THE TRUTH ABOUT TEXAS

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FIFTH THOUSAND
(Later editions will be fully illustrated.)

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FOREWORD.

This study of Texas is believed to be a departure from the stereotyped style of such publications. It is offered by the *Santa Fe* as an appreciation of the *Whole of Texas* without regard to selfish interests, or particular localities, and is addressed impartially to the immigrant, the agriculturist, the home or health seeker, the manufacturer, the shopkeeper and the capitalist. Special effort has been made to avoid exaggeration, or even undue optimism, in the projection of facts and the estimates of possibilities. The latest and most authentic pronouncements of scientific and commercial authorities have been utilized and simplified. The mighty facts presented are more impressive and convincing than volumes of rhetorical hyperbole, and though it is impossible to give adequate consideration to every phase of the State's preëminent advantages in a short treatise of this kind, yet pains have been taken to touch trenchantly upon every aspect of this young empire that can be of interest and use to the intelligent reader.

TEXAS.

ITS HISTORY, ITS SIZE, ITS GROWTH AND ITS POSSIBILITIES.

It is impossible to arrive at an adequate and symmetrical appreciation of the State of Texas as it is to-day without an acquaintance with the few known facts of its early history, from the day when La Salle landed his frail ships at Matagorda, on the coast of the Gulf of Mexico, in 1680, and called the country Louisiana in honor of Louis XIV, then sovereign of France. Eleven years later came Alonzo de Leon with the red and yellow standards of Spain, an army of steel-clad paladins and a few hundred emigrants from Catalonia and Castile, and named the uncharted empire "New Philippines," for the honor of his king, Philip V of Spain. Eighty-three years before the American colonies declared their independence, San Antonio, the oldest European settlement in Texas, was founded, and twenty-four years later, Goliad and Nacogdoches, then two squalid clusters of adobe huts, dominated by alcaldes and innocent of the most primitive aspirations to civilization, became the second and third "cities" of the State.

In 1718 the Spanish monks in San Antonio built the Alamo, destined to be an everlasting monument to the matchless heroism of the American Texan, the birthplace of his liberty, the tomb of medieval tyranny on this continent, the altar-stone of a sacrifice and a retribution without a parallel in all the songs and stories of the bold deeds of men. Beginning with the church and monastery of the Alamo, the good priests built a rosary of missions extending southward at intervals of a few miles, linked by rude ditches which led upon their farms and vineyards the waters of San Pedro creek and San Antonio river. They are standing yet, these stained and crumbling mission churches. Scarred and shattered, with the moss and mould of nearly two centuries upon them, loot to the bat, the lizard and the owl, they loom now at the very threshold of bustling American cities, in the midst of

teeming gardens and farms, mute evidences of the prophetic wisdom of the patient men who builded them.

Then came Mexican rule, and the adjoining States of Coahuila and Texas were ruled by Mexican governors till about 1820, when the inroads of American colonists from the United States began to incur the hostile attention of the authorities at Saltillo. The revolution of 1835 is reasonably traced to the arrival of Stephen F. Austin with a large following of American families in 1823, but at all events, in 1836, a year after the beginning of desultory hostilities with Mexico, Texas made its declaration of independence, and with General Santa Anna and a large army of Mexicans already overrunning the border, boldly summoned her scattered sons — not more than three thousand fighting men all told — and stood alone, without a word of encouragement, without an alien sword to help them, without even an assurance that the great republic of the United States knew that its adventurous kinsmen, a mere brigade of hunters, horsemen, scouts and pioneers, were fighting for liberty against the embattled armies of Mexico.

On February 23, a few days before the declaration of Texas independence, General Santa Anna, with an army of more than six thousand Mexicans, including artillery, cavalry and infantry, invested San Antonio and demanded the surrender of the town and its defenders. Col. W. B. Travis, James Bowie, David Crockett (the Davy who went ahead when he was sure he was right), J. B. Bonham and J. Washington, with 183 others of the same unconquerable race and strain, then hoisted the flag of Texas upon the white parapet of the Alamo and swore together that they would fight Santa Anna there till Gen. Sam Houston had marshaled his army, or until the last man of the little garrison was down.

In all history there is no record of a feat at arms that quite compares with this. The romancers and the poets have not imagined nor portrayed a situation or a denouement so grimly desperate, so hopelessly gallant, so unselfishly brave. Few in numbers, short of ammunition, quickly cut off from food and water by the swarms of Mexican soldiery, with no applauding army of their fellows to look on or to rescue them, with no hope of reward or praise, no chance to see the fruits of their

heroism; inspired only by their love for Texas, sure only that it was their duty to gain time for their scattered compatriots, they went into the barricaded Alamo to die.

For eleven days and nights the army of Santa Anna surged and skirmished, bombarded, enfiladed, rushed and died about the windowless walls of this tabernacle of courage. From the roof, behind the low, stone breastwork of the projecting walls, came always the intermittent, deadly, but diminishing fire of the Texas riflemen. Sorties, ambuscades, sudden rushes under cover of the darkness, proffers of mercy, promises of reward, flags of truce and attacks *en masse*, were equally futile in shaking the determination or abating the superhuman vigilance of that small garrison. Day by day the heaps of dead and dying Mexicans littered the ground and poisoned the atmosphere about the Alamo, till more than two thousand had died before the fort.

Within, the hungry, famished, sleepless heroes diminished day by day. Some died of the fever or from their wounds, some never returned from their silent watches on the roof, some perished repelling the Mexicans who scaled the walls, some fell before the incessant hail of bullets that swept against the fortress day and night, but nobody spoke of surrender or escape! At last, when ammunition, food and water were gone and the last lingering hope of rescue was removed, Colonel Travis, summoning his few men about him in the earthen-floored room which is the main apartment of the Alamo, drew with his sword upon the ground a line, and bade those who still preferred death over surrender to cross it.

Only one man hesitated!

A man named Rose who had proved his courage beyond all reasonable doubt preferred to live, and said so. There were no recriminations, no looks of surprise, no harsh words from the others. One laughed and said: "Oh, come on, Rose. You've got to die some day and you might as well die with us!" Bowie, gallant Bowie, wounded, sick and unable to stand, was carried across that fateful line upon his cot. Rose was aided to escape during the night. In the morning the Mexicans knew that the Texans had exhausted their ammunition, and before 7 o'clock two thousand of them with fixed bayonets assailed the walls with ladders. From the roof the Americans fought them until they

had piled the ground with dead; overborne by the sheer weight of numbers, they backed, fighting now with knives and pistols, boards wrenched from the dismantled altars and clubbed rifles, down into the dim, pewless church where the wounded, weak but undismayed, lay feebly cheering on their comrades. Inch by inch the battle waged into the southwest corner of the bloody sanctuary, where, in a dark baptismal vault, two women and their children, the families of two Texans, gave zest to the last forlorn defense. Here Bowie died, transfixed by a dozen bayonets, and just outside the low-vaulted entrance near the main door of the Alamo, bold Crockett fell upon a heap of slain. And so perished Travis and Bonham and Washington, and all the heroes of the Alamo — perished manfully, even gaily, that Texas might be free.

It is a simple tale, all told in a few paragraphs, but the spirit of its actors lives in Texas yet. Within two months Gen. Sam Houston and his little army, crying "Remember the Alamo," annihilated the army of Santa Anna on the field of San Jacinto and baptized the infant republic with the holy chrism of heroic blood. Such was the birth and christening of Texas. It was annexed to the United States in 1845, adding 265,780 square miles of virgin soil to our national estate, and it shall be the purpose and the argument of this book to illustrate and prove that Texas is the most important and inexhaustible agricultural area with an adequate coast line, in the whole world.

That is a brave line!

"The most important and inexhaustible agricultural area with an adequate coast line, *in the whole world.*"

Alone and unsupported by figures, facts and the incontrovertible evidence of actual achievement, it sounds empty, blatant, visionary. And maps are so misleading, statistics are so dry and unconvincing, mere talk and well-sounding adjectives are so easy and so futile.

The length of Texas from north to south is half the whole length of the United States in the same direction. Its width is more than one-half the width of the southern border of this nation between the Atlantic and the Pacific oceans. Texarkana, in the northeastern corner, is as far from El Paso, in the northwestern corner, as Chicago is from the ocean. *There are one*

hundred and seventy million acres of land within its borders! It is bigger than the whole republic of France. Its average width, east and west, is eight hundred miles; its average length is more than seven hundred and fifty. It has over eleven thousand miles of railroads and more navigable rivers than any other five States combined. It is as large as Great Britain and Ireland, Turkey in Europe, Greece, Holland, Denmark and Belgium combined. Some of its counties are bigger than whole Eastern States. It has four hundred miles of coast line and deep-water harbors where the fleets of the world may ride together at safe anchorage. It is bigger than the German empire, which sustains in easy comfort a population of fifty millions. Figuring its capabilities upon the basis of proved productivity, Texas could sustain a population of ninety-five millions!

Only one-seventh of its land is under cultivation.

It has not yet attained fifteen per cent of its tested agricultural and mineral possibilities.

Its population, according to the new Federal census, is but 3,048,710.

There are fifty-six acres for every man, woman and child now in Texas, or an average of less than twelve persons *to every square mile in the State.*

Although Texas has doubled its population since 1880, it has as yet not more than three million one hundred thousand inhabitants, though it is nearly five times as large as New York with a population of more than seven millions. It has been the least understood, the least exploited and the most modest State in the Union. Until ten years ago its chief industries were cotton and cattle, and most of the world believed that it was half coast swamps and half semi-arid pasture ranges. Even now it has no cities of more than one hundred thousand, and alone, of all the States, the increase of population is greater in the agricultural regions than in the towns. There are three reasons for this, which become more apparent as the years advance. First, the ease with which money can be made and a competence attained by Texas farming; second, the restrictive legislation of the State, which prohibits the upbuilding of vast and favored corporations and so tends to distribute not only the commercial advantages but the municipal population of the commonwealth. A

third reason, only commencing to be apparent, has been the fact that, until within the past two years, the native manufacturing facilities of Texas remained unknown or undeveloped.

There is not in the world to-day an area of civilized country in which land is so *cheap,* the climate so varied, the soils so perfectly adapted for the cultivation of all kinds of cereals, fabrics, fruits, fodders, sugars and tobaccos. Its apples are better than those of Michigan; Smyrna yields no better figs; its wine is as good as Languedoc; its wheat is as perfect as the grain which has made Minnesota and the Dakotas famous around the world. Its mineral wealth, almost untouched, is greater than Pennsylvania's; its forests of hard and soft building woods are the largest and most valuable of the few remaining areas of marketable timber; its oil fields, scarcely two years old, contain enough fuel, light and asphalt to run the factories, to illuminate the houses and to pave the cities of a nation with fifty million inhabitants. Within its borders are all the thermometric variations of both temperate and semi-tropic lands.

Keeping in mind its vast areas and the almost primitive state in which its natural resources yet remain, remembering the numerical paucity of its population as compared with the acreage of the State, it will be quickly easy to understand why Texas stands uniquely alone among the United States as an alluring and certain field for the enterprising farmer, homeseeker, merchant, manufacturer, miner, capitalist or professional man who finds his environments narrowing or overcrowded, or whose opportunities in more densely settled and older sections of this country are unequal to his youth or enterprise. Already in the first rank as a cattle-producing State, Texas produces more wheat than any other in the Union except Kansas, California and Minnesota; the State produces thirty per cent of the cotton crop of the United States and seventeen per cent of the world's; her rice industry, although yet in its infancy, is beyond all comparison the most extraordinary and certain agricultural prospect ever offered to Caucasian husbandmen. For these reasons and because it is almost certain that for many years Texas will remain the greatest essentially agricultural region in this country, that branch of her industries, with something of its beginning, achievement and future, has been placed first.

AGRICULTURE.

SOIL, CLIMATE, WATER SUPPLY AND CROPS.

As soil and climate are the two characteristics which determine the whole future of an agricultural region, so they are the first objects of attention for the farmer and the homeseeker. In Texas these two essential conditions have mapped out and charted as plainly as with a draftsman's brush, the grazing lands, the wheat fields, the cotton plantations, the sugar belts, the rice lands, the orchards, the vineyards, the forests of pine and hardwood, the mining districts, the oil fields and every one of the geological and atmospheric peculiarities which make the future of the State certain. There was never a time in the history of agriculture when the advantages of diversified and intensified farming were so well understood by the farmer, when governments expended so much money in climatic investigation, in agricultural experiment and in scientific testing of soils, but many of the results of these learned investigations are uttered in technical and statistical pamphlets which are almost unintelligible to the average reader.

The State of Texas comprises a greater variation of geological and climatic conditions than any group of States of equal area, and as these peculiarities are traceable in a large measure to the varying altitudes, latitudes and longitudes of the immense area of the State, so also the judicious selection of a home or farm site can be best determined by a brief but adequate knowledge of the different divisions into which Texas may be definitely divided. Geographically considered, the whole State consists of a series of broad, irregular steps or terraces, the highest of which is the Great Plains in the northwest corner, and the lowest of which is the Coastal Plain which extends in a wide, ramifying semi-circle from the mouth of the Sabine river to the delta of the Rio Grande. Next to the Great Plains, as one travels from the northwest toward the southeast, comes the zone of the famous red lands of central Texas, then the black prairie belt which stretches from the Red river at the northern boundary of the

State in an irregular but continuous area across the east-central length of Texas to its southern boundary, the Rio Grande river. East, southeast and south of this third step, or bench, lies the coastal region, which contains the principal lumber growth, the oil fields, the rice land and a considerable part of the sugar plantations of Texas.

The rivers, trending generally from the northwest toward the southeast, naturally follow the descending topography of the land, finding their sources in the high altitudes at the edge of the shed of the Great Plains, growing in volume as they traverse the rain-blessed regions, and finally spreading out into considerable width and depth as they enter the humid, coastal regions, where the average rainfall is about sixty inches. Within this series of concentric platforms, or steps, can be found, in the order named, the high, dry and almost arid grazing lands of the plains, where natural absorption is much greater than the annual fifteen to twenty inches of rain; the small but almost desert region of the trans-Pecos, which is mountainous and alkaline; the middle altitudes of the great central red lands, where the annual rainfall varies between twenty and thirty-five inches; the black lands, at a slightly reduced altitude, where the annual precipitation of moisture ranges from thirty-five inches in the western margin to fifty inches along the edge of the Coastal Plain; and finally, the Coastal Plain itself, where the highest average temperature, the most uniform climatic conditions and the greatest rainfall continue from year to year. (See map on page 77.)

The region of the Pan-handle, the Staked Plains and contiguous portions of the northwestern portion of Texas have been designated as arid or semi-arid, and it is true that the absorption of moisture is there greater than the rainfall. There are no rivers of considerable size, the country is comparatively unsettled and, as yet, there is no organized industrial effort except the cattle business, which, as yet mainly conducted on the old-fashioned method of free grazing in great herds, will give way to the more modern and economic system of fenced farming as soon as the country is developed and settled. That this is a mere question of time is assured by reason of the fact that, although the rainfall is wholly insufficient for many staple cereals, the soil is essentially arable and beneath its dry surfaces at varying

depths lie adequate and inexhaustible supplies of water. The cattle business, as it is now, will be discussed under its proper head in a succeeding article. The question of irrigation, already established as a national affair, is sure to find its most advantageous solution in Texas, because the State is singularly favored with subterranean waters which, seeping through the sand and porous surfaces of its soil, are caught and held in great cachements of gravel which lie between sub-strata of clay and the upper layers of silt, alluvial and decomposed sandstone.

