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TARR & McMURRY'S GEOGRAPHIES

SUPPLEMENTARY
VOLUME

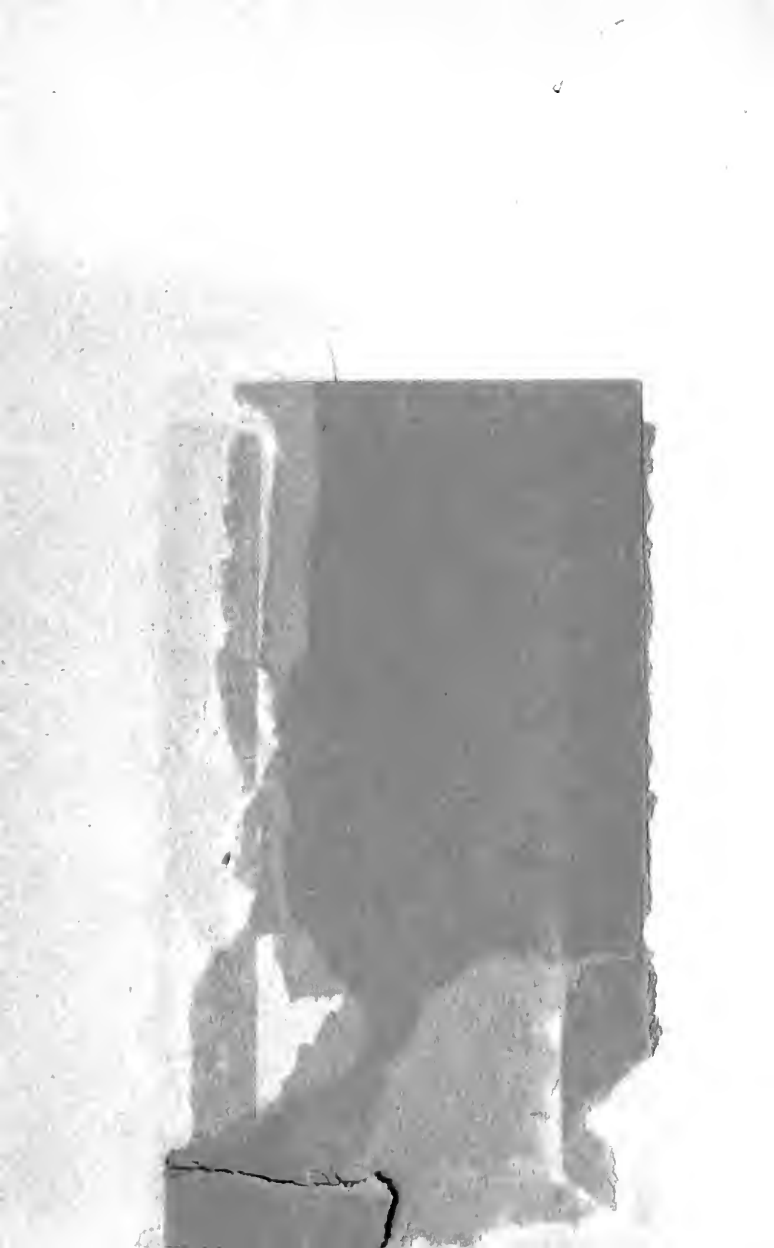


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TARR AND McMURRY GEOGRAPHIES

SUPPLEMENTARY VOLUME

TEXAS

BY

E. G. LITTLEJOHN, A.M.

PRINCIPAL WEST BROADWAY SCHOOL, GALVESTON, TEXAS

13661

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CONTENTS

	PAGE
SUGGESTIVE PLAN OF TEACHING	vii
SOURCES	ix
ACKNOWLEDGMENTS	xi
PHYSIOGRAPHY	1
Position and Size of the State	1
Boundaries	2
Coast Line	3
Surface	5
Divisions	5
The Eastern Province	7
The Southern Province	7
The East Central Province	7
The Central Province	9
The Great Plains Province	11
The Trans-Pecos Province	12
Elevation	13
Drainage — Rivers	15
Lakes	20
Climate	20
Soil	24
Forests	26
AGRICULTURAL INDUSTRIES	30
Cotton ; Corn ; Wheat ; Rice	31
Sugar ; Fruits	32
Trucking ; Hay	33
Tobacco	34
Table of Agricultural Products	34

	PAGE
RANCHING	34
Number and Value of Live Stock	37
FISHERIES	39
RAILROADS	39
MANUFACTURING	42
Number and Value of Manufacturing Plants	42
Six Most Important Manufactures	42
The Lumber Industry	42
Cotton Products	43
Ginning Plants; Railway Machine Shops; Canning Factories; Sugar Refineries; Petroleum Refineries; Packing Houses; Brick Yards, etc.	45
MINERAL RESOURCES	47
Gold; Silver; Copper; Lead; Zinc; Iron; Salt; Gypsum; Clay Quicksilver; Asphaltum; Building Stones	50
Coal and Petroleum	50
Artesian and Mineral Waters	53
POLITICAL DIVISIONS	55
Original Counties	55
Number of Counties	56
Largest County; Smallest County	56
Population	56
Eight Largest Cities	56
Other Cities	68
GOVERNMENT	81
EDUCATION	84
HISTORY	90

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SUGGESTIVE PLAN OF TEACHING

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1. **Map.** — Let the teacher draw on the blackboard an outline map of the state. On this map indicate by dotted lines the greatest distance across the state from north to south, and from east to west. Outline the county in which pupils live, and surrounding counties. Indicate on the map, by different colored crayons, the agricultural and the grazing regions; the wooded area, and the prairies; the section best suited to the growth of corn, cotton, rice, and sugar cane; the mineral districts; the six physical districts. Give pupils outline maps to be filled in at their seats. Let them use colored crayons. Do not put too much on one map. The maps may be made on a gelatine copying pad or with a pasteboard outline. Memory maps should be frequently required to bring out special topics. Pupils should make free-hand sketch maps on the blackboard daily, until they can draw a tolerably correct outline of the state.

2. **Mountains.** — Show pictures of Texas mountain scenery, buttes, mesas, and lost mountains. Locate mountain region on raised map, and then on outline map. Show pupils how to represent mountains by hachure lines.

3. **Rivers.** — Prepare a drainage map of the state. Enter the principal rivers on this map and have pupils describe them. Call particular attention to the slope of the land which gives direction to the flow of the rivers. Notice differences between rivers east of the Brazos and those west. Why these differences?

4. **Railroads.** — Make a railroad map of the state, showing principal trunk lines. Note the different sections contributory to each. Locate most important cities on each line. Be careful to note all the lines that enter or pass through the pupils' home town. What do the railroads bring into the state, and what do they carry out? Question pupils as to the lines they would travel over in going to certain places. Locate the greatest railroad centres. What fare is charged passengers on railroads in Texas?

5. **Journeys.** — Have pupils take imaginary journeys over the railroads, stating the character of the country through which they travel,

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what cities they pass, and the objects of interest to be noted in each. What rivers are crossed?

6. Counties. — Have pupils give boundaries of their home county, and state its chief productions. Name the county seat, and mention some things of interest that may be seen there. Name groups of counties in different sections of the state. Name largest county; smallest county.

7. Cities. — Locate the sixteen largest cities on an outline map. Group them as to the different physical divisions. Note where most of them are found, and state why this is so. Study in detail the capital city; the largest city; the chief seaport.

8. Productions and Occupations. — Note what are the chief productions, and enter these on outline map.

SOURCES

The matter contained in this Supplement has been obtained from the following sources:—

Publications of the United States Geological Survey.

Bulletins of the Census Bureau.

Bulletins of the United States Department of Agriculture.

Report of the United States Commissioner of Fish and Fisheries.

Reports and other papers of Professor Robert T. Hill, of United States Geological Survey.

Reports and other papers of Professor E. T. Dumble, formerly State Geologist.

Bulletins of the University of Texas Mineral Survey, W. B. Phillips, Director.

Annual Report of Hon. Jefferson Johnson, State Commissioner of Agriculture, Statistics, and History.

Annual Report of Hon. Arthur Lefevre, State Superintendent of Public Instruction.

Annual Report of the State Treasurer.

Annual Report of President and Faculties of the University of Texas.

Annual Catalogue of Agricultural and Mechanical College.

Raines' Year Book of Texas, 1901.

Shaler's Story of Our Continent.

Gilbert and Brigham's Physical Geography.

Publications of various railroad companies and boards of trade.



ACKNOWLEDGMENTS

In the preparation of the section on physiography I have drawn very freely upon the writings of Professor Robert T. Hill and Professor E. T. Dumble, and in several instances have used almost their exact language, for which special acknowledgments are here made. I also wish to acknowledge my indebtedness to Hon. Arthur Lefevre, State Superintendent of Public Instruction; Mr. J. W. Hopkins, Superintendent of Galveston Public Schools; Professor T. U. Taylor, University of Texas; Miss Hattie Beal, teacher of English, Ball High School, Galveston; Mr. J. H. Johnston, Secretary Galveston Chamber of Commerce; and Dr. I. M. Cline, of the United States Weather Bureau. Also to Professor L. D. Borden, of the North Texas Normal College; Mr. Nic Teng, San Antonio; Mr. Ferd Ohlendorf, Galveston; Mr. Wesley Love, Jacksonville; Mr. A. G. Pickett, Flatonia; Mr. F. Beck, Coleman; T. V. Munson & Sons, Denison; Mr. Sam H. Dixon, Houston; and the United States Geological Survey for photographs.

E. G. L.

GALVESTON, TEXAS, January 1, 1903.

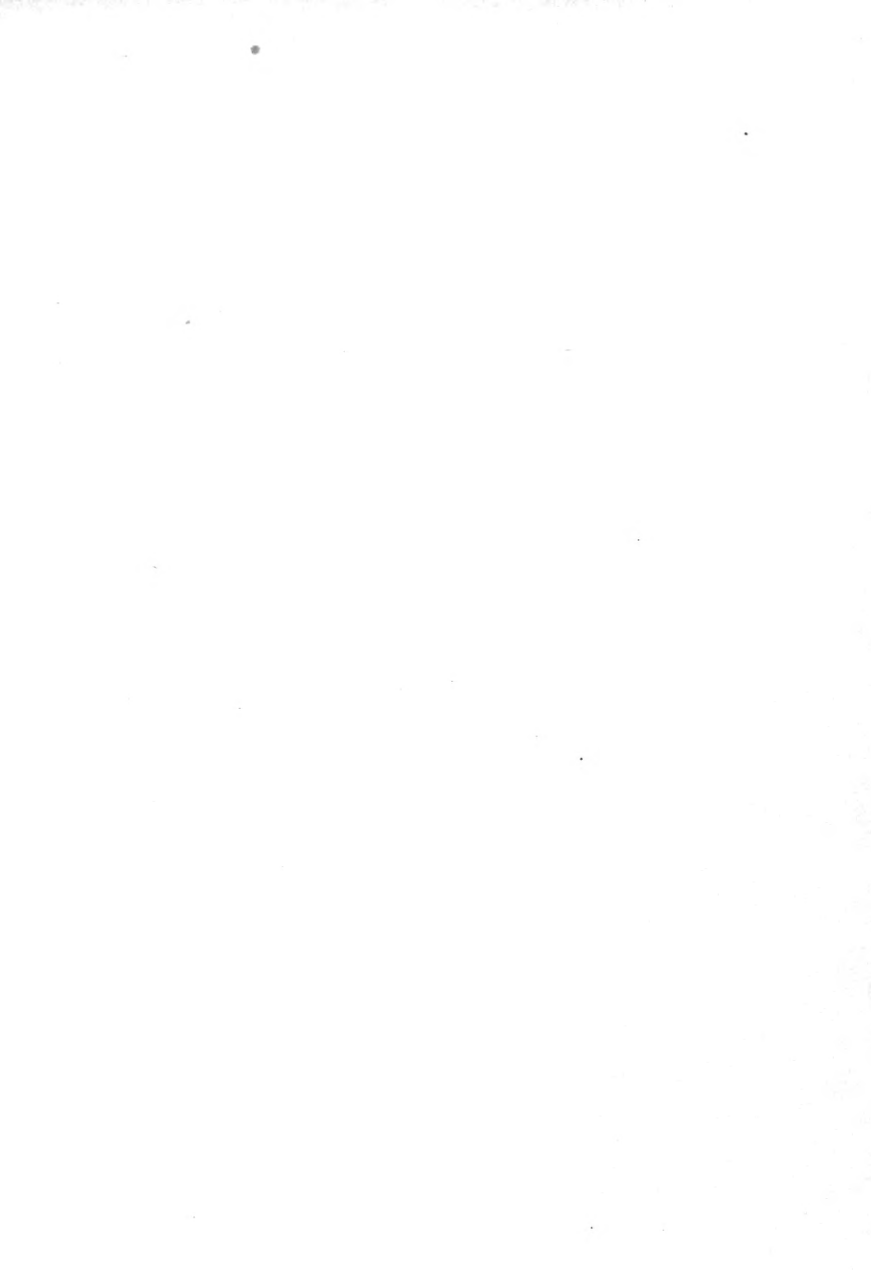




FIG. 1.

State capitol, Austin; seventh largest building in the world.

TEXAS SUPPLEMENT

PHYSIOGRAPHY

Position and Size. — Texas is situated in the extreme southwestern portion of the United States. It is included between the parallels of $25^{\circ} 51'$ and $36^{\circ} 30'$ north latitude, and the meridians of $93^{\circ} 30'$ and $106^{\circ} 45'$ west longitude from Greenwich. It is midway between the Atlantic and Pacific oceans and about equidistant from the Equator and the Arctic Circle. It is in the heart of the North Temperate Zone.

Florida excepted, Texas is the most southern of all the states in the Union, and is usually classed as a Southern state. Owing to its central position it may, with equal

propriety, be called a Central state. It includes large areas of the Great Plains and Rocky Mountain regions, and its far western corner is nearer the Pacific than the Atlantic — hence it may be called a Western state. It is also a Gulf state, bordering as it does for nearly five hundred miles on the Gulf of Mexico.

Texas has an area of 265,780 square miles, of which 262,290 square miles are land, and 3490 square miles are water surface. There are 167,865,600 acres of land in the state — enough to give two and one-fifth acres to every man, woman, and child in the United States. It is much the largest state in the Union, being thirty times the size of Massachusetts, and nearly six times the size of New York. Texas is as large as all the New England and Middle Atlantic states combined, with Indiana in addition. It is about equal in extent to the German Empire or the Republic of France. Its length and breadth are nearly the same — 750 miles. This distance is more than one-half that across the United States from north to south and one-third that from east to west at the widest part of the country. The state is irregular in shape, but, if thrown into a square, each side of the square would be slightly more than 515 miles in length. The geographical centre of the state is near Waco, McLennan County.

Boundaries. — The boundaries of Texas are largely natural. The Gulf of Mexico forms the southern boundary. Beginning at the Gulf at the outlet of Sabine Lake, the boundary line follows the middle of the Sabine River to the intersection of that stream with the 32d parallel; thence north along the 94th meridian to Red River; up this stream to the 100th meridian; on this meridian north to the parallel of 36° 30'; west on this parallel to the

103d meridian; south on this meridian to the 32d parallel; west on this parallel to its intersection with the Rio Grande; thence down the middle of this stream to its mouth.

REVIEW AND MAP QUESTIONS.— On a map of the United States locate Texas accurately. Between what parallels of latitude does it lie? What other states lie wholly or partly between the same parallels? Name some foreign countries that have the same latitude. Which meridian of longitude forms part of the eastern boundary of the state? What other states does this meridian cross? What meridian forms the eastern boundary of the Panhandle? In what three great sections of the United States might Texas be classified? Why? Which state is farther south than Texas? What rivers form part of the boundary line of the state? Name the states that bound Texas. What is the land area of the state? The water area? The total area? How does Texas compare in size with New York? California? Georgia? How does it compare in size with the German Empire? With France? What is the greatest length of the state? The greatest breadth? How many acres of land in the state? If the state were thrown into a square, what would be the length of the sides of the square? Where is the geographical centre of the state?

