

THE INFLUENCE OF THE SHORELINE, RIVERS AND SPRINGS ON THE SETTLEMENT AND EARLY DEVELOPMENT OF TEXAS

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A comparison of early colonial settlements in New England and Texas during the middle of the eighteenth century shows a decided contrast in their locations. In New England the colonists settled along the coast, in Texas along a line roughly parallel to the coast but about one hundred miles into the interior. This distribution, coast line and interior, is all the more striking since in Florida and the West Indies the Spanish colonists, just as the English in New England, settled along the sea margin.

No barrier such as the Appalachian Mountains, which stood up against the westward expansion of the English for a century, exist in this plains country. Nevertheless there are definite physical factors which played an important part in Texas settlement and development. The most important of these are the parts played by the Texas coast line, by its rivers, by its springs and later by its artesian waters—in brief, by the waters of the state.

The Texas Coast Line

The geological history of the Texas Gulf Coastal Plain and the Texas shore line is comparatively simple. Detrital materials eroded from mountains and lands to the north and northwest were spread in broad apron sheets under shallow marginal continental seas. The slope of this deposition is so gentle that a slight submergence of the land would bring the sea well in toward the interior. Even today, a submergence of the marginal plains of 450 feet would make Dallas a sea port while an elevation of 50 feet would place Galveston fifty miles in the interior.

The re-entrants of the Texas coast line such as Corpus Christi, Galveston, and Matagorda bays are due either to

recent submergence of the coast line following a period of emergence, or to encircling delta deposits or possibly to both causes. The outstanding feature, however, is the off-shore parallel barrier beaches which are the result of heavy storm waves along a shallow coast line.

The Texas coast line, approximately three hundred and twenty-five miles long, is fringed by barrier beaches for nearly two hundred and fifty miles. One barrier beach, Padre Island, stretches more than one hundred miles along the Laguna Madre without a tidal opening. The term "barrier beach" is truly descriptive for these beaches are barriers of potent force.

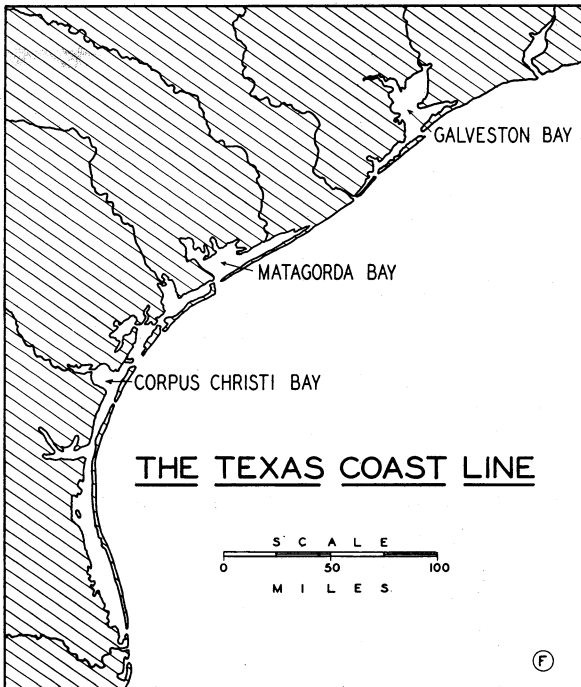
The low uninviting shore, the long stretches of bare, sandy barrier beaches, the few shallow and inadequate harbors—inadequate even for the light draft of small sail boats of the early explorers—all served to conceal from the conquering Spaniard the princely empire of the Texas country.

Neither Cabeza de Vaca, who met shipwreck along the Texas coast in 1530, nor Moscoso, who skirted along its shores in 1543 brought back tidings of good harbors or of desirable coast lands for settlements. Thus, for more than a century while Cuba, the West Indies and Mexico were being settled and exploited, Texas was neglected.

To further emphasize the part played in Texas history by its barrier coast line, suppose there were a great series of harbors such as are found along the New England shore, a Boston harbor at Galveston. What would have been the effect of easy accessibility and an early Spanish conquest not only in Texas but on the settlement of the whole North American Continent west of the Mississippi? With an adequate harbor at Matagorda Bay, would La Salle have lost his good ship on landing in 1684 or would not Fort St. Louis have completed the French great arc around the English Colonies and have insured to France a permanent empire in the New World? The important part later played in Texas history by the re-entrants of Galveston, Matagorda and Corpus Christi bays but emphasize their insufficiency.