The Staked Plains region may be then thus briefly described: About 150 miles in width, three thousand to four thousand feet above sea-level; soil, a rich dark loam, capable of producing almost anything when adequately watered, and already yielding sufficient tame and native fodders; an abundance of water at from ten to four hundred feet below the surface; many small lakes in the central and western parts, a few of which are salty and have many feet of pure crystal salt in their bottoms; climate, very healthy, although the winters are the coldest in Texas, the thermometer sometimes falling to ten degrees below zero; summers and mid-seasons, salubrious and cool, on account of high altitude and mountain influences.

The trans-Pecos arid lands lie in the triangle between the Pecos river and the Rio Grande, south of New Mexico, and excepting Jeff Davis, El Paso and Brewster counties. The soil of this, the only waste land of any extent in Texas, is dry and almost desert in many places, although there are great areas of short, nutritious grass upon which many herds of deer and antelope flourish; the climate is excessively hot; except in a few localities stock-water is unobtainable. The margins of this arid region, that is, along the banks and bottoms of the Pecos and Rio Grande rivers, are, however, susceptible of the most intense cultivation by irrigation, and the success which has attended the growing of foreign grapes there is augmented by the absence of all those destructive diseases and insects which attack vineyards in other sections. This, in brief, is an accurate description of the three subdivisions of the plains region of Texas. Although its hills abound in metal and its agricultural future is wholly dependent upon irrigation, yet it must be considered as a pastoral territory, as yet the least attractive locality

for the small farmer, the merchant and the home-seeker who now turns his eyes toward Texas.

Descending to the second tier or arc, comprehensively called the red lands, we first come to the undulating prairies of reddish-brown soil which extend from the Pecos river on the southwest, northwardly through the eastern half of the Panhandle, and which are locally described as "The Chocolate Plains." Here the headwaters of the Nueces, the Devil's, San Antonio and Guadaloupe rivers on the south, the Colorado and Brazos in the center, and the Red and Canadian rivers on the north, resolve themselves into well-defined streams, draining the country and facilitating the business of agriculture and stock raising. Along these streams are considerable fringes of timber — cottonwood, elm, ash and hackberry. The native grass, though short, is rich and the chief diet of the immense herds of cattle maintained in the region, which is nearly five hundred miles long and varies in width from one hundred to two hundred miles. The soil is admirably suited to resist drouths and the many ravines and deep-cut waterways furnish easy methods for the construction of dams and reservoirs. Cotton, sorghum, alfalfa, wheat, oats and corn yield paying crops where irrigation is sufficient, and many of the bottom lands produce these staples without any irrigation at all.

With this terse description of the less favored portions of Texas, we come to a similar consideration of the immense tracts of agricultural and timber lands included in the Red River valley between Wichita county in the north-central edge, nearly three hundred miles eastward to the northern end of the eastern timber lands, and comprising the famous black lands and the teeming fields which undulate gently across the whole middle and southeastern extent of Texas to the rice lands of the coast region. This extraordinary stretch of prolific soil comprises more than one hundred thousand square miles and encompasses within its borders the most remarkable variations of wealth-producing conditions of soil and climate in the world. Within its limits the fruits of the tropics and the hard cereal grains of the North can be raised with equal success. There is no section of the world in which the railroads are so active in extending their lines, or in which the ramifications of great traffic systems are so

numerous or so expensively installed. It contains four-sixths of the State's population, nearly all of its best cities, towns and villages, and a rural population which, though small in contrast with the empire upon which they live, is said by statisticians to be the wealthiest per capita of any strictly farming community on earth.

Beginning then with the valley of the Red river, which here forms the northern boundary of Texas, we find a rich sandy soil, interspersed with wide intervals of black alluvial and many thousand acres of the denser waxy land between Gainesville in Cooke county and Paris in Lamar. The altitude varies from one thousand feet above sea-level in Clay and Montague counties to three hundred in the eastern forest regions, and the whole length of the valley for twenty miles on either side of the river is well drained, well watered and blessed with a climate phenomenally equable, healthful and inspiriting. There is nothing known to northern or temperate latitudes that will not grow in this valley with profit to the producer, and in many instances with results of quality and quantity that have never been surpassed. Its bottom lands yield enormous crops of cotton and its uplands and tables form the accredited "fruit belt" of the State by producing more apples, grapes, peaches and small tree-fruit of fine quality than any other part of Texas or than Arkansas or Missouri. There has not been a failure of the peach crop in this region for over twenty-five years, and a singular immunity from late frosts in the spring makes the raising of vegetables and all early-ripening crops most certain and satisfactory. All kinds of hardy grain, cotton and grass-fodders flourish on its adjacent fields; coal in unlimited deposits, fine building stone, clays for cement, and brick and lumber in plenty are literally strewn throughout this valley; the water supply is copious, pure and easily accessible, and, except the far western reaches of the Red river, irrigation is unnecessary. It will not successfully raise rice, nor the more sensitive fruits of the tropics, nor the tender shrubs peculiar to the humid, hot, low countries, but its winters are mild and sunny and the heat of its summers is never intolerable.

The black land prairies, beginning in the northern edge of the State at the margin of the Red River valley, extending through the very heart of the State somewhat in this shape) (, is esti-

mated by its inhabitants, as well as by those who have made close observations of its soils, climate and productivity, to be the garden spot of the Southwest. It is nearly two hundred and fifty miles wide at its northern expanse, narrowing irregularly toward the middle or waist region of its southward extent, and widening again where it touches the southern, or Rio Grande, limits of Texas. In a general southeasterly direction the black land prairies are crossed, drained and watered by the Red, Sulphur, Trinity, Sabine, Brazos, Colorado, San Antonio and Guadaloupe rivers, and all of these streams are bordered by considerable timber of many varieties and bottom lands of astonishing adaptability for the raising of garden truck and fruits. In the western part the black prairie is crossed from north to south by two belts of sandy timber-land which is covered by an extensive but irregular growth of fuel, tie and fence timber. The soil of the region is in most cases black, whether sandy or waxy, and in the district east of the timbered belts it is of wondrous depth and inexhaustible richness, lying upon a foundation of lime rock or clay which holds vast supplies of hard or soft waters, as the containing subsoil is of clay and rock or gravel and sand. Splendid artesian wells are accessible throughout these black prairies all the way from Fort Worth to the Rio Grande, and the average annual rainfall is from thirty inches, along the western limits of the land, to over fifty inches in the eastern and southern districts.

Cotton, corn, oats, wheat, rice, hay, cattle, hogs, sheep, goats, horses and mules are the chief agricultural products, and there is no section of the United States in which the natural advantages for such farming are so perfect. In Eastland, Young, Stephens and other counties there is coal in plenty; there is much petroleum near Corsicana, and the result of intensive farming of vegetables and fruits has for years been a source of easy revenue to the farmers, whose chief assets lie in their incomparable annual yield of cotton, corn and the other staple cereals. The dense network of railways, which already covers the region herein described as the "black lands prairies," is the most convincing evidence of the forward condition of its prosperity and development. Although the newly discovered riches of the rice, oil and lumber fields of the coastal region, to be described next, may in

time equal the glories of the black lands, the latter yet boast of the greatest percentage of population, the largest number of first-rate cities and the longest and most unvarying period of swift development and wealth. Gainesville, Fort Worth, Dallas, Weatherford, Cleburne, Paris, Temple, San Antonio, Austin and a dozen other progressive and cosmopolitan cities, none with a population of more than sixty thousand, but all of exceptional beauty and prosperity, give ample demonstration of the native merits of the soil and of the ambitious industry of the people.

The climate is almost ideal in its balmy equability, for in the most northern counties of this remarkable zone the thermometer seldom reaches zero, the winters are dry and, with the exception of a brief and occasional norther, mild and sunlit. Most of the rain falls when it is most needed, in May and June, and in the more southern latitudes, where there is no winter, the high altitudes and the constant presence of the gulf breezes make the summers both delightful and healthy.

The region of the Nueces river, while not identified with the black lands, is yet contiguous to it on the south and may be quickly described as a triangular region bounded on its broadest side by the Rio Grande between Starr and Maverick counties, and extending to an apex at San Antonio. The Nueces river region is one of the most remarkable fruit-producing areas in this country. Its grapes mature earlier than those of California, and many semi-tropical vegetables, such as the Spanish onion, flourish under the as yet restricted irrigation improvements of the neighborhood. It is famous for its yields of pecans and for the rich, natural growth of pasture grass, upon which its vast herds of beef cattle fatten all the year round. This lower section of the middle lands of Texas is capable of a much greater development, because lands are very cheap, irrigation is a simple question, and the railroads are rapidly building into the district.

The coast region, a title used in the broad sense to describe all of that great, upland, rolling and flat portion of Texas which lies east and southeast of the black lands and extends from the shores of the Gulf of Mexico more than one hundred miles into the State, comprises the forest lands of eastern Texas, the oil fields, the rich rice fields of which Houston and Beaumont are pivotal centers, the sugar-cane belt of Colorado, Wharton and

Matagorda counties, and the immense acreage of cotton, corn and grain land that lies overlapping the black lands west of Brenham and the coast lands proper, where rice is king and thirty thousand rice farmers are swiftly coming to rival in wealth the cattle barons and cotton lords of the interior and western parts of Texas.

Rising in gentle undulations, well drained by numerous rivers, creeks and bayous, with a well-distributed and certain rainfall, a climate that varies not more than thirty degrees the year round, and a soil that is unequaled for the production of rice, corn, oats, sorghum, hay, sugar-cane, sea-island and Egyptian cotton, tobacco, figs, pears, grapes and, with the exception of apples, every fruit, grain, vegetable or grass that is known to modern agriculture. The soil in the river bottoms is a deep, black, sandy loam of inexhaustible fertility; the prairies and uplands offer three varieties, all sandy loams and generally covered with a close-knit sod that when plowed quickly rots into an enduring and virile fertilizer when disintegrated by the sun and wind.

The great forests of timber are in the northeastern section of the coast region, the oil fields lie between them and the gulf, about the lower reaches of the Neches river in Jefferson county. On the river and creek bottoms of the central and eastern portions of the coast region, especially in Harris, Galveston, Jefferson, Colorado, Brazoria, Wharton, Matagorda, Austin, Chambers, Liberty, Fort Bend and Jackson counties, are the rice fields and their tributary industries. Enormous crops of cotton, corn and ribbon cane are raised on the higher levels, and on the lands within ten to fifteen miles of the gulf all sorts of winter vegetables and fruits thrive. Here the strawberries are of fine quality and ripen in February, and great shipments of tomatoes, celery, asparagus and cabbage are sent to northern markets before such luxuries have been planted in more rigorous climes. In summer the thermometer seldom goes above 80 degrees in the shade and the average temperature in winter is about 50. The incessant gulf breeze tempers the heat of the torrid months and diminishes the cold of winter. Land is cheap and easily accessible both to the great inland markets and to tidewater.

With this general characterization of the coast country of Texas, the four great natural subdivisions have been briefly

described, namely, the plains, or strictly pastoral; the red lands, both pastoral and agricultural; the black lands, which form the most thickly settled and developed as well as the oldest and most famous portions of the State, and, finally, the coast region, which includes the forest, oil and rice fields, all at the very dawn of a certain and sure era of phenomenal prosperity. The information here epitomized, and we believe simplified, was collected in various forms by the Department of Agriculture at Washington and at Austin, Texas, by the Merchants Association of New York, by the Geological Survey and other disinterested authorities, who have been attracted to a study of Texas by the extraordinary natural phenomena, business and sociological possibilities of its incomparable gifts. The Santa Fe railroad, in thus presenting an unbiased and unexaggerated account of the present conditions and assured enterprises feasible in the State, has sent its own correspondents, writers and photographers to lay before the public an impartial and thoroughly dependable presentment of Texas as it is and as it may become through the sure and irresistible efforts of American enterprise, American industry and American thrift. In the preceding pages particular attention has been paid to the history, growth, size, possibilities, soils, water supply, climate and general topography of Texas. In succeeding subdivisions specific crops, such as cotton, rice, sugar, grain, grasses, fruit, and the vast and now transforming cattle industry, will be discussed without exaggeration and upon scientific and wholly impartial bases.

The Homestead Act of Texas, like many of the State laws of like trend and purport, was conceived in the desire to preserve the home, and to cherish the rights of the widow, the orphan and the children of the unfortunate. There is no State in the Union where the rights of the individual, regardless of wealth, station or influence, is more jealously guarded than in Texas. The homestead has been from the beginning an object of the most liberal solicitude. It embraces two hundred acres and all improvements, and may be in one or more tracts. It can not be confiscated for debt, and can be sold by the authorities only for taxes or the purchase money, or for materials for improvement, and then the instrument of sale must be in writing and signed by the wife. In towns the allowance is $5,500, of which $5,000 may consist of

lots exclusive of improvements if used as a home or for business, and $500 for other exempt property. Widow and children, in case of the death of a husband, are entitled to one year's support from an estate, and if there is no homestead proper, then sufficient property from the existing estate may be sold so as to raise the sum of $5,500. Following are the articles exempt from any execution: All implements of husbandry; all household and kitchen furniture; all books, tools and apparatus pertaining to a business, trade or profession; two yoke of work oxen; five cows and calves; one wagon; two horses; one buggy or carriage; twenty sheep; twenty hogs; all forage or provision for home and stock consumption.

Married women may retain property owned by them before marriage, or acquired later by inheritance, and such estate is not liable for the husband's debts, nor for her own contracts except for expenses upon her own property, nor is her property liable for her endorsements of negotiable instruments.

Although the above-described laws are the most generous ever provided for the struggling immigrant and home-seeker in any country, the percentage of unjust and dishonest avoidances of debt in the State, on account of it, has been so strikingly small as to disarm any criticism that might be passed upon its leniency. It has always been regarded by the home owner and ambitious husbandman as the bulwark of his proprietorship. It has enhanced the meaning of the word "home" for him and his wife and children, for in Texas, more than in any other place in the world, the house of the toiler, of the striving shopkeeper, of the aggressive farmer, is his castle, and though he live or die, succeed or fail, the faithful woman who has worked and suffered with him, and the tiny baby in her arms, will be defended and nourished by the strong laws which were made and are enforced in their behalf.

Cotton.

Nearly one-third of the cotton crop of the United States, and almost one-fifth of the world's yield of this staple fabric, is grown, harvested and marketed within four hundred miles of Houston and Galveston, Texas. The crop (estimated) for 1902 was about 3,225,000 bales, and taking past seasons and the present demand as precedents, it will command a greater price than at any time within the past six years. Houston is the American center of distribution for this rich harvest; Galveston, with its unsurpassed shipping facilities and close access to the cotton fields, is the port, par excellence, for the exportation of the great staple. The Texas cotton belt is typical of the Texas profusion of natural gifts, for it extends from the coast into the higher altitudes of the center of the State. The coast region, while not producing as great a tonnage as the central acreage, yields more bales per acre. Therefore, in the coast region the yield offers the greatest maximum result from the least possible expenditure and effort. The prairies, on the other hand, being purchasable at a cost much less than the so-called cotton lands of the bottoms, yield from one-third to one bale of cotton per acre, thus destroying the ancient theory that prairie land was not adaptable for the plant. Being available for other staple crops, and particularly suitable for diversified and intensive farming, it may be said without prejudice that the uplands and prairies of Texas are fully as valuable for cotton, connected with supplementary crops, as are the bottom lands of the coast. Cotton is ready money; it is the easiest of all crops to cultivate, harvest and handle; at this writing it has produced more of the agricultural wealth of Texas than any other article. But, while thus far largely dependent upon the cotton yield for his earnings, the Texas farmer has come to realize the fact that he can best achieve the greatest profits by supplementing his cotton with other field crops. It is true that Texas, like all other cotton-producing areas, has devoted itself so assiduously to the one staple that, in times of over-production, low prices and diminished demand, it has not always realized the best profits from the acreage involved. Thus far the Texas cotton acreage has been invariably large, and in years of great production the surplus has been forced into foreign markets at low prices, and without sufficient emolument to the planter. The tendency is now to diversify the planting with cereals and other food products less liable to over-production, and therefore augmental to the fixed staple. The cotton lands of Texas are equally favorable for the cultivation of a number of other valuable crops, and, until the local manufacturing demand for the raw fabric attains the pro-

portions warranted by the proximity of cheap fuel and other natural advantages, it will probably be the policy of the Texas cotton planter to so diversify his annual harvest as to regulate the total output of cotton while realizing the best results from other staples.