Coast Line.— Texas has what is known as a rising shore line. Around the shores of the Gulf of Mexico and the Atlantic Ocean as far north as New York is a broad ocean bottom plain called the *continental shelf*. The water here is shallow, and a slight raising of the shelf would bring it above sea level. This is what has actually happened to the Texas coast region. It was once a part of the continental shelf, but has been raised until it has become a broad level plain. Since the uplift began a slight subsidence of the land has admitted the ocean waters into the valleys, forming a series of shallow bays all along the coast, as Galveston Bay, Matagorda Bay, Espiritu Santo Bay, and Corpus Christi Bay.

These bays, naturally shallow, are constantly being filled by the sediment brought down by the rivers and by waves and currents. As a consequence the harbors are poor. The United States government spends thousands of dollars every year dredging and deepening these har-



FIG. 2.

Government jetties, Galveston.

bors. By means of a system of rock jetties extending several miles into the sea, a depth of thirty feet of water has been secured at Galveston, and vessels of the heaviest draught may enter and discharge at that port.

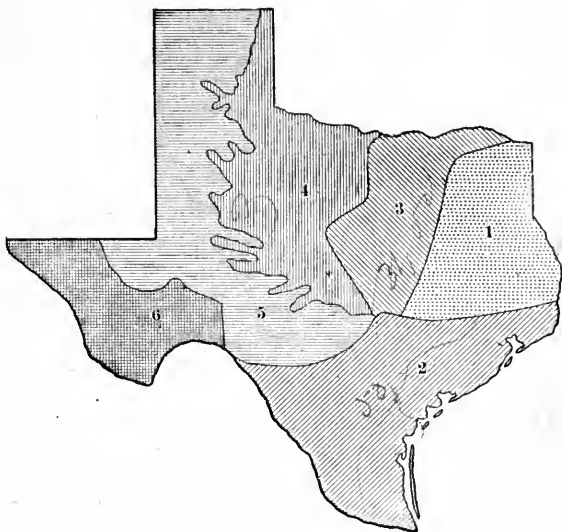
Another characteristic feature of the coast is the series of long sandy islands or bars that stretch along its entire length. Owing to the shelving of the sea bottom great

waves cannot attain the shore, but are compelled to break in deeper water, sometimes miles out to sea. Where they break they push the sand of the sea bottom up in the form of a bar. As wave follows wave, the bar increases in height till it rises above the level of the water and becomes an island. This the wind raises still higher by drifting the gravel into a low sand dune. Such islands are usually elongated and parallel with the shore, while back of them is a belt of quiet water or lagoon. All of the Texas islands are of this character. The most important are Galveston Island, Matagorda Island, St. Joseph Island, Mustang Island, and Padre Island — the last, more than 100 miles in length, being the most noted of its kind in the world.

REVIEW QUESTIONS. — What is meant by a rising shore line? Describe a coast of this character. What other portions of the United States have rising shore lines? Describe the formation of the islands along the Texas coast. Name the principal islands. Which is the largest? Account for the shallow character of the bays along the coast. Name the principal bays. Name the best harbors. How was deep water secured at Galveston? What is the length of the coast line of Texas? How does this compare with that of the small state of Maine?

Surface. — The surface of Texas may be described as a vast and diversified series of plains sloping gently from the high plateaus and mountains on the northwest, to the low-lying shores of the Gulf of Mexico on the southeast. It is naturally divided into six sections or provinces: I, the Eastern Province; II, the Southern Province; III, the East Central Province; IV, the Central Province; V, the Great Plains Province; VI, the Trans-Pecos Province.

The Eastern and Southern Provinces occupy the Texas coastal plain, that portion of the state lying east and



PHYSIOGRAPHIC REGIONS OF TEXAS.

(After Hill.)

- | | |
|---------------------------|---------------------------|
| 1. Eastern Province. | 4. Central Province. |
| 2. Southern Province. | 5. Great Plains Province. |
| 3. East Central Province. | 6. Trans-Pecos Province. |

south of a line drawn roughly concentric with the coast from Texarkana to Del Rio. The former lies to the north of the 30th parallel and is commonly known as the East Texas Iron and Timber Belt; the latter extends from the 30th parallel south to the Gulf of Mexico and west to the Rio Grande.

The Eastern Province embraces 33,000 square miles, an area as large as the state of Maine. It is about 150 miles in width, narrowing somewhat from south to north. It has a gently rolling surface, rising in altitude from 250 feet in the southern part to 600 or 700 feet in the central parts about Palestine, Jacksonville, Nacogdoches, and Tyler. The soil is of a sandy texture, red or gray in color and largely impregnated with iron. This section receives an abundant rainfall and is covered with a growth of pine and other valuable timber. Rich deposits of iron are widely scattered throughout the province.

The Southern Province contains 52,000 square miles, an area as large as the state of Alabama. It is, for the most part, a prairie region. Along the coast and for 50 miles inland, the surface is low, flat, and unbroken, with an elevation not over 100 feet. Beyond the coast prairie, the country rises gradually in altitude, becoming more undulating, then hilly, and finally assuming a somewhat rugged aspect. The section east of the Colorado is well watered and has a considerable forest growth. West of that stream the climate is semi-arid and the timber, excepting mesquite, disappears. The rich alluvial soil is well adapted to the growth of sugar and rice.

The East Central Province embraces that portion of the state north of the Colorado, between the Eastern and Central Provinces. It includes the Black and Grand

Prairies and two belts of timber known as the Eastern and Western Cross Timbers, and has an area of 31,000 square miles. The surface of this region is a gently undulating plain, sloping easily toward the east and south-

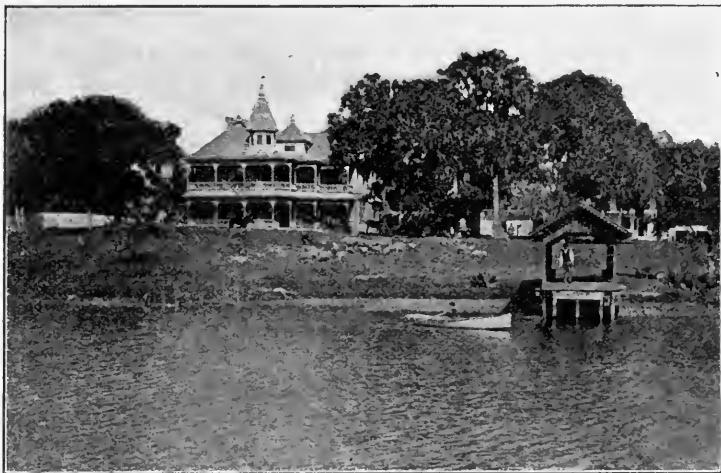


FIG. 3.

A coast country home.

east and having an altitude of from 400 to 700 feet. The eastern portion, the Black Prairie, is comparatively unbroken, but the Grand Prairie in the west, especially south of the Brazos, is rugged and broken, resembling in many places the "bad lands" of the upper Missouri.

While distinctively prairie, this region is not altogether treeless. A low growth of mesquite is scattered over the entire province; occasional "mottes" or clumps of live oak dot the uplands; pecan, bois d'arc, and walnut border the streams; while black-jack and post-oak grow in

the sandy belts. The prairies are characterized by black or chocolate-colored soils of surprising fertility. The black waxy lands of the Black Prairie is one of the finest bodies of agricultural land in the world. The densest rural population in the state is found in this belt, and here also are located the most important inland cities, as Paris, Sherman, Denison, Dallas, Fort Worth, Waco, Waxahachie, and Austin.



FIG. 4.

Mesquite-covered prairie, Central Province. Wichita Mountains in background.

The Central Province lies north of the 30th parallel and extends from the 98th meridian, approximately, to the eastern escarpment of the great plains. This is a vast upland, rising in a succession of scarps or steps from an altitude of 700 feet in its eastern portions to

2500 feet along its western border. Its surface is greatly diversified, due to erosive action, and buttes and mesas are characteristic features. These flat-topped hills rise to a height of 400 or 500 feet above the intervening plains, and give one the impression of huge, thickly set bridge piers. The principal group, called the Callahan



FIG. 5.

Signal Butte, Callahan Divide, Howard County.

Divide, extends along the 31st parallel, through the counties of Coleman, Comanche, Brown, Eastland, Callahan, Mitchell, Taylor, and Runnels. South of the Colorado, there is a rugged, semi-mountainous area called the Burnet country, which embraces several counties — Burnet, Llano, Mason, Blanco, and Gillespie — and constitutes the Central Mineral District. Owing to insufficient rainfall the Central Province is destitute of

timber except along the streams and in the hilly mineral district, and agriculture is made difficult. Grass is abundant, however, and the raising of cattle is an important industry.

Beyond the Central Province, and extending westward to the Pecos River, is the *Great Plains Province*. That portion of the province south of the 32d parallel is



FIG. 6.

Summit of the Llano Estacado.

known as the Edwards Plateau; and the portion north of that line as the Llano Estacado or Staked Plains. This region is a vast treeless expanse, rising to an elevation of 4000 feet above the sea. It is bounded on three sides, east, north, and west, by bold bluffs or escarpments from 150 to 400 feet high. So level are these plains that one standing on the surface seems to be in the midst of a great bowl, whose gently sloping sides rise up to

meet the overarching sky. A good growth of grass covers the surface of the plains, affording abundant pasturage for cattle and sheep, and making this the great grazing region of the state. By artesian water sections of it are being developed as farming land.

The Trans-Pecos Province lies between the Pecos River and the Rio Grande, and embraces an area as large as the state of South Carolina. It is a combined area of mountains and plains, ranging in elevation from 3000 to 6000 feet. The mountains are outlying spurs of the Rocky Mountain range, which, dividing in New Mexico, crosses Texas in a southeasterly direction in four distinct ranges or lines of elevation. These ranges are not continuous, but rise abruptly from the plains and disappear as suddenly, seeming to have no connection with each other, and assuming the form known in the west as "lost mountains." The principal ranges in the order of their occurrence from west to east are the Franklin Mountains; the Hueco, Quitman, and Eagle mountains; the Comanche, Wind, and Diablo mountains; the Guadalupe, Davis, and Santiago mountains. The highest mountain of the system in Texas is Guadalupe Peak, near the border of New Mexico, which attains an elevation of 9000 feet. Livermore Peak—altitude 8500 feet—in Jeff Davis County, and Mt. Emory—altitude 8500 feet—in Brewster County, are the highest summits south of Guadalupe Peak.

Surface water is scarce throughout the Trans-Pecos, and most of the streams laid down on the maps are mere drainage channels, dry the greater part of the year. Scrubby cedar, live-oak, Spanish oak, with small mountain walnuts and other shrubs, are found among all the

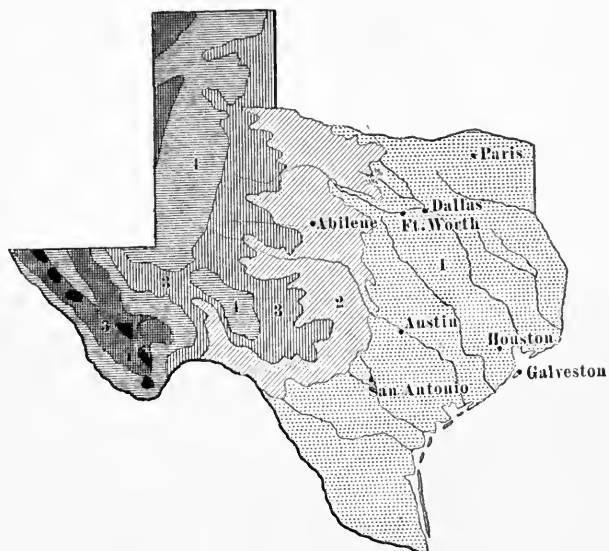


FIG. 7.

A "lost" mountain, Trans-Pecos Province.

ranges. The plains, or "flats," when not barren sand or gravel, are covered with gamma grass and buffalo grass. Of larger plants there are found many species of cactus, yucca, greasewood, and mesquite. On the higher mountains there is good timber.

Elevation. — The average elevation of the state above sea-level is 1700 feet. Of the entire area forty-five per cent is below 1000 feet. The 1000-foot contour line runs south from Red River to Austin, and thence in a southwesterly curve to Del Rio on the Rio Grande. This line divides the state into two nearly equal parts: The most fertile section of the state, and the portion having the greatest density of population, lies between the 500-foot and 700-foot contour lines. The highest point, as has been stated (p. 12), is Guadalupe Peak, whose summit is 9000 feet above the sea.



RELIEF MAP OF TEXAS.

(After Hill.)

- | | |
|---------------------|---------------|
| 1. Under 1000 feet. | 3. 2000 feet. |
| 2. 1000 feet. | 4. 3000 feet. |
| 5. 4000 feet. | |

REVIEW QUESTIONS. — Name the six natural divisions of the surface of Texas. Show these divisions by shading on an outline map. Describe the surface of the coastal plain. Locate the wooded area of this section. Name the most common forest trees. Of what divisions does the East Central region consist. Locate each of these divisions on an outline map. Describe the soil of the Black Prairie region. For what crops is this soil specially suited? Mention the most important cities of this region. What meridian forms the western boundary of the Central region? What are the Cross Timbers? Locate them on an outline map. Describe the Grand Prairie region. How does it differ from the Black Prairie country? Where are the Staked Plains? Describe the surface of this section. Where is the Trans-Pecos region? How large is this section? Describe its surface. Name the principal mountain ranges of this region. What peculiarity have these mountains? Name the highest peaks. Describe the vegetation of this region. What is the average elevation of the state? On an outline map draw the 1000-foot contour line. What elevation has the most densely populated districts? What is the highest elevation in the state? How much of the state is below the 1000-foot contour line?

Drainage. — Forty-four rivers, large and small, constitute the drainage system of Texas. Excepting the Red and Canadian, which belong to the Mississippi system, all are included in the Texas system proper. Most of the streams following the continental slope flow in a southeasterly direction and empty into the Gulf of Mexico. As a general rule, the rivers west of the Brazos are clear and swift-running, while those to the east are sluggish and burdened with silt, — a variation due to structural differences in the country traversed by them. As commercial highways these streams are of little importance. The channels of the eastern rivers are obstructed by snags, and their mouths by sand-bars. For much of the year there is a scarcity of rainfall west of the Brazos, and the rivers of that section shrink to mere rivulets, easily fordable. In times of excessive drought they are little

more than a succession of water holes. At other seasons navigation is impeded by currents and rapids. The United States government is clearing and deepening the channel of Buffalo River to Houston, and has under consideration plans for the improvement of the Trinity.

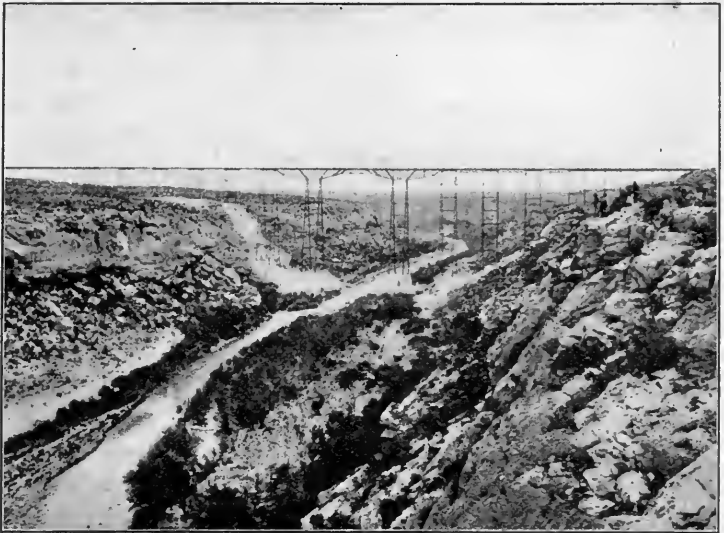


FIG. 8.

