

The Grand Prairies of Texas

By FRANK BRYAN*

Welcome to the Grand Prairies of Central Texas. They were first so called by that grand old man of early Texas geology, Dr. Robert T. Hill. These prairies offer no spectacular, breath-taking landmarks to the viewing eye. They offer only a broad vista of rolling prairie hills. Yet this can be a thrilling vista, once you know the details of its history back into remote antiquity.

The sculpturing of these hills began in the long dry era of the early Ice Age. During that long era Central Texas was a desert-dry wasteland. Its dust built the high hills upon which rests the city of Vicksburg, Mississippi, where Confederate soldiers dug deep in the Texas dust in seeking cover against mortar shells from Yankee gunboats.

The climatic cycle, which caused Texas dust to be trapped by the lush vegetation of the moist Mississippi Valley, has maintained the same general pattern since the very beginning of the Ice Age. The one great change has not been in the general over-all continental climatic pattern. It has been in the location of the center of that great cyclonic swirl. This center migrated southward with the accretion growth of the great Ice Age Continental Icecap. It returned northward with its retreat.

To confirm how continuous has been this cycle, take the record of winter moisture over the United States for the winter months of 1950-51. For sixty-six of the ninety days snow fell, and remained largely unmelted, over the region of the Great Lakes. For forty of the ninety days snow fell, and remained largely unmelted, over the region of the Rocky Mountains north and westward from Denver, Colorado. And during those same ninety days, moisture lightly, and hurriedly, just *twice* brushed the region of the Staked Plains of West Texas.

It is these last-mentioned two days, when winter moisture swirled over the Staked Plains, that are of interest to us here in our study of the origin and history of the Grand Prairies of Central Texas. Both were accidents and none of the moisture stuck. The winter air masses, which regularly rush southward across the West Texas Plains, are chilled and completely dehydrated over the region of the northern Rockies. They reach Texas wild-eyed and moisture hungry. They are

*Consulting geologist, Groesbeck, Texas.

still lapping up dust when they hit the Lower Rio Grande Valley, and move up the Gulf Coast to east of Corpus Christi, Texas.

At present, there is what in geology we would call a fault or shear-zone between this driest of dry air and the warmer, moist air to the east. It is marked on the ground as the westernmost reach of sufficient winter moisture for spring sap to rise to grow forest-dense, hilltop timber. The reason that this shear-zone is marked by the westward reach of timber-growing winter moisture is that the chill of the contact precipitates more moisture from the warm air than the heavier dehydrated air will absorb as it crowds the shear-zone eastward. This is important for us to know here because this westward reach of winter moisture gives the Grand Prairies their eastern boundary line. It gives to the whole of the Southwest its most spectacular and, in pioneer days, most useful single landmark. It is known as the Cross Timbers.

In the early days of the Southwest, the Cross Timbers served traders, trappers and soldiers the way the Greenwich meridian serves sailors. This line of forests crossed at right angles all of the major streams of the Southwest — the Arkansas, Cimmaron, North Canadian, Canadian, Washita, Red, Trinity, and Brazos rivers. When rendezvous was planned on any of these streams, it was just a matter of setting the distance *above* or *below* the Cross Timbers. In its unilateral revision of the Dancing Rabbit Treaty after the Civil War, the United States fixed the Cross Timbers as the western boundary of the lands deeded to the Five Civilized Tribes. The Cross Timbers then became the surveyed boundary line between the Indian Territory and the Oklahoma Territory, which were eventually joined to become the state of Oklahoma.

The Cross Timbers, then, become unique as the only known climate, winter-moisture fixed political boundary line.

In Texas, the long dry summers and impervious nature of the soil over outcropping Cretaceous beds confuse the climatic picture. The most exact single position on the ground in Texas, from a strict winter moisture point of view, is the west edge of the Western Cross Timbers at about the Shackelford-Stephens county line. In the area covered by this field trip, the actual position of the Cross Timbers is fixed by the outcrop of the highly permeable Woodbine Sand, which is boxed in on both sides by tight shales upon which all but thorn timber dies during the hot summer months.

