, number and workmanship of specimens, metate type, and to a certain extent by point

[6]Sotol XIII.

type. The most probable explanation of the use of the "pit" is the accepted one of its use as specialized hearths for the preparation of the Sotol or the Mescal plant for food over a very long period of time; but it must be borne in mind that there are serious objections to this explanation. These pits are found over a large area of New Mexico, Texas,[7] and probably Old Mexico, and are probably the remains of the camps of the Mescalero Apaches,[8] who were the historical inhabitants of the land.[9] The Toyah Creek Sites are distinguished from the others by their hearth-middens, their size, typical locations, number and nature of specimens, absence of the mortar and metate type. Their location along well watered, fertile, level areas hints of agriculture, as does the large quantity of metates and manos.[10] The presence of a large percentage of sand stone manos and metates suggest the intrusive influences from the north and east. It has already been noted that potshards from the south have been found.

Thus it seems that there may have been either a two-fold occupation by a semi-agricultural people (the Toyah Creek Sites), and by a hunter type of people living to a great extent on the Sotol or Mescal Plant.[11] However, the historical tribes, the Mescalero Apaches, with whom the Sotol Sites are fairly well associated, were reported to have been practicing agriculture at the time of white contact here, and as the only sites at which agriculture might have been carried on according to evidence recovered are the Toyah Creek Sites and perhaps an occasional Hunter Site, the distinction between the two may prove to be merely a superficial one.

As is to be expected, it is evidenced that there were contacts and influences with other areas as shown by the finds at X-II, the pottery, and sandstone manos and metates of the Toyah Creek Sites; but as to the extent and significance of this influence little can be said.

Thus, by way of conclusion, we see that while there is some evidence that there has been a two-fold occupation of the Area by Indian tribes, there is no definite proof, from the standpoint of the present work, that the occupation was other save sporadically that of the Mescalero Apache.

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[7]H. P. Mera, Raht, and others.
1933 report on Field Work in North America, American Anthropology, West Texas Historical and Scientific Society, Alpine, Texas.

[8]Personal statement of M. Opler, U. of Chicago Ethnologist at Mescalero Reservation to the writer at 1933 meeting of A. A. A. S. at Las Cruces, New Mexico.

[9]Z. M. Pike (Expedition of Z. M. Pike-Coues); Raht, **Romances of the Davis Mountains and Big Bend Country**

[10]Teeth of skull from B-III, associated geographically with Hunters XI, VII show marked wear of the type common in Indian tribes making use of corn ground on stone metates.

[11]No account is taken here of the rock shelter sites which are peripheral and lack investigation.

NOTES ON THE OCCURRENCE OF FOSSILS IN THE TUFF BEDS of the GREEN VALLEY REGION, BREWSTER AND PRESIDIO COUNTIES

BY HENRY T. FLETCHER

The fossil remains of plant or animal life are often necessary in the determination of the geologic age of rock formations. Where fossils do not occur, or are unnoticed, there is often difficulty in assigning to such formations their correct age. Such a problem is found in the Big Bend of the Rio Grande in the southern part of Trans-Pecos Texas, where the age of sediments, aggregating many hundreds of feet in thickness, has been only tentatively determined because of the lack of fossils.

The formation of the Rocky Mountains was attended by excessive sub-aerial erosion and great volcanic activity. Behind the Front Range a great synclinal area was formed and thick beds of sediments were laid down in what was probably a sea of fresh or brackish water. With the increase of volcanic activity, ash and other ejected matter from numerous vents predominated in the make-up of the sediments. Lava flows and volcanic tuffs now cover a large percentage of the country lying south of the Southern Pacific Railroad and between the Front Range, on the east, and the Tierra Vieja and Chinati Mountains, on the west.

The volcanic matter issued from vents in the Davis Mountains to the north, in the Chinati Mountains to the west, and probably in other localities in various parts of the area. These sediments, for the most part, and except where it has been removed by erosion, are protected by a flow of lava that extends from the Davis Mountains southward into Mexico. Where the lava has been eroded, beds of volcanic tuffs, interbedded with clays, shales, sandstones, and conglomerates, have been exposed. These beds probably reach their greatest development in the vicinity of the Chisos Mountains where Dr. J. A. Udden has called them the Chisos Beds.

The Chisos Beds are described by Udden as being "composed of chocolate brown to gray clay in layers, grayish blue to white tuffaceous sediments, sandstones and occasional ledges of conglomerates. The whole series is stratified in thin and well defined ledges and layers. This series seems to have a thickness of some two thousand feet. The last two formations do not contain any fossils so that their exact age cannot be

determined. It is possible that the Chisos Beds may be later than the Cretaceous."

C. L. Baker says of the same series, "On the Tornillo Clays rests a great thickness of volcanic tuffs, sandstones, clays and a few layers of conglomerate—the Chisos Beds. No fossils have yet been found in the Chisos Beds."

The finding of fossil remains in beds that are thought to be correlated with the Chisos Beds of Udden and Baker may assist in determining the age of those beds. Several types of fossils were found near the headquarters of the 02 Ranch, in Green Valley, on the upper branches of Terlingua Creek. Specimens were shown Dr. W. S. Adkins, of the Bureau of Economic Geology of the University of Texas, who thought that their discovery might prove to be of some importance, an opinion shared by Dr. E. H. Sellards, Director of the Bureau. The writer is also indebted to the late Dr. J. A. Udden and to Dr. Robert T. Hill, of Los Angeles, California, for encouragement and inspiration in collecting fossils and geologic data in the Green Valley region.