Pecos River Canyon. Southern Pacific Railroad Bridge.

Chief among the rivers entirely within the state is the Brazos, with a drainage basin of 59,000 square miles, an area equal to the great state of Georgia. It has its source in Lamb County at the foot of the Staked Plains, whence it flows in an easterly direction to Baylor County; thence it takes a southeasterly course to Brazoria County, where it empties into the Gulf of Mexico. Its length is 950 miles. It is navigable for light draught boats to Colum-

bia, 40 miles inland. Improvements at its mouth have made it possible for vessels of heavy draught to load and unload at Velasco, 5 miles from deep water.

Red River, the next in importance to Texans, has its source in the Llano Estacado, 2500 feet above sea-level. It flows east and then southeast through Arkansas and Louisiana into the Mississippi. It forms the northern boundary of the state from the 94th to the 100th meridian and has a drainage area in Texas of 29,000 square miles. Its total length is 1500 miles. It is navigable to Shreveport, Louisiana. Vessels of light draught occasionally reach as high as Jefferson, Texas. Red River gets its name from the red clay which forms a portion of its bed and colors its waters. Its principal tributary is the Big Wichita.

The Colorado, with its tributaries, constitutes one of the oldest drainage systems of the state. Ages ago, when

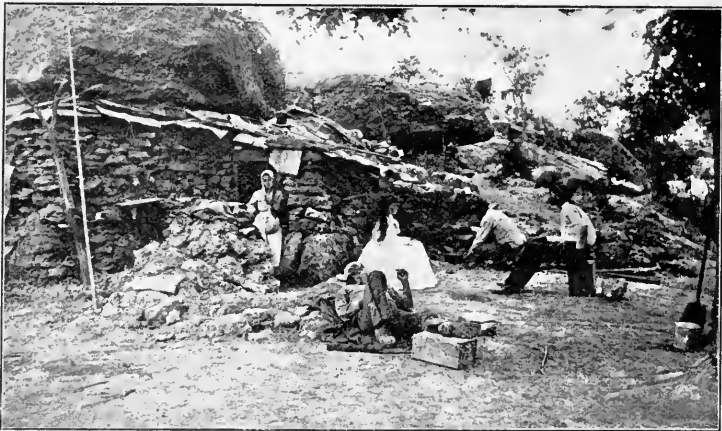


FIG. 9.

Mexican home in the Concho country, near San Angelo.

the land first appeared above the sea, rivers descended from the highlands of the central mineral region. Later this land was submerged and thick beds of rock were deposited over it in the sea. When the waters again retired, the Colorado and other rivers began their work. Now for many miles of its course the Colorado flows through deep canyons. Its valley is famous for its beautiful scenery. The Colorado takes its rise not far from the head waters of the Brazos, at the foot of the Great Plains, and flows in a southeasterly direction into Matagorda Bay. It is 900 miles long and drains an area as large as the state of Tennessee. Its principal tributaries are the Concho, Llano, and San Saba. Austin, the state capital, is beautifully situated on the banks of the Colorado, about 200 miles from its mouth.

The Trinity River rises in the northern portion of the Grand Prairie, and, flowing southeast, nearly parallel to the Brazos, enters Galveston Bay about 40 miles from the city of Galveston. It is 550 miles in length, and drains a country equal to the combined area of the states of Vermont and Massachusetts. The cities of Fort Worth and Dallas are situated on the Trinity about 250 miles as the crow flies from tide-water. Improvements now in contemplation by the United States government will make the Trinity navigable to Dallas.

The Sabine is a river belonging to the Black Prairie drainage. It rises in Hunt and Collin counties, and flows southeast till it reaches the intersection of the 94th meridian and 32nd parallel, when it turns to the south and enters the gulf through Sabine Bay. It is 500 miles in length and has a drainage area in Texas of 17,000 square miles. It owes its name to the Mexicans, who called it

“Sabinas,” meaning cypress, a forest tree that lines its banks. - Light draught boats ascend the Sabine as far as Logansport, Louisiana. The Sabine traverses the great timber district of east Texas and Louisiana, and large quantities of logs are floated down it to supply the saw-mills of Orange.

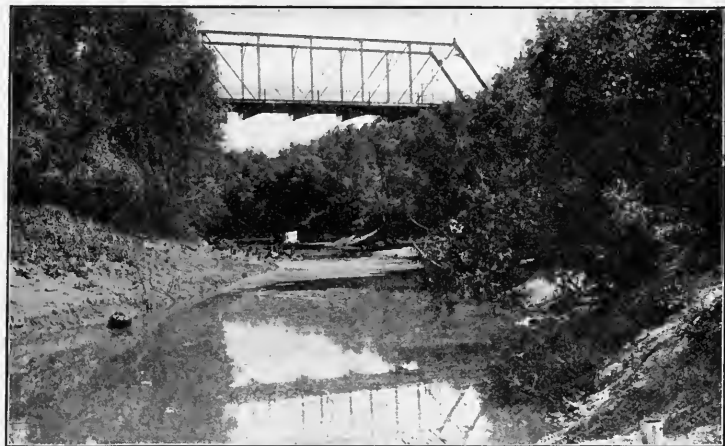


FIG. 10.
Crossing the Trinity.

The Rio Grande (Great River) rises in the Rocky Mountains, in the southwestern portion of Colorado, and after a course of nearly 1800 miles in a generally southeast direction, flows into the Gulf of Mexico. In all this great distance it receives but one tributary of note, the Pecos. The Rio Grande drains a smaller area in Texas than any other large river, its basin having an average width of less than 15 miles. In its upper course it receives a considerable volume of water; but

much of this is drawn off for irrigation purposes, and part of what remains sinks into the sands forming its bed, so that at El Paso its volume is greatly diminished. For many miles south of El Paso the bed of the river is a sandy plain, often entirely dry or with water standing in pools. At other times torrential rains fill its channel and overflow the adjacent country, causing much destruction. In its lower reaches rapids are common. Vessels of light draught ascend this stream as far as Edinburg in Hidalgo County, and in times of high water to Rio Grande city.

Other rivers of less importance are the Neches, Guadalupe, San Marcos, San Antonio, Nueces, Pecos, and Canadian.

Lakes. — Texas has no large lakes, but numerous small ones, fresh and salt, are found scattered throughout the state. Some occur in river bottoms and are fed by the flood waters of the streams; others in depressions are fed by springs and the drainage of the surrounding country; others still are found in “sink-holes.” Some of the best-known fresh-water lakes are Grand Lake, in Colorado County, and Clear Lake, in Harris County. Salt lakes are found in Cameron and Hidalgo counties, in the basin between the Diablo and Guadalupe mountains, and on the “Llano Estacado.” Sabinas Lake, in Gaines County, is six miles long and four miles wide.

Climate. — Texas presents three well-pronounced types of climate; the low, damp, cool climate; the low, damp, warm climate: and the high, dry climate. The north-eastern portion of the state presents the first; the coast country the second, and the elevated districts of west Texas the third. The coast country has a mean annual temperature of 70° Fahrenheit. Leaving the coast the

temperature falls toward the northwest at the rate of about one degree for every forty miles, until the mean annual temperature of 56° is reached in the Panhandle. In all parts of the state July is the warmest month of the year, and January the coldest.

The prevailing winds are from the Gulf of Mexico, except in December and January, when northerly winds are most frequent. The south winds play an important part in the climate of all Texas except the extreme west. During the long summers they bring coolness and comfort. In

the winter they temper the cold and give to southern Texas the mildest and most delightful winters of any state in the Union. At irregular intervals during the winter months, cold winds or "northers" of sudden appearance and great velocity sweep down upon

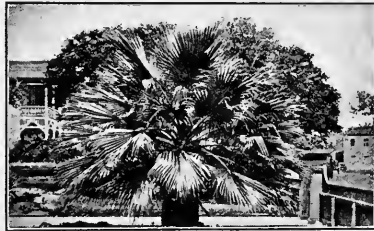


FIG. 11.

A glimpse of the tropics. Fan Palm,
Galveston.

the state from the northwest. Sometimes the wind is accompanied by rain or sleet, when it is known as a "wet norther." Wet northers last only about twenty-four hours, but in that time they do much damage to live stock and vegetation. Dry northers are invigorating and are considered very healthful.

Moisture, next to temperature, is the most important element in the determination of climate. For the year the humidity ranges from sixty-seven per cent over the central portions of the state to fifty per cent or less in the western portion and the Panhandle. The precipitation of this



MEAN ANNUAL TEMPERATURE.

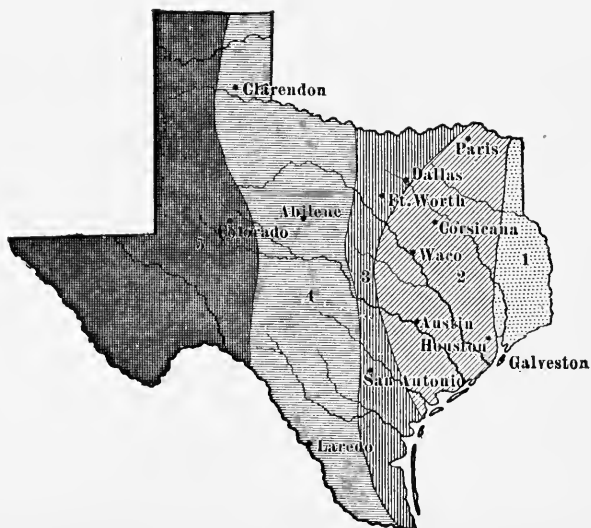
(After Gannett.)

1. 70° to 75°.

2. 65° to 70°.

3. 60° to 65°.

4. 55° to 60°.



MEAN ANNUAL RAINFALL.

(After Gannett.)

- | | |
|---------------------|---------------------|
| 1. 50 to 60 inches. | 3. 30 to 40 inches. |
| 2. 40 to 50 inches. | 4. 20 to 30 inches. |
| 5. 10 to 20 inches. | |

moisture as rainfall is greatest over the eastern portion of the state, where it exceeds fifty inches annually. This diminishes toward the west over central Texas at the rate of about five inches in sixty miles, and over the southern and northern portions five inches in twenty-five miles. At El Paso only about ten inches fall annually. Beyond the line of twenty inches agriculture cannot be carried on suc-



FIG. 12.

Rice field near Beaumont.

cessfully without irrigation, and this line follows closely the base of the Llano Estacado. The rainfall of the eastern portion of the state comes mainly from the Gulf of Mexico and in the winter months; while that of the western part comes chiefly from the Pacific and in summer. February and July are usually the months of smallest rainfall, and May and September of the heaviest.

Soil.—Texas has a great variety of soils of wonderful fertility. There is scarcely a known crop that may not

find somewhere in the state a soil suited to its needs. All the prime crops of the United States may be grown here in the greatest perfection. Fertilizers are almost unknown. Thousands of acres that have been under continuous cultivation for sixty years or more show as good returns as when the first crops were planted.

The principal soils are classified as black waxy, black sandy, red sandy, gray sandy, and alluvial. The black

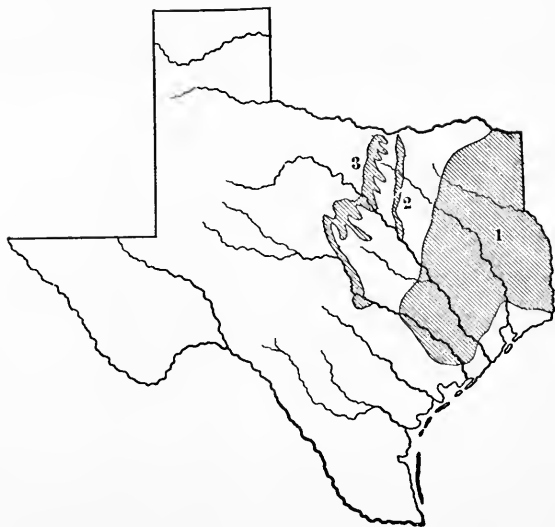


FIG. 13.
Threshing rice.

waxy, so called from its color and its waxy character when wet, is the richest and most durable. It varies from one foot to several feet in thickness and is not so greatly affected by washing as other soils are. It is specially adapted to the growth of grain and cotton. This is the soil of the Black Prairie region. The black sandy soil is characteristic of the southern portion of the coastal plain. It is easily cultivated and very productive, and is specially adapted to the growth of rice and sugar-cane. It is also

a congenial soil for the growing of fruits and garden crops. The red and the gray sandy lands of East Texas have long been famous for their richness and their adaptability to fruit culture. Both the black sandy and the red sandy require great care in cultivation to prevent washing. The main bodies of the alluvial soils are connected with the river systems — the Red, Trinity, Brazos, Colorado, etc. These soils vary in quality according to the territory drained by their respective streams. Thus, the soils east of the Brazos are of a waxy consistency and stiffer than those of the Brazos and streams westward that drain the sandy lands of the Great Plains. Of all the alluvial lands, those of the Brazos bottom are considered most valuable. In places the soil is said to be fifty feet in depth, and its fertility is constantly renewed by deposits of silt left by the periodical inundations of the river. Deposits half an inch or more in thickness have been made by a single overflow. In the northern sections of the state the alluvial soils produce large crops of corn ; in the southern portions, cotton, sugar-cane, and rice in the greatest perfection.

Forests. — The forests of Texas are one of the chief sources of the state's wealth and prosperity. The wooded area embraces 64,000 square miles, the largest area of the kind in any state of the Union. The principal forest growth is confined to the Eastern Province and the northern portion of the Southern Province. It consists mainly of pines of the long-leaf and short-leaf varieties. The long-leaf pine belt extends along the eastern border of the state from Harrison County to within twenty miles of the Gulf, covering about 25,000,000 acres. These forests form the basis of the yellow pine lumber



TIMBER REGIONS OF TEXAS.

(After Gannett.)

1. East Texas Timber Belt.
2. Eastern Cross Timbers.
3. Western Cross Timbers.

industry of Texas, and are the source of supply for the building material of the untimbered portions of the state, as well as for Oklahoma, Kansas, and other Western prairie states.

The long-leaf pine is succeeded on the north by forests of the short-leaf pine, interspersed with various hard



FIG. 14.

Long-leaf pine forest. Loading logs to be transported to lumber mill.

woods, such as oak, hickory, maple, ash, and poplar. Toward the western margin of the wooded area the pine disappears and the hard woods predominate. In the swampy bottoms of the Trinity, Neches, and Sabine large bodies of cypress are found. The pecan is found on nearly all the streams, but thrives best in the Central and East Central provinces. The wood of the pecan is white, tough, and durable, and is used largely in the manufacture of agricultural implements, such as tool handles, wagon axletrees, etc. The gathering of pecan nuts is an

important industry. The valuable bois d'arc and walnut are common along the streams of East Texas.

The Eastern and Western Cross Timbers are two belts of stunted black-jack and post-oak which extend in an irregular manner across the East Central Province from Red River to the Brazos and the Colorado. The former marks the western boundary of the Black Prairie, and, varying in width from 10 to 15 miles, reaches as far south as Waco, a distance of 150 miles; the latter, following the western margin of the Grand Prairie, and varying in width from half a mile to 10 miles, extends to Austin. The timber has no lumber value and is used only for firewood and other minor purposes. As has been said, mesquite is widely scattered through the semi-arid district, but it is only of local importance. Mountain pine is cut on the Guadalupe Mountains.