In his chronicle of the Santa Fe Expedition, Kendall had this to say of his crossing this section of the Cross Timbers in western Hill County during the summer of 1841:

The immense western prairies are bordered by a narrow belt of forest land. . . . The growth of timber is principally small, gnarled post oaks and black jacks . . . and, in places, an impenetrable undergrowth of briar and thorn brush. . . . In that portion through which we passed, and we spent a fortnight in the Cross Timbers, the country was broken and full of deep, impassable gullies.

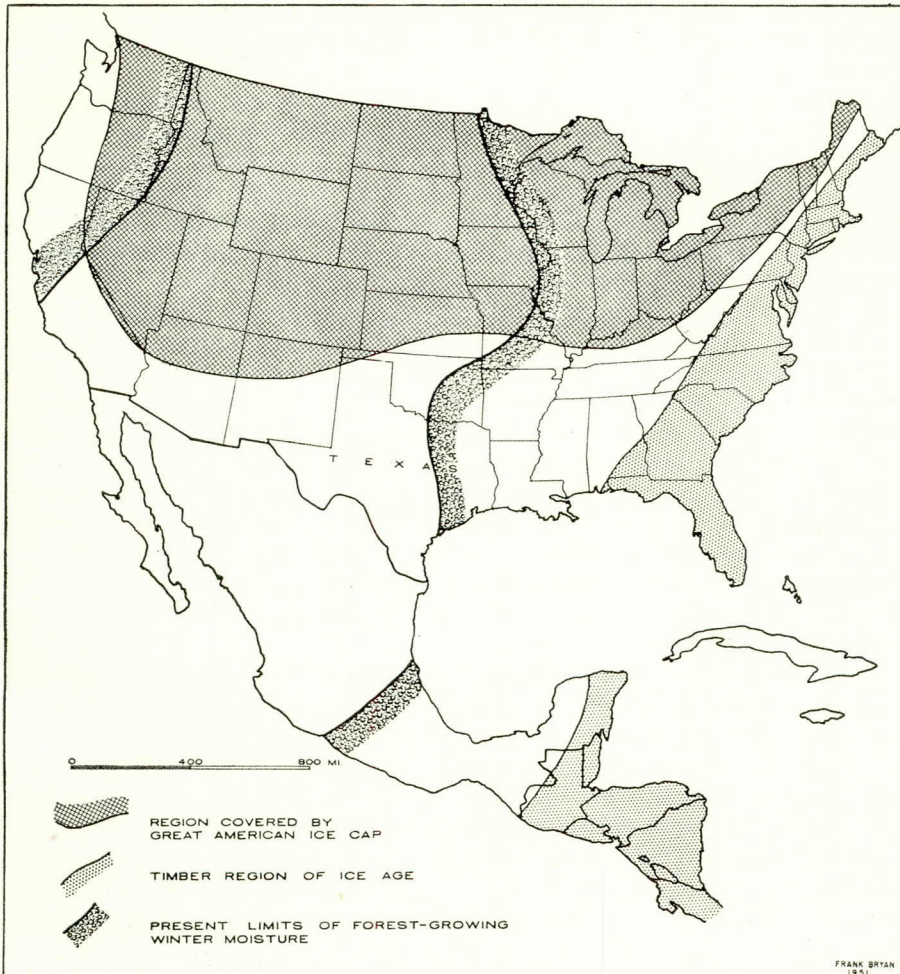


Fig. 1. Present and Ice Age limits of winter moisture and timber growth.

His is one of the best and most intimate descriptions yet given of the Cross Timbers. It accurately fits many uncleared portions of western Hill County today.

Actually, the Cross Timbers represent a western migrating winter-moisture line. This migration undoubtedly occupies some fixed position with the northward retreat of the melting Continental Ice-cap. How recent has been the last few hundred miles of this migration will eventually be fixed in detail when we gain a better over-all picture of American archeology.