Unless rice supplants it in extent of acreage and average profits, it is more than likely, however, that cotton will remain king of the agricultural potentates of Texas. The peculiar adaptability of the ground, the certain cash payments, the ease of shipment, the absence of all uncertainty as to climatic and extraneous influences, the plentitude of negro and Mexican labor, all conduce to this partiality for the farming of cotton.

And it is well to say here that what may have seemed in the past to have been an over-production of the fabric will in time prove to be far less than the normal requirements of even the manufacturing capacities of the State itself. In 1901 Texas had in its factories more than eighty thousand spindles and 2,172 cotton looms, an increase of almost one hundred per cent over the preceding year. Nearly $300,000 is now invested in a cotton factory at Dallas; Dennison makes cotton yarns; Gonzales, Belton, Bonham and Corsicana are all equipped with extensive cotton works for the manufacture of sheetings, ducks, yarns and drillings. But the recent advent of cheaper fuel, in the shape of inexhaustible supplies of combustible oil at Beaumont and Sour Lake, is certain to put the cotton manufacturing business of Texas on a new and unprecedented basis. The influx of emigrants from all parts of the world will do much to solve the labor question, already a burning issue in the districts adaptable for gigantic manufacturing enterprise, and in time it may come to pass that all warnings as to the over-production of cotton will be vain and out of date. In this connection, and with reference to the paucity of available labor in the factories of Texas, whether of cotton or machinery, in the shops and in the mills, it is well to explain here that the chief deterrent which prevents able-bodied men from seeking work in the factories is the cheapness of agricultural lands and the comparative ease with which a livelihood may be earned from the prolific products of the field, the orchard and the garden.

The fact remains that the textile industries of Texas, espe-

cially that of cotton, are largely things of the future. It requires no clairvoyancy to see that the vast territory lying back of and supplementary to the cotton fields of Texas is sure in time to produce largely the finished as well as the raw product for both home and foreign consumption. But it is not the purpose of this book to prophesy the manufacturing future of Texas' cotton industry. That will expand with the access of emigration. It will come gradually but certainly with the incursions of skilled labor that are already setting forth for the rich fields of the great Southwest. In the meantime, the cotton fields of the central black lands and of the coast regions of Texas offer greater cash prizes at an expenditure of from thirty to forty per cent less than in Northern farming regions, to the husbandman who devotes himself with reasonable industry and intelligence to the cultivation of Texas cotton.

For fear that any remarks made here in favor of diversification of cotton as a crop in districts favorable to its cultivation may be taken as unwarranted, inexpert or prejudiced, the opinion of Secretary John E. Hollingsworth, of the Texas Department of Agriculture, printed in his report of 1890-'91, is subjoined:

"A fact worthy of note in this connection is that Texas has the largest acreage in cotton of any State in the Union, and would, under equal conditions of soil, climate and seasons, fall below the average production per acre of other States. On the contrary, however, as the figures show, the average yield in this State exceeds that of any of the cotton-growing States, and thus the superiority of our soil and the adaptability of the climate in the production of the fleecy staple are clearly established. It may be stated without fear of contradiction, that no fertilizing materials were used by any Texas farmer, except in cases where experiments were being carried on, while in most, if not all, of the other cotton-producing States commercial fertilizers enter largely into the expense account of the cotton producer.

"During the past four years the average yield per acre for each year has been as follows: 1887, .34 of a bale per acre; 1888, .38; 1889, .41, and 1890, .41. The average value of an acre of cotton, including cotton seed, for 1890 was $16.64. It will also be seen by reference to the previous reports of this department

that there has been a constant and steady increase in the acreage devoted to the cultivation of cotton. This is partly due to the abandonment of wheat growing in portions of North Texas heretofore devoted to the growth of that cereal, and partly to the opening of new cotton farms in the southwestern and western parts of the State, but not entirely. The increase in the cotton acreage has been much greater than the increase in population, showing conclusively the tendency to an expansion of the cotton acreage to the exclusion of other crops on farms in cultivation during that period.

"The fact that this has been going on in the face of strenuous efforts on the part of the agricultural press and some of the leading farmers of the country to induce the farmers to diversify crops and raise more grain and less cotton, would indicate that the average farmer thinks he knows best what crop is suited to our soil and climate and will yield the greatest return for the capital and labor invested. It is true there are other crops that yield a larger average money value per acre in cultivation, but as a rule they enjoy only a limited market, and are sure to entail loss on producers when the demand is exceeded by production. Sugar cane is about the only exception to this general rule, in this State, but the heavy expense necessary to the manufacture of sugar prohibits a rapid development of the agricultural interests of the State in that direction. Another very important consideration in accounting for the steady increase in the acreage in cotton is the fact that it is a sure money crop, and can be realized on at any time, even in markets remote from the great marts of trade, for its value at the mills, less the cost of transportation, but the producer retains but little money in his hands after paying the cost of production."

Allowing for losses by floods in the river regions, boll worms and other natural difficulties, Secretary Jefferson Johnson, of the Texas Department of Agriculture, in July of 1902, figured that the cotton crop of all grades in the State would aggregate at least 3,225,000 bales, which means, at then existing values, that nearly $150,000,000 worth of cotton would be marketed by Texas planters, and the enormous total, including the by-products of oil, cake and meal, would distribute almost $175,000,000 among the followers of this single agricultural industry in the State.

Although it is true that many large planters pick as many as eight hundred bales from one thousand acres of cotton land, it is agreed that the small farmer, who can depend upon his own and his family's efforts in the planting, cultivation and picking, achieves better results, in proportion to capital invested, actual effort and economical handling, than his more ambitious and usually richer neighbor. Add to this the facts that in Texas, as in no other agricultural State, no advantages accrue to the shipper of great quantities, that one bale commands its cash return as quickly and as certainly as a trainload, that the certainty of favorable weather in Texas removes all cause for hurry in the handling of the crop, that the ready and insatiate markets of Galveston, Houston, Brenham and a dozen lesser marts are almost at his doors, and you will understand why the "small farmer" of Texas has thriven on cotton, why his proportion of net profits on the yield is greater than the big fellow's, and why he clings to it as a good thing.

On prairie plantations, where the weather is delightful, the drainage good and the hygienic conditions best, the work of picking is not more arduous than berry-picking in Michigan. It is infinitely less hazardous and more than fifty per cent less expensive. In the bottom lands of the rivers, in the more torrid districts of the cotton belt, the negro and the Mexican flourish in happy multitudes. They seem to be as indigenous to the soil as the crops of lush sugar and fleecy cotton amidst which they live and thrive, and most of the greater acreages are harvested by them. Of the sixteen to eighteen million acres of the cotton belt proper, it is estimated that nearly five million acres were actually planted with the white staple in 1902. While cotton will grow with more or less success on seven-tenths of Texas' total surface and three out of four counties produce it in varying quantities, it would seem sufficient for the purpose of this treatise, to append an alphabetical list of those counties which have planted an acreage of more than twenty thousand, and in which cotton may be, therefore, regarded as a staple and consistent subject for agricultural effort. A few of the counties named show a cotton acreage of nearly one hundred and fifty thousand acres, some have scarcely twenty thousand, and the average is about thirty-six thousand.

LEADING COTTON COUNTIES.

Anderson,	Fannin,	McLennan,
Austin,	Fayette,	Milam,
Bastrop,	Fort Bend,	Montague,
Bell,	Freestone,	Nacogdoches,
Bosque,	Gonzales,	Navarro,
Brazos,	Grayson,	Panola,
Brown,	Grimes,	Parker,
Burleson,	Guadaloupe,	Red River,
Burnet,	Hamilton,	Robertson,
Caldwell,	Harrison,	Rockwall,
Cass,	Hays,	Rusk,
Cherokee,	Henderson,	Shelby,
Collin,	Hill,	Smith,
Colorado,	Hopkins,	Tarrant,
Comanche,	Houston,	Titus,
Cooke,	Hunt,	Travis,
Coryell,	Johnson,	Upshur,
Dallas,	Kaufman,	Van Zandt,
Delta,	Lamar,	Walker,
Denton,	Lavaca,	Waller,
De Witt,	Lee,	Washington,
Eastland,	Leon,	Williamson,
Ellis,	Limestone,	Wilson,
Erath,	Madison,	Wise,
Falls,	Marion,	Wood.

Rice.

Scientific investigation and the actual performances of the rice farmers of Texas unite to substantiate the proposition that cultivation of this cereal is certain to be for many years the most alluring, the most profitable and the least hazardous of all agricultural ventures in the Southwest. This is made apparent by the fact that the soil of millions of acres of the coast country of Texas is perfectly adapted in texture, in topography and in climatic conditions to produce perfect rice at the least cost with absolute certainty; the industry is as yet in its infancy, because, of the four million acres of land suitable for the business, less than two hundred thousand is under rice cultivation.

The United States still imports most of its rice, though the American product, sold in competition with the foreign article, commands a better price, is of superior quality and is yet offered in quantities far short of the demand. The area of lands suitable for the profitable rearing of rice is limited, and, therefore, the fear of ultimate over-production is unreasonable. At the same time scarcely one-twentieth of the available area is engaged in the industry, though the lands can be bought at from $6 to $50 an acre, and the proven harvests are fifty per cent more profitable and far less difficult to cultivate than the best farming lands of more northern latitudes.

Prof. S. A. Knapp, the government expert, in his report of the rice industry, published in 1899, said that fifty-four per cent of the cereal food of the world's population is *rice.* For the past five years the United States alone has consumed about seventeen hundred million pounds of this white grain, *but imported nearly one-half the total used.* This extraordinary patronage of the foreign product was due, not to superior quality nor to lower price, but to the fact that the United States itself did not supply enough to meet the home demand. Ten years ago the State Commissioner of Agriculture for Texas made no mention of rice in his reports. Until three years ago nobody thought of "trying it on" in Texas. Now, from figures based upon the cost of land, the expense of cultivation and harvest, and the increased facilities for power and shipping in Texas, it has come to be the most profitable agricultural enterprise in the country.

To Mr. W. C. Moore, of *Texas Farm and Ranch,* an expert in the latest modifications of the rice business as tested in Texas, we are indebted for the following brief and yet comprehensive explanation of the subject, written before the era of well-irrigation or Beaumont oil for fuel:

"What is probably the greatest element in the transformation of the rice industry from a small and insignificant beginning to what is recognized to-day as one of the leading and best-paying industries in the Southern States, may be found in the extensive system of irrigation that has been established in the last few years.

"Many companies are organized to build the canals and put in the pumping machinery. This necessitates an outlay of from $50,000 to $300,000, according to amount of land to be irrigated.

" Rice canals are constructed by building two parallel levees over the prairie, one hundred feet apart and varying from three to eight feet in height. The engineer in locating the main canal and laterals selects the highest lands, and hence some canals have many different courses. The object in clinging to the most elevated land is that all land will be below the level of the water in the canal. The two-ten gang plows and four large mules do the work. After plowing, the disk harrow is needed to cut the sod, and in April and May the sowing commences and is done after the manner of wheat, oats and similar grain. The press drill or seeder can be used, but the drill is preferable, for it gives a more regular stand and ripens more evenly.

" The pumps are started and a regular stream is sent boiling and foaming through the levees, filling them bank full.

" The rice farmer, from this time until harvest begins, has only to watch his levees and cry out, " Give me water, water, water," which he keeps up for about seventy days — the usual period for irrigation. The flood gates are now closed and the drainage gates opened. Harvesting begins as soon as the field dries sufficiently to permit the harvester to enter, which is from ten to fifteen days. The rice self-binder is identical with other grain harvesters, except stronger, heavier and with broad wheels to prevent cutting into the soft earth.

" Threshing proceeds just as with wheat or oats. There is but little difference between the rice and wheat thresher. The charges per bushel are practically the same. Rice is sacked at the machine and the average weight is 180 pounds. It is not unsacked until emptied into the bin at the rice mills, for the reason each field may have a different grade, and hence it is sold in lots.

"It is difficult to determine the exact average yield of rice for the reason some farmers adhere to the 'providence system,' which means maybe fifteen barrels one year and five barrels the next season. It is safe to calculate, however, when an abundance of water is at hand, the average yield will run quite twelve barrels per acre.

" Marketing.— Rice warehouses are found in all of the towns in the rice-growing territory, for the farmers who desire to ship

to the larger markets. This method, however, has been largely superseded by the rice mills, which have located in the towns and either buy the crops or mill and sell the rice, for which they charge 40 cents a barrel and also retain the bran and polish. The rice planter has, therefore, the opportunity of milling and selling his own crop, or the mills will do it for him, or he can dispose of it to the highest bidder ' in the rough.'

" Profits.— Now we have reached the vital part of rice culture, and which, of course, influences all business enterprises. The first consideration is given to calculating the cost and the profit. No wise man ever embarked in an undertaking without weighing well these two points. One man can easily handle one hundred acres of land. Some handle a hundred and fifty. The cost per acre, including water rent, is about $10 per acre. If you are a tenant add $7 more for land rent and your total cost is about $17. The average price of rice is $3 per barrel, and with an average yield you have $36 an acre, or $19 profit per acre, or $1,900 from one hundred acres. These figures are conservative, and many farmers make much more."

Divergent from Mr. Moore's intimation that the rice grower need grow nothing else, there is, however, a later and well-conceived belief among soil experts that rice land, to achieve the best and most lasting results, requires a rotation of crops, and it is estimated that when all of Texas' available territory has been adapted to rice culture, not more than half of the total acreage will be growing rice at a given time. This, according to some of the best authorities, will not only establish a final bar to over-production, but will conserve the perpetual fructivity of the fields.

Another phase of the industry so well delineated by Mr. Moore has developed with the discoveries of inexhaustible and cheap quantities of fuel oil in the Beaumont and Sour Lake region of Jefferson county. It has been demonstrated that a great area of land, which is, on account of greater altitude, inaccessible to the great irrigating canal systems of the coast district, is yet perfectly adapted for rice culture. Hitherto, on account of the scarcity and high cost of fuel, private pumping plants have been beyond the reach of the average rice farmer. Water in plenty and easily accessible by broad wells of little

depth has always been at hand; the hardpan and clay "container" has been as regular and as widespread in these higher lands as in the lower; the suspended moisture has been sufficient and the natural drainage has been even better than in the low lands. Great quantities of this land along the Santa Fe and other railroads is yet obtainable as low as $10 an acre, because they can not be reached by the irrigating flows from canals and bayous. But already many centrifugal and propeller pumps have been installed, which, with twelve to twenty horse-power engines, have perfectly irrigated from one hundred to three hundred acres of rice.