REVIEW QUESTIONS.—Make a drainage map of Texas, showing the principal rivers. In what direction do the rivers flow? Why? State two differences between the rivers that are east of the Brazos and those that are west. Account for these differences. What importance have the rivers of Texas as commercial highways? What is the United States government doing to improve them? What rivers form part of the boundaries of the state? Name the eight most important rivers in their order, from east to west across the state. Where are there lakes in Texas? Give the origin of these lakes. State the cause of the alternation of floods and low water in Brazos, Rio Grande, and other Western rivers. Account for the exceeding fertility of the Brazos bottoms. As a rule the Texas rivers empty into the Gulf of Mexico; mention two exceptions to this rule. Describe the Brazos, the Colorado, the San Marcos, the Trinity, the Rio Grande. Name the principal classes of soils and the crops for which each is adapted. How large is the wooded area of Texas? Where is the principal forest growth? Locate the long-leaf pine belt; the short-leaf pine belt; the hard wood belt. Where is the cypress found? the pecan? Mention two valuable uses of the pecan. Locate and describe the Eastern and Western Cross Timbers.

AGRICULTURAL INDUSTRIES

Texas is, above everything else, an agricultural state. Her chief source of wealth being in her farms. Tillage of the soil forms the chief industry of her people. The



FIG. 15.

Cotton gin with wagons in waiting, Ellis County.

farms of the state number 352,190, and are valued at \$691,773,613. The total value of farm products is \$240,000,000, nearly \$80 for every man, woman, and child in the state.

The agricultural region extends from the eastern border to the foot of the Llano Estacado; but any part

of the state could be brought into cultivation by means of irrigation.

The great agricultural staples are, in the order of their importance: cotton, corn, wheat, oats, hay, rice, fruits and garden truck, rye, and barley.

Cotton. — Texas stands first among the states of the Union in the production of this staple. The annual cotton crop amounts to more than 3,000,000 bales, valued at \$150,000,000. The cotton region lies east of the 100th meridian and embraces 50,000 square miles, an area as large as the state of Alabama. All the counties in this district raise cotton to a greater or less extent. Ellis County has the greatest acreage, closely followed by McLennan, Fannin, Hill, Navarro, Williamson, Falls, Milam, and Bell.

Corn may be grown in almost every county in the state, but it reaches its greatest perfection in the tier of counties along Red River, between the 95th and 97th meridians and immediately south. Grayson County takes the lead in its production, and next in order come Collin, Ellis, Washington, Williamson, Hill, and Dallas. The crop for 1901 amounted to more than 81,000,000 bushels, valued at \$38,000,000.

Wheat. — Of wheat, Texas produces annually 20,000,000 bushels. The wheat region lies north and west of Fort Worth and Dallas and embraces an area as large as the state of Ohio. Collin County takes the lead in the production of this cereal, closely followed by Denton, Tarrant, Grayson, and Dallas.

Rice. — The rice belt embraces an area as large as the state of South Carolina. It extends along the coast from the Sabine River to the Rio Grande, and into the interior

80 to 100 miles. The most extensive areas under cultivation are near Beaumont, Jefferson County, and the valley of the Colorado in Wharton County. The crop amounts to 1,000,000 bags annually, valued at \$3,500,000.

Sugar.—The alluvial lands of the lower Brazos, the Trinity, the Colorado, and the Guadalupe, embracing an area of 1,000,000 acres, are among the finest sugar lands in the United States. The sugar industry, however, has



FIG. 16.

Harvesting wheat, Jack County.

not yet developed to very large proportions. Much the larger part of the cane now grown is converted into sirup. Fort Bend County leads in the production of this staple, Brazoria County ranking second.

Fruits.—Texas is becoming widely known as a fruit-producing country. The northern section of the state is adapted to the raising of apples, the coast country to pears, while the peaches of east Texas are the finest in the world. Smith, Wood, and Anderson counties in the order named are the chief centres of the peach industry. Figs are



FIG. 17.
Gathering tomatoes, Smith County.

grown in perfection near the coast. The country along the Rio Grande is famous for its grapes.

Trucking. — The raising of small fruits and vegetables for the northern markets is a great and growing industry. More than ten thousand car loads of truck, consisting of strawberries, cantaloupes, tomatoes, potatoes, cabbages, cucumbers, onions, etc., were shipped from the state in 1901. Tyler, Lindale, Alvin, Beeville, Jacksonville, Weatherford, and Corpus Christi are shipping points for these products.

Hay. — The harvesting of hay is an important industry in Kaufman and surrounding counties. Forney, Kaufman County is the principal centre of this industry.

Tobacco is grown in ninety-eight counties of the state, Montgomery County leading. Willis in this county is the centre of this industry. The product of this section is said to be equal in all respects to Cuban tobacco, especially for the manufacture of cigars.

AGRICULTURAL PRODUCTS

	AMOUNT	VALUE
Cotton (bales)	3,500,000	\$157,500,000
Corn (bushels)	81,962,910	38,522,568
Wheat (bushels)	23,395,913	14,973,384
Oats (bushels)	28,278,232	8,483,470
Rice (barrels)	1,000,000	3,500,000
Barley (bushels)	50,405	36,292
Rye (bushels)	64,630	43,302
Hay (tons)	548,879	3,732,377
Garden truck (cars)	10,000	7,674,798

RANCHING

Next to agriculture, ranching—the raising of cattle and sheep on large grazing preserves—is the most important industry of Texas. Western Texas, the Plains region, is peculiarly adapted to this pursuit. By reason of the scant rainfall agriculture is forbidden; but there is sufficient precipitation to sustain an abundant growth of nutritious grasses which afford pasturage for immense herds of cattle and sheep. In the number and extent of its ranches, Texas leads all the other states. There are several thousand of these ranches, varying in size from a

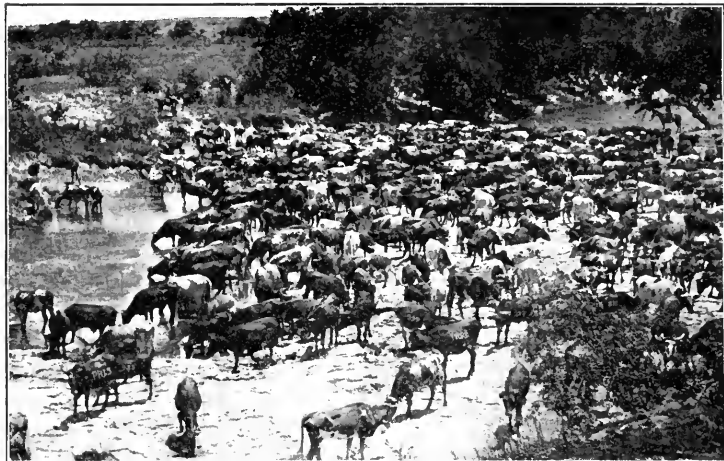


FIG. 18.
Cattle Ranch, Tom Green County.

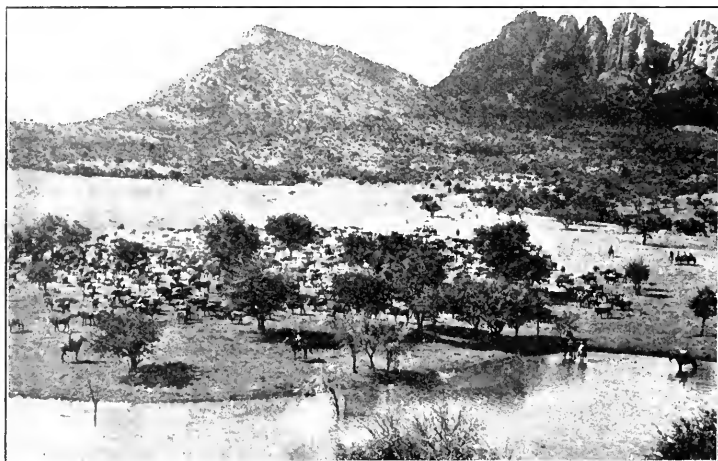


FIG. 19.
The round-up.

few thousand acres to several millions. The largest is the "X. I. T." ranch in the Panhandle, which embraces several counties and contains nearly 3,000,000 acres, an area as large as the state of Connecticut. More than 100,000 head of cattle range over this great tract. When ready for market, they are shipped to Kansas City, St. Louis, and Chicago, where they are slaughtered and the meat is



FIG. 20.

Buffaloes on the Goodnight Ranch, Panhandle.

packed to be sent to all parts of the world. More than \$80,000,000 worth of live stock are shipped out of the state every year.

Since the introduction of cottonseed oil mills and the consequent production of the by-products, meal and hulls, which are valuable cattle food, the fattening of cattle on farms has become an important industry.



FIG. 21.
Sheep ranch, Coleman.

NUMBER AND VALUE OF LIVE STOCK

	NUMBER	VALUE
Cattle	4,887,795	\$85,570,022
Milch Cows	763,173	19,270,127
Swine	2,418,032	11,256,020
Sheep	2,657,393	5,097,469
Horses	1,238,209	25,858,147
Mules	286,618	10,082,645

REVIEW QUESTIONS.—Name the great agricultural staples in the order of their importance. Shade an outline map so as to show the wheat region; the rice region; the chief corn region. What is trucking? What are the chief products of this industry? Mention three trucking centres. Where are large quantities of hay harvested? Name five cities where flour is manufactured. How does Texas rank as a cotton-producing state? Shade an outline map so as to show the cotton belt. Name the counties that take the lead in the production of cotton; what is the annual value of the state's cotton crop? Name the counties that lead in the production of corn. What is the annual value of the corn crop? What county leads in the production of sugar? Where is tobacco grown? What is ranching? Color an outline map so as to show the area devoted to this industry. How does Texas rank as a cattle-producing state? Locate the "X. I. T." ranch.



FIG. 22.
Prize sheep.



FIG. 23.
Shearing sheep, Concho country.

FISHERIES

This industry is yet in its infancy, and is restricted almost entirely to the bays and estuaries along the coast. The bay seine fishery is the most important. The principal species of fish taken by means of the seines are sheepshead, croakers, sea-trout, Spanish mackerel, pompano, mullet, rockfish, jewfish, and whiting. The trout is generally considered the finest for the table. A line of vessels from Galveston is engaged in "outside fishing" on the red snapper banks of the Gulf of Mexico, and has built up a considerable trade with points in the interior.

Oyster reefs are found in all the bays, and at the mouths of rivers along the coast. Matagorda Bay has the finest oysters, but the greatest catch is taken from Galveston Bay.

REVIEW QUESTIONS. — Where are the fisheries of Texas principally carried on? What is the chief fishery? What are the principal food fish taken? Where is outside fishing carried on? Where are the United States fish hatcheries located. Locate the principal oyster beds of the state.

RAILROADS

One of the most important factors in the development of the state has been the railroad. The first road in Texas was commenced in Harrisburg in 1852, and completed to Richmond in 1855. Texas is now (1903) the second state in railroad mileage, being surpassed only by Illinois. Sixty-eight roads now traverse the state, having an aggregate mileage of 10,616 miles. Two great trunk lines — the Texas and Pacific, and the Southern Pacific — cross

the state east and west ; three others—the Gulf, Colorado, and Santa Fé, the Houston and Texas Central, and the Missouri, Kansas, and Texas—run north and south ; and the International and Great Northern crosses diagonally from Texarkana to Laredo. These lines, with their



FIG. 24.

Union Passenger Station, Fort Worth.

branches and connections, reach all the principal points in the state, and afford excellent facilities for trade and travel.

The area of greatest railroad development follows closely that of greatest density of population. Accordingly, it will be observed that the best railroad facilities are afforded in the black land district of central Texas.

A very large proportion of the mileage is included in the strip of country between Texarkana and Fort Worth, and from the latter place to Galveston.

The north and south lines are the outlet for the immense grain trade of the Western and Northwestern states, which within the last few years has made Galveston the first wheat-exporting city in the United States. A vast transcontinental and interoceanic trade is carried on over the lines of the Southern Pacific, which, with their water connections at Galveston, form one of the greatest commercial highways in the world. The International and Great Northern, connecting with the Mexican National at Laredo, commands the trade of our sister republic on the south.

The greatest railroad centres of the state are Fort Worth, Dallas, Greenville, Waco, Houston, and Galveston.

REVIEW QUESTIONS.—How does Texas rank among the states as to railroad mileage? When and where.

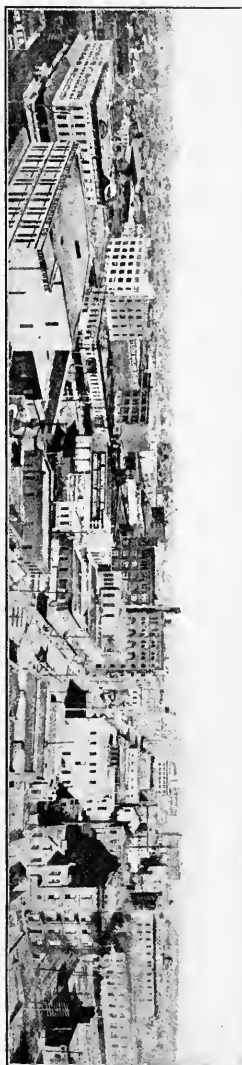


Fig. 25.
Bird's-eye view of the business district of Dallas.

was the first line of railroad built? How many miles of railroad in the state? Name two trunk lines crossing the state east and west. Indicate the course of these roads by dotted lines on an outline map. Locate the most important cities through which they pass. Name three north and south lines and indicate same on map. What is the character of the trade carried on over the north and south lines? The east and west lines? Name the two most important railroad centres of north Texas; of south Texas. What section of the state has the best railroad facilities? How do you account for this?

MANUFACTURING

Texas is known chiefly as an agricultural and a stock-raising state. But, by reason of an abundance of raw materials and a practically unlimited supply of cheap fuel, the state is rapidly forging to the front in the manufacturing industry. For the year 1900, there were reported to be in the state 16,245 manufacturing establishments, with a capital of \$90,433,882, and an earning capacity of \$83,639,058. Lumber, cotton, and wheat form the basis of the industry. Mentioned in their order, the six most important manufactures are: (1) lumber manufacturing, including sash, doors, blinds, etc.; (2) the manufacture of cottonseed oil and cake; (3) flour and gristmill products; (4) the construction and repair of railroad cars; (5) cotton ginning; (6) foundry and machine-shop products.

The lumber industry is confined almost entirely to the eastern border counties, from Bowie on the north to Jefferson and Harris on the south. More than two hundred sawmills are in operation in this section, producing annually lumber to the value of \$16,000,000. One company alone cuts 250,000,000 feet every year and supports a population of 15,000 people. The principal centres of this industry are Houston, Harris County, Beaumont, Jeffer-

son County, and Orange, Orange County. Large planing mills and factories for the manufacture of sash, doors, and blinds are in operation in these and other cities.

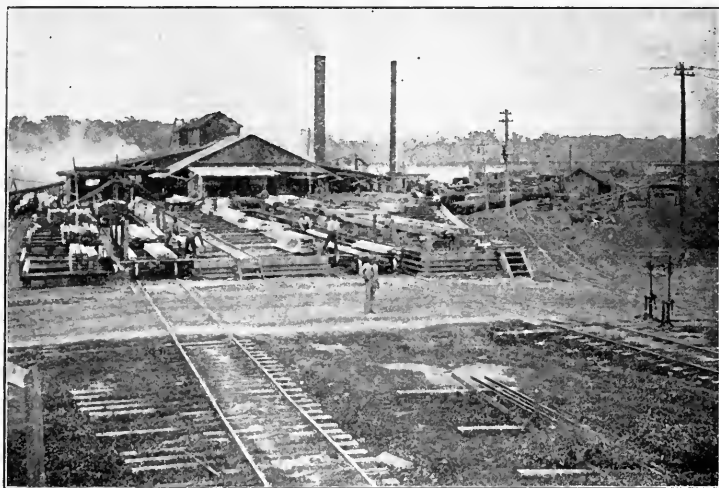


FIG. 26.