The facts relating to the stratigraphy and occurrence of fossils, in these notes, will, it is hoped, assist in the preparation of more ambitious studies of the region in the future. The conclusions here reached should and will be followed by examinations of some of Udden's sections of the Chisos Beds in the Chisos Mountains, where it is expected the same fossils may be found and the correlation of the Green Valley tuffs with the Chisos Beds be proved conclusively.

LOCATION

Green Valley is the local name of an area, some thirty miles square in extent, lying in Brewster and Presidio Counties, its northern boundary being about thirty miles south of the Southern Pacific Railroad. The northern and western boundaries are defined by a high and continuous escarpment rising above the valley floor. The eastern boundary is formed by the Santiago Range and the southern by a line near and paralleling the Carsones Range, and intersecting the Santiago Range near Dog Canyon. The Solitario Uplift lies just outside the region at its southwest corner.

The region covers parts of six topographic quadrangle maps of the United States Geological Survey—Jordan Gap, Tascotal, Buckhill, Agua Fria, Santiago, and Nine Points Mesa. The area here studied lies in the Jordan Gap, Buckhill, and Agua Fria Quadrangles, the 02 Ranch Headquarters being situated on a western branch of Terlingua Creek, near the western edge

of the Buckhill Quadrangle. The elevation is 3789 feet above sea level, its latitude approximately 29 degrees and 51 minutes North and its longitude about 103 degrees and 45 minutes West.

LITERATURE

There are no publications bearing directly on Green Valley, though several contain allusions to the relief and stratigraphy of the region. These publications and those covering adjacent areas include:

BAKER, C. L., AND UDDEN, J. A. *Review of the Geology of Texas*, University of Texas Bulletin 44, 1916.

BAKER, C. L. AND BOWMAN, W. F. *Geologic Exploration of the Southwestern Front Range of Trans-Pecos Texas*, University of Texas Bulletin 1753, 1917.

BAKER, C. L. *Exploratory Geology of a Part of Southwestern Trans-Pecos Texas*, University of Texas Bulletin 2745, 1927.

BLAKE, W. P. *Trans-American Institute of Mining Engineering*, Vol XXV. 1895.

BOSE, EMIL. *On a New Exogyra From the Del Rio Clay.* University of Texas Bulletin 1902, 1919.

DUMBLE, E. T. *Cretaceous and Later Rocks of Presidio and Brewster Counties.* Trans. Texas Academy of Science, 1901.

HILL, B. F. *The Terlingua Quicksilver Deposits, Brewster County.* University of Texas Min. Sur. Bulletin 4, 1902.

LIDDLE, R. A. *The Marathon Fold and its Influence on Petroleum Accumulation.* University of Texas Bulletin 1847, 1918.

POWERS, SIDNEY. *Solitario Uplift, Presidio and Brewster Counties, Texas.* Rep. Bulletin Geological Society American Vol. 32, pp 417-428, 1921.

UDDEN, J. A. *Geology of the Chisos Country.* University of Texas Bulletin 93, 1907.

UDDEN, J. A. AND BAKER, C. L. *Review of Geology of Texas.* University of Texas Bulletin 44, 1906.

UDDEN, J. A. *Fossil Ice Crystals.* University of Texas Bulletin 1821, 1918.

UDDEN, J. A. *Etched Potholes.* University of Texas Bulletin 2509, 1925.

UDDEN, J. A. *The Anticlinal Theory as Applied to Some Quicksilver Deposits.* University of Texas Bulletin 1822, 1918.

RELIEF

Green Valley is not a structural valley and probably not a basin. It seems rather the result of erosion and degradation, the relief, or most of it, resulting from differential erosion. The drainage is all toward the Rio Grande, and the harder lavas, forming the "Rimrock," have so far protected the underlying sediments from being washed away to the Gulf of Mexico. About half of the area has had the volcanic series entirely removed exposing Cretaceous beds of mostly Boquillas Flagstone age. The Cretaceous exposures lie to the southeast of a line of geologic contact running from the southern point of Elephant Mesa in a southwesterly direction to Bandera Mesa. At various places patches of tuffs and a few remnants of lava flows are found. A number of mesas owe their existence to the hardness of intrusive caps which are probably the remains of sills. The typical relief is of the "cuesta" type, low ridges with gentle slopes on one side and a short steep slope on the other.

To the northwest of the line of contact, the relief is also largely of the cuesta type, the determining strata being either lavas or beds of indurated tuffs or sandstones. Several mesas, with lava caps, which were once parts of the "Rimrock"now stand out alone in the Valley. Several intrusive dikes form wall-like ridges, some standing as much as two hundred feet above the surrounding plain. Straddlebug Mountain is a mass of intrusive syenite prophyry that has domed the Buda Limestone and Boquillas Flagstone, both formations dipping away from the peak at sharp angles. Where the drainage channels cut across the dips of the tuffs, the harder beds form cascades or, where a heavy bed occurs, small steep walled canyons are formed. Where the stream follows the strike, there is usually a low scarp on one side of the valley.