The barren barrier beach of Galveston Island formed

indeed a place of refuge for Mexican republicans and for gentlemen pirates who had a fondness for elegant clothes and red painted houses, but neither sea nor the Texas coast line were hospitable to the first American colonists.



The schooner *Lively*, fitted out by Austin with provisions and implements for his colony, was wrecked either at sea or along the coast. Although many colonists came to Texas by boat even in the early days, the harbors did not become important until they were deepened by man. The outstanding fact of early Texas history is that colonists came from the interior by land, first from Mexico and later from the United States.

The modern distribution of Texas cities shows the negative influences of the Texas coast line. There is but one large city on the coast. Nature's barriers are slowly being dug away at Port Arthur, Beaumont, Galveston, Corpus Christi, Port Isabel, Brownsville, and especially at Port Houston, but

even with its vast coast line, Texas is in reality an interior state.

Rivers and Springs

From Mexico or from the United States, the early pioneers entered Texas by horseback or in great cumbersome wagons, or prairie schooners, pulled by slow moving oxen. No mountains lay across the path yet they were not free to travel as they wished across the broad plains and prairies. The necessity for water and fuel mapped the route with a rigid and constraining hand. It is difficult, almost impossible, to conceive the checks, controls and restraints laid on the pioneer settler in the environment of this new country. He rode horseback from four to six miles an hour or trudged beside an ox team with its tar-greased, cumbersome wagon at a rate of two to three miles per hour. The night camps required water and grass. Rivers had to be crossed by fords or by crudely constructed ferries. In choosing a home again he was limited, he needed fuel, shelter and water. Miss Harriet Smith believes that these factors kept settlers off the most valuable prairies of Texas for many years.¹

With the Texas pioneers, large streams became important boundary lines and checks to inter-communication, although in some instances stream valleys formed the basis for unified settlements. Places for fording streams without danger became nodal points along the pioneer's route, and the early trails and roads ran from crossing to crossing. The fords across the Trinity at Dallas and Fort Worth and across the Brazos north of Waco were well known to all early Texans. Even the Red River could be forded at a few localities. The location of a ford is dependent upon the stream bottom. Good fords have hard rock bottoms. Few geological formations of the Coastal Plains series are hard enough to resist deep stream erosion. The streams usually flow over bottoms of mud or quicksands. Desirable fords across Texas streams are few and these are located where the streams cross harder geological formations such as the Austin chalk at Dallas and Waco, or the Fort Worth limestone at Fort Worth.

¹Smith, Harriet, "Geographic Influences in the History of the Settlement of Black Prairie in Texas", *Journal of Geography*, Vol. 19, pp. 287-294.

With the building of crude ferries greater freedom of movement was given, but the permanent ferries were located where streams cut across harder beds because at those points the meandering of the stream was slight. The well known Moseley's Ferry across the Brazos on the San Antonio Road was located where the River crossed a harder clay belt in the sandy terrain.

River Boundaries

A braided stream such as the Red River forms a definite barrier. While it carries no great volume of water at normal flow, its treacherous floods, its menacing quicksands, its changing channels and quick shifts from bank to bank make it an impressive natural boundary for the northeastern part of Texas. It was for the pioneer a great dividing line. Even today only seventeen bridges, five of which are toll bridges, cross this difficult stream in a distance of more than three hundred and sixty miles air line along the northern border of the state. From Ogden, west along the river, there is almost a hundred mile stretch without a bridge.

To the south and west the Rio Grande with its mud bottoms and menacing floods, or rocky steep-walled canyons, forms an equally well defined boundary line for Texas. Had either the Sabine or the Arroyo Hondo on the east been as well defined, a boundary line compromise or a neutral ground it never would have been needed.