Lumber mill, Beaumont.

The manufacture of cottonseed oil and cake is second only to the lumber industry in importance. For many years it was thought that the lint was the only valuable product of cotton. The seed were usually thrown away, or used in small quantities to feed milch cows. But to-day all this is changed, and there is scarcely a part of the plant that is not utilized. Cotton roots furnish a useful drug; bagging and rope are made from the stalk; the seed furnishes a variety of products—hulls, meal, and oil, the last being the most important. Cottonseed oil is used as a substitute for lard and olive oil, and for the

manufacture of soaps. Cottonseed meal, the residue after the removal of the oil, is a valuable food stuff for cattle, exceeding in this respect either corn or wheat. It is also extensively used as a fertilizer. The hulls have been found to be a good substitute for hay. They are also an excellent fuel, two and a half tons of hulls being equal to a cord of wood. Cotton-hull ashes are valuable as a fertilizer, especially in tobacco growing.

Texas produces annually 25,000,000 gallons of cottonseed oil, one-fourth the entire output of the United States. It finds a ready sale in all the markets of the world. Large quantities are shipped through Galveston to Mediterranean ports. Cottonseed oil mills are found in almost every large town in the cotton belt.

The manufacture of cotton cloth is fast becoming an important industry in Texas. Large mills are located at

Dallas, Denison, Sherman, Waxahachie, Hillsboro, Waco, Bonham, Gonzales, Corsicana, and other places.



FIG. 27.

Cotton mills, Waco.

Texas being a great corn and wheat producing state, the manufacture of

flour and grist mill products has become an important industry. Extensive flour mills are in operation at Wichita Falls, Sherman, Bonham, Greenville, Denton, Fort Worth, Dallas, Galveston, and other places in the grain belt.

Ginning plants for separating lint cotton from the seed are found in almost every village, town, and city in the cotton belt and on many large plantations. Nearly 3,000,000 bales of cotton are ginned annually. Some of the largest ginneries are to be found at Corsicana, Waxahachie, Waco, Farmersville, and Granger. In this industry, and in the manufacture of cottonseed oil and cake, Texas ranks first among the states.

The great railway mileage in Texas necessitates machine shops for the manufacture and repair of railroad cars, engines, etc.; and large plants of this character have been established at Marshall, Tyler, Palestine, Cleburne, Denison, Greenville, and other places.

To utilize the surplus products of orchards and gardens canning factories have sprung up all over the state. Jacksonville, Tyler, Lindale, are important centres of this industry.

Large sugar refineries are located at Sugarland, Fort Bend County, Eagle Lake, Colorado County, Shepherd, San Jacinto County, and other places. The manufacture of saddlery and harness is extensively carried on in Dallas, Fort Worth, Waco, and San Antonio.

The manufacture of books and stationery is an important industry in Galveston, Houston, Dallas, and San Antonio. Dallas is the centre of a large publishing business.

Petroleum refineries are located at Corsicana and Port Arthur.

Large packing houses are in operation at Fort Worth, Dallas, and other places.

Extensive brick yards are located at Virginia Point and Cedar Bayou, near Galveston; Harrisburg, Houston, Dallas, Laredo, Calaveras near San Antonio, Elgin, and

many other places. Elgin pressed brick is said to rival the Philadelphia brick.

A paving-brick establishment is in operation at Garrison, Nacogdoches County. Fire bricks are manufactured at

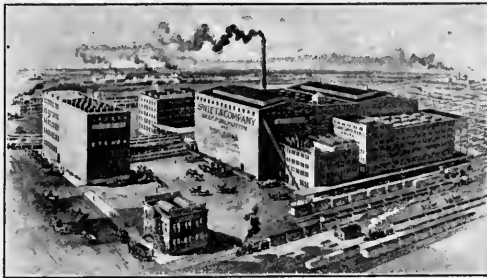


FIG. 28.

Packing house, Fort Worth.

Flatonio, Kosse, and Athens. Charcoal furnaces are manufactured at Harrisburg.

Potteries for making ordinary stone ware, curbing, flower pots, and sewer pipe are located

at Athens, Weatherford, Denton, McDade, Henderson, Texarkana, Ladonia, Elmsdorf, and other places.

Salt is manufactured at Colorado, Mitchell County, and Grand Saline, Van Zandt County.

Almost every town of any importance in the state has a well-equipped ice factory. Large quantities of ice are used in refrigerator cars employed in the shipment of fruit and vegetables.

REVIEW QUESTIONS.—What conditions favor manufacturing in Texas? Name the greatest manufacturing city of the state. What products form the basis of the manufacturing industry in the state? Mention the six most important branches of the industry. Where is the lumber industry carried on? What is the annual output of this industry? Mention three important centres of the industry. Name the by-products of cotton. For what are they used? In what city is the largest cottonseed oil mill in the world? What is the annual production of cottonseed oil? Mention five cities where cotton mills

are located. Where are some of the largest ginneries? The most extensive canning factories? Sugar refineries? Packing houses? Petroleum refineries? What city is noted for the manufacture of saddlery and harness? Mention a large publishing centre. Where are bricks manufactured? Paving tiles? Fire brick? Mention five towns where potteries are located.

MINERAL RESOURCES

Although only slightly developed, the mineral resources of Texas are of great value. Of the metallic group, ores of gold, silver, iron, lead, zinc, copper, manganese, and quicksilver have been found in workable quantities.



FIG. 29.
Smelting works, El Paso.

Iron-ore beds of great extent and richness are found in east Texas and in the central mineral region (see p. 10). The ores of the latter are said to be equal to any in America. Furnaces for the reduction of the east Texas ores are in operation at Rusk, Cherokee County, and at

Jefferson, Marion County; and in the central district at Bessemer on the Austin and Northwestern Railroad. Iron has also been discovered in the Trans-Pecos.

The deposits of *gold, silver, copper, lead, and zinc* ores are confined to the central mineral district and the Trans-Pecos. Gold and silver occur "free" and in connection with the ores of the other metals. A silver mine, with a capacity of one thousand ounces per day, is in operation at



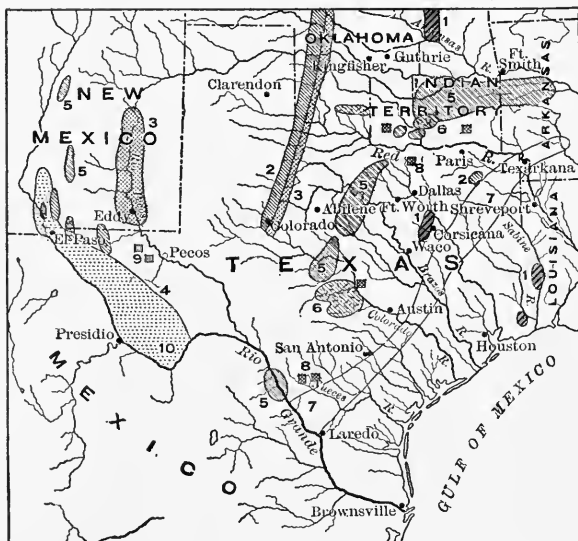
FIG. 30.

Salt works, Grand Saline, Van Zandt County.

Shafter, Presidio County. Copper, in paying quantities, is taken from the Hazel mine in the Diablo Mountains. Large quantities of salt are produced at Colorado, Mitchell County, and Grand Saline, Van Zandt County. Other salines are found in Smith, Anderson, and Freestone counties.

The gypsum deposits of the Abilene country are among the purest and most extensive in the world.

Extensive clay beds are found in all sections of the state, of all varieties and qualities, from common brick



MINERAL RESOURCES OF THE TEXAS REGION.

- | | |
|---------------------|---------------|
| 1. Oil. | 6. Granite. |
| 2. Salt. | 7. Lignite. |
| 3. Gypsum. | 8. Asphaltum. |
| 4. Precious metals. | 9. Sulphur. |
| 5. Coal. | 10. Cinnabar. |

Permission U.S. Geological Survey.

clay to the finest porcelain clay. The kaolins, or china clays, of Edwards and Uvalde counties are among the best in the world. Beds of a quality suitable for the lower grades of earthenware occur in various localities from Angelina to Atascosa County. Potteries are in operation at Athens, Texarkana, Weatherford, Henderson, and other places.

Quicksilver in good deposits is found in the southwestern part of Brewster County, in the Trans-Pecos, and a number of furnaces have been built for the reduction of the ores. A flourishing settlement has sprung up at Terlingua, where the mines are located.

Asphaltum is known to exist in Montague, Cooke, Anderson, Burnet, and Uvalde counties, and throughout the Neches valley in east Texas. It occurs in tar springs, as in the Sour Lakes of Hardin County; the main deposits, however, consist of beds of sand, sandstone, and limestone impregnated with bitumen. A plant for the utilization of the product is in operation at Carbonville, Uvalde County. Asphaltum from these works has been used for paving purposes in San Antonio, Houston, Waco, and other places.

Building stones of great variety are found in almost every county in the state. Sandstone, limestone, marble, and granite are abundant. The granite quarries of Burnet County furnished the material for the magnificent capitol building at Austin, and for the Galveston sea wall and jetties.

Coal and Petroleum.—The Texas coals are principally of two kinds, lignite and bituminous. Lignite is intermediate between peat and bituminous coal. It has more carbon and less water than the former, but more water

than the latter. Lignite varies in color from brown to brilliant jet-black. It occurs in beds varying in thickness from three to twelve feet, and is found in nearly all of the fifty-two counties extending diagonally across the state from Red River County to Webb County on the Rio Grande. The principal mines now in operation are the Santo Tomas, near Laredo, the Vogel, in Milam County, and Calvert Bluff, in Robertson County.

Two workable seams of bituminous coal are found in the northern portion of the state, beginning in Montague and Wise counties, and extending southwest through Jack, Palo Pinto, and Stephens counties, and finally disappearing in Eastland and Erath counties. Mines are in operation at Strawn, Palo Pinto County, Thurber, Erath County, and at some other places.

A third coal seam, known as the Eagle Pass coal field, lies along the Rio Grande, from Eagle Pass to Laredo. The Hartz mine, near Eagle Pass, is the largest producer in this district.

It is estimated that the coal district of Texas embraces 40,000 square miles, an area as large as the state of Ohio.



FIG. 31.
An oil "gusher," Spindle Top
oil field, Beaumont.

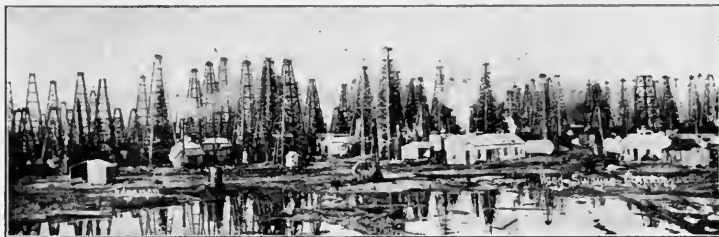


FIG. 32.

A forest of "gushers," Spindle Top Oil Field, Beaumont.

In 1880 Texas produced no coal. In 1890 the output was in excess of 100,000 tons, and in 1900, 1,000,000 tons.

Petroleum has been found at many places in Texas: Elgin, Lockhart, Sour Lake, San Antonio, Nacogdoches, Corsicana, and Beaumont.

Oil was discovered in the Corsicana field in 1894, in a well that was being bored for artesian water. More than 600 wells are now producing, with an annual output of 1,000,000 barrels. Two grades of oil occur in this district, an illuminating oil, and a heavy oil which is used for fuel and for lubricating purposes. A large refinery has been established at Corsicana to prepare the illuminant for the market.

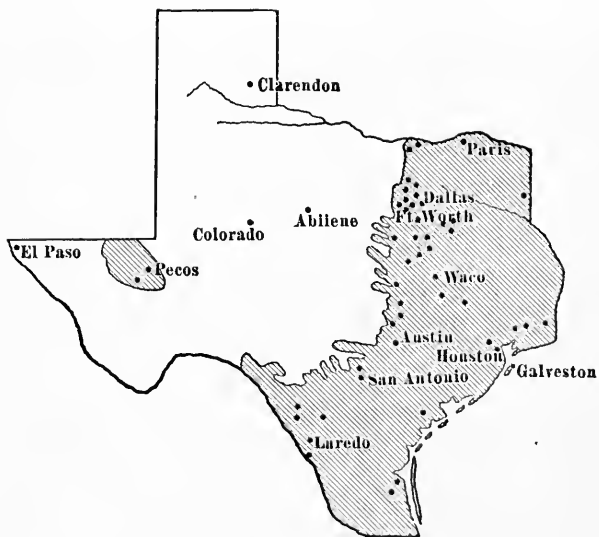
The Spindle Top oil field, near Beaumont, is one of the most famous in the world. Oil was struck in this territory on January 10, 1901. More than 300 wells are now (1903) producing. Many of these wells are spouting wells, known locally as "gushers." When the wells are uncapped, the oil is thrown out with great violence to the height of 100 feet or more. The producing capacity of a "gusher" is remarkable — from 25,000 to 50,000 barrels daily. Nine of these wells, flowing at their full capacity,

would produce more oil than all the other wells in the United States combined.

The Beaumont oil is of a heavy grade, suitable for fuel and for lubricating purposes.

Artesian and Mineral Waters. — No life, animal or vegetable, can exist without water, and it is the presence or absence of this element that determines the fitness of a country for human habitation. Texas is fortunate in having an abundant water supply, obtained from artesian wells and surface wells. The artesian water belt, embracing the Eastern, Southern, and East Central provinces, an area of 120,000 square miles, is one of the most extensive and productive in the world. Hundreds of wells have been sunk in all parts of this district, from which water of the purest quality and in unlimited quantities is obtained. Many cities and towns derive their supply from this source, notably, Galveston, Houston, Waco, Dallas, Corsicana, Marlin, Denton, Belton, Hillsboro, and Temple. These waters are also being utilized on ranches and farms for domestic purposes and for irrigation.

The wells vary in depth from 500 to 2000 feet. Some of them are flowing, while others are non-flowing. The daily capacity of an average flowing well ranges from 75,000 to 300,000 gallons, but there are several at Waco that flow more than 1,000,000 gallons. In some instances the waters are hot, as at Waco, San Antonio, and Marlin, and possess valuable medicinal properties. At places these underground waters find their way to the surface in great springs, as at Del Rio, San Antonio, San Marcos, and Cedar Springs. The largest of these springs, at the head of the San Antonio River, flows the enormous volume of 23,000 gallons a minute.



ARTESIAN WATER BELT.

(After Hill.)

Water from surface wells is abundant in most parts of the state.

Texas is the leading state in the Union in the production of mineral waters, the output for the year 1899 being 4,729,950 gallons. The waters are found both in springs and in dug or bored wells. Some of the wells are artesian. Among the most noted wells and springs are the following: Mineral Wells, Palo Pinto County; Wooten Wells, Robertson County; Elkhart Mineral Wells, Anderson County; Palo Pinto Crystal Wells, Palo Pinto County; Marlin Hot Wells, Falls County; Dulnig Mineral Wells, Bexar County; Sour Lake Mineral Springs, Hardin County; Lampasas Springs, Lampasas County.

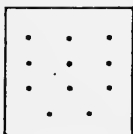
REVIEW QUESTIONS. — Name the most important mineral products of Texas. What two kinds of coal are found in the state? Tell the difference between them. Show by shading an outline map the location of the coal fields. At what places is coal mined? In what parts of the state is petroleum found? What is a "gusher"? What two grades of oil are found in the state? For what is Beaumont oil chiefly used? Where are oil refineries located? Locate the iron district of the state. Where is copper found? The precious metals? Where is salt mined? What useful building stones are found in the state? Locate the principal granite quarries. Show by shading an outline map the location of the artesian water belt of the state? How does Texas rank in the production of mineral waters? Name and locate some of the most famous mineral wells and springs.