All the western part of Green Valley, that part covered in this paper, lies in the drainage system of Terlingua Creek. Some of the clayey beds prevent the escape of ground water downward and comparatively shallow water is found in many places, while there are no wells or springs in the area where the Boquillas Flags are exposed.

STRATIGRAPHY

No formations older than the Edwards Limestone, of Commanchean Age, are found in the region. Several hundred feet of massive beds of this age occur along a fault that extends from near Buckhill eastward and southeastward for many miles. Above lies about one hundred feet of thinner bedded limestone that, no doubt, represents the Georgetown Limestone.

This is overlain by the Del Rio Clay and Buda Limestone, each about seventy feet in thickness. The latter outcrops at several other points in the region.

The Boquillas Flags cover a large area, being apparently in conformity with the Buda Limestone wherever the two are found together. The Terlingua Beds are found in the lower part of Green Valley, and the Rattlesnake formation probably also occurs in small bodies in the southern part. If the last two formations covered the region, it is probable that they were almost entirely removed by erosion before the deposition of the tuff series. Along much of the line of contact there are few exposures of bedded rock, the surface being covered with wash and alluvium. But wherever the tuffs are in direct contact the Boquillas Flags there is apparent non-conformity. The Boquillas Flags, for the most part, occur in long low ridges, forming cuestas with the longer slope dipping about three or four degrees, the strikes being approximately parallel and bearing about N 50 degrees W. The strikes of the parallel structures in the Flags apparently plunge at low angles to the northwest under the superimposed load of volcanics.

THE TUFFS

The Tuff series is splendidly developed in the high escarpment or "Rimrock," which forms the north and west boundaries of Green Valley. This high bluff has a capping of reddish lava that is most likely of rhyolitic origin, varying in thickness from twenty-five to one hundred feet. Below it the beds of tuffs, sandstones, and conglomerates can be traced for miles. The McKinney Mesa, a few miles west of the 02 Ranch, is a monadnock of the "Rimrock" and presents a fine section of the series. Turney Peak, near McKinney Mesa, is one of a group of sharp peaks from which the lava capping has disappeared. To the northwest, where the "Rimrock" makes a graceful curve to the southward, is a group of hills as high as the parent escarpment, or higher. Some of them still retain their lava capping and, in the lower hills, the less resistant tuffs have been dissected into a typical badlands topography. At the foot of the lava capped slopes are found low hummocky foothills.

The tuffs and lavas probably once occurred over a much greater area, no doubt covering the Cretaceous beds over most of the country west of the Front Range. The western part of Green Valley lies lower in the synclinal area, and the relative sinking of this area in the general uplift has prevented erosion from removing all the igneous rocks which covered the underlying sediments.

A lower, and probably later, flow of lava covers an area extending from Whirlwind Spring westward to the Presidio-Brewster County line and reaching the northwest flank of Turney Peak. Remnants of this flow are found in the gap between McKinney Mesa and Turney Peak and in the small, long mountain, a mile south of the 02 Ranch, which is called Little McKinney. This lava is similar in appearance to that of the "Rimrock" but is not represented in any of the exposed sections of that escarpment, Turney Peak or McKinney Mesa.

In places the tuffs are exposed for hundreds of feet in thickness and the continuous bands of different colored beds are very striking. Dr. W. P. Blake skirted the western "Rimrock" en route to the newly discovered Terlingua quicksilver district in the early nineties. He wrote of Green Valley as follows: "From Marfa to the Tres Lenguas the direction is nearly southeast following a widely eroded valley in table lands, which are generally capped with a hard layer of basaltic lava, seen to the best advantage at the Alamitas Rancho and in Church mountain near Collinson's Rancho. An isolated conical mountain, rising from the broadly eroded country to the eastward of Church Mountain, has a flat top and is evidently the remnant of a former mesa left standing as a monument as if to show what an enormous amount of material had been swept away to the Gulf by erosion and degredation. The edges of the horizontal beds can be seen from a distance, and the mountain, known as San Diego Peak, doubtless affords a very complete and interesting section of the entire series from the lava cap to the lower strata of the Cretaceous."

Dr. Blake continues, "The beds of which this peak and . . . the upper branches of the Tres Lenguas are chiefly formed are remarkable for their whiteness and homogenity, and appear to be of an indurated mud. It is an amorphous mass, in which there is an enormous amount of clay and silica, but it is without well defined stratification. It is remarkable for the general absence of oxide of iron. It is fusible and would appear to be a mass resulting from the breaking up of feldspathic rocks. The thickness is probably not less than five hundred feet and it extends over a wide area, east and west, as far as the edges of the high mesa can be seen. The general uniformity of composition of this deposit is broken toward the top by a bed of conglomerate or breccia, ten or more feet in thickness, made up chiefly of red and brown porphyritic rocks. The masses being in part well rounded show the action of currents of considerable force and extent. This stratum contrasts strongly with the white sediments above and below and makes a dark colored belt or bend through the hills visible for miles on either side."

Dr. Blake viewed San Diego Peak and most of the exposures

he described from too great a distance and was mistaken in that the capping of that peak is not lava but an intrusive syenite porphyry. Closer examination has shown that the whole tuff series is stratified in thin and usually well defined ledges and layers and not, as Dr. Blake stated, without well defined stratification.