Boundaries of Empresario Grants

Boundary lines of empresario grants were made along parts of the Nueces, Guadalupe, Colorado, and Sabine rivers; but in many instances a large stream occupies the central area of the grant. The Bexar district, De Witt's grant, De Leon's grant, Robertson's grant, Austin's colony, Burnett's grant, and Zavalla's grant are illustrations. Across these grants streams cut broad shallow valleys in traversing the belted coastal plains of the Gulf slope. These broad valleys are rich, timbered, easily cultivated, and have abundant water. All needs of the pioneer were at hand—timber for fuel and buildings, rich alluvial soils, and water. The rich river bottoms, fingering up through the open prairies, were

the first lands to be chosen by the Spanish missionaries and the first to be selected by colonists from the United States. The valleys thus became the desirable units for settlements while boundary lines fell out on the valueless prairie.

County Boundaries

In the present county organization of the state, rivers form important boundary lines though in many instances the old unity of the river valley persists. Streams that divided the empresario grants have continued to form county lines, particularly for the original counties, and for the divisions of Texas formed during its independence. The Trinity River forms the boundary line of thirteen counties. While the head waters of the Colorado are used as boundary lines for six counties, the lower Colorado which was included within the original grant to Robertson, flows through the middle of seven counties. The Brazos forms the boundary line for eight counties. Where rivers flowed through the center of counties, bridges were necessary to secure unity. A clipping from the Dallas News of November 18, 1921, reveals vividly the factors involved:

Thorndale, Texas. November 17. That Milam County should be divided and a separate county formed of that part of the county south of Little River seems to be the concensus of opinion of large as well as small tax payers of this section today following the action of the county judge and commissioners court at Cameron yesterday in refusing a petition of three hundred residents of this section for the appropriation of \$15,000 toward a bridge across the Brazos River near Gause.

The people south of the river feel they have been discriminated against, not only in this matter but in other matters of road building in the county.

The bridge across the Brazos is the key to the only opportunity this section of the county has of obtaining state and Federal aid toward a highway through it.

Texas Rivers as Avenues of Commerce

As routes for access to the interior, Texas streams have been of minor importance, since colonial routes were across the streams. While never used as highways like the tide-water rivers of Virginia or New England, yet following the advent of the steam boat, considerable traffic developed along the lower reaches of the Colorado, Brazos, Trinity, Red, and Sabine rivers. This served to hold the centers of population along the stream valleys up to the time of the Civil War.

With the coming of the railroads, the settlement of the prairies, and the passing of river traffic, there has been an outward movement from the valley and river towns. Jefferson at the head of Caddo Lake, once the metropolis of East Texas, was relegated to minor importance for a number of years, but due to the oil industry it is again becoming a metropolis. Sabinetown, one a thriving little city of five or six thousand people, has not even left its name on the map. Many landings and ferries, once centers of commerce and trade, are today only memories with the older inhabitants.

A good illustration is that of the changes at the Towash crossing of the Brazos west of Hillsboro. At that point a hard layer of rock across the river forms an excellent ford which was well known to many Indian tribes. Towash became a noted crossing in pioneer days for cattle and wagon teams. A mill erected at the site became the center of a thriving community. With the coming of the Missouri, Kansas, and Texas Railroad, the center of commerce shifted to a new town of Whitney, while a bridge was built across the Brazos. Today only the ruins of the old mill remain at the site.

Distribution of Colonies and Occurrence of Springs

A pioneer's first consideration in a new country is his water supply. Without water he cannot live. The pioneer of the mountains becomes a connoisseur in springs, but springs are infrequent in a land of plains and prairies. The few which were found exerted a dominant control over early centers of population and the location of homes and plantations.

When in 1800 Philip Nolan with Ellis P. Beans and others, after having left the waters of the Trinity, crossed the vast treeless prairie and found the "Painted Springs" (probably the Tehuacana Springs in Limestone County), they had much the same feeling about the spring as did the Comanches and Pawnees who made it a sacred neutral ground.

Because of the moderate and seasonal rainfall the source of permanent springs in Texas must be deep seated.

Seepage springs are found along the escarpment of the Edwards Plateau, occasionally at the breaks of the plains, along high terraced river gravels, and from the iron ore hills of East Texas. However, the most notable springs of Texas are of the fissure type found preeminently along the extensive Balcones fault. These springs are the birthplaces of the noted spring rivers of Texas—the Concho, San Saba, San Antonio, Llano, Leon, Comal, and San Marcos.