POLITICAL DIVISIONS — POPULATION

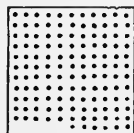
The original counties of the state of Texas were twenty-three in number: Austin, Bexar, Columbia (now Brazoria), Colorado, Goliad, Gonzales, Harrisburg (now Harris), Bevil (now Jasper), Jackson, Jefferson, Liberty, Matagorda, Viesca (now Milam), Mina (now Bas-

trop), Nacogdoches, Red River, Refugio, Sabine, San Patricio, Shelby (once Tenaha), Victoria, and Washington. There are now (1903) 246 counties. The largest, El Paso County, with an area of 8460 square miles, is about equal in size to the state of Massachusetts. Rockwall is the smallest county. According to the census of 1900 the twelve most populous counties in order of their rank are Dallas, Bexar, Harris, Grayson, McLennan, Tarrant, Fannin, Collin, Ellis, Lamar, Travis, and Hunt. It will be observed that nearly all of these counties are situated in the Black Prairie Region, where also are found most of the largest cities.

The population of Texas in 1900 was 3,048,710, a density of 11.6 to the square mile. Were the density the same as that of New York State, it would have a population of 33,753,060.



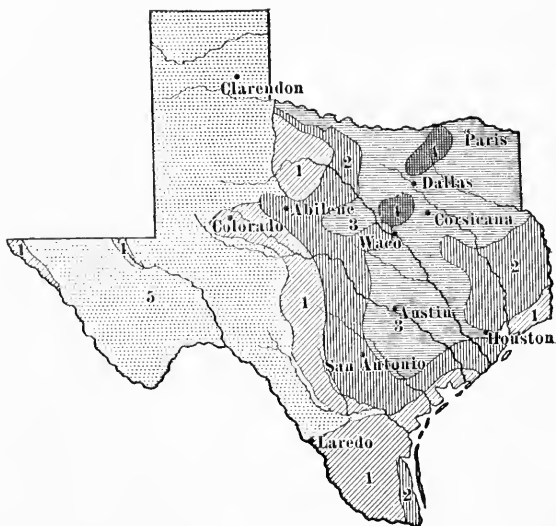
DENSITY OF POPULATION: TEXAS.
11.6 to square mile.



DENSITY OF POPULATION: NEW YORK.
127 to square mile.

Cities. — In the same year there were sixteen cities having a population exceeding 8000. The following table shows the population of the eight largest cities: —

San Antonio	53,321
Houston	44,633
Dallas	42,638
Galveston	37,789
Fort Worth	26,688
Austin	22,258
Waco	20,686
El Paso	15,906



DENSITY OF POPULATION.

(After Gannett.)

- | | | |
|----|----------|-----------------|
| 1. | 2 to 6 | to square mile. |
| 2. | 6 to 18 | “ “ “ |
| 3. | 18 to 45 | “ “ “ |
| 4. | 45 to 90 | “ “ “ |
| 5. | Under 2 | “ “ “ |

SAN ANTONIO, the "Alamo City," is the oldest as well as the largest city in the state. It is also the most interesting. It was founded by the Spaniards in 1730, sixteen families from the Canary Islands settling at that time on what is now known as Main Plaza. When the Spanish power was overthrown (1821), San Antonio became the



FIG. 33.

Alamo Plaza, San Antonio. Alamo on the right. U.S. Government Building in the background.

capital and chief city of the Mexican province of Texas. In the war for Texas independence, eight battles were fought in and around San Antonio. Here is located the famous church of the Alamo, immortalized by the brave defence of Travis and his little band of heroes in the Texas Revolution. In the vicinity are the old "missions" established by the Spaniards two hundred years ago for

the conversion of the Indians. The "missions" are now in ruins, but interesting from past associations.

San Antonio is situated in a fertile valley through which flow the San Antonio and San Pedro rivers, surrounded by an amphitheatre of hills which give it a most picturesque appearance. It is beautifully and regularly laid out, and has all the appointments of a modern, up-to-date city. A feature that distinguishes San Antonio from other American cities are its numerous public gardens and plazas. These are scattered at random throughout the city, and while affording a pleasing variety, furnish much-needed breathing space, and recreation grounds for the people. No more charming place can be found than the natural park surrounding the celebrated San Pedro springs.

San Antonio is the chief trade centre and distributing point of the southwest. It is an important live-stock and wool depot, and the leading pecan market in the United States. Four trunk lines of railroad pass through the city, connecting it with all parts of the state and with Mexico. San Antonio is department headquarters for the United States army in Texas; and Government Hill, where the soldiers' barracks are located, is one of the points of interest in the city. San Antonio is a popular health resort, its high, dry climate being especially beneficial to persons suffering from lung troubles.

HOUSTON, the "Magnolia City," is situated on Buffalo River at the head of the tide-water navigation. It is the great railroad centre of the state, no less than fifteen lines converging here. It is also the centre of the three great industries, rice, lumber, and cottonseed oil. Houston is the second city in the state in the value of its



FIG. 34.
Cotton scene, Houston.

manufactures, the annual output of which is nearly \$11,000,000. The following table shows the six most important manufacturing enterprises with the value of their products for the year 1900:—

Cottonseed, oil and cake	\$1,755,549
Cars and general railroad supplies	1,680,587
Carpentering	1,093,416
Masonry brick and stone	419,199
Foundry and machine-shop products	319,543
Lumber and planing-mill products	256,980

Houston was founded in 1837 by J. K. and A. C. Allen and named in honor of General Sam Houston. A

few miles below Houston, at the junction of the San Jacinto and Buffalo rivers, is the celebrated battlefield of San Jacinto, where General Houston met and routed the Mexican army under General Santa Anna, and thus achieved the independence of Texas.



FIG. 35.

Buffalo Bayou. Water front, Houston.

DALLAS is the commercial metropolis of north Texas. It is situated on the Trinity River about 300 miles from the Gulf of Mexico, in the heart of the Black Prairie Region. The surrounding country is a rich agricultural section which carries on through Dallas an immense trade in agricultural implements and general farm supplies. The wholesale trade of the city amounts to \$36,000,000 annually. Dallas is the leading manufacturing city in the state. Among the most important manufacturing establishments are saddlery and harness factories, foundries and machine shops, printing and

publishing plants, packing houses, cottonseed oil mills and cotton mills. Dallas is the second largest distributing point for agricultural implements in the world, and the first city in the United States in the manufacture of saddlery and harness, and ginning machinery.

The great Texas State Fair and Dallas Exposition is held here every year in the month of October, and attracts thousands of visitors to the city.



FIG. 36.

County courthouse, Dallas.

GALVESTON, the "Oleander City," is the commercial and financial centre of the state. It is situated at the eastern extremity of Galveston Island, at the entrance to the bay of the same name. Galveston has the finest harbor on the Gulf of Mexico, and vessels of the heaviest draught enter and discharge at its wharves. An immense foreign trade is carried on through this port. Thirty-one

lines of steamers connect it with foreign ports, and several lines are engaged in the coastwise trade. Galveston stands fourth among the cities of the United States in the value of its foreign exports. The total business of the port for the year 1901-1902 was \$260,837,354. The

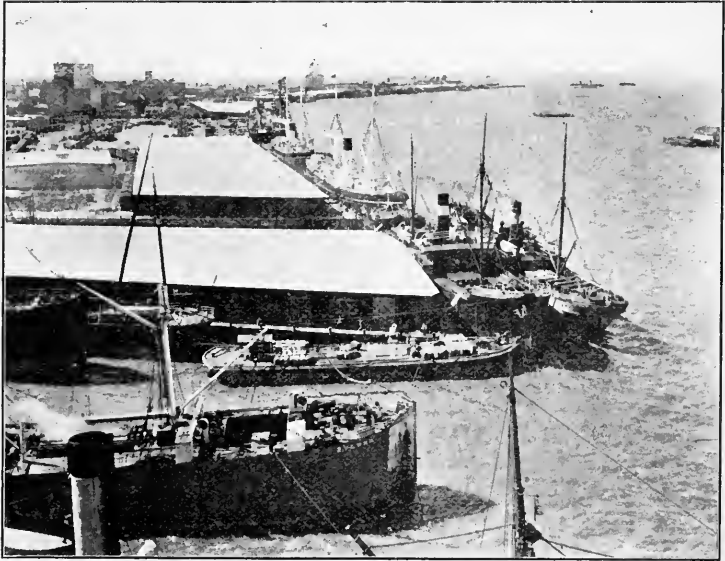


FIG. 37.

Water front, Galveston. Cotton sheds in the foreground, with vessels loading and unloading. Grain elevators in the distance.

chief articles of export are cotton and by-products, oil, cake, and meal; breadstuffs, lumber, live stock, ores, and metals. The chief imports are coffee, sugar, tropical fruits, fibres and manufactures, iron and steel, toys, wines, and silks.

Galveston is the largest primary cotton port in the

world, receiving annually more than 2,000,000 bales. It is also the largest wheat-exporting point in the United States.

Galveston has excellent railroad facilities, six trunk lines centering here. The Southern Pacific wharves and terminals are among the most extensive in the country.

The manufactories of the port are important, consisting of flour mills, rice mills, a rope and twine factory, car repair shops, foundries and machine shops, a sash, door, and blind factory.

Galveston is a popular pleasure resort, and thousands of visitors come here every summer to enjoy the invigorating gulf breezes, the excellent surf-bathing, and driving on the finest beach in the world. The harbor of Galveston is strongly fortified, and the United States government maintains military reservations at the eastern and western limits of the city.

In times past, Galveston has been visited by destructive storms which have greatly retarded the growth of the city. The last, which occurred September 8, 1900, destroyed millions of dollars of property and many thousand lives. To prevent the recurrence of these calamities, a massive sea wall, three miles long and seventeen feet high, backed by an embankment of solid earth, is being constructed on the seaward side of the island. When this work is finished, the grade of the entire city will be raised to a height sufficient to secure complete immunity from overflow.

FORT WORTH, the "Panther City," is situated on a high plateau overlooking the west fork of Trinity River, thirty-two miles west of Dallas. Next to Dallas, Fort Worth is the most important railroad centre of north Texas,

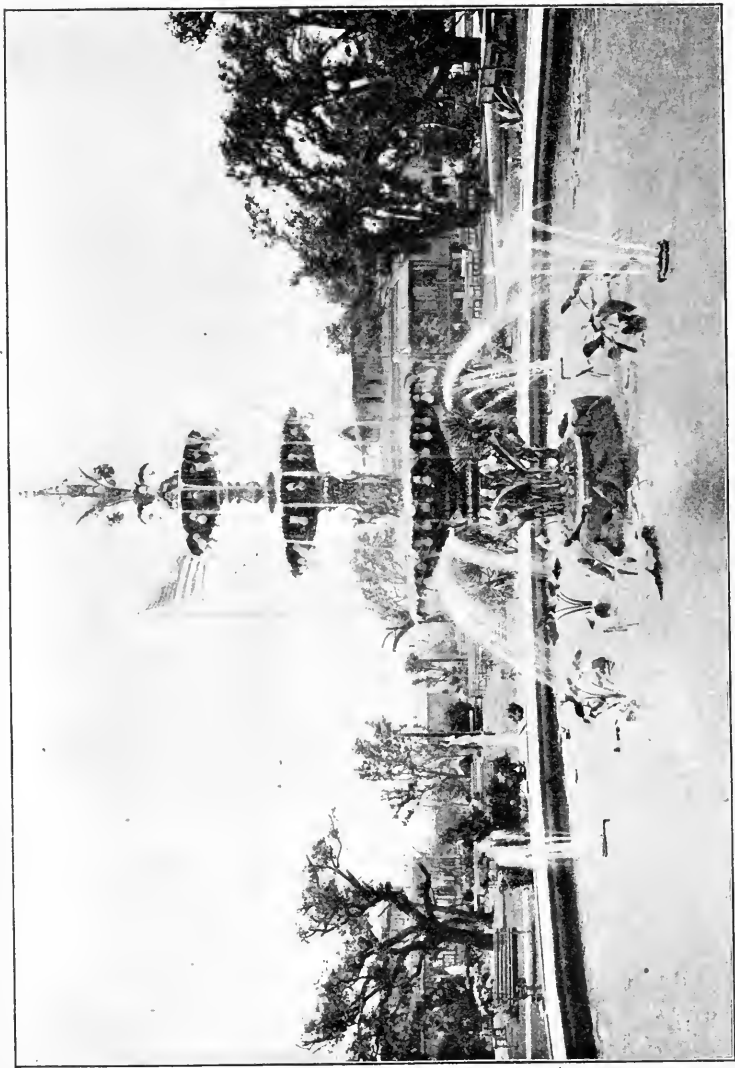


Fig. 38.
Gärten Verein, a noted pleasure resort, Galveston.

eleven lines entering the city and furnishing sixteen outlets for business. An electric line connects it with Dallas.

Fort Worth is the distributing point for the live stock of the great Northwest and of the enormous grain trade of the Panhandle. The manufacturing industries of the city are



FIG. 39.

Main Street, Fort Worth. Courthouse in the distance.

important, consisting of saddlery and harness factories, cottonseed oil mills, canning factories, flouring mills, and packing houses. The city is in the centre of the artesian water belt of Texas, and has hundreds of artesian wells, which supply an abundance of the purest water for public and private enterprises.

AUSTIN, the capital of the state, is beautifully located on a cluster of hills overlooking the Colorado River. It is in the same latitude as Jacksonville, Florida, and is a little south of Los Angeles, California. The city is regularly laid out, with broad and imposing avenues which lead up to the statehouse after the manner of the city of Washington.

In the midst of the city, on a commanding eminence, stands the magnificent capitol building, the pride of every Texan, completed at a cost of 3,000,000 acres of public lands. It is built of Texas granite, and is the seventh largest building in the world. The splendid buildings of the State University are situated on College Hill, in the northern portion of the city. Other public buildings of note, the asylums for the blind, the deaf and dumb, and the insane, the land office, and the governor's mansion, are all beautifully located in different portions of the city.

WACO, the "Central City of Texas," is situated on the right bank of the Brazos River, about four miles from the geographical centre of the state. It is the seat of McLennan County, one of the richest and most productive of the black land counties.

Waco has an extensive trade in agricultural implements, grain, live stock, wool, and cotton. It is one of the largest interior cotton markets of the state. Manufacturing is a growing industry. Among the establishments in operation are flouring mills, oil mills, cotton mills, wagon factory, iron foundries, packing houses, and saddle and harness factories.

Waco is noted for her artesian wells. The city water-works are supplied from this source. Owing to the large number of the wells, and the copiousness of their flow,

Waco has become known as the "Geyser City." Several of the wells flow more than 1,000,000 gallons per day. These waters have a temperature of 104° Fahrenheit, and are said to possess valuable curative properties.

Waco is a noted educational centre. Baylor University, the oldest institution of learning in the state, is located here. It is also the seat of Add-Ran University, Academy of the Sacred Heart, and Paul Quinn College.

EL PASO, "The Pass," is situated on the Rio Grande, in the extreme western corner of the state. It is the centre of a rich mineral district, including the Trans-Pecos in Texas, New Mexico, Arizona, and the northern states of Mexico, and to this circumstance it owes its importance. Immense quantities of ores are shipped here, and two large smelting plants have been established for their reduction.

El Paso is the most important railroad centre of the Southwest. Eight lines of road enter and pass through the city and others are projected. An extensive trade is carried on with the Southwest and with Mexico and California, consisting of mining and milling machinery, ores, coal, lumber, vegetables, and fruit.

Among the manufacturing enterprises of the city are two foundries, a carriage and wagon factory, cigar factories, and saddlery and harness factories.

A United States military post is located here.