Prof. E. T. Dumble made the same trip as Dr. Blake, and over the same route, in 1897. His observations were as follows: "The hills along the route to Alamitos appear to be composed entirely of tuffs and accompanying lavas and in none of the exposures, found at San Jacinto Peak, did we find anything else. Similar materials were observed at Water Gap Pass and forming the escarpment on the western side of Green Valley. Here we found beds of grit overlain by a conglomerate and this by a rhyolitic bed, followed by later flows of lavas of various colors, the whole rising to a height of more than four hundred feet above the valley."

In 1902, Mr. B. F. Hill, Associate Geologist of the University of Texas Mineral Survey, spent three months of field work in the Terlingua District. Mr. Hill wrote of the general geology of the Big Bend: "North of the district, the country is a high plateau of volcanic material . . . . East of this plateau the underlying sediments are exposed on the Marathon and Alpine roads in the neighborhood of Santiago Peak, a single mountain of granitic acidic eruptive rock, quite distinct from the flows making up the plateau. The sediments are of two distinct series, the lower of which is the Upper Cretaceous, the higher members immediately underneath the volcanic complex being in all probability divisions of the Tertiary. The strata exposed on the east are practically the same that are exposed along the Fresno Canyon. The eruptions furnishing the enormous masses of volcanic rock were probably in the latter of the Tertiary period."

Udden's typical exposures of the Chisos Beds were in the neighborhood of the Chisos Mountains, which lie some forty miles southeast of the 02 Ranch. Desiring to show the similarity of the Chisos Beds and the tuffs of Green Valley, we will quote rather at length from Udden's descriptions:

"In their makeup the Chisos Beds are quite unique. They are everywhere clearly stratified in thin and well developed edges and layers. These measure from an inch to one and two feet in thickness and persist for long distances. The exposures appear somewhat like those of stratified limestones, but the color is usually of a brighter hue than is common in limestones. The great bulk of the strata consist of a bluish gray or white stratified rock which lies in even, thoroughly

consolidated ledges. Among these are occasional layers of clay and sandstone and even thin layers of conglomerate. The sandy layers often show cross-bedding, and occasionally also ripple marks, and the sand is quite well sorted.

"The typical rock appears almost structureless to the naked eye . . . Frequently these ledges have been considerably altered, even when not much changed in their superficial appearance, or entire ledges have been affected by solution to such an extent that large, irregular cavities have been formed and filled with calcite.

"The sandstones, which are less than one fifth of these deposits, are seldom very heavy but consist of mostly isolated ledges a foot or so in thickness, and these are rarely more than two or three in succession. The grains are largely angular quartz . . . but well rounded grains occur also. The interstices between the grains are filled either with some fine tuffaceous material or by calcite or by a siliceous deposit, evidently brought by the ground water.

"Clayey strata are most frequent in the lower part of the formation where they resemble the Tornillo Clays. They have a chocolate color and contain small dark calcareous concretions. Higher up they become thinner and acquire a dirty dark gray color. On weathering, the highly shaly strata break up into cubical pieces; and concretions, when present, are apt to be larger and have a more smooth surface than in the lower clays.

"Conglomerate seams are sometimes present especially in the middle and upper parts of these sediments. But they constitute an insignificant fraction of the whole. Some of the conglomeritic seams are associated with the sandy ledges and their pebbles, which consist mostly of well worn limestone, average from one fourth to a half inch in diameter to two or three inches. Elsewhere, we find well-worn and rounded small boulders of limestone, as well as igneous rocks, from three to six inches in diameter, imbedded in the stony ledges of finer textures. The limestone boulders are sometimes partly silicified on the surface so that this is protected, as it were, by a more or less continuous crust of shert."

FOSSILS

Organic remains have been found in ten different localities in the tuffs near the 02 Ranch, varying in distance from one to thirteen miles. It is thought that careful field work will disclose other occurrences. The locations are marked on the accompanying map by crosses.

The first find was made at the southeast end of Little McKinney Mountain, about a mile south of the 02 Ranch. This hill rises three to four hundred feet above the surrounding plain and has a lava capping at the southeast end, this flow continuing through the mountain under about one hundred and fifty feet of bedded tuffs at the northwest end. Little McKinney extends northwest-southeast, and the tuff beds dip to the southwest at about four degrees. Terlingua Creek, running from the north, makes a bend around the west end, turning toward the southeast. About a mile to the southward, several small draws enter the creek from the north which have dissected a group of low hills, which cover about a square mile in area. These hills were part of a southeasterly extension of Little McKinney. Beginning at the southeastern foot of Little McKinney and following rather closely the 3750 foot contour line, the upper part of a tuffaceous clayey bed is exposed. Its color is pinkish to tan and, in many places, is covered with grass and debris. The bare clay weathers into slopes of thirty to forty-five degrees but, due to the cutting of small hillside drainage, usually presents more or less rounded points to the level flats at the foot of the slopes. This sediment is rather harsh to the touch and is thinly bedded. It weathers into small cubical or rectangular pieces with sharp edges which soon become rounded. The fragments soon weather to powder and the color fades to a flat white. This rock is apparently without structure.

In this bed, internal casts of a gasteropod and the casts of borings are found more or less plentifully. At a few localities badly weathered casts of a second gasteropod and fragments of fossil bones, probably of turtles, also occur.