It is now contended by the advocates of well-irrigation that this system is more economical than the canal system. The pumping engines can be utilized for many other profit-saving purposes — to thresh crops, to saw wood, to furnish electric light. Stimulated by the cheapness of fuel oil, many enterprising companies have begun to install power-plants in lands remote from the rice canals, and from these sources of energy, electric power is sold to neighboring farmers at prices which, in some cases, furnishes pumped water at a cost of forty per cent less than that furnished by some of the great canal companies. In accepting the high total of four million acres of "land available for rice" in Texas, these higher or well-irrigated lands have been included. Before the oil fields of Texas were discovered, and when the cost of fuel was correspondingly high, Mr. George McManus, of Beaumont, in an address to the Texas Farmers' Congress, had this to say:

"The great canal companies tend to increase the landlord system — to people the rice country with tenants. Among people who are willing to be tenants there are many excellent farmers and citizens, but, as a class, those who are willing to become and remain tenants are not as good farmers or citizens as those who insist upon owning and cultivating their land. And the best class of citizens is none too good for us.

"To return to the wells; they were found to be such a good thing that they have increased their number to over one hundred and sixty in Louisiana this year. Most of the later wells are eight and ten inches in diameter. The California propeller pump seems to exceed the centrifugal in popularity. Batteries

of four and five wells have been bored, operated by one fifty-horse-power engine, and will irrigate from five hundred to one thousand acres.

"We find it costs us in southeast Texas about as follows: Ten-inch well complete, two hundred feet deep, $650; California propeller pump in place in well, $250; twenty-horse-power engine, $700; total for plant, $1,600. This should water 250 acres of rice land for sixty days at a total cost for fuel, oil and engineers of $400. *What is there in it?* I had almost forgotten to tell you that. Well, there's money in it. More money than in any other field crop grown. The average yield is ten barrels per acre, and that average is made when the crop of the ne'er-do-well, the fishing, hunting farmer, who puts his crop in any old way, and leaves it to take care of itself till it is ready for harvest, when his crop, I say, is averaged with that of the careful farmer, it makes ten barrels per acre. The better farmers get sixteen barrels. But call it ten. The average price again is $3, or a gross average for the crop of $30 per acre. It costs $3 per acre more to raise rice than to raise wheat. A total of $10 per acre should cover all expenses, including your work and that of your teams. One man with a good team of four horses or mules can care for one hundred acres of rice. He should not try to do much more. So one man with four mules should count safely on making $2,000 for his summer's work. If he is a good farmer, a careful, industrious farmer, he is more likely to make $3,500 net than $2,000. I won't take up your time to tell you all I know about rice — of the number of people of my acquaintance who have made little fortunes in rice raising in the past four or five years. I'll give you a few very representative crops I know of. Albert Anderson, of Jennings, Louisiana, on ninety acres raised 16⅔ barrels per acre, and sold his crop for $6,800. He watered it from one eight-inch well. E. S. Abbott, of Welsh, Louisiana, flooded 250 acres from one eight-inch well. Crop paid for land, teams, tools, seed and all improvements, and $1,300 besides. George Mound, of Jennings, Louisiana, sold his crop off 126 acres for $7,200. John Robinson, of Welsh, Louisiana, sold his crop off 196 acres for $6,500 — watered by eight-inch wells."

Further adequate expert information and personal testimony

of rice raisers can be found in "Rice Raising in Coast Country of Texas," an attractive booklet issued by the Santa Fe.

Sugar.

In east-central, eastern and southern Texas there are about one million acres of alluvial soil upon which sugar-cane may be raised as extensively and with as much success as upon any land in the United States, and yet Commissioner of Agriculture Johnson estimates that less than twenty thousand acres are under cultivation for the production of both sorghum and sugar-cane. Figures based upon this general acreage indicate that this comparatively meager development of the sugar-growing possibilities of the State will still yield a total gross profit of more than $1,600,000.

It may be presumed, therefore, that if the full capacity of Texas sugar-yielding acres was accomplished, this single branch of agriculture might add to the annual wealth-making activities of the State nearly $75,000,000. Without regard to the misleading totalization of such "possibilities," it is better to concede that, while the progress of sugar cultivation is already showing healthy signs, there is little likelihood that it will attain such mighty proportions within the next decade, or that this particular branch of the farmer's business will absorb all his attention till commercial conditions, over which he has no control, have altered so as to stimulate prices, facilitate the harvesting of the cane and make the convenient milling of his crop an agent in behalf of the planter.

And yet in Fort Bend, Colorado, Matagorda and Wharton counties, particularly along the line of the Cane Belt railway, there is now a vigorous and well sustained expansion of the sugar-producing areas and plenty of tangible evidence to the effect that it is a crop of growing popularity, and much profit. At Sugarland and Lakeside there are now in operation great mills and refineries, and many of the most perspicacious planters are devoting their whole attention to the sugar cane. There can be no doubt that the chief deterrent against the expansion of the industry has been the great capital required to equip plantations with the machinery necessary for milling the

sugar. With the advent of convenient mills and refineries, and the now rapidly increasing railway facilities, the planter is sure to realize greater profits from the twenty-five to fifty tons of cane which an acre will yield. Already, in the territory tributary to the central refining plants, the small farmer is able to haul his crop to the handler and, with no delay or additional expense, carry home the full value of his product. The planting and cultivation of cane is considerably less costly than that of cotton or rice, but, as yet, its harvesting is difficult, comparatively slow and more expensive than many crops of less average value.

The facts here stated will explain why such a relatively small proportion of Texas sugarland is now devoted to that purpose, but it also discloses a sufficient reason why those who are successfully engaged in raising the saccharine plant are satisfied with the increasing rewards attendant upon their devotion to it. In Texas, as in other regions where nature does as much for the husbandman as hard work and ample capital can do, the tendency amongst farmers is to devote themselves to that particular branch of husbandry which yields the greatest profits with the least effort and expense. The cotton, rice, corn and various cereal crops of Texas have been such "a pudding" that the sugar-producing resources of the State have not been pursued with the eager assiduity which they merit. With the increase of immigration and the consequent plenitude of labor, with the improvements now being made in machinery and the gradual but certain preëmption of other lines of farming, the sugar-raising activity of Texas is certain to become one of the most popular, as it is already one of the most profitable, resources of its enormous acreage. But the statistics of the National Department of Agriculture, while placing Texas second among the sugar-producing States, does not concede it so large an occupied acreage for sugar as the State officials claim. Nor is it certain that such plantations as are already paying good profits will yield a much greater tonnage than twenty to the acre.

Licht's sugar statistics for 1899-1900 show that the United States consumes more sugar per capita than any other nation — more than sixty-five pounds per annum for every man, woman and child — and yet of the total 9,516,629 tons of cane and beet sugar produced in the world, this country yielded hardly three

hundred and fifty thousand tons, of which 75,859 were made from beet roots. The bulk of the cane sugar of that year's crop is credited to Louisiana, and, assuming that these figures are at least approximately correct, it is easy to arrive at the reasonable conclusion that Texas' contribution to the sugar stock of the world is utterly out of proportion with the noble expanses of suitable soil in that State. In this connection, and in explanation of the conservative and not wholly positive "estimates" here given of Texas' various agricultural achievements, it is well to say that the Texas Department of Agriculture has for some years been denied an appropriation adequate to the work of collecting and compiling such exact figures as must seem necessary in exploiting the past and prospective performances of the State.

If there is any error in this presentation of the situation it is on the side of conservatism rather than exaggeration, and must consequently appeal more strongly to the investor, the manufacturer and the careful home-seeker than any amount of bombastic assertions could. Nature has done everything for the native sugar plantation lands of Texas, and it is not within reason to believe that they will remain long neglected by man. Every expert and intelligent investigation of the opportunities offered in this field of Texas development has elicited the renewed attention of capital, labor and emigration, and there, in the last analyses, are the influences which will make the sugar industry of Texas a perennial source of wealth and progress to the State.

Corn, Wheat and Other Field Products.

A hint of Texas' potential influence in contributing to the world-power of the United States may be had by considering that in one year she has *exported* $62,000,000 worth of cereals *not including rice.* In the light of this extraordinary performance, recall the fact that less than twenty per cent of the cereal productivity of the State has been attained and you may get a safe, though astonishing, forecast of the future of that commonwealth as a food-supply auxiliary of this republic. Kansas, with its almost incredible cereal richness, is already the wonder of the world, and already the working model, the shining object-

lesson in diversified and intensive farming for the ambitious agriculturist of all the States.

The Government Year Book for 1900 contains the surprising information that Texas during that season produced $14,973,384 worth of *wheat!* Almost $2,000,000 worth more than Nebraska, for decades supposed to be the very home of that grain; more than Pennsylvania, with its dense population; more than Iowa, Washington, Missouri, South Dakota, Illinois, Maryland, Oklahoma, Tennessee, Oregon, or any of the remaining thirty less productive "wheat States." Kansas, Minnesota and California were the only three States which surpassed Texas in that year's wheat yield, *and yet Texas has not attained more than one-fifth of her limitation!*

Here then, in a climate which is at all seasons more mild and salubrious than the harsher latitudes once supposed to be essential to the successful cultivation of wheat, a crop is possible, which, in quality as well as quantity, surpasses the arduous and experienced efforts of the more populous, more expensive and more rigorous regions of the north-temperate latitudes. A large proportion of the vast wheat yields of Kansas, Oklahoma, Iowa, California and even Nebraska, with a considerable part of the raw and milled product of Minnesota, is hauled from the middle and northern States of the West, past the very gates of the wheat farmers of Texas for export through the capacious and widening port of Galveston which lies adjacent, a short haul from their favored fields, the focal point of eleven thousand miles of the best equipped and most progressive railroad facilities of any State in the Union. Under such circumstances it is not extraordinary that the Texas grain farmer and the thousands of smaller factors contributory to, or dependent on, his prosperity, are not occupied with boasting advertisements of the advantages they have found at home, or that they have appropriated no considerable sums to the expansion of their own State Agricultural Department. The annual totals in dollars and cents seem to be all-sufficient, and they are complacently busy in the meantime "making crops" and enlarging their own scope to the fullest of their means.

Thus far the wheat acreage of Texas is confined mostly to the more northerly areas and to the region of the black lands

extending southward through the State, but as the farmers become more familiar with the inherent capabilities of the soil, and as the emigration of northern husbandmen increases, this acreage is being gradually extended with noble results. Economic conditions, attendant upon growing populations and enhanced manufacturing opportunities, are swiftly making for the enlarged production of food crops, and the permanent necessities of the already vast cattle, cotton and rice areas will estop any remote chance of over-production. Add to these inescapably favorable circumstances the low prices of wheat land, and the force of Secretary Wilson's exclamation when he visited the State becomes understandable. He said: "If I were a young man I'd pack my grip and come to Texas. The conditions and the prospects for development are such that I could not afford to remain away."

The United States Year Book of 1900 shows then that Texas, with its small average of agricultural development, already ranked fourth of all the States in the size and value of its wheat crop — about $15,000,000. It is fair and reasonable figuring to estimate that if the remaining four-fifths of its available wheat lands were brought under cultivation the annual value of this single cereal would approximate $75,000,000, a figure most astonishing when we know that even Kansas, with its record-breaking crops and extraordinary stage of development, startles the world when its wheat sales approximate $50,000,000 in a single year. But it is only by such large propositions that the status of an empire like Texas can be appreciated. It is a well-known economic truism that the net values of food products enhance with the comparative density of tributary population, just as the relative values of cotton, wool, coal, oil, lumber and other raw materials for the manufacture of fabrics, for fuel, for building, increase with the growth of near-by cities, towns and urban communities. If, then, Texas has already flourished almost incredibly without a proportionate population to feed, clothe, house and equip, it requires no special foresight to know that the scope of her agricultural interests will wax greater and greater with an assured access of emigration.

The annual harvests of Texas corn have, however, been of even greater cash value than the wheat. In the year of the last

drouth the sum total of a "failed" crop was over $30,000,000 worth, and the last, a favorable season except for a few local washouts by flood, the corn sales of the Texas farmer aggregated about $38,000,000. Texas now ranks seventh among the States as a corn producer, and seventh also in the combined corn and wheat yield. In his report of 1890-'91, Commissioner John E. Hollingsworth, of the Department of Agriculture of Texas, makes the statement that "Texas is not included in the corn-producing States," and, strange as it may seem, that dictum was true ten years ago. In accounting for a decrease of 135,655 acres in that year's corn-planting, Mr. Hollingsworth said that the farmers were wholly unable to dispose of their corn surplus of the preceding year and had, therefore, reduced the acreage. Reference is made here to these "old" figures because there has been much talk in Texas about the mistake of over-production in corn and other staples, and because the changed conditions of the cattle industry have had a marked and direct effect upon the supplementary business of corn, oats, cotton meal, alfalfa and all fodder plants. In a word, the enormous free ranges of ten years ago with their abundance of free pasture, made the farming of tame fodders almost unnecessary and always hazardous. The diminution of the free pastures and the corresponding increase of the "fenced cattle" interests, the remarkable growth of the hog crop and the induction of millions of other "tame" live stock, will be discussed under the head of "Cattle and Other Live Stock," but it is well, in considering Texas' corn yield of to-day, to remember that there is no longer any dearth of home demand, and that the existing profusion of corn is an indication and a proof that the State is only at the threshold of its *necessary* performances in this direction.

Ten years ago there were less than ten thousand acres devoted to oats in Texas. Now the oats area comprises more than one million acres and adds nearly $9,000,000 to the net earnings of the farmer. For the same reasons that the corn crops of a decade ago were small, the oats crops were practically nothing, but now oats is one of the most profitable items, and the increase of its acreage and the commensurate advance of its price prove that the soil and the conditions warrant its continuous expansion. Barley, rye, buckwheat, broom-corn, kaffir corn and all tame

forage plants flourish, though as yet the slight local demand for these crops holds them far below their possibilities.

The value of hay, tame grasses, alfalfa and kindred feeds raised in Texas has now reached a total of nearly $14,000,000 — for over three million tons — and with each year's extension of the modern system of diversified farming, and a surprising multiplication of tame animals, the forage fields are being profitably extended.

Texas' annual fruit crop has now reached an $8,000,000 status, and the latest canvass of its orchards shows that there are over fifteen million trees now flourishing in the State, as against five million ten years ago. The unfailing successes of the peach orchards have given that branch of industry a superior stimulus, so that more than sixty-five per cent of the bearing trees of the State are peach trees, but apples, apricots, cherries, plums, prunes and pears are now experiencing a sudden and swift appreciation. The Red River valley is usually described as the "Texas Fruit Belt," but all of the eastern and southeastern counties are capable of immense development in this line. Already Galveston, Brazoria, Harris and a few other counties along the line of the Santa Fe are marketing more than half the pear crop of the State, and the superior flavor and texture of the fruit are inviting the horticulturists to successful competition with California.

More than half the area devoted to small fruits is in eastern Texas, notably Smith, Tarrant, Galveston and Brazoria counties. Blackberries, strawberries, dewberries, raspberries, currants and gooseberries ripen so early in this region and combine such rare qualities of size and flavor, that interest in their cultivation is enhancing very fast. In the irrigable valleys of the southwestern and southern portions of the State there is now a considerable extension of grape culture, and in the valleys of the Pecos, the Rio Grande and the San Antonio rivers the extension of irrigating facilities has given a powerful impetus to the growth of many varieties of wine-yielding grapes. The early maturity of the fruits of Texas has been mostly responsible for the rewards which have attended their production, but the transportation facilities of the State are now adequate for an immediate and enormous expansion of the business. The advent of canning,

drying and preserving plants is giving added zest to the work of the orchardist, and the almost unlimited area of cheap lands available for the purpose in the coastal region where the rainfall is plentiful, as well as in the higher altitudes where irrigation is necessary, presages a constant and widening growth of Texas' fruit industries.