Archeology enters the picture when we study the timbered portions of the United States and Mexico on the same map. The timber-line of the Cross Timbers, which passes a few miles to the east of Oklahoma City, and, on its main line, south between Fort Worth and

Dallas, and thence almost straight south to the Gulf, enters Mexico to the north of Tampico and passes about halfway between Mexico City and the city of Vera Cruz.

East of this line in Mexico we have a large number of very ancient stone cities which now are overgrown by a dense, impenetrable tropical jungle. To the east of this line in the United States we have the forest-overgrown cities of the vanished Mound Builders. There must be a connection between the two, because no modern agriculture thrives in the Mexican jungles, and gullied abandoned farms mark our own sweep through forest lands. It was absolutely impossible for any early, primitive agriculture to produce a city-supporting food surplus in hand-cleared jungle of forest timber.

The answer to the mysteries of the jungle-buried cities of Mexico and Central America, and to the vanishing of the Mound Builder cities of the upper Mississippi Valley, lies in a westward migration of tree-growing winter moisture. At the time when these prehistoric cities flourished in all of their ancient glory, theirs was a semiarid climate, of the kind which furnished the ideal climate for the development of the ancient cities of the Lower Nile. Even today, no jungle regions are yet civilized centers, but semiarid regions, such as California and Palestine, bloom with modern civilized cities almost overnight.

During the Ice Age, Texas was in a manner of speaking the Nile Valley of the western world. It was the most habitable portion of the North American continent.

Actually, Texas was crossed by three great ice age river systems, the Brazos, Colorado and Pecos-Rio Grande. Of these we are primarily interested here in the reach of the ice age Brazos across these Grand Prairies. The course of the ice age Brazos has been mapped in detail, with grade elevations run, from where it pronged away from the terminal moraine of the Pecos Valley Glacier at Fort Sumner, New Mexico, to where its clear-water-clean sands and gravels go under the Beaumont clays just below Hearne, Texas. It was a giant as rivers go. With a grade of 10-feet per mile across the High Plains, its bed was five miles across. With the grade flattened to under three miles here at Waco, the width was around twelve miles.

The ice age Brazos must have been a wonder stream. In its sands and gravels there is not one vestige of dirt or silt of any kind. They are the world's finest cement sands and gravels. Such cities as Waco, Fort Worth, and Dallas are foundationed by them. Its waters, then, were crystal clear and, the grade being steep, they flowed with the rush of a millrace, all the way from the High Plains to the sea.

The character of the sands and gravels of this ribbon, river deposit is of itself almost conclusive proof that the ice age Brazos flowed across a barren, desert land. All of the sands and gravels of this ancient river are foreign to the lands they are deposited across. They are headwater material. They contain no inwash material from the bordering Grand Prairies.