The prime requisite in the selection of a site for the early missions was an abundance of spring water. Saint Denis on his noted trip across the state followed Indian routes which led from spring to spring, and he was thus able to point out to the Spaniards desirable locations for settlements. The San Pedro and other springs gave the location for the mission group at San Antonio. Nacogdoches was well supplied with spring water, as were most of the other missions. Those close to the coast depended upon streams for fresh water supply.

Dr. Robert T. Hill has shown recently that, in spite of Prescott's opinion, it seems more reasonable to believe Cabeza de Vaca traveled the southern route to the Pacific Coast, following the Indian trails from spring to spring along the Balcones Escarpment in southwest Texas, than that he crossed the dry Edwards Plateau.

A search into the early history of Texas cities reveals that the initial settlement was most often located by a spring. A typical illustration is that of the city of Austin. In 1826 William Barton settled at Barton's Spring, and two years later the village of Waterloo was laid out. In 1839 the site was selected for the state capitol and the name changed to Austin. Austin is on the opposite side of the river from Barton's Spring.

It must again be emphasized that springs in Texas are not of common occurrence. They are of the rarest occurrence over the plains and prairies. Large, bold springs are confined to areas of limestone rock.

The "boiling springs" of Salado were known from early times, and it was to this locality Col. Robinson brought his first settlers. The beautiful springs around New Braunfels

were important in the selection of the location for the German colonists under Baron von Meusebach.

The first community settlements at Dallas, Waco, Fort Worth, San Antonio, San Marcos, and Sulphur Springs were influenced by springs. A map of Texas cities prior to 1885 would coincide with a map showing the most important springs throughout the state.

Artesian Wells

It is a notable triumph for man over Nature when he releases himself from the confines of surface waters. Armed with new knowledge he sinks a well and builds a city such as Denton with its ten thousand people and two state schools. Not only has he found an abundant water supply, but one which conserves his health because of its remarkable purity.

Empirical search for artesian waters in the state began early. In 1828 Leon R. Alemy was given the monopoly of drilling artesian wells in Texas for a period of six years. In 1856 the United States Congress passed an appropriation of \$100,000 for boring artesian wells in the arid region between the Nueces and the Rio Grande. Most of these efforts were abortive. In 1868 a well bored on the Capitol Hill at Austin, was abandoned at 1200 feet because a sand containing mineral waters was encountered. An excellent supply could have been secured had the well been drilled about two hundred feet deeper.

To Dr. Robert T. Hill more than any other one man, Texas owes the knowledge of her wealth of artesian waters. In his paper on the "Geography and Geology of the Black and Grand Prairies"² the empirical knowledge given by haphazard drilling over the prairies was replaced by accurate knowledge of the available areas and depths at which artesian waters might be secured.

The growth of Texas towns and cities shows an amazing increase from that date. Fort Worth was selected as the site for its great packing house industries largely because of its ample supply of artesian waters. Dallas owes much to its artesian water supply as do most of the larger Texas cities. The largest increase, however, came in the small towns and the number of farms on the prairies.

²U. S. G. S. 21st Annual Report, part 7.

The work of Alexander Deussen³ on the coastal plains has equally advanced the material development of the state, showing that almost one fourth of Texas has under it available artesian water.

Could the early explorer Philip Nolan make his trip again, he would find on his dry, treeless prairies hundreds of farm houses and towns where he could be served with excellent water. No single factor has had so much effect in the growth of its citizenship, in changing the character of its agricultural industries, and in adding to the total well living of the state as that of the exploitation of its artesian water supply.

Geographic Control

To understand the early history of a people, one must study and know them in relation to their environment. Modern geographers are shy of the phrase "geographic control." This generation builds bridges and roads; it drills for water; it rides in horseless machines; it even flies in the air. It laughs at the idea of environmental control. Not so with the pioneer to whom mountains and rivers meant grim, desperate endeavor and to whom the missing of a tiny spring meant death.

The great plains of Texas were not conquered easily. The low, flat, uninteresting coast line was passed by for more than a century; ugly, treacherous rivers, mud-bottomed and steep-walled, were moats of most difficult passage. Even when crossed, the vast waterless prairies were tests for the sturdiest horsemen.

While today man has overcome many restraints and controls, he is yet limited and bound, and the paradoxical fact is true that as Texas becomes more densely populated, the ties of geographic control will more strikingly differentiate its citizenship.

³U. S. G. S. *Water Supply Paper*, No. 335.