The 1902 vegetable crop of Texas was valued at $8,971,879, most of which was consumed in the State, although the northern shipments of cabbages, tomatoes, sweet potatoes, Spanish and native onions and potatoes amounted to about $3,000,000 worth. The inducements for extending the cultivation of these particular varieties are unusually great in Texas, particularly throughout the region of the black lands and in the coastal regions where they mature months earlier than their northern relatives. The Spanish onion, always regarded as a luxury in northern latitudes, flourishes with certain profusion in the irrigated soils of the higher plateaus and valleys.

There are two thousand farmers in Texas who have found tobacco a profitable crop, although the available acreage for the best qualities of the weed are comparatively limited, and the average planter, familiar with American methods, knows very little about the habits and needs of the variety best suited to Texas. The Federal Government has proved the adaptability of a considerable belt of land, largely in Montgomery county, which is capable of growing a leaf very much like that of Cuba. This section now yields nearly one-half the annual product of the State, although smaller fields are scattered over ninety-seven other counties. The latest estimates of the crop approximate six hundred thousand pounds for the year, valued at about $150,000.

In closing this cursory notice of the conditions and opportunities of Texas' agricultural industries, it is timely to impress the reader with the fact that, although a larger part of the State is in the humid region, where the rainfall is plenteous and the soil fertile beyond the hopes of northern husbandmen, yet the mighty stretch of territory in the red lands, in the great plains and in the lower reaches of the central black lands, though low in price, sparsely settled and usually requiring irrigation, is capable of the most profitable and intensive cultivation of any similar area in the United States. Texas is peculiarly blessed

with natural facilities for irrigation. In the very regions where the rivers are fewest, the greatest and most inexhaustible supplies of water lie within a few yards of the earth's surface, waiting to be pumped upon the yearning soil. The profusion of cheap fuel, the relative cheapness of machinery, the extension of railroads, the increase of population and convenient markets in these regions are already effecting a marked change in the appearance and potentiality of the country. It is the opinion of scientific modern agriculturists that farming with irrigation is, cent per cent, the most profitable of all farming, because it is the *only* certain method, because the soils, where it is necessary, are basically the most fecund and because, in areas where it is practicable, the climatic conditions are usually the most friendly and inspiring to the toil and to the health of man.

Cattle and Live Stock.

It is proved and agreed upon that the live-stock industry is now the most important and profitable of the rural occupations of this country. Texas leads in the number, value and quality of its cattle herds, and is the first of all the States to meet and take advantage of the changing conditions, which, for a time, seemed to menace the prosperity of this widespread interest. Sad and misleading articles have been published from time to time showing that the number of range cattle in Texas has been rapidly decreasing for the past five years, but the important fact that the total number, the aggregate values and the meat and dairy yields of the cattle business of Texas have enormously increased has been largely overlooked by those writers who can not disassociate the idea of free cattle pastures from the modern and essentially progressive idea of fenced farming, forage raising and the reclamation and rejuvenation of the semi-arid regions of the public domain.

Addressing himself to the topic of public lands, as bearing upon the interests of the cattlemen of the United States, President John W. Springer, of the National Live Stock Association, in his speech to the fifth annual convention of that organization, said:

"In connection with the disposition of the public lands, I

wish to call your attention to the experiment made by the State of Texas, which, in 1896, passed a law offering the grazing lands of that State to actual settlers on forty years' time, at three per cent interest, at $1 an acre. The result has been that thousands of citizens and settlers have purchased lands, which were limited to four sections to each settler, under the restriction that no title could be passed until three years had been spent by such settler on the tract so purchased, and a house built and occupied. Texas has an enormous revenue as a result, and it has proved a very great boon to the stock-raiser in that *he can control his own range.*

"It might be well for Congress to pass a similar law for the remaining grazing lands, and let the homesteader have one year from the date of enactment to choose a homestead, after which the Department of the Interior shall permit actual settlers to acquire not more than four sections, at a value of not less than $1.25 per acre, on twenty years' time, at three per cent interest, no title to vest till principal and interest are paid and the settler has built a home and occupied the land for three years. This will provide small stock ranches for thousands of our deserving stockmen who are now tenants over the country, and the encouragement thus given them by the Government will produce increased millions of dollars in produce, live stock and revenue by taxation of the States of the Far West. All alike would derive a benefit, and the Government can well afford to aid in the building of homes in this great semi-arid country."

The State laws of Texas, with regard to the grazing lands, at once explain the decrease in the number of "range cattle," and account for the steady increase in the total numbers and values of neat cattle, domestic animals, sheep, hogs and goats. The division into small ranges of the once boundless areas of Texas pastures means more than appears on the surface. It means more than an added revenue for the State. It means more than President Springer explained in his speech to the cattlemen of this country. First and foremost, it means the establishment of a system of rational and economic husbandry that the cattleman of an elder day knew and cared nothing about. He did not build, he did not bore wells, he did not plant, he lent no help to nature in conserving water, in protecting timber, in exterminating the

native enemies of agriculture. His was the most extravagant and the most short-sighted of methods. He waxed rich upon the lush grasses of the free pastures and over-crowded them with countless herds of half-wild cattle. When the plains were denuded by the cattle, and an average of forty acres was required to sustain a single steer, millions of sheep were inducted, which almost completed the ruin of the ranges, and when these had destroyed the verdure, myriads of goats were brought to browse even upon the shrubbery and to consume the last vestige of life-sustaining forage.

It is well for Texas and for the cattle industry of the West that a new order was established in that State. Now comes the cattleman who drives wells and builds dams and reservoirs; now comes the husbandman who creates far more than he consumes, who alternates crops, who gives prolific nature a rest, who takes no chances and depends not upon luck, but who makes crops for his cattle, feeds them, waters them, nourishes them, by matching his own intelligence, his own industry and the natural faculties of the region against drouths, disease and the score of other hazards which confronted the recklessly prodigal cattle kings of other days. Under this new order it is not strange that Texas leads all the States in her cattle wealth, and that her forward strides are more constant and more rapid than that of any other commonwealth.

Homes, schools, prosperous farms and gardens, towns and villages of comely growth, have spread already into the old grazing lands of Texas, and the contrast between its "cattle country" and that of further and less favored domains is ocularly evident as one passes westward across its State lines into the remoter territories.

Careful estimates, made since the last census figures were gathered, show that Texas has now about ten million neat cattle, nearly twice as many as the second great cattle State, and valued at a total of about $170,000,000. The total value of its domestic animals is $238,927,506, and in a single year the State *exported* $79,133,327 worth of cattle, sheep and hogs. These are figures never approached, much less equaled, by any other State in this country, or by any region of equal area in the world, and when it is remembered that Texas is remote from the greatest markets

of the world, that its population is meager and its percentage of tilled ground very small, the future which looms in certain prospect before its cattle industry is one that must make the most conservative observer marvel. That greater and more potential influences for the quick development of Texas' cattle and live stock interests are at work is evident from the recent establishment of great packing plants at Fort Worth, where the great houses of Armour and Swift are now completing the largest, best equipped and costliest establishments of the kind outside of Chicago. In this new move of the largest strictly manufacturing industry to the very doors of the largest classified agricultural industry lies another evidence of the economic laws of modern trade by which Texas will be enabled to minimize the waste of effort and expense in marketing her cattle, and hold and enhance her prestige as the leading cattle State of this country.

In horses, too, Texas ranks among the foremost States, having about one million three hundred thousand head, besides five hundred thousand mules, both aggregating an approximate value of about $60,000,000. In one year Texas exported $39,816,640 worth of horses and mules.

The last obtainable figures as to the sheep, swine and goat herds of the State show that in 1900 there were 1,689,298 sheep, 277,605 swine, 627,333 goats, all valued at $12,511,571.

The dairy products of the State now aggregate almost $20,000,000 worth annually; poultry and eggs yield $10,000,000 more, the wool clip is worth $1,617,000 and $468,527 is produced in a year by the bees of the State.

The *dairy business in Texas,* while in its infancy, properly speaking, presents a most inviting prospect for the future. Until within the last three years, and since the Santa Fe road began to agitate the development of the business by sending expert dairymen into the State for the purpose of educating the people to the responsibilities of this most important industry, it was not supposed that the farmers could be induced to turn their attention to the care and development of dairy cattle. It is gratifying to note that there is now developing in the State a strong dairy sentiment. A number of first-class butter and butter and cheese factories have been built recently, and there is an undeniable and fixed purpose in some sections to foster the dairy interest with

great care. The people are beginning to breed their cattle with a view of developing milk strains, and many inquiries are being made for improved dairy machinery. Certain sections of the State are well supplied with a fine grade of dairy cattle, and the climatic conditions, old dairymen declare, are favorable to the success of the business. Such protein feeds as are necessary in the production of butter are easily produced in Texas, and as soon as the farmers learn of the success of the plants already established and realize how very profitable the business can be made, dairying will become most popular with them. It is predicted by experts in this line, who have visited the State with the view of ascertaining the conditions and possibilities, that Texas will ultimately be one of the leading dairy States of the Union.

In thus massing the figures appertaining to Texas' past performances, as a home for cattle and other live stock, it is believed that the object of the inquirer is best satisfied. Nothing remains with which to elucidate the situation except to apply the proved possibilities of the region yet accessible under advantageous conditions, for the extension of the industry. There is not a county in Texas in which beeves, sheep, swine and goats will not flourish, from the rich lowlands of the coastal region to the dry-sod pastures of the Staked Plains, and from the Red river to the Rio Grande bottoms that divide us from the old republic of Mexico. The installation of great fields of alfalfa, kaffir and Jerusalem corn and other dry-sod forage plants in the higher terraces of the interior have not only proved themselves valuable and vigorous feeding crops, but have increased the humidity of the climate and enhanced the productivity of all adjacent lands. The hay and grass lands of the black belt and of the coastal regions yield more tons per acre and a greater percentage of nutriment than similar areas in any of the States. Under the State laws which now dominate the once wild reaches of the western portion of Texas, lawlessness is at an end, the farmer is no longer regarded as an intruder, and land feasible for irrigation, facile to the plow and blessed with an almost perfect climate can be had at prices that will be remembered as ridiculously low when one generation of its settlers shall have begun the gratifying business of evoking its ready opulence.

MANUFACTURING AND MINES.

Experts in the exploitation of the manufacturing advancement of states and nations agree that the standard by which the growth and prospects of this branch of industry may be best measured is the production and consumption of fuel.

In 1880 Texas produced no coal. In 1900 the output of its mines was more than a million tons. Geologists estimate the coal area of the State as embracing forty thousand *square miles.* It extends in irregular strata from the Red river, zig-zag across the State to Laredo, on the Rio Grande. Its enormous stores of ready fuel have been scarcely scratched. Within a short distance of Fort Worth and Dallas, in the northern part of the State, a few richly paying mines are in operation, and scattered along the lines of the railroads are many smaller establishments for the mining of the bituminous fuel. But the fields remain almost undeveloped; the industry is yet an infant.

The sensational discovery of the Beaumont oil fields has temporarily overshadowed the fuel question of the whole world as well as of Texas. The enthusiasts, encouraged and sustained by many expert scientists, insist that the dominance of Texas oil as a fuel is not to be temporary, but permanent, and that the small area of 160 acres included in the Spindletop tract near Beaumont is now ready to run every factory in the United States, and energize every locomotive, steamer and battleship that flies the American flag. However justified these predictions may be, it is at least certain that the oil discovery at Beaumont, Texas, has already attracted enormous sums of outside capital, thousands and tens of thousands of immigrants, and the concentrated attention of millions of observant men in all parts of the world to the resources and destinies of Texas. Increase of ready capital, a commensurate population and adequate shipping facilities are the three essential conditions for the permanent growth of manufacture, and, without immediate reference to the merits of the oil wealth of Texas, which will be discussed specially, it is certain that that marvelous discovery has done more than any recent single

influence to bring outside capital, population and attention to this State.

If coal and fuel oil are the two first physical considerations in projecting an estimate of manufacturing ability, lumber is an invaluable aid to both. Texas' sawmills are already cutting at the rate of eight hundred million feet annually, and there are seventy-five billion feet yet standing in the true forest region of the eastern counties. The Santa Fe railroad is already completing its new extension into the heart of this wondrous timber belt, paralleling the Neches and the Sabine rivers and enhancing the values of the tributary forest lands with every mile of construction.

The quarries of granite and other building stones, considerably developed in Llano, Blanco and Burnet counties, appear at frequent intervals and with evidence of almost infinite deposits in nearly every section of the State. Iron ore has been located in paying quantities in seventeen counties of the State, but as yet, like most of the other mineral riches of the State, it has been only "pecked at." The annual output of iron ore is as yet less than fifteen thousand tons. The largest gypsum beds in the world are in the northwest corner of the State, and, indeed, it would be an audacious writer who would assert that there is any essential mineral, stone, clay or wood used in manufacture or building, that *can not be found* in Texas.

Coming now to the final condition important to the building up of great manufacturing interests, the one perhaps most interesting to the prospective investor, it can not be amiss to refer to the legislative conditions which affect the capitalist. Regarding this phase of his State's status, Mr. Louis J. Wortham, of Austin, an authority upon commercial law, speaking to the National Association of Merchants and Travelers, on August 12, 1902, said:

"But with all our mineral and agricultural resources, I know that Texas can not mount to the summit of its capabilities without the aid of fructifying capital from abroad. Such capital is coming — has come to a wholesome though somewhat limited extent. Nearly eleven thousand miles of railroad, giving Texas third place among the States of the Union in railroad mileage, substantially demonstrates the fact. Our corporation laws, as

much from being misconstrued as from their drastic provisions aimed at the destruction of the trusts and the protection of the individual from the encroachments of monopoly, it is confessed, have kept foreign capital out of the State that in many instances would have sought the development of our resources. What Texas seeks to do, and no more, is to so deal with trusts and combinations as to impose proper safeguards between them and the consumers without striking at the life of the legitimate enterprise or of the modern business company. In April, 1901, two committees, one from the Chamber of Commerce and the other from the Merchants' Association of New York, came to Texas in response to an invitation from its governor. These gentlemen were specifically invited to examine our corporation laws. Mr. James B. Dill, one of the greatest corporation lawyers of the day and a member of the Merchants' Association delegation, was chairman of the Committee on Laws. He expressed the opinion in his official report 'that if the Legislature of Texas were to-day to draw afresh an anti-trust act which would express the opinion among the larger in number and better in class of citizens of that State, that different, more temperate language would be used than at present upon the statute books.' He moreover declared that 'one may rest assured of the fact that rationality will be the basis of Texas' action in future dealings with the trust problem.' This man, an honest critic invited to the task, correctly interpreted the signs of the times in Texas. Since his report was written some of the most intemperate provisions of the Texas anti-trust law have been declared unconstitutional, and the steady advance to the position of a conservative force in the administration of the affairs of the State, on the part of the dominant political power, has been demonstrated in its recent platform utterances favoring an amendment to the constitution authorizing the charter of banks of discount and deposit and demanding the generous treatment of the legitimate corporation."

Here, then, is a succinct and impartial summary of the native gifts and actual conditions of Texas' manufacturing prospects at this day. There is not a railroad operating within the State which is not extending to prospective factors and miners the generous inducements of low rates and rapid service; there is not a considerable town in the State which is not eager to

encourage the establishment of shops, mills and plants for the handling and manufacture of native material. Galveston, Houston, Fort Worth, Dallas, Beaumont, Brenham, Austin, San Antonio, Cleburne, Temple, Lampasas, San Angelo, Waco, Brownwood, El Paso, Sherman and Paris are all ready to meet half-way the approach of new commercial and constructive enterprises, and every one of these cities offers a certain future of prosperity for dozens of different kinds of manufacture. Wages in the factories now in operation are higher than in any State of the Union, and yet the scarcity of skilled hands is such that the expansion of this branch of business is retarded. As was indicated in a previous chapter, the almost voluntary productivity of the Texas farm is largely responsible for this shortage of skilled labor, because even the newly arrived artisan, coming face to face with the cheap and prolific farms of the State, often abandons his place in shop or factory and takes to the outdoor life of a farmer.

