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An Orange Tree at Corpus Christi.

THE COAST COUNTRY.

The Coast country of Texas, like that of Louisiana