The gasteropod resembles a land snail, having a rather low spire in proportion to its base. The volutions are four and one half to five. The specimens were all of internal casts though some of them showed fragments of shell which were usually silicified, making identification difficult. The adult size seems to be about one and one half inches in height and one and three-fourth inches in basal diameter, though some specimens are larger. The casts weather out of the beds having the same color as the sediments and fading to a lighter color in time. The second gasteropod is also represented only by internal casts which are badly weathered, but it is rather slender and tall, with six or eight volutions.

There is a great variation in the numerous internal casts which are thought to be borings of some small gasteropod. The usual shape is with one end rounded, though some are tapering. Some have peculiar tubercles at one end, usually at an angle to the axis of the cast, suggesting a trap door or the surface

of contact with some other body. They are also occasionally found in close conjunction, like the cells of honey comb, but separated by indurated mud. No sign is found in any cast.

The bed containing the fossils is everywhere overlain by a ledge about three feet thick, sufficiently indurated to form a capping for low relief. It has a fine pinkish, gray groundmass with particles of white ash and tiny quartz crystals. There are occasional pink to white concretions which weather out, giving this bed, in places, a peculiar honey-combed appearance. Large slabs of this bed break off and slump down the slope of the softer beds below.

The second occurrence of fossils is in a group of low hills about three miles southeast of Little McKinney where conditions of topography and stratification are similar to the first location. Both the gasteropod and casts of borings are found here.

The third location is in a small arroya on a broad flat about seven miles east of the 02 Ranch and one mile east of the Brush Mill. Here the flood waters have cut down to the typical tuffaceous shale and a number of gastropods were found at this location the more indurated bed has been removed.

The fourth location is at the foot of a small mesa a mile northwest of the 02 Ranch house, where both the gasteropods and borings occur rather plentifully. Here, as at Little McKinney, the fossil bearing stratum is at the foot of the slope, the typical overlying bed being in evidence around most of the mesa. This hill is about two hundred feet high and, but for the great amount of talus, would present a fine section. At the top is a bluff, approximating about thirty feet in height, surmounted by three beds of yellow to gray sandstone which weathers brown. The sandstones are cross-bedded in places, elsewhere containing large pebbles. Great masses have broken off and slumped down the steep slopes.

The fifth location is on the east slope of McKinney Mesa, about three hundred feet below the lava capping. In a small gully many small specimens and one large specimen of the gasteropod were found. It is possible that these casts were weathered out of some one of the several conglomeritic beds that occur above. Or their presence may indicate a second horizon of occurrence, as this location is some five hundred feet above Little McKinney location and no faulting is indicated. It is not certain whether they were water-worn or simply altered by weathering.

A similarly located find occurred in the face of the "Rimrock" escarpment west of the Alpine road and about thirteen miles northeast of the 02 Ranch. Here, at an elevation of about

forty-three hundred feet and some two hundred feet above the foot of the slope, a number of gasteropods were found. It is not known whether they had weathered from a contiguous bed or from layers higher up the slope.

Specimens of the gasteropod were found at various points in the bed of Terlingua Creek, which flows within one hundred yards of the 02 Ranch house. Their source was finally found at the crossing of the Marfa road about two miles above. Here clear water flows for some distance over a pinkish gray bed of tuff. The surface showed many rounded proturberances which appeared to be concretions. A geologist's pick disclosed that they were the gasteropod covered with a layer of indurated tuffaceous matter.

About twelve miles south of the 02 Ranch and about a half mile above the Burnt House Camp on Crystal creek, another find occurred. Here the stratification is similar to locations one and two. The fossils are scattered over the surface, the typical indurated overlying ledge being present. Above this is a bed of conglomerate about eight feet in thickness. This conglomerate is composed of boulders of limestone, lava, and novaculite. The ashy binder weathers and the boulders cover the slope. The limestone boulders have weathered away to a thickness of possibly half an inch, leaving the harder fossils projecting. These fossils indicate the boulders to be mostly of Commanchean origin. Some of them are covered with a laver of chert. The casts of borings were rather rare at this place.

At a point about a mile west of Davenport Spring and five miles north of the 02 Ranch fragments of geodes, scattered as float over the lava capped hills or along the slopes of the underlying tuffs, were found to contain fossil remains resembling Dentalium. All were silicified, usually being brown or yellow in color. The fragments varied in diameter from one eighth to one inch and in length up to six inches or more. They are subcylindrical in cross section, being a little flattened, and most specimens have a crease on one side extending their whole length. In some geodes these worm-like fossils are twisted and matted as if they had been trapped in a cavity in the lava and replaced with silicon after they had died. One single specimen resembles in form a Caprina from the Edwards Limestone and is entirely silicified. In some of the flinty geodes are prints that resemble leaves, and several small masses resemble silicified berries.

A half mile north of Diff Spring, incorrectly called Duff on the topographic map, in a bed of thinly bedded tuffaceous shale was found the curious criss-cross markings called by

Udden "fossil ice crystals." These beds outcrop in a low ridge near a lava flow which apparently dips under them. This is the only occurrence of this type of fossil the writer has seen except in the Boquillas Flags, where they are locally abundant.

DETERMINATION OF FOSSILS

From the literature available, it was determined that the gasteropod, occurring most plentifully at each location, was Macrocyclis spatiosa Meek and Hayden. Macrocyclis was proposed as a subgenus under Helix by Beck in 1837. Macrocyclis spatiosa was found by those engaged in the United States Geological Survey of the Territories, under the leadership of F. V. Hayden, United States Geologist, during the years 1855-56. Notice of its occurrence in the Wind River Group in Wind River Valley, west of the Wind River Mountains, Wyoming, is found in Vol. IX of the Report of the Survey. Vol. IX is a "Report of the Invertebrate Cretaceous and Tertiary Fossils of the Upper Missouri Country" by F. B. Meek.