However, as the knowledge of Texas' unequaled climate and opportunities, its plenitude of work for all classes, the cheapness of living within its borders and the advanced condition of its social and educational facilities become widely known to the wage-working multitudes of the over-crowded sections of the Eastern States, there will be an influx of population which will quickly make plain and easy the future destinies of the State's extraordinary manufacturing endowments. Speaking of these, Mr. S. Cristy Mead, chairman of the Committee on Agricultural Conditions, in his report to the Merchants' Association of New York, after a rigid inspection of the resources of Texas, said:

"To state the case tersely, Texas will eventually be able to consume its own grain and garden products, while it is unlikely that any of the Northern prairie States ever will. The reasons are found in the collocation of mineral deposits, sufficient fuel and oil reservoirs, the incentive to cotton manufacturing offered by the fact that the peculiar fiber of Texas or Arkansas cotton is essential to great development in that industry, and that Texas can produce a greater variety of food supplies at less cost than almost any State. The conditions recited tend strongly to induce manufacturing growth and make agriculture profitable at the same time."

This report, published at the beginning of 1902, is expressive of the impressions produced on a party of eminent financiers, scientists and business men of New York, who made a tour of this State for the express purpose of giving to its advantages and shortcomings the attention and study that are only possible by actual contact, and significant only when exercised by intelligent and disinterested persons. As the observations and reports of the New York capitalists, who visited the State in the winter of 1901-'02, have already had a marked and beneficial effect upon the access of outside capital and attention to Texas, and as their inquiries were conducted upon singularly proficient plans, another quotation from the "findings" of the report, that of Mr. D. Le Roy Dresser, is here apposite. He says:

"Probably no State in the Union is better circumstanced for the production of staple cotton goods than Texas, herself producing nearly thirty per cent of the cotton crop of the United States, and over seventeen per cent of the total crop of the world. She has in this fact a fundamental advantage unrivaled by any other State or country. Besides this qualification of the possession of unlimited and unfailing supplies of raw material of excellent quality, the State of Texas has a varied and excellent climate, furnishing physical conditions for cotton manufacture perhaps unsurpassed on this continent. Add to these facts a population steadily increasing in size and more rapidly growing in its purchasing capacity, and a system of transportation already offering free intercommunication not only between the different sections of the State, but with the North, East and West, and with seaports possessing established connections with the great cotton goods importing ports of the world, and we have a situation in which one would naturally expect to find Texas one of the largest cotton goods producing States, in proportion to her population, in the Union. In point of fact, however, the actual accomplishments of Texas in this field have been small."

Similar statements may be truthfully made about all the factory accomplishments of Texas, but their smallness is enhanced and made more striking by comparison with the infinite riches and facilities of the raw materials at hand and the equipment for marketing all products. For the cold-blooded man of figures, who shies at superlatives, dislikes generalities and suspects the

enthusiasm of "boomful" literature, the following paragraph from the new census may be most interesting, as it is certainly most authentic and literal:

"Although Texas is an agricultural and stock-raising State, there has been a large growth in its manufacturing and mechanical industries during the half-century. The population during these years has increased from 212,592 to 3,048,710, while the average number of wage-earners employed in manufacturing establishments increased from 1,066 to 48,152, embracing, in 1900, 1.6 per cent of the entire population, compared with .5 per cent in 1850. Probably the best indication of the importance of the wage-earning class is afforded by the greatest number employed at any one time during the year. In 1900 this was 77,995, or 2.6 per cent of the total population of the State. The greatest per cent in the increase of the value of products is shown for the decade ending with 1860, but the greatest absolute increase was between the years 1880 and 1890. Manufacturing in Texas is chiefly the result of the State's abundance of raw materials, especially lumber, cotton and wheat, the leading industries being those which are more or less dependent upon these materials. The large area of the State and the heavy freight charges tend to encourage local production, while abundant fuel is available for power."

Knowing, then, from divergent but competent sources, the sane story of Texas' unrivaled potentiality for mechanical and manufacturing growth, we may proceed to the concrete observation of present facts without being suspected of exaggeration or superlative enthusiasm.

OIL.

There is hardly a corner of the world in which the fame of the Beaumont oil fields is not known. Investigation has satisfied many conservative authorities that the inexhaustible and accessible nature of that oil has solved for all time the fuel problem of the world. The least that can be fairly said about it is, that it certainly marks an epoch in the commercial history of Texas, and that, in point of cheapness, convenience and apparent quantity, it stands to-day without a rival in the world. For those who have stood, awed and wondering, in the presence of one of those towering geysers of black oil which at intervals have hurled their reeking riches almost to the clouds above the heights of Spindle Top, it is hard to suppress enthusiasm, difficult to get down to "brass tacks."

Therefore it is best to avoid, if we can not ignore, the "fine writings" of the oil zealots, and take as a standard of appreciation the report of the special committee sent by the New York Chamber of Commerce, at the request of Governor Sayers, to inspect the Beaumont oil fields.

The gist of this report follows:

"Your committee first came in touch with the mineral resources of the State when they reached Beaumont, Tuesday morning, April 23. This new oil field, now attracting so much attention, is in the center of Jefferson county, near Beaumont, eighty-four miles east of Houston, a growing railroad center, and eighteen miles from Port Arthur, a seaport on the Gulf of Mexico.

"We are informed that the first gusher was struck January 10, 1901, and at once an enormous stream of oil, the full size of the six-inch casing, spouted to a height of about one hundred and fifty feet, under an estimated six-hundred-pound pressure — the pressure being so great it was impossible to check the flow, which continued for ten days before being brought under subjection and measured, but it was estimated at twenty-five thousand barrels per day. When this well was again opened it is

claimed that a thirty-five-thousand-barrel tank was filled in twelve hours, or at the rate of seventy thousand barrels per day of twenty-four hours. The greatest excitement followed the striking of this particular well. Development began on all sides, with a tremendous speculation in lands, starting at from $2 to $5 per acre in January, and, according to contiguity to the gusher, in some instances reached $40,000 per acre.

"It is evident that a fuel oil, in the apparently inexhaustible quantities in which it has been found in the Beaumont field and its contiguity to ocean shipment, is of much more importance and value than an illuminating oil in the comparatively limited quantities that nature has provided the latter. As no one ever has, or probably ever will, control ocean traffic, the nearness to ocean navigation is an important factor. The railroads and other interests in this country requiring steam are adapting their furnaces, as rapidly as it can be done, to the use of oil in the place of coal, and in this respect it comes as a boon to the fuel consumers.

"It is claimed that the demand for fuel oil is unlimited and has been met in only one country, namely, Russia, where the consumption now amounts to more than eight times the combined consumption of the refined oils. Owing to the active markets created in the Eastern Hemisphere for the Russian product, South and Central America are the only natural markets left for the American oils outside of the United States.

"Previous to the phenomenal strike of flowing wells at Beaumont, Corsicana was the center of oil production of the State. In fact, the production at this point enabled Texas to climb from the lowest to seventh place in the oil-producing States, with the likelihood of its reaching first place, owing to the increased production at Beaumont.

"The method of utilizing oil for fuel is extremely simple. A small pipe connects with the reservoir of oil, is run into the firebox of the boiler and connected with the spray from the exhaust steam pipe. The oil and steam thrown off together form a gas that burns with a steady and intense heat. It is considered safe, clean and reliable. We are informed that many sugar refineries in Louisiana are getting ready to use this oil.

"We are indebted to an oil expert, C. F. Z. Carachristi, for

the following information as to the permanency of the Beaumont deposit: 'That the production of this field will, undoubtedly, be greater than any oil field in the United States, and, probably, greater than the aggregate production of all the oil fields in this country, can not be doubted by any one who is familiar with the commonest facts in regard to the different fields. As before stated, there has been no other territory in this country, except the Oil Creek (Pa.) field, where the surface indications of oil have been so numerous and widely scattered as in the Beaumont district, and there has never been anything to equal the high percentage of oil saturation which is found in the Beaumont field. When it is considered that over one hundred feet of oil-bearing sand was found before the gusher was struck, and that the well would have been among the largest in the country, even if drilling had been stopped before the principal stratum was reached, some conception of the productiveness of the field can be formed.

"'An idea of what this thickness of oil and sand means can be obtained when it is known that the average thickness of oil sand in the Eastern field is less than twenty feet, and that a ten per cent saturation of a hundred-foot stratum will produce eighty thousand barrels of oil per acre. While heretofore this production has never been equaled in this country, it has been surpassed in the Russian field, where a twenty-acre tract has produced nearly forty million barrels of oil, and is still producing over twelve thousand barrels a day. The highest average production in the Eastern field, except in small pools, is about two thousand barrels per acre, which is the approximate average production of the Bradford field. In the Eastern and California oil fields, the oil strata have been much disturbed by volcanic action, and the result is that oil is only found in the anticlinals or along their slopes, while in the Texas and Russian fields the oil strata are practically level and entirely undisturbed by volcanic action. The result is a more general saturation of the oil sand and a more even distribution of the productive oil lands.'

"It is possible to pipe the Beaumont oil to Houston, but eighty-four miles distant, and thus make that city a large manufacturing as well as railroad center, the cheap fuel attracting a certain kind of manufacturers from all parts of the Union,

giving them, among other shipping facilities, a possible outlet to the ocean via La Porte and Galveston."

The Hon. L. T. Dashill, writing in the *National Oil Reporter,* contributes an equally convincing though more picturesque appreciation of the wonderful fuel fields, as follows:

"For several months Beaumont has been, in the language of the 'Old Alcalde,' the center of the surrounding country. From the four corners of the earth men have come to see what manner of place this is. Some have come fascinated with the budding prospects here about to unfold — have pitched their tents and henceforth are to be numbered among us. To them all Texans extend a cordial greeting, and around them and their interests will be thrown all of those beneficent influences which emanate from an enlightened citizenship governed by liberal laws. Others have come, seeing visions and dreaming dreams, stepped rashly into the whirl of speculation which for a time dominated men and things, lost their all or failed in the realization of their hopes, and left discouraged, disappointed, embittered. From the boomer, the bankrupt speculator and the envious foreign competitor, have emanated stories exaggerated and so conflicting that capital, always conservative, halts at the threshold of its investments and demands facts, not fiction, concerning the oil fields of Texas. Our guests are therefore doubly welcome — because of the pleasure their presence affords us, and because of the mission which brings them here as representatives of the greatest fact gatherers and fact distributors in the world.

"Under these circumstances, let us address ourselves to conditions, not theories — to the oil that we have, rather than that which Mother Earth may yield in other quarters — to the bird in the hand rather than the ten in the bush. Within four miles of this little city there are fifty-odd oil gushers, the smallest of which is larger than any other well ever discovered in the world outside of this district. A thirty-five-thousand-barrel tank has been filled from one of these wells in twelve hours, and the same well will produce in a given time as much oil as all the wells in the State of Pennsylvania, while the fifty-odd gushers are capable of producing in ten days as much oil as the wells of West Virginia, California, Indiana and Ohio have produced in the last fifty years. The production of these fifty-odd gushers, if sus-

tained for one year, is equal to 364,000,000 tons of good steam coal, and 364,000,000 tons of good steam coal, delivered at the Atlantic or Gulf coast, is worth more than $780,000,000. The actual cost of producing this oil, under normal conditions, will not exceed a fifth of a cent per barrel, while the ability of the producers to handle it can not be crippled by hostile combinations of capital, because of the proximity of the field to the deep-water ports of the Gulf of Mexico. The mind staggers when confronted with the fact that within an area of one hundred acres of ground enough petroleum can be found to run every factory in the Union and furnish fuel for every steamer and and warship that carries at its masthead an American flag. As a fuel this petroleum is as nearly perfect as exists in nature. It requires absolutely no treatment, and the danger attached to its use is no greater than that of gas, wood or coal. It burns readily, and it has been demonstrated that its heating power is higher than that of any other commercial fuel. One pound of Beaumont oil of average gravity, free from sand, will evaporate as much water in a steam boiler as will two pounds of anthracite, two and one-fourth pounds of bituminous, or three and one-half pounds of lignite. Speaking in round numbers, six barrels of oil weigh a ton, and in actual test on a steamship of one hundred horse-power and eight hundred tons burden, it was found that the consumption of oil was three and one-half tons per day, or twenty-one barrels, as against a daily consumption of nine tons of coal. The president of the Santa Fe Railway system has stated that twenty-five passenger and freight engines on a thirty-days' run used 2,077 tons of coal and covered 87,063 miles, or about forty-two miles per ton. Oil at $1.35 per barrel would at this figure cost 14.4 cents per mile, against 23.2 cents per mile for coal. Experiments with the battleship engine of the International & Great Northern Railway Company have demonstrated that on a hundred-mile trip twenty-six and one-half barrels of oil were consumed, whereas the same run with coal would require six and one-half or seven tons of the best lump coal. The coal at $3.75 per ton would cost $26.25, and the oil at 60 cents per barrel $15.90, showing a saving on the trip of $10.35. Comparisons *ad infinitum* could be detailed, but enough has been seen and said to demonstrate that the output of the Beaumont oil field is phe-

nomenally large, if not inexhaustible, and that nature has here provided a reservoir of fuel which, with proper development, will revolutionize the commercial world. This is the field to which your attention is invited. That it will in time be fully developed we have no doubt, but it will require large capital, patient endeavor and the constant exercise of conservative business methods. However, it is but justice to say that the progress made in this work during the past nine months is remarkable. In the boring of wells, the laying of pipe lines, the building of tanks and the delivery of oil under contracts, heretofore made, no comparison is found in the history of the world's oil fields.

"The discovery of oil in the Beaumont field is to Texas the dawning of an era teeming with magnificent possibilities. With her vast domain of iron ore; her forty million acres of pine, cypress, walnut, oak and cedar; her annual agricultural products aggregating in value $200,000,000; her hogs, cattle and sheep, and with the strong arms and brave hearts of her honorable citizenship, Texas is ready at one bound to take her rightful place at the head of the great sisterhood of American States. Let the problem of cheap fuel be permanently solved and on her hillsides and in her valleys will be found factories and mills yielding products as varied as are her boundless resources, and within her limits the elements of prosperity will be so mingled that her greatness will be the greatness of an empire, and her strength the strength of an industrious, God-fearing people."

LUMBER.

There are forty million timber-bearing acres in Texas, but outside of the true forest district of the eastern part of the State, it is not a prolific or profitable source of hardwood or building lumber. Almost that whole area bordering the Sabine river is, however, covered with a dense and perpetual growth of valuable woods, which cover an expanse extending three hundred miles from north to south, one hundred and fifty miles wide at the southern extremity and about one hundred miles wide at the northern margin. About half the region bears upon its high ground vast and almost impenetrable forests of pine of several varieties, which give way in the lower districts and slopes to oak, walnut, elm, maple, hickory, poplar, gum and a half-dozen less important growths. Toward the northern limits of this great forest many valuable cabinet woods predominate, and there are immense reaches of walnut, maple, oak, ash, beech, elm, sycamore, gum, hickory, poplar and others.