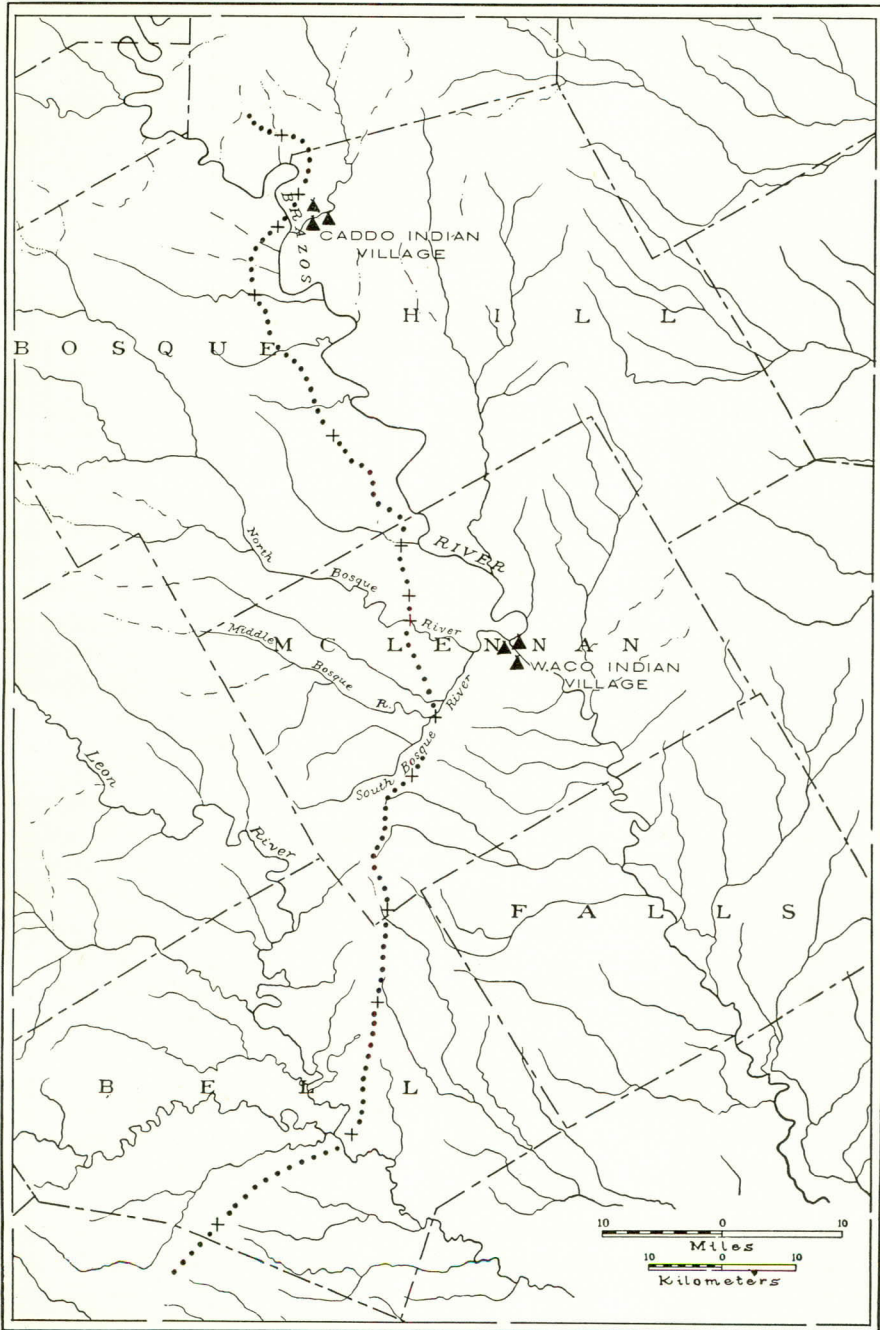


Fig. 2. Route of Kendall's Santa Fe Expedition across Central Texas in 1841.

In the days of its glory, the ice age Brazos valley was inhabited by the now extinct ice age mammals. Among these the more spectacular were the mammoth, the mastodon, the saber-toothed tiger, the long-horned prehistoric bison, the giant sloth, the Pleistocene camel and the contemporary small American horse. The great abundance of their fossil bones, found in every gravel pit along the course of the ice age Brazos, indicates that these animals swarmed in great herds through the lush growth of its semi-irrigated bottom lands. No other geological formation anywhere contains such a continuing abundance of fossil mammals.

We can safely conclude that during the Ice Age a comparatively civilized primitive man, highly skilled in the art of flint flaking, spent his days hunting along the course of this river and his shank-of-the-evening hours hunkered over a shoal campfire, shaping flint weapons for tomorrow's chase.

This, however, is at present a controversial subject. But as far back as the year 1932, in my study, "Some Notes on the Archaeology of Central Texas," in the *American Anthropologist*, I called attention to the fact that here several cultural types of stone artifacts were definitely tied to ice age terrace levels. The evidence convinced me of the fact that man had lived on the Brazos during the Ice Age.

Since then important discoveries at Malakoff, Texas, and Clovis, New Mexico, have been made. At both of these sites, man-made implements are unquestionably associated with the fossil remains of only ice age mammals. Both sites are also in direct contact, in this association, with the clean ice age sand and gravel of the typical ice age terrace deposits along the Brazos and its ice age Trinity prong. From these facts — seed planted in a fertile field — many arguments have grown. But the weight of evidence forces the belief that man roamed these Grand Prairies during the Ice Age.