LAREDO is situated on the Rio Grande, 140 miles southwest of San Antonio. It is the terminus of the International and Great Northern Railroad, and is an important shipping point for the Texas-Mexican trade. The principal industries of the surrounding country are grape culture and the raising of vegetables. Population, 13,429.

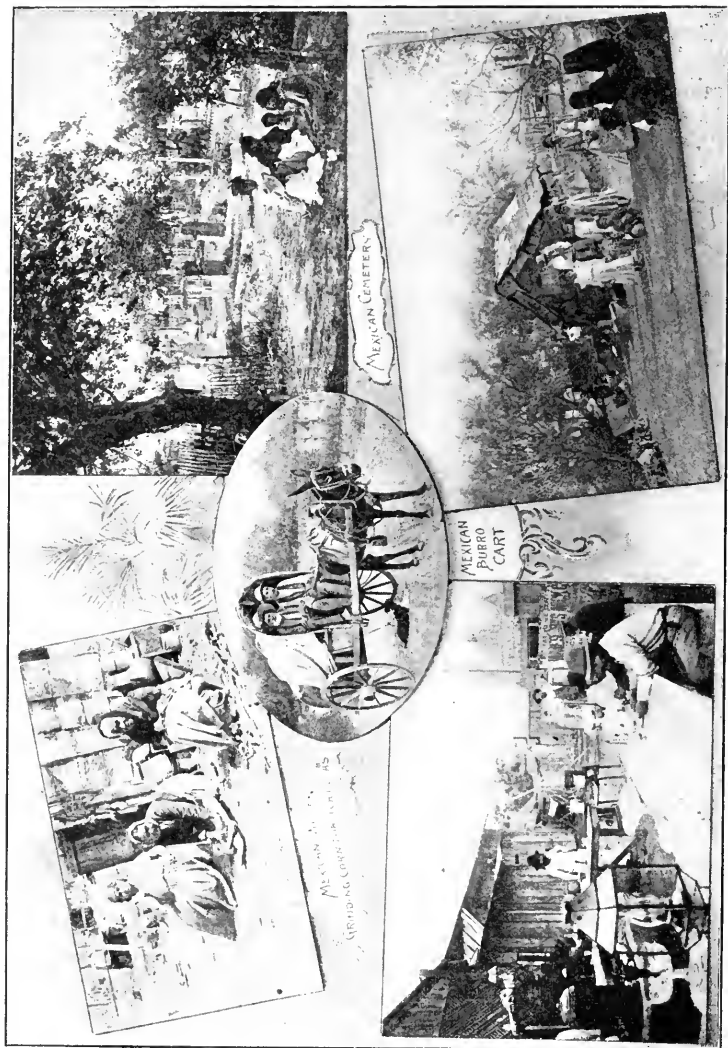


FIG. 40.

Scenes from Mexican life. The border cities have a large Mexican population.

DENISON, the "Gate City," is three miles from Red River in the northern portion of Grayson County. It is an important railroad centre, and contains the shops of the Missouri, Kansas, and Texas Railway. Denison carries on an extensive trade with the Indian Territory. Population, 11,807.

SHERMAN, the county seat of Grayson County, has a considerable trade in lumber, grain, and cotton. It has large flouring mills, pressed brick plants, a packing house, a collar factory, a broom factory, cigar factories, and the largest cottonseed oil mill in the world. Sherman is an important educational centre, nine colleges being located here.

Sherman and Denison are but 10 miles apart, and are connected by an electric railway.

BEAUMONT, the seat of Jefferson County, is situated on the Neches River, 39 miles north of Sabine Pass, and 83 miles east of Houston. It is one of the great lumber markets of the United States. Lumber is shipped from here by rail to almost every state in the Union, and to Mexico. Large quantities are exported to foreign countries through Port Arthur, Sabine Pass, and Galveston. The Kirby Lumber Company, of Beaumont, is one of the largest lumber manufacturers in the world, the capacity of its mills being 400,000,000 feet annually.

Beaumont is also the centre of the rice and oil industries of east Texas. Three miles from the city are the celebrated Spindle Top oil fields, which have made the name of Beaumont famous all over the world. Beaumont, since the oil strike, has a population estimated at 15,000 to 20,000. With the three great industries—lumber, rice, and oil—centred here, Beaumont is destined to be-

come one of the foremost manufacturing and commercial cities of the country.

PARIS, the seat of Lamar County, is on the Texas and Pacific Railroad, 60 miles east of Sherman and just within the edge of the Eastern Cross Timbers. This is a fine farming region, and Paris carries on an extensive trade in agricultural products and supplies. Among its

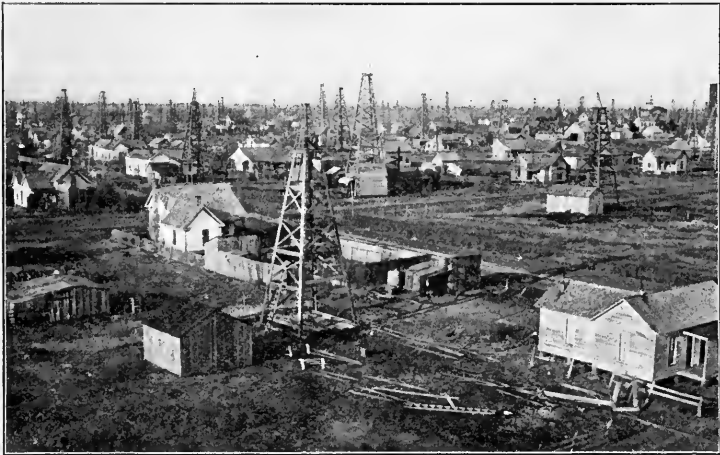


FIG. 41.
Corsicana oil field.

manufacturing enterprises are a cottonseed oil mill, flouring mills, planing mills, and iron foundries. Population, 9358.

CORSICANA is the seat of Navarro County. It is 50 miles southeast of Dallas, at the junction of the Cotton Belt and Houston and Texas Central railroads. It is a shipping point for cotton, wool, hides, and petroleum. Like other cities of this section, its manufactures consist

of cotton oil mills, flour mills, etc. It is said to have the largest cotton ginning plant in the world. A large petroleum refinery is located here. The Corsicana oil fields are second in importance only to the Beaumont field. Population, 9313.

PALESTINE, the seat of Anderson county, is an important railroad centre, the main line of the International and Great Northern Railroad forming a junction here with the Galveston branch. The general offices and shops of this road are located here. Population, 8297.



FIG. 42.

Shipping peaches, Tyler.

TYLER, the seat of Smith County, is situated on the main line of the Cotton Belt Railroad, 128 miles southwest of Texarkana. It is the chief distributing point for the

trade of east Texas. It ships large quantities of cotton, fruit, and garden truck. Tyler is an important manufacturing point. Among its industrial enterprises are a willow-ware factory, a coffin factory, a large iron and brass foundry, a rolling mill, a box factory, a carriage and wagon factory, and canning factories. Population, 8069.

GAINESVILLE, the seat of Cooke County, is situated on the Elm fork of the Trinity River, six miles south of Red River, in a rich farming and stock country. It has flouring mills, cotton oil mills, compresses, and foundry and machine shops. Population, 7874.

MARSHALL, the seat of Harrison County, is an important railroad town. The extensive machine shops of the Texas and Pacific Railroad are located here. Population, 7855.

CLEBURNE, the seat of Johnson County, is on the main line of the Gulf, Colorado, and Santa Fé Railroad 30 miles south of Fort Worth. The Santa Fé shops and general offices are located here. The industrial enterprises are similar to those of other towns in the Prairie region. Population, 7493.

TEMPLE, the chief town of Bell County, is on the main line of the Santa Fé Railroad, 40 miles southwest of Waco. Division headquarters and repair shops of the Santa Fé road are located here. Temple is an important cotton market. Population, 7065.

GREENVILLE, the capital of Hunt County, is situated near the head waters of the Sabine River, 50 miles northeast of Dallas. It is an important railroad centre, and extensive machine shops of the different lines are located here. It has, besides, flouring mills, a saddle and harness factory, wagon factory, cotton and woollen mills, and numerous other smaller manufacturing plants. It is in

the rich black land country and has a large trade in farm products and supplies. Population, 6860.

TERRELL, the chief town of Kaufman County, is on the Texas and Pacific Railroad, 30 miles east of Dallas. It has a considerable trade in cotton, grain, flour, live stock, hides, and wool. The North Texas State Asylum for the insane is located here. Population of Terrell is 6330.



FIG. 43.

Cauliflower field, near Beeville.

BROWNSVILLE, the seat of Cameron County, is situated on the Rio Grande near its mouth. It has an important trade with Mexico. Most of the inhabitants are Mexicans or the descendants of Mexicans, and Spanish is the language commonly spoken. Population, 6305.

BRENHAM, the seat of Washington County, is at the junction of the Santa Fé and the Houston and Texas

Central railroads, 65 miles northeast of Houston. It is the centre of a rich cotton-growing section, and several thousand bales of the staple are marketed here annually. Population, 5968.

HILLSBORO, the seat of Hill County, is an important grain and live-stock centre. It has one of the largest cotton compresses in the state. Other industrial estab-



FIG. 44.

Pear orchard and strawberries, near Floresville, Wilson County.

lishments are flouring mills, cottonseed oil mills, a cotton mill, and a broom factory. Population, 5346.

TEXARKANA, Bowie County, is situated on the boundary line of Arkansas and Texas, hence its name. It is an important railroad centre, connections being made here between several state and interstate lines. Population, 5256.

BONHAM, the capital of Fannin County, is on the Texas and Pacific Railroad, 70 miles northeast of Dallas. It has

a fine trade in agricultural products with the surrounding country. Population, 5042.

ENNIS is an important town of Ellis County, on the Houston and Texas Central Railroad, 25 miles south of Dallas. It is in the rich black land belt, and its trade is confined principally to the products of the farm. Population, 4919.

WEATHERFORD, Parker County, is situated near the western edge of the Grand Prairie, in a rich farming country. It has a considerable trade in cotton, grain, live stock, hides, garden truck, and fruits. Population, 4786.

CORPUS CHRISTI is situated on the bay of the same name, 125 miles southeast of San Antonio. It has a fine harbor and a growing commerce. It occupies the highest point on the Texas coast and is a popular health and pleasure resort. It is an important point for the shipping of vegetables. Population, 4703.

WAXAHACHIE, the seat of Ellis County, is the centre of the great cotton-growing industry of the state. Ellis



FIG. 45.

Cotton yard, Waxahachie.

County leads all other counties in cotton acreage, and Waxahachie is one of the largest interior cotton markets. It is also an important market for fat cattle and mules. Among its industrial establishments are a large cotton mill, cottonseed oil mills, flouring mills, and elevators. Five railroads enter the town. Population, 4215.

DENTON, the seat of Denton County, is noted as an educational centre. The North Texas State Normal School and the Girls' Industrial School are located here. Large shipments of cotton, wool, flour, grain, and hides are made from this point. Population, 4187.

ORANGE, the seat of Orange County, is situated on the Sabine River near its mouth. It is one of the great lumber markets of the state. Population, 3835.

BRYAN, Brazos County, is an important cotton market. College Station, near Bryan, is the seat of the Agricultural and Mechanical College. Population of Bryan, 3589.

ABILENE, Taylor County, has large grain and cattle interests and is a noted health resort. Population, 3411.

MARLIN, Falls County, is famous for its hot wells, which are said to possess valuable curative properties. Population, 3092.

GEORGETOWN, Williamson County, is an educational centre, Southwestern University, a denominational school of the Methodist Church, being located here. Population, 2790.

SAN ANGELO, Tom Green County, is the centre of an extensive grazing country and has a large trade in cattle, sheep, and wool. It is also an important pecan market. Its high, dry climate makes it a favorite health resort. It is the western terminus of the Santa Fé Railroad. Population, 2615.

SAN MARCOS, Hayes County, is one of the most picturesque little cities in the state. It is situated on the San Marcos River, midway between Austin and San Antonio. It is the seat of the Southwest Texas State Normal School. The United States has fish hatcheries here. Population, 2292.

LAMPASAS, in the county of the same name, has fine mineral springs and is noted as a health resort. Population, 2107.

HUNTSVILLE, Walker County, is the seat of the Sam Houston State Normal Institute. It is an historic city, having been the residence of General Sam Houston. General Houston died and was buried here in 1863. One of the state penitentiaries is located here. Population of Huntsville is 2485.

NACOGDOCHES, in the county of the same name, is one of the oldest towns in the state and has many historical associations. It was the home of General Thomas J. Rusk, of J. Pinckney Henderson, first governor of the state, and of Kenneth L. Anderson, last vice-president of the Republic. Magee's expedition started from here in 1812, and it was here that Dr. James Long established the capital of his republic in 1819. Population, 1827.

MINERAL WELLS, Palo Pinto County, is famed as a health resort. It has mineral waters that are said to rival the famous German Carlsbad, or Hot Springs of Arkansas. Population, 2048.

JACKSONVILLE, Cherokee County, is the centre of the east Texas fruit and trucking industries. A large canning factory, a box factory, and a cottonseed oil mill are among the industrial enterprises of this thriving little city. Population, 1568.



FIG. 46.

Packing peaches for shipment, Jacksonville.

RUSK, Cherokee County, is the seat of one of the state penitentiaries. A large iron furnace is operated by the state in connection with the penitentiary. Population, 1527.

Many other thriving towns are found in all sections of the state. Brief mention should be made of the following : —

NAME	COUNTY	POPULATION
McKinney	Collin	4342
Gonzales	Gonzales	4297
Victoria	Victoria	4010
Brownwood	Brown	3965
Navasota	Grimes	3857

NAME	COUNTY	POPULATION
Belton	Bell	3700
Sulphur Springs	Hopkins	3630
Longview	Gregg	3591
Yoakum	Lavaca	3499
Cuero	De Witt	3422
Cameron	Milam	3341
Calvert	Robertson	3322
Jefferson	Marion	2852
Crockett	Houston	2612
Smithville	Bastrop	2557
Rockdale	Milam	2515
Honey Grove	Fannin	2483
Wichita Falls	Wichita	2480
Seguin	Guadalupe	2421
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La Grange	Fayette	2392
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Dublin	Erath	2370
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Bastrop	Bastrop	2157
Hearne	Robertson	2129
New Braunfels	Comal	2097
Comanche	Comanche	2070
Clarksville	Red River	2069
Bowie	Montague	2000

REVIEW QUESTIONS.—Name the eight largest cities of Texas. Find them on the map of Texas. What has caused the growth of each? Name five cities that are noted as health resorts. Name three noted educational centres. Name a great railroad centre in north Texas and another in south Texas. Name the twelve most populous counties of the state. Find them on the map. Name two cities that are centres of the lumber industry. Name the most important seaports on the coast of Texas. Find them on the map. Describe the foreign trade of Galveston. Name two cities with interesting historical associations. What two cities are centres of the oil industry? Name three cities on the Rio Grande; in what does their trade consist? Name two cities that are centres of the fruit industry. What cities have large packing houses? What city is the largest inland cotton market of the state? Name three cities that are centres of the cattle

industry. Near what two cities are there important United States military reservations? Name the most western city of the state. Name the city nearest the centre of the state. Name a city on each of the following rivers: (a) Brazos; (b) Colorado; (c) Trinity. In what direction and by what railroad would you go from Galveston to Palestine? Houston to El Paso? Fort Worth to Marshall? Corsicana to Texarkana? Austin to Laredo? Where are the state asylums for the insane located? The state prisons? Name the counties bordering on Louisiana. Which is the largest county in the state? The smallest? Find them on the map. Name five "black land" counties. Name the counties in order that border on Red River. Name five counties in the "Panhandle." In what cities are state normal schools located? What two cities are centres of the rice industry? Give a brief description of the capital city. Name the eastern border counties. Name the original counties of the state. Name five counties in the rice belt; five in the timber belt; five in the wheat belt; five in the Panhandle; five in central Texas; five bordering on the Gulf of Mexico; five on the Rio Grande; the six counties of the Trans-Pecos. What is the latitude and longitude of Austin? What cities of the Old World lie near the same parallel?