The Wind River Group consists of gray and ash-colored sandstones, with more or less argillaceous layers, and reaches a thickness of fifteen hundred feet or more. The formation did not seem to be very fossiliferous, probably because favorable locations were not encountered. Only two vertebrates were found, one species of Trionyx and one of Testudo. The invertebrate fossils included a species of Vivaperus, a Helix (?), and Macrocyclis spatiosa. The latter two are figured on Plate 42 of the Report. No marine or brackish-water types were found. The authors were uncertain as to the age of the Wind River Group. In describing the Group, on page LXI of the Report, they said it was probably of Miocene age, while, in the description of the fossil Macrocyclis, the age is given as probably Eocene. At least, the age of the Group is Tertiary and not Cretaceous.

Macrocyclis spatiosa was described as "a noble species that will be distinguished at a glance from the other land-shells yet known from the Upper Missouri country, or, indeed, from all the Rocky Mountain region, by its large size, wide, deep umbilicus, and general form." It is subdiscoidal in shape; the spire low, but not flat; volutions are five and a half to six; the average size of adult specimens was given as nearly two inches in breadth and about one inch in height.

We are inclined to the opinion that if our Green Valley gasteropod is not identical with Macrocyclis spatiosa it is at least a species of that genus. It could possibly be a Helix; however, as most species of Helix are taller than wide, this is unlikely.

The slender, badly-weathered gasteropod found at several of the Green Valley locations might possibly be a species of Goniobasis, found on the Upper Missouri in the Fort Union and Judith River Groups of Tertiary brackish-water beds. However, their bad state of preservation precludes their determination with any degree of certainty.

SECTION AT LOCATION NO. 1

At the southeast end of Little McKinney Mountain there is a rather abrupt cliff where the section is as follows:

21—Dark red lava, massive in the lower half, vesicular and dark brown above. 60 feet.

20—more or less unconsolidated tuffaceous clays, grading in color from pale pink to red, with several rather indurated sandy layers, up to three inches thick, at about the middle. 25 feet.

19—Pink to pale yellow tuff, forming an overhanging bluff, with a seam, one inch thick, of soft clay bearing slightly indurated concretions, about four feet from the top. 15 feet.

18—Pinkish gray thinly bedded shales. 8 feet.

17—White clay with small red flakes, presenting a spotted aspect, rather indurated. 1½ feet

16—Purplish clay. 6 inches

15—Dark brown to red indurated tuff. 6 feet.

14—Tan to dirty gray tuffs in beds one half to six inches. 31 feet.

13—Dull grav indurated sandstone, upper half reddish, with occasional boulders. 1 foot.

12—Soft white marl 4 inches.

11—Dull gray indurated sandstone. 1½ feet.

10—Soft white marl. 6 inches.

9—Dull gray indurated sandstone. 1½ feet.

8—Soft white marl. 6 inches.

7—Slightly indurated tuffs with red flakes like small crystalline plates. 5 feet.

6—A nearly perpendicular bluff of purplish pink indurated tuff (like No. 2) alternating with dirty

pink, evenly bedded tuffs (like No. 3), in beds of from one to three inches. 56 feet.

5—Dirty pink tuffs with several harder layers that form benches (like No. 3). 25 feet.

4—Pinkish gray indurated bed (similar to No. 2) but harder and containing more quartz. 2 feet.

3—Dirty pink tuffs with definite beds, up to two feet thick, showing no cleavage, the faces weathering in rounded lumps. Several sloping benches formed by harder layers. 50 feet.

2—Pinkish gray indurated bed with fine ground mass containing particles of white ash and quartz. Occassional pink to white concretions which weathering out give appearance of honeycomb. 3 feet.

1—Pinkish to tan, clayey shale in thin beds, weathering in cubes which soon become rounded. Gasteropods and casts of borings. 6 feet.

0—Beginning on a gentle slope covered with gravel and alluvium.

Other sections on Little McKinney show the strata represented in the above section to be continuous and unbroken in the mountain. The most prominent bed in the series is one of alternating sandstones and conglomerate, number 5 in the section, where the conglomerate has thinned out to less than a foot and the boulders are represented by small pebbles. Toward the west end the bed is six feet thick and the boulders reach six to ten inches in diameter. They are mostly water-worn Commanchean limestone, with some lava and novaculite. Secondary weathering of exposed boulders has left the fossils projecting, sometimes as much as an inch. Some of the boulders are covered with chert, while some of the fossils have a bright pink color. The fossils predominating in the Commanchean boulders are species of Pecten and Turritella.

A section in McKinney Mesa, two miles west of Little McKinney, shows the conglomerate member of the Little McKinney section to be the lowest exposed bed. About halfway between the two is a low conical hill with large slabs of the conglomerate lying on its sides. Evidently, until recently, these slabs were part of a caprock which has preserved the hill from the degradation that has formed a level plain around it.