The ice age Brazos came to a sudden, dramatic end. One day it ran bank full like a millrace to sea. The next it was dead. Its days of glory were gone forever. This happened when the ice age canyon-cutting waterfall of the Pecos entered the Pecos glacier's terminal moraine at Fort Sumner, where it beheaded the Brazos prong of that great inland ice age river distributary. The exact position of the beheading is fixed on all geological maps. It is the extreme northern end of the mapped Pleistocene deposits of the present Pecos Canyon.

The beheading of the ice age Brazos marks an instant of change in the geology and animal life over a large section of Texas, and in particular across these Grand Prairies. When the Brazos was thus beheaded, its waters vanished into its highly permeable sands and gravels. Its lush bottom lands became one with the bordering deserts. All the great herds of animals it once supported crowded in and around its last water holes and there died. That is the reason why certain small gravel pits have unearthed such a wealth of fossil mammoth and mastodon remains.

The beheading of the Brazos, then, becomes a chronological landmark in the ice age geology and animal life of the Southwest. Against it we can reckon elapsed time to and from just as early explorers reckoned distance above and below the Cross Timbers. It marked the end of all ice age mammals over the Grand Prairies. It marked the beginning of the sculpturing of its present topography. It marked the remote beginning of its present animal life.

Fortunately, we have left to us a remnant of that ancient Ice Age land surface. It is that tableland which the Spanish Conquistadores called *Llano Estacado*, our early pioneers called the Staked Plains, and which tractor farmers now call the High Plains. Its fountainhead of shallow irrigation water is supplied by the Sand Crawl Remnant of the bed of the ice age Brazos, which extends unbroken for a distance of 110 miles across the tableland with an average sand-dune width of five miles. At Muleshoe, Texas, where my study was made, these sand dunes absorb all the water of a six-inch rain as fast as it falls, and the water table at the edge of the sand is only eight feet below ground. It slopes directly away from the rain-absorbing sands of the ancient ice age river bed.

Because of the fact that the ice age river beds absorbed all rain water, new streams took over, parallel to the old bed. Blackwater Draw at Muleshoe is a classical example of the beginning of our present Grand Prairies topography. It has been cut and shaped only since the Brazos was beheaded by the Pecos. It is, indeed, a new land.

To learn of its history, we must turn to the alluvia of its present stream beds, where the records have been kept. Of these records, very little is now known. This has been a neglected field; but a beginning has been made, particularly in the Grand Prairies region.

The Brazos Valley alluvia are filled from top to bottom with charcoal, ash, broken bones, flint flakes, and other evidence of prehistoric human culture. They tell us of how continuous has been this human inhabitation of the Brazos Valley; how these people lived and what they ate (which for a long time was elk and black bear). The detail of this history is for future students, and it will be great writing.

For a glimpse of what this history will be like, there is an alluvium-buried midden in the drainage ditch west of the Houston highway at the Tehuacana Creek crossing five miles southeast of Waco. Less than a mile north of the Bosqueville outcrop of the Buda, which is a high point of this trip, there are several alluvium-buried strata of midden material in the high west Brazos bluff. In both these places the examples are classic but not unusual. They tell a long story of early human habitation.

Let us turn from these buried middens, where geological and archeological history over the Grand Prairies are meshed like the cogs of a gear case. When you stand on the shale hills of the Eagle Ford to the north of Moody, and look over the region of the limestone hills to the west, you stand on one of America's oldest cultural

boundary lines. For all of 10,000 years this drainage divide was the boundary line between the lands of the Prairie Indians and the Brush Indians — or Midden People — of the Hill Country.

Of these two races of prehistoric Americans, the Midden People of the Hill Country to the west are by far the more interesting. When you look over this country from the shale hills above Moody, you look over a land where a race of human beings lived practically without change for at least 10,000 years. These people have left us one of the world's best anthropological yardsticks to measure how a certain natural environment will fix a human adjustment to it, and, having it once fixed, will hold it without change for a long period of time. It tells us how fixed are the habits and how slow the change among people born to the superstitious ignorance of savage tribes.