When it is remembered that, within the past few years, the great lumber States of the northern latitudes, and noticeably Michigan, have been almost stripped of their forests, and that the big lumber factors of the country have been emulous for the discovery and possession of new reserves, the importance of Texas' splendid forests becomes at once apparent. Its lumber region is not only one of the few great sources of supply left in this country, but almost its whole forest area is underlaid with valuable deposits of iron ore, affording at once a market for the small timber, charcoal and by-products, and holding forth to the miner, smelter and iron miller the advantages of cheap and plentiful raw material, as well as easy access to the markets on the railroads now building into the region, or by any of the navigable rivers which here come within easy reach of tidewater at Galveston and Port Arthur. In most of the Southern States the lack of transportation facilities has been the chief obstacle to the successful handling of logs, but in Texas no such difficulty exists, and the result is already becoming apparent. There are

now at profitable work in the State some of the largest and best-equipped sawmills in this country, and the prices at which their product is being marketed compare favorably with those of any Northern mart.

It is well known that the successful conduct of a great lumbering business requires the ownership of large areas of forests, the employment of a great capital and, generally, the exercise of concrete and corporate organization. The recent modification of the once-stringent anti-corporation laws, as explained in the words of Mr. Wortham in a previous article, applies with special significance to the lumbering interests of Texas, for at no time in the history of the State has the field been so inviting, so certain of reward, so sure of commensurate encouragement as now (1902-'03). That existing conditions must continue to grow more favorable is evident from the facts that Texas' yellow-pine forests are the best and greatest of the accessible lumber districts of this country; that its convenient seaports offer an unlimited and rich market abroad, and that the visible supply of white pine in the United States and Canada can not, at the present rate of cutting, last more than a dozen years.

The long-leaf yellow-pine timber along the river Neches in Texas is considered the best in the world for the building of ships and railroad cars. In one year Beaumont and Houston sawed and sold more than eight million feet of lumber for local use and exported to foreign countries almost forty-eight million feet. Houston and Beaumont, together, have been sawing at the rate of four hundred million feet a year, but the recent boom in eastern Texas, together with a sudden and insatiate demand from Dallas, Fort Worth, Cleburne and San Angelo, has forced up prices until the mills are seeking escape from some of their foreign trade, and are devoting greater energy to supplying the home demand. At this writing a Houston mill has refused an order for one hundred million feet for foreign future delivery, because the price was too low.

Beaumont is building at the rate of three hundred new houses a year; Houston has in course of erection forty-seven new business and factory structures and 125 new homes; Galveston is adding $17,000,000 worth of improvements in the shape of warehouses, docks, mills, factories, stores and homes, and Fort Worth

and Dallas, rivaling one another for immediate supremacy, can not supply their needs of lumber and brick within their State. The building of railroads and railroad equipments has increased the recent demand for ties, telegraph poles, rough and fine lumber, and it is not likely that the lumber factors will catch up with their multiplying customers for two years. The sudden and surprisingly rich development of the rice industry has added another influence to the demand for both building material and constructive labor, and the enormous warehouses, platforms, power plants, wharves and pumping structures made necessary by the installation of oil properties lately at Beaumont, Port Arthur and now at Sour Lake, have taxed the ingenuity, the energy and the invested capital of every lumber merchant, sawyer and operator interested in lumber and its kindred trades.

But the flourishing lumber industries of Texas are not crying out for rival companies to come from other States to help them to realize upon the great earnings already accruing from their energy and investments. The loudest prayer is for labor, labor, labor! Men to work in the forests, in the logging camps, in the mills, in the lumber yards, in the buildings — men, men, men! That is what the Texas lumber industry most needs, and it is willing and anxious to employ many thousands at wages higher and more easily earned than in any other section of the country. The same is true of a dozen other important manufacturing interests of the State, and the answer to this demand is the same answer that will solve the whole problem of Texas' swift and unparalleled growth during the coming decade. Galveston's planing-mills and sash, door and blind industries are among the most profitable in the State, but they are not able to keep pace with their requirements; Houston, too, has a $500,000 equipment for manufacturing these building accessories of native lumber, but its capacity has been overtaxed for years, and it is now driven to doubling its facilities. The making of furniture is almost an untried venture in the State, although there are at least a dozen towns in which convenient supplies and ravenous markets would seem to furnish ideal conditions for the finishing of almost any grade or quality of house furniture.

In spite of the comparatively small extent of industries pertaining to lumber, the twelfth United States census, bringing the

figures up to the end of 1900, show that the manufacture of lumber and timber products is the most important mechanical industry in the State. There were, at the beginning of 1901, 637 establishments devoted to the manufacture of wood products, giving employment to 7,924 wage-earners, or 16.5 per cent of the wage-workers of the whole State, and the products of these establishments were $16,296,473, or 13.6 per cent of the total for the State. This seems like a very slight showing, when the unequaled advantages at hand are considered, and the exact figures are given, not with the desire to boast of past performances in this or in any manufacturing line, but to show beyond peradventure that manufacturing in Texas, like mining, agriculture and even cattle enterprises, is only at the dawn and threshold of its insistent and necessary possibilities. Apply to this situation the fact that this leading mechanical industry of Texas is wholly unable to keep up with the demands made upon its service and you have the key to the whole manufacturing status of the State at this time. The lumber and timber working industries of Texas are almost wholly confined to the counties in the extreme eastern portion of the State, the 215 mills in this section, from Bowie county on the north to Harris and Jefferson counties on the south, turning out $13,930,298, or eighty-five per cent of the State total in 1900, Beaumont, Houston, Galveston and Orange being the pivotal centers of the business.

COTTON, WOOL AND FLOUR MILLS.

The manufacture of cotton, including ginning, compressing, milling the oil and cake, handling the seed and weaving cotton cloth, is the second most important developed industry of Texas, but conceded by commercial and scientific experts to be the first in point of opportunity and the surest of a continuous and practically unlimited growth. In 1902 Texas had more than eighty thousand spindles, against fifty thousand in 1900, and twenty-five hundred looms, against one thousand two years ago. Dallas, Denison, Celeste, Bonham, Belton, Gonzales and Corsicana are making sheetings, drills, ducks, yarns and broom cotton, but they, too, for many reasons, chief of which has been the scarcity of labor, have been unable to supply the increasing demand for their goods. About $3,000,000 (less than one-third of the total invested in ginning, and one-fourth less than the capital invested in compresses) is all that has been thus far devoted to the actual making of cotton cloth. And yet the quality, the fiber and the proximity of raw materials in Texas and in the adjacent fields of Arkansas and Louisiana make the great towns of Texas the natural and inevitable headquarters for world-mighty cotton factories, and its noble seaports the logical distributing points for the manufactured as well as the raw yields of its enormous tributary plantations.

The making of cotton-seed oil and cake is, however, as yet the most extensive and lucrative side of cotton factoring, 103 establishments, employing twenty-five hundred hands, producing annually about $15,000,000 worth. Of the 93,325,727 gallons of cotton-seed oil produced in the United States, Texas gave nearly twenty-five million, and Galveston exported to Europe, mostly to Mediterranean ports, about twelve million gallons. The cake and meal have also come to maintain a high and stable value, for this by-product is no longer utilized only as a fertilizer. It has become a recognized and invaluable feed for the fattening of cattle. More

than half a million steers are annually sustained upon this product alone, and the demand is rapidly increasing.

Wool has been for some time successfully manufactured into first-rate fabrics, but the total capital invested in the business is only about $300,000, and only one mill in the State cuts up its cloth and manufactures it into garments. The annual wool clip — the yield of mohair and of other animal-born fleeces — is as yet utterly unequal to the vast herds of sheep and goats in the State, and the manipulation of these shearings is as far short of the supply as the clippings are unworthy of the multitudes of wool-bearing animals. The field for endeavor in this line is not unlimited, of course, but in proportion to its scope, it is one of the surest and most profitable directions for the wise employment of adequate capital and modern enterprise.

When it is remembered that Texas in four years, from 1898 to 1901, inclusive, jumped from twenty-second to fourth place in the ranks of wheat-producing States, it would seem that its milling interests as directed to the grinding of the staple cereal should have done better than to advance from $7,000,000 in 1898 to $12,333,730 in 1901. Texas has the vast wheat lands of Kansas, Oklahoma and Indian Territory at hand to supplement her own marvelous riches of this grain; there is no rival in America that can point to exporting or freighting facilities equal to those within the State; unlike most of the strictly manufacturing businesses, labor is not a dominating consideration in the making of flour and grist. Texas should grind and sell annually more wheat than is produced within the State borders, and there is no doubt that the time is at hand when this achievement will be a part of the new history of the commonwealth.

The latest statistics show that less than fourteen million bushels of wheat and only four million bushels of corn are being ground annually in the Texas mills, though the demand for the products so marketed is greater than the combined capacities of the plants engaged, and the yield in flour, bran and meal nets a greater profit than the similar output of any works of equal extent in any part of the United States. When Texas strikes its normal "gait" as a flour-producing State, it will find the accompanying increase of its grain crops, its superior geographical location and the admitted excellence of its cereals to be influences that

can not be overestimated or surmounted by Northern or further Western competitors for foreign, coastwise or interior markets.

Railroad Shops and Other Factories.

The sudden advance of Texas' railroad industries leaves Pennsylvania and Illinois the only two States whose actual mileage in operation is greater than that of the Lone Star State. Within four years Texas has attained third place as a railroad State, and with the fast and costly extension of the roads the car-building and shopwork business of the commonwealth has advanced till it ranks fourth in scope and importance of the manufacturing industries. Whole towns have been builded about the vast shops constructed, notably Cleburne, where the Santa Fe operates the finest and most extensive car working, building and repair shops in Texas. Six hundred freight cars, fifty passenger cars, ten locomotives and an enormous amount of repairing have during the past year aggregated a product valued at almost $10,000,000, giving employment to seven thousand wage-earners and engrossing the energies of thirty-five well-equipped plants.

Mention of the lesser manufacturing enterprises of the State would not be complete without drawing special notice to the enormous output of the saddle and harness factories, whose estimated products this year will reach almost $5,000,000, mostly the work of the gigantic Dallas saddleries, where an establishment, said to be the largest of its kind in the world, finds markets for its wares in every harness and saddle using country on the globe.

A brief mention of the few remaining lines reckoned among the "eleven leading industries of Texas," as calculated by the United States census just published, does not regard the meat-packing enterprises which are already installed in Fort Worth and will certainly bring that beautiful city into the front rank in population and in volume of business, as it is already in the van among the beautiful, healthful and homelike communities of the State. The new packing plants at Forth Worth have been erected by the Swift and Armour companies and form, together, the largest, most modern and costliest of the kind outside of Chicago. They will have cost, when complete, upward

of $5,000,000, and add to the population of Fort Worth about twenty thousand people, including laborers of various departments and their families. The effect of this gigantic installation will be felt in the widening circles of tributary lines; in the necessary access of shops, of new civic improvements, buildings, furnishings and shops, and in the export and traffic business of the State. In the cattle business it will be noticed most of all, for now the butcher, packer and cold-storage operator have come within the sound of the bellowing herds, and the economy of hauling, the avoidance of shrinkage and risk and the minimizing of effort will add perceptibly to the earnings of the cattleman, the feeder and the smaller ranchman.

The following estimate of some of the leading industries for 1901 will give an adequate idea of the relative importance of the branches named, though each has undergone an average improvement of about nine per cent since the census enumerators compiled the table:

There were 772 establishments engaged in printing and publishing in 1900, with 2,547 wage-earners and products valued at $4,577,110. In 1890 there were 447 establishments, 2,069 wage-earners and products valued at $3,971,410. The increase in the value of products during the decade was $605,700, or 15.3 per cent.

There were 359 establishments engaged in the manufacture of saddlery and harness in 1900, with 1,093 wage-earners and products valued at $3,420,790. In 1890 there were 165 establishments, 693 wage-earners and products valued at $2,488,356. The increase in the value of products during the decade was $932,434, or 37.5 per cent. This industry is carried on extensively in the city of Dallas, and its products find a market in nearly all the States and Territories west of the Mississippi river.

There were nine establishments engaged in the manufacture of malt liquors in 1900, with 585 wage-earners and products valued at $2,689,606. In 1890 there were seven establishments, 401 wage-earners and products valued at $1,702,087. The increase in the value of products during the decade was $987,519, or fifty-eight per cent. There was no malt produced in the breweries of Texas during the census year, these establishments being dependent on outside sources for this most important material.

There were ninety-nine establishments engaged in the manu-

facture of foundry and machine-shop products in 1900, with 1,343 wage-earners and products valued at $2,682,426. In 1890 there were fifty-nine establishments, 782 wage-earners and products valued at $1,874,059. The increase in the value of products during the decade was $808,367, or 43.1 per cent.

There were seventy-six establishments engaged in the manufacture of planing-mill products in 1900, with 657 wage-earners and products valued at $1,605,297. In 1890 there were sixty-two establishments, 949 wage-earners and products valued at $2,700,941. The decrease in the value of products during the decade was $1,095,644, or 40.6 per cent.

There were 171 establishments engaged in the manufacture of clay products in 1900, with 1,859 wage-earners and products valued at $1,212,266. In 1890 there were 143 establishments, 2,072 wage-earners and products valued at $1,311,270. The decrease in the value of products during the decade was $99,004, or 7.6 per cent.

THE MANUFACTURING CITIES.

Of the seven leading cities of the State, Galveston doubtless transacts the greatest total volume of annual trade, though Dallas and Houston surpass the great port in the annual value of their strictly manufacturing outputs, and San Antonio is almost abreast of the Island City in the returns of its factories and shops. Fort Worth, with its latest acquisition of great packing-houses, may outstrip both Houston and Dallas in manufacturing totals during the next few years. But it is impossible to forecast the mighty results of the energies now at work in Houston, Galveston, Beaumont, Dallas, or even in Austin, San Antonio and Waco, all of which are now included in the first flight of seven Texas cities.

Of the twenty-three cities and towns with populations of twenty thousand or less, in which the establishment and opportunities for successful manufacture are growing brighter and more rapid each day, El Paso takes first rank, with an estimated annual manufactured output of nearly $9,000,000 worth. Cleburne, Gainesville, Brownsville, Beaumont, Belton, Bryan, Calvert, Corpus Christi, Corsicana, Cuero, Denison, Greenville, Hearne, Jefferson, Marlin, Marshall, Orange, Sherman, Taylor, Temple, Weatherford and Yoakum are all natural and aggressive factory centers, sure of continuous growth, and all offering special inducements by cheap sites, bonuses and favorable legislation to the prospective investor, homeseeker or business man.

In formulating this discussion of Texas' performances and prospects as a manufacturing State, particular care has been taken to sanely exploit the real inducements toward development, rather than the past achievements of particular enterprises, localities or towns. The information projected is authentic and given rather with belittlement than exaggeration. The purpose of this manner of handling the subject is self-explanatory and must appeal to the wise man of business, the careful wage-worker, the cautious head of a family and the master of vast industrial enterprises, in a safer and more convincing manner than any quantity of fancy boasting.

Galveston.

Although it is not the largest city in Texas, Galveston, with its matchless harbor and bay, the enormous tonnage of its regular shipping, its inexpressibly beautiful environments and the unequaled energy and determination of its thirty-eight thousand people, is the most important, the most potential and the most interesting city of the State. The whole West, from the Mississippi river to the Pacific ocean, pays tribute to it. It is the focus of half of the commercial activities of the State and the gauge-point of the export trade of the whole Southwest. It sends forth annually to the outside world more cotton and cotton-seed products than any other port in this country, and ranks third of the nation's great harbors in the total tonnages and values of its cargoes. Since the final establishment of a deep-water channel for ocean-going ships in 1896, its export business has tripled, and in 1901 the value of its shipments to the foreign trade was $14,000,000 greater than in the previous year.