About three hundred feet below the top of the McKinney Mesa section is twelve feet of dark red, irregularly-bedded conglomerate, having a sandy marix and boulders, up to ten inches in diameter. The boulders are well worn and mostly

tuffs and lavas, though some limestones are present. The deep red color of the bed so strongly contrasts with the lighter colored tuffs that it is noticeable from a great distance. This is the red conglomerate mentioned by Dr. Blake in the quotation used above.

The red conglomerate is overlain by two hundred or more feet of less indurated sediments, their general appearance being quite different from the beds below. Yellow or red, scarcely indurated tuffs are inter-bedded with rather loose gravels, with thin layers of conglomerate at intervals. The latter contain some boulders of Carboniferous rock from which fragments of crinoids weather. There is reason to believe that these beds may represent the Crown Conglomerate and the Burro Gravels of Udden's Chisos Mountain section.

A section on the "Rimrock," west of the Alpine-Terlingua road, at location No. 6, corresponds closely to the McKinney Mesa section. The top four hundred feet, just under the seventy-five foot cliff of pink lava, is a talus slope covered with grass and other typical mountain flora. We were unable to determine whether the red conglomerate was here present; however, it is present in the "Rimrock" farther west, where it is a prominent feature for many miles. Here, as at McKinney Mesa, the lowest exposed bed is the gray conglomerate. No attempt is made to correlate any members of the several sections except the two conglomerates. There can be little doubt that the whole tuff series was laid down in a rather shallow sea and probably near an oscillating shore line. This is indicated by the abrupt changes in the physical composition of continuous beds, the cross-bedding, and the frequent change from one type of sedimentation to another.

STRUCTURE

A detailed description of the structure of the region is not in the province of this paper but it is desired to mention several important structural features. To the eastward of the line of geological contact, mentioned above, the formation most exposed is the Boquillas Flags. The Santiago Range, of the Front Range of the Rocky Mountains, has an axis that bears about fifty degrees northwest-southeast. When this range was formed there was also formed a series of approximately parallel structures that now show in long, low ridges in the Boquillas Flags. These anticlines appear mostly as cuestas, the gentler slopes having dips of three to five degrees. The steeper slopes often suggest the presence of faulting, but it is thought that they are usually the result of erosion instead. In going from Del Norte Gap, in the Santiago Range, southwestwardly across Green Valley, five or six of these structures are crossed. These anticlines, at the

line of contact with the tuffs, all appear to be plunging under the thousand feet or more of volcanics.

East of the contact, small areas of tuffs occur. Some of these are of more or less extent vertically where protected by a bed of lava or intrusive rock, as in Butcherknife Hill, Buckhill, Santiago Peak, and Nine Points Mesa. On the dip slopes of the Boquillas Flags a conglomeritic tuff is often found. This basal tuff is usually finely bedded and is usually whitish, buff or pinkish in color. At several points dams were evidently formed by lava flows and small lakes formed. Below the Sid Place a bed of fresh water limestone is exposed in Calamity Creek, but no fossils were seen.

A system of northwest-southeast faulting, paralleling the structures, is found throughout Green Valley. Most of these faults seem to be of small displacement, with the exception of that running from Buckhill eastwardly, where the Commanchean beds are faulted upward, the displacements being locally as much as a thousand feet. There is also a system of northeast-southwest faulting with even less average displacement. Since the tuffs usually occur in non-conformity with the Boquillas Flags great care must be exercised in estimating their value in the determination of fault displacement.

In the volcanic complex northwest of the line of contact there is a broad, low structure with a northwest-southeast strike about parallel to the axes of the structures in the Boquillas Flags. Its axis lies about a mile northeast of the 02 Ranch house and follows closely Paradise Valley to its head and out of the region. The dips to the northeast and southwest average about four degrees. The parallel anticlines of the Boquillas Flags may continue under this broad, low fold and should, no doubt, be complicated by the tectonic forces which produced the later structure.