In their early days, these Midden People learned to cook the sotol root in a limestone-lined sunken oven. When the limestone disintegrated after many heatings, the broken bits were thrown aside and a new lining put in. When the best camp sites around a permanent spring became covered with the broken fragments of burnt stone, camp was made on them as a new ground level. Eventually, as much as twelve acres around some springs became covered to a depth of over ten feet. The late Dr. J. E. Pearce, of the Department of Anthropology at the University of Texas, made careful calculations of these great masses of midden material. His final conservative estimate was that several of them are over 10,000 years old.

These 10,000-year-old middens are important to geologists because it has become a custom to say that the Ice Age ended 10,000 years ago. Here, for once, we can see how little has been the erosional change in the land surface over a period of 10,000 years (which, after all, is barely twice the age of some Nile Valley ruins).

With this fact in mind, the post-Ice-Age sculptured hills of these Grand Prairies come alive with new interest. They have been erosion-carved from a desert land surface, which, at the time of the beheading of the Brazos, was well above the level of the highest present Pleistocene terraces. The average height of the top of these terraces across the Grand Prairies is more than 100 feet above present stream level along the Brazos. This means that there has been a blanket erosion of these rolling limestone hills of something over 100 feet everywhere since the beheading of the ice age Brazos.

But this is not yet a true measure of the time since the Brazos was beheaded and our present drainage pattern had to begin anew, with streams like Blackwater Draw taking an easier course parallel to the sands and gravels of the old course. There was a long, unknown desert era, when the dust dunes of the high Vicksburg Bluffs were built up, during which the whole of the Southwest, from the Rio Grande to the Canadian, was one vast desert. That era has, at present, an unmeasurable length.

In making a stab in the dark at the length of that era, we can only borrow a page from the Egyptian scholars who first put the

“10,000 years” into circulation. When Solon made his famous visit to the scholars of the Nile delta, and the discussion turned to geology and the disappearance of the Land of Atlantis beyond the Pillars of Hercules, an Egyptian scholar said: “Solon, oh Solon, ye know nothing of antiquity in Athens. Mark ye well, ten thousand is the sum total of the years which have lapsed since these times of which I speak.” Let me take up there and remind you that ten million years will not mark the lapsed time since the ice age Brazos flowed like a millrace, bank full and crystal clear, across these Grand Prairies you view here today.

This, briefly, is a review of the history of these Grand Prairies for the last ten million years before the beginning of its recorded history.

The recorded history of these prairies begins in the year 1535. In that year, just forty-three years after Columbus made his first American landfall, Alvar Núñez Cabeza de Vaca and three companions, one a Negro, trudged up the Brazos from the Falls in present Falls County, to its extreme upper headwaters on the Staked Plains. Their passage through the Waco Indian village (site of present Waco) was a ceremonial procession. Cabeza de Vaca was looked upon by the simple Indians as a visiting god who, by a simple laying on of hands, could cure the sick and heal the wounded.

On breaking out of the land of the Tertiary timbers and entering upon the great Cretaceous Blackland Prairies, he recorded one observation of great importance to anthropologists, in the matter of the adjustment of a primitive people to their natural environment. Where the timber Indians had always sought cover in dense timber, Cabeza de Vaca noted that on the prairies the Prairie Indians always pitched camp in the open and felt safe only when surrounded by open prairies. He recorded that no corn or other crops were grown by the inhabitants of the Brazos, from end to end, in the early 1500's. Its valley was inhabited by a people living entirely by hunting and fishing, and eating the scarce raw fruits of the prairies — a people to which, as we now know (from the seed in excavated burials) the hackberry was, in season, a principal food. Cabeza de Vaca mentioned it as the little fruit of the tree. And he also reported that, in season, they ate the bois d'arc apple, or Osage orange and the mesquite bean. Cabeza de Vaca records that the food was actually seasoned by these early and very hardy Texans, by the sprinkling in the grinding pit of a little plain dirt, after the fashion of a French chef adding garlic to a stew. Dirt-seasoned mesquite beans and the milk-ripe Osage orange were staple foods of the peoples of the Grand Prairies in the early 1500's.