From its fifty miles of available dock space forty lines of steamships ply to foreign ports. It is in quick and constant touch with every important point on the western seaboard of Europe, from Denmark to the Mediterranean. London, Liverpool, Antwerp, Havre, Bremen, Belfast, Mexico, Cuba, South America, China and Japan have frequent and regular vessels at its wharves, and in the four hundred ships which ply annually to these foreign marts, Galveston pours into the markets of the world two million bales of cotton, two hundred and sixty thousand tons of oil cake and cotton-seed meal, twelve million gallons of cotton-seed oil, sixteen million bushels of wheat, one hundred and fifty thousand barrels of flour, nineteen thousand carloads of other grains, and nearly $10,000,000 worth of cattle, horses, live stock of other kinds and manufactured articles. Add to the traffic of these four hundred ships the combined business of 215 coastwise ships, with total cargoes of nearly three hundred and sixty thousand tons, and you will have a glimpse of the truth as to why the importance, the wealth and the civic significance of Galveston can not be measured by its comparatively small population.

As there is no combination of circumstances which can prevent the steady and rapid growth of this enormous annual trade,

so there is no need to exploit the influences which are to bring it about. They are to be found in the rapidly developing cities, factories and farms of the interior, in the mighty increase of western emigration, in the settlement of Oklahoma and Indian Territory, in the expanding needs of Kansas, Nebraska, Colorado, Utah and the whole West, but most of all in the imminent growth of Texas itself.

Galveston lies at the east end of Galveston Island. It is the county seat of Galveston county and is proud of a civic, educational and economic stage of advancement that is not surpassed by any city of its size in the United States. Last year nearly $4,000,000 were spent for permanent improvements in the city; the waterworks, owned by the city, derive an adequate and pure supply from deep and inexhaustible wells with a capacity of nearly four million gallons per hour; street lighting, fire department and a perfect sewerage system are also owned and operated by the city. The assessed valuations of the city assessor now aggregate $26,960,512, and the city tax rate is $1.57 on the $100. There are two high schools and seven graded schools of the public-school system, twelve private schools, a Catholic university, the School of Medicine of the State University, two Catholic academies, thirty-one churches of all denominations for white worshipers and thirteen for negroes, and many orphan asylums and other charitable and eleemosynary institutions. A breakwater and seawall are now in process of construction which, together with extensive grading within the city limits, will have cost, when completed, nearly $7,000,000. The best street-car system in Texas, the most picturesque residence district, the most beautiful suburbs, a bathing beach without a superior in this country, a climate that does not vary thirty degrees the year round, winters that are like the Indian summers of our northern latitudes, summers that are made cool and invigorating by the incessant Gulf breezes, which, sweeping from the south and southeast across a thousand miles of salt water, make the air a tonic and the sunless skies a benediction! Such is Galveston at this day, a city so beloved of its people, so mighty in its achievements and in its promise, that it may be regarded as the concrete embodiment of the whole resistless spirit of the Southwest.

Houston.

Houston, although lying fifty-five miles from the end of the Galveston jetties, is but five miles from the western ramifications of the Bay of Galveston, and by means of deepening and widening bayous, some of which already penetrate into the heart of the city, hopes, with the expenditure of less than $5,000,000, to become within a few years a supplementary seaport to the already dominant harbor of Galveston. The sum of $1,300,000 has already been appropriated and is being used by the National Government to better the waterway to the Gulf. The city, whose corporate limits embrace only nine square miles, is one of the most beautifully situated in America. Naturally drained, encinctured by a native growth of evergreen timber, as well diversified by nature as if a landscape gardener had chosen the site, Houston is one of the most attractive looking, homelike and winsome of the principal centers of eastern and southeastern Texas. On account of the narrow limits of the place, the United States census enumeration of 1900 is but 44,633, but a recent careful canvass of the suburbs and adjoining communities shows that there is a total population of 78,336 within a common radius of seven miles from the center of Houston. Its population has increased nearly fifty thousand since 1890, and a few days' residence among its people will convince the observer that, with the possible exception of Galveston, Dallas and Fort Worth, Houston is the busiest, most progressive and most promising city in the State.

Next to Kansas City, Houston and Fort Worth have the most extensive railroad terminals and outlets of any cities west of the Mississippi river, and, as a cotton-distributing center, Houston is already without a rival among the inland markets of the United States, handling as many as 2,543,059 bales in a single season. And yet, in spite of her proximity to tidewater, in spite of her natural endowments as a city of homes, in spite of her almost fierce forward strides as a jobbing center, it is almost certain that the chief direction of Houston's future growth will be in lines of manufacture. The established metropolis of the cotton and rice region; the sugar, tobacco and grains of the whole inner coastal areas pouring into her gates; the lumber and oil industries of eastern Texas, just at the dawn of their development, and trending

naturally and essentially toward the railroad center of that portion of the State, it is hard to see how Houston, with its inexhaustible supplies of water, its superior shipping facilities, its peerless location and perfect climate, can fail to quickly achieve an extraordinary prestige as the manufacturing metropolis of southern and eastern Texas. Fuel, lumber, food, fabrics, in incalculable profusion, lie all about this favored city. With the already evident increase of rural and urban population in her territory, Houston can not avoid being within a few years a bustling hive for nearly every manufacturing craft. Already her annual bank clearings are $466,426,159, more than $1,500,000 *daily*, and a total annual increase in ten years of nearly $72,000,000!

Fort Worth.

Fort Worth is not only the gateway to Texas' richest agricultural region and the commercial pulse of the enormous export trade vented at Galveston, but it is a great railroad center, with fourteen lines literally radiating to all points of the compass. It now has a population of but thirty-five thousand, but the advent of the great packing town at its northern verge will add twenty thousand and make the city a hot rival of Dallas, Houston, Galveston and San Antonio for numerical supremacy. It is beautifully located on a bend of Trinity river, 670 feet above sea-level, perfectly drained, well paved and with eleven thousand men employed in its shops and stores. It is now connected with Dallas by a perfect and rapid street-car system, and its suburban villages, homes and environments are as beautiful as those of any city in this country.

Dallas.

Like Fort Worth, Dallas is almost in the center of the most densely populated and perhaps the richest agricultural communities in the State. It is admittedly the chief jobbing city of the Southwest, doing an annual trade in that line of about $45,000,000. It sells more cotton-ginning machinery than any city in the world and ranks second in the sale of farm implements. Although it is believed to be one of the best-equipped and best-governed

towns in Texas, its tax rates and civic debts are the smallest. The last census places Dallas first of the manufacturing cities, and there is little doubt that it is the comeliest and most maturely developed city of northern Texas.

Beaumont.

The magical performances of Beaumont within the past two years have been the wonder of the world, and yet very few people know that the town was already certain of a great future before the oil fields were discovered. Situate upon the Neches river, at the very edge of deep-water navigation to the Gulf via Sabine Pass, its lumbering and manufacturing interests had already aggregated millions annually. But with the "coming in" of the far-famed Lucas gusher, and the successive installation of the biggest oil operations in the world, Beaumont was transformed in a few months from a lively, well-poised city to a crowded metropolis, rushing and working, digging and building, till, for nearly a year, its population increased at the rate of two thousand a month. On account of the sudden expansion, the limited accommodations and the enormous prospects unfolded, Beaumont is now the liveliest town of its size in the world. Building material is at a premium, and labor commands its own price. Its "native sons" are improving and beautifying it beyond the dreams of two years ago, and the municipal government is bending every energy and sparing neither expense nor pains to make it as modern, as sanitary, as well watered and as comely as any city in the country.

Brenham.

Brenham, the county seat and principal city of Washington county, is one of the most picturesque and busy cities of its class. The present population is between nine and ten thousand, and cotton forms the chief item of its distributing trade. It has one of the best school systems in the State, and its fifty-four small factories and shops represent the bulk of $500,000 worth of "factory" business done by the county annually. The rich valley of the Brazos river pours into its depots and warehouses an extraor-

dinary amount of cotton, corn and various feed products, and three elevators, four mills and six cotton-ginning factories give employment to more than one thousand wage-earners, whose average total yearly earnings exceed $150,000. On the main line of the Santa Fe, it lies also midway between Houston and Austin, the capital of Texas, on the Houston & Texas Central, and from its advantageous position, geographically, is the chief commercial center for seven counties.

San Antonio.

Although San Antonio is chiefly known to the outside world as the Alamo City, or as a health resort, its people's chief pride rests upon its material prosperity, its swiftly increasing population, its fine buildings, its model municipal government, public improvements and perfect educational facilities. It is already crowding forward as one of the first six manufacturing centers of the State, and in point of population it is not far behind its four rival claimants for supremacy. Within the past year many extensive farms, vineyards and gardens have been added to the rural resources of the city, and there seems to be no limit to the supplies of fine water which can be reached by artesian wells. There is no city of equal size within two hundred miles of San Antonio, and it is therefore the industrial and social focus of a vast extent of tributary territory. The perfect climate, the profusion of sulphur and mineral springs upon the borders of the city, the historical interest attaching to its old fortresses, cathedrals, convents and ruins of the Spanish régime, have conspired with the incessant enterprise of its people to make San Antonio one of the most cosmopolitan, as it is one of the most beautiful, of American cities of its size.

Austin.

The capital city of Texas has a population of about twenty-four thousand, and ranks among the first seven manufacturing cities of Texas. The State University, a noble educational settlement, is located within its limits, and its State, county and city buildings are the pride of all Texas. In 1901 the total volume of

its trade was more than $21,000,000. Travis county, in which it is situated, is on the margin of the famous black lands of the south-central section of Texas, and is almost equally divided by the rich valley of the Colorado river. The city proper occupies one of the most beautiful and healthful sites imaginable, the country to the north and west being mountainous and wondrously diversified by fine watercourses, great reaches of timber and upland farms. The city is named for Stephen F. Austin, who came to Texas in 1823 and practically began the American colonization of the State. Travis county is named in honor of William Barrett Travis, the bright, particular hero of the Alamo.

Cleburne.

Cleburne, the county seat of Johnson county, is a working model for modern cities of the ten-thousand-population class. It is the next big railroad town south of Fort Worth, and is, without doubt, the liveliest place of its size in the State. The advent of the Santa Fe shops was largely responsible for its sudden growth and sustained importance, for its population has more than doubled in ten years, and the amount of building now in process indicates an immediate expansion of all kinds of business. It is the junction point for all traffic leading to and from Weatherford to the west and Paris toward the northeast, and by the nature of its location and the trend of its interests is destined to excel many larger towns in the volume and character of its manufacturing traffic.

Temple.

The chief city of Bell county has attained much of its importance by being the point of entrance for an enormous volume of cattle freight, which here reaches the main lines of Texas traffic. The population has doubled since 1890, when 4,047 inhabitants had well begun the building of a flourishing city. Temple is said to have the richest and best-maintained banks in Texas, the size of the place and the volume of its business considered, and the average financial rating and credit standing of its two hundred merchants are not surpassed in any other city of equal population.

The entire cattle wealth of west-central Texas, beginning with the great shipments started at San Angelo, passes through Temple, and every year adds to its importance as a railroad center and shipping point. Its advantages as a manufacturing city are many and varied, for it is at the very heart of the State, surrounded by the richest fields, the most varied natural resources in timber and ore, and almost equidistant from the railroad outlets of Fort Worth, Dallas and Paris on the north, and Galveston, Beaumont, Houston and San Antonio on the south.

Waco.

The Athens of Texas is situated on the Brazos river, in McLennan county, one of the most perfectly adapted agricultural sections in the world. The city has a population of twenty-two thousand, and ranks sixth in the State as a manufacturing center. Waco's chief glory is its schools, and of a total municipal revenue of $200,000 a year, more than $50,000 is directed to the maintenance of what is regarded by pedagogues as the most complete and perfectly adjusted school system in the United States. The town is well governed, beautifully located, intensely ambitious and civically proud, with the results that usually accompany high motives and incessant effort in the right direction.

El Paso.

"The Pass to the North," as its old name implies, is the main gateway between the United States and the republic of Mexico. Although its population is less than twenty thousand, according to the last census, it outranks all but five cities of the State in the volume of its manufacturing business, and it is the fifth port of entry of the United States. The southeastern portion of New Mexico, the eastern districts of Arizona and the richly endowed valleys of the Rio Grande and Pecos rivers in Texas pay tribute to the wealthy city of El Paso.

San Angelo.

One of the most productive cattle regions in the Southwest finds vent for its countless herds through San Angelo, the county

seat of Tom Green county and the principal city of the range country of southwestern Texas. The town has a population of about seven thousand, and from the status of a mere "cattle town" five years ago has rapidly attained the growth, activity and style of a central community, well housed, perfectly governed and surrounded by the changed conditions which have come over the cattle industry of the Texas of to-day. With the growth of its civic population and the settling up of the great expanse of farm land at hand, the cities of this section are sure to achieve remarkable manufacturing results, for the pasture and timber lands adjacent are richly underlaid with coal and mineral deposits.

Brownwood.

Brownwood, in Brown county, although a city of not more than five thousand people in 1902, is typical of Texas and, in its way, unique among American cities of its size. An indication of its energy and progressiveness may be found in the fact that its population in 1888 was given by the Commissioner of Agriculture at two hundred souls. It has now eleven churches, four public schools, six private schools, two colleges and a concrete and economical civic government based upon the most advanced methods. The lumber business of Brownwood is one of the largest done in any city of the State; there are large cotton-seed oil mills, wholesale grocers rated at $50,000 to $250,000, and banks with credit standings of $500,000. Brown county is one of the richest agricultural and stock-raising areas in the Southwest, and the enormous transactions of cattlemen, farmers and various husbandmen is the motive and explanation of the wealth and enterprise of the bankers, merchants, factories and educational institutions of Brownwood, the county seat. The county is watered by the Colorado river, the Pecan bayou, the Blanket, Stepp, Salt, Clear and Indian creeks, and a number of lesser rivulets. The prevailing soil is the black, sandy loam. The Gulf, Colorado & Santa Fe cuts through the south center of the county, and its taxable possessions and improvements are valued at nearly $500,000.

Lampasas.

This beautifully situated city, the county seat of Lampasas county, has a population of nearly three thousand, and is the center of activity for one of the most prolific farming and cattle counties of central Texas. It has a dozen schools, public and private, nine churches, excellent water and illuminating works, and a group of banking and financial institutions unsurpassed in resources and activity by any city of similar size in the United States. The jobbing and mercantile center of one of the best cattle and agricultural counties in Texas, the wealth and prosperity of Lampasas City are as stable and sure as the constant and unfailing advances of the husbandmen and cattle raisers, who regard it as their metropolis and headquarters. Lampasas county was formed in 1856 from Bell and Travis counties, and is bounded on the west by the Colorado river. About one-fourth of the county's area is woodland, but the valleys and lowlands are among the richest in the State, of black, waxy soil, capable of the finest and most prolific crops of cereals, fruits, grasses and vegetables, and sufficient in extent to maintain ten times as many human and animal lives as they now sustain. The cattle and live-stock shipments from Lampasas to Northern and Eastern markets during the year 1902 aggregated nearly $1,000,000 worth, and it is said by sheep experts who have recently visited the county that there is no more favorable region in this country for the breeding, raising and fattening of wool-bearing mutton.

PRECIPITATION IN THE TEXAS REGION.

1, over 50 inches; **2**, over 45 inches; **3**, over 40 inches; **4**, over 35 inches; **5**, over 30 inches; **6**, over 25 inches; **7**, over 20 inches; **8**, over 15 inches; **9**, over 10 inches.

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