GOVERNMENT

In its essential features the government of Texas is the same as that of other states of the Union. It has a written constitution embodying the fundamental laws of the state, and setting forth the principles that control the making of other laws, and defining the powers and duties of public officers.

The constitution of Texas provides that the government shall consist of three departments, Legislative, Judicial, and Executive.

The legislative power is vested in a Senate and House of Representatives, which, together, are styled The Legislature of the State of Texas. The Senate consists of thirty-one members, and the constitution provides that this

number shall never be increased. One-half of the Senate is elected every two years. The term of a senator is four years. Membership in the House of Representatives may never exceed 150. The membership at present (1903) is 128. Representatives are elected biennially for a term of two years. The Lieutenant Governor by virtue of his office is President of the Senate. The House of Representatives elects its own presiding officer, who is designated as the Speaker. The Legislature meets biennially at the state capital, on the second Tuesday in January, and at other times on the call of the Governor. The legislative term is fixed by law at ninety days. An "extra session" may not continue longer than thirty days.

The Executive Department consists of the Governor, Lieutenant Governor, Treasurer, Comptroller of Public Accounts, Commissioner of the General Land Office, Superintendent of Public Instruction, Attorney General, and three Railroad Commissioners; all of whom are elected for two years, except the last who are elected for six years—one every two years. Other executive officers, as Secretary of State, Adjutant General, Commissioner of Insurance, Statistics and History, and State Health Officer are appointed by the Governor to serve during his term.

The Judicial Department consists of (1) one Supreme Court of three judges; (2) five Courts of Civil Appeals of three judges each; (3) one Court of Criminal Appeals of three judges; (4) sixty-three District Courts of one judge each; (5) a County Court for each county; (6) Justice of the Peace Courts, not less than four nor more than eight for each county. All the judges and justices are elected by the citizens of their respective districts.

The Supreme Court holds its sittings at the capital. The Courts of Civil Appeals are held at Galveston, Dallas, San Antonio, Austin, and Fort Worth. The Court of Criminal Appeals may be held at any three places in the state. At present (1903) it sits at Tyler, Austin, and Dallas. The District Courts are held at the county seats of the different counties. County Courts for criminal business hold a term once a month at the county seat; for civil business once every two months. Justices' Courts are held monthly at some designated place in the precinct.

Cities and incorporated towns have Corporation Courts with power to try misdemeanor cases.

Texas has two senators and sixteen representatives in the United States Congress.

REVIEW QUESTIONS. — How often and when does the Legislature of the state of Texas meet? What is the total membership of the Legislature? Of each branch of the Legislature? How long is a legislative term? For how long may an "extra session" hold? Who is state representative from your district? Who is your state senator? Name the counties of your representative district. Your senatorial district. Name the chief executive officials of the state. Give the names of the present state officers: Governor, Lieutenant Governor, Treasurer, Comptroller, Commissioner of the General Land Office, Attorney General, Superintendent of Public Instruction, Railroad Commissioners. Of what does the judicial department consist? How many judges of the Supreme Court are there? How many judicial districts? Who is judge of your district? What counties in your judicial district? In what cities does the Supreme Court sit? Where are the District Courts held? What representation has the state in the Congress of the United States? In what congressional district do you live? Give the name of the congressman from your district. Give the names of the two United States senators from Texas?

EDUCATION

The educational system of Texas comprises public free schools, normal schools, the Agricultural and Mechanical College, the State University, schools for the deaf and dumb and for the blind, the State Orphan School, and the Industrial Institute and College for White Girls.

Separate schools are provided in all cases for white and for colored children.



FIG. 47.

Main building, State University, Austin.

The Public Free Schools embrace rural schools and independent districts (cities and towns). The rural schools are operated under two systems — the *community*

system and the *district system*. The community system is in operation in thirty-one counties. Under this plan schools may be organized in any part of the county by enrolling the names of such pupils as may attend, and recommending to the county judge three citizens of such community as trustees. The community has no geographical boundaries, and there is no limit to the number of communities that may be formed in a county excepting that in towns of not more than 1500 people, no more than two for white and two for colored children may be organized.

One hundred and ninety-six counties are under the district system. The districts, which are formed by the commissioners' courts, have certain specified boundaries, and may levy a local tax not to exceed twenty cents on the hundred dollars' valuation of property. The county commissioners may organize districts in community counties, provided that no district shall contain more than thirty-six square miles of territory.

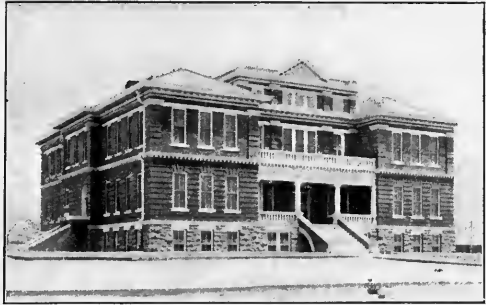


FIG. 48.
High School, El Paso.

Cities and towns may be constituted independent districts by a vote of the citizens of the municipality.

The public schools of Texas are the most richly endowed of any state in the Union, the permanent school fund, state and county, amounting to nearly \$46,000,000. This



FIG. 49.
Houston High School.

fund has been derived mainly from the sale of public lands which, from time to time, have been set aside for this purpose. At present the state fund consists of interest-bearing bonds to the amount of \$10,600,000 ; interest-bearing land notes \$15,200,000 ; and about



Fig. 50.

North Texas Normal College, Denton.

14,000,000 acres of unsold lands. The interest on the bonds and notes held by the permanent fund, the rentals from lands still unsold, one-fourth of all the occupation taxes, an annual

poll tax of one dollar, and a special tax of eighteen cents on the hundred dollars' valuation of property constitute the *available fund* for the maintenance of the schools. The available fund amounts to nearly \$4,000,000 annually, and is apportioned among the different counties according to scholastic population.

The constitution requires that the schools be maintained six months in each year.

The state school age is from seven to eighteen years inclusive.

The public free schools are under the control of the State Board of Education, consisting of the Governor, the Comptroller of Public Accounts, and the Secretary of State. The State Superintendent of Public Instruction is secretary of the State Board of Education. He is the chief executive officer of the system.

Four normal schools are maintained by the state for the training of teachers: the Sam Houston Normal Institute at Huntsville; the North Texas State Normal at Denton; the Southwest Texas Normal at San Marcos; and the Prairie View Normal and Industrial College, at Hempstead, for colored teachers. These schools are strictly professional, their aim being to fit teachers for the practical work of the schoolroom.

The Agricultural and Mechanical College, located near Bryan, Brazos County, is a branch of the State University, "for instruction in the mechanic arts and the natural sciences connected therewith." Connected with the college is an experiment station supported by an appropriation of \$15,000 per annum from the treasury of the United States.

The State University is located in the city of Austin, on a beautiful block of forty acres of ground overlooking the state capitol. It was formally opened to students September 15, 1883, and is coeducational. Tuition is free to residents of the state. Graduates of approved high schools are admitted without examination. The system of instruction is a combination of the elective and class methods. The degrees awarded are those usu-

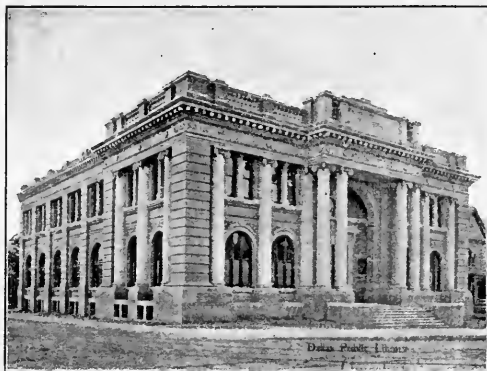


FIG. 51.

Public Library, Dallas.

ally given by American universities. After 1905 only one degree will be awarded—Bachelor of Arts. No honorary degrees are conferred.

The affairs of the University are managed by a Board of Regents composed of eight citizens, residents of different portions of the state, who are appointed by the Governor and confirmed by the Senate.



FIG. 52.

Agricultural and Mechanical College, Bryan.

The medical department of the University is located at Galveston.

The Industrial College for White Girls is located at Denton. It is designed to give, besides a literary course, instruction in kindergarten work, telegraphy, stenography, photography, drawing, painting, designing and engraving, needlework, cooking, trained nursing, the care and culture of children, and such other subjects as may best fit girls for the practical industries of the age.



FIG. 53.

Baylor University, Waco.

The institutes for the deaf and dumb and for the blind are located at Austin. The state orphan school is at Terrell.

In addition to the state schools there are in Texas 49 white and 7 colored denominational and private colleges of high rank, in which are over 500 teachers and 8000 students. This private property is valued at nearly \$3,000,000.

REVIEW QUESTIONS.— What grades of schools are provided for in the educational system of Texas? From what sources is the permanent free school fund derived? What is the total amount of this fund? What is meant by the available school fund? From what sources is this fund derived? What amount of this fund is annually apportioned to the schools? What is the constitutional requirement as to the length of the school term? What is the state school age? How many normal schools does the state maintain? Locate each of these schools. Where is the State Agricultural and Mechanical College located? How is it maintained? Give the main facts concerning the State University. Locate the Girls' Industrial School. Speak of the differences between the community system of the public free schools and the district system. How many counties in each system?

HISTORY-

The exploration of Texas began soon after the conquest of Mexico by Cortez. In 1528 Cabeza de Vaca, two common sailors, and a negro, survivors of Narvaez' expedition to Florida, were shipwrecked on an island on the Texas coast, supposed to have been Galveston Island. Here they were taken prisoners by the Indians, who looked upon them as curiosities, and they were shown about from tribe to tribe for eight years. In this way they unwillingly explored the country from Galveston to El Paso.

In 1540 Coronado, in search of the Seven Golden Cities of Cibola, reached the Pueblo village of Ysleta on the Rio Grande, where he made the first formal claim of the Spanish crown to the territory of Texas. Haunted by the same golden phantom, Hernando de Soto, in 1542, penetrated the continent by way of Florida and reached the vicinity of Texarkana. Forty years later, Espejo explored and named New Mexico, and established missions at Sante Fé and El Paso. On these explorations Spain based her claims of sovereignty.

In 1685 Robert Cavelier de la Salle, a French explorer in search of the mouth of the Mississippi, landed on the shores of Matagorda Bay and began a settlement. Soon after, while on an exploring expedition into the surrounding country, La Salle was murdered by some of his own party; and the settlement, having lost its leader, was destroyed by the Indians.

In 1690 Spain, through jealousy of the French, began the permanent occupation of the country by the establishment of missions. In 1730 San Antonio was founded.

From 1712 to 1803 Texas was alternately under the rule of France and Spain. In the latter year France, who was then in possession, sold Louisiana to the United States. A dispute then arose between the United States and Spain as to the western boundary of Louisiana, the former claiming the Rio Grande, the latter the Sabine. The matter was settled in 1819 by the United States giving up Texas to Spain in part exchange for Florida, and agreeing to the Sabine as the boundary line.

In 1821 Mexico revolted from Spain and soon afterward became an independent republic. Texas was then a province of Mexico.

On New Year's Day, 1822, Stephen F. Austin, with a company of immigrants from the United States, arrived on the Brazos River and began the Americanization of Texas. Other immigrants followed, and, before a decade had passed, more than 20,000 had established themselves within the limits of the province. The rapid increase of the Americans alarmed the Mexican authorities, who, in 1830, prohibited further immigration from the United States, and began a systematic persecution of the colonists who had previously arrived. The Americans remonstrated, and then took up arms to defend what they conceived to be their rights. The first clash occurred at Gonzales, October 2, 1835. On March 2, 1836, a convention was held at Washington on the Brazos, which declared Texas a free and independent republic. Four days later occurred the memorable battle of the Alamo at San Antonio, where the Texan garrison under Colonel Travis were defeated and slain to a man. On March 19, Colonel Fannin with 300 men surrendered at Goliad, to be treacherously murdered on the 27th.

Flushed with these successes, the Mexican President, General Santa Anna, moved eastward, vowing to drive every American from the soil of Texas. He had no opposition till he reached the San Jacinto River in east Texas. Here, on April 21, 1836, he was met and disas-

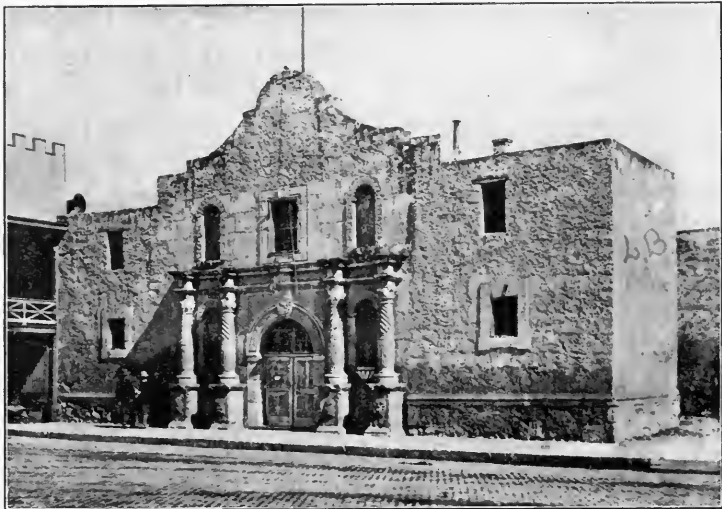


FIG. 54.

The Alamo, San Antonio.

trously defeated by a force of Texans many times smaller than his own, under the command of General Sam Houston.

The battle of San Jacinto achieved the independence of Texas, which now set up a government of her own, and elected General Houston president.

In 1845 an arrangement was made with the United States by which Texas became a state in the American Union. With annexation, Texas began to grow rapidly

in wealth and population. From a struggling little republic of less than 50,000 people she has in fifty years become the sixth state in the Union in point of population; and, should the present rate of growth continue, another ten years will place her well alongside of New York and Pennsylvania in this element of greatness.

In other ways the progress of the state has been remarkable. Fifty years ago there was not a mile of railroad within her borders; now with nearly 10,000 miles, she eclipses every other state except Illinois. Texas, to-day, is the leading state in the production of cotton, cattle, and oil. One-twelfth of all the wealth gathered in from the farms of the United States is produced in this magnificent state.

And not only in material progress has this wonderful advance been made. Thanks to the wisdom of her founders, Texas has one of the best-equipped educational systems in the world, and every child in the state, no matter what its race, color, or condition, has within its reach a free education, from the simple elements of the primary school to the higher culture of the university.

Thus, "rich in all the elements that constitute a commonwealth's greatness, Texas stands to-day the foremost type of progressive and successful Americanism."

REVIEW QUESTIONS.—Who was probably the first explorer of Texas? State the circumstances of this exploration. State the facts concerning Coronado; De Soto; Espejo. Where and by whom was the first formal claim to Texas made for Spain? What is the oldest town in Texas? Give the date of La Salle's landing at Matagorda Bay. What was the fate of La Salle and his colony? When did Spain begin her occupation of the country? What method did she employ? Describe a mission. Name some of the principal missions in Texas. When was San Antonio founded? Under what governments was Texas

from 1712 to 1803? What dispute arose between the United States and Spain concerning Texas? When and how was this dispute settled? Show how Texas became a part of Mexico. When and by whom was the first American settlement in Texas made? State some of the causes that led to the Texas revolution. When and where was the first battle of the revolution fought? Give an account of the fall of the Alamo. What was the last battle of the war? When was it fought and what were its results? Give the date of the Texas Declaration of Independence. Who was the first president of the Republic of Texas? What other presidents were there? When was Texas annexed to the United States? Tell something of her progress as a state of the Union.

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