CONCLUSIONS

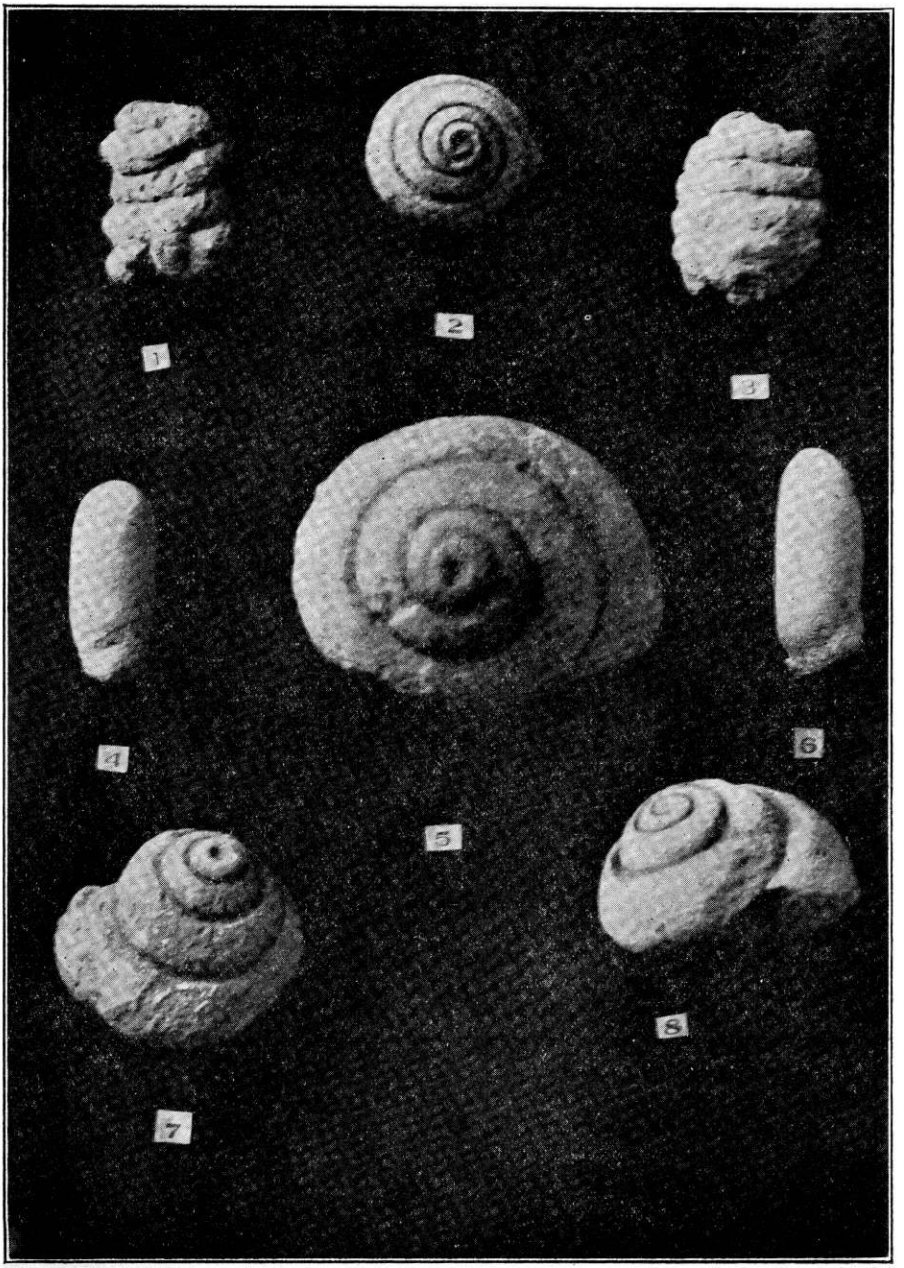
A number of conclusions may be drawn from the foregoing notes: first, that, during the formation of the Front Range, there was a period of great erosion and degradation of the higher land masses and that probably drainage to the Gulf of Mexico was interrupted, the water accumulating in a great inland sea behind the Front Range.

There was a scarcity of plant and animal life in the region during a long period of time due to the presence of so much ashes on the land and in the water. At one period, a few species of vertebrates, including turtles, and invertebrates, including land-shells were present. Because of the constant tectonic activity that alternately raised and lowered the land surface, the shore lines were constantly changing.

It is probable that much of the lower part of the Chisos Beds and, possibly some of the Upper Cretaceous formations, were never represented in the Green Valley region, or, if ever present, had been removed by erosion before the submerged period during which the Green Valley tuffs were deposited.

Other conclusions are that the common fossil gasteropod in Green Valley was the land snail, Macrocyclis spatiosa, or a kindred species; that it was associated in its occurrence with certain brackish-water invertebrates and turtles; that the thousand feet of tuffs, more or less, were laid down in Green Valley during Tertiary time, at about the end of the Eocene or beginning of the Miocene Periods, or possibly during the intervening Oligocene.

The most important conclusion, in the opinion of the writer, is that a great deal of hard work should be done in the Chisos Mountains in studying the stratigraphy of that region and the search for fossils in the Chisos Beds. This should be done in an effort to determine the true age of that formation and correlate the various areas of volcanic tuffs found throughout western Trans-Pecos Texas.



1 & 3—Gasteropod, Sp.
2, 5, 7, & 8—Macrocyclis Spatiosa, Meek.
4 & 6—Internal Cast of Boring (?)

ERRATA SHEET FOR PUBLICATION NO. 5

The table below is a list of corrections of errors in the printing of "Beginnings of the Great McDonald Observatory" and "Two Thousand Miles by Boat in the Rio Grande in 1850." Mr. Barry Scobee and Col. M. L. Crimmins, the authors, are in no way responsible for the errors.

Page 19: The author's name should be spelled Scobee, not Scobbee.
Page 21, line 17: For Dr. Elvey read Dr. Struve. (Dr. Struve is director of Observatory, not Dr. Elvey.)
Page 23, line 34: For Maecey, read Marcey.
Page 24, line 19: After dust add of.
Page 26, line 21: For Patterson read Paterson and for Patterson-Leatch read Paterson-Leitch. After Paterson-Leitch Company insert the following words: of Cleveland, Ohio, which has the sub-contract under Warner and Swasey for the steel frame structure and dome; and by H. J. Von Rosenberg of San Antonio, for the Bart Moore Company.
Page 27, line 13: For Luedeche read Luedecke.
Page 41, line 14: For mustangs read mustang-mules.
Page 44, line 18: For ox mule read ox or mule.
Page 44, lines 25-26: Omit Rio Grande, Texas.
Page 45, line 2: For It read He.
Page 45, line 4: Omit he.
Page 45, line 9: For Mexican power read Mexico, a power.
Page 45, line 31: For Kearney read Kearny.