In the field of geology, Cabeza de Vaca made only two important observations on his trip up the Brazos. He recorded that there were gypsum crystals (mica) in the zone where for two days the women had to carry drinking water in the march upstream. This zone where

they carried water upstream was along the Clear Fork where it crosses the gypsum beds in Jones County, along the mouth of Bitter Creek.

His second record of the geological outcrops was in crossing the narrow divide (he recorded it as seven leagues) between the headwaters of the Clear Fork and the main stream of the Double Mountain Brazos. This was somewhere near the Scurry-Garza county line. Here he was intrigued by the Triassic red of the gnarled outcrops of that bit of badland topography. He called them a "scoria" or rusty slag of iron.

After Cabeza de Vaca, the next of the great explorers to visit these Grand Prairies was the Frenchman, Sieur de La Salle. He arrived here some 150 years after Cabeza de Vaca, in the spring of 1687, and found that the Prairie Indians were then a mounted race. He bought horses from them and explored over a considerable portion of the Grand Prairies.

After La Salle, the French explorer Athanase de Mézières reached the Brazos on these Grand Prairies in April of the year 1778. We can fix his visit as being in this immediate vicinity because he reached the Brazos at a village of the Tuacanas (which the Spanish spelled Tehuacanas) who in early historic time had a village at the mouth of what is even now known as Tehuacana Creek. Also, he told us a little of the geology along his route to the Brazos. He traveled within sight of the Grand Forest. That was the straight-line Balcones Fault line contact of the timbered Tertiary with the shale prairies of the Cretaceous.

Ten years later, the Spanish explorer, Francisco Xavier Fragosa, left Santa Fe, New Mexico, and explored eastward to the fort at Natchitoches. He hit the Grand Monte, the Cross Timbers, on a stream which he called La Trinidad. He reported that this band of timber, the Woodbine prong of the Cross Timbers, ran for a distance of 200 leagues north and south and was only three leagues wide.

Nine years later, in 1797, an Irish citizen, Philip Nolan, got a Spanish permit to hunt horses over the Grand Prairies. He built a blockhouse fort on what is now Nolan's Creek in extreme north-western Hill County. Here he was hunted down and killed in 1801 by the Spanish as an outlaw.

Of his fourteen Anglo-American companions, who were taken prisoners by the Spaniards, one was Ellis P. Bean, to whom we are indebted for the present English spelling of Waco, which was spelled Hueco by the Spanish. The new spelling was introduced in a letter to Stephen F. Austin, which Ellis P. Bean wrote while in camp at the "Waco Village on the Brazos." In this letter he also gives us the English spelling, as he understood it, of what the French called Tuacanas and the Spanish Tehuacanas. Ellis P. Bean spelled it the Tawalkanays, which is how it is now correctly pronounced.

After Ellis P. Bean's report to Austin from Waco, the next im-

portant event of historical interest on this portion of the Grand Prairies was the Santa Fe Expedition sent out from Austin by the Republic of Texas in the year 1841 to organize government in what is now New Mexico. The route of this expedition across southeastern McLennan County in the first week of July, 1841, was that of the drainage divide along the Eagle Ford shale hills northward from the site of the present village of Moody. With this Santa Fe Expedition was the first trained geologist to collect fossils over this portion of the Grand Prairies, an Englishman, Thomas Falconer. On his return to England he published (1844) a brief history of the expedition.

He wrote that in the first week of July in 1841, the high point of interest was a lone Indian. He was mounted upon the usual scrawny Comanche pony and was armed only with a spear. He broke out of the buckbrush in close pursuit of a galloping buffalo, which he pursued over the prairie hills and beyond sight to the north, with such a singleness of purpose that, what with his scrawny mount being unable to shorten the buffalo's lead, he took no note of the long trains of the Santa Fe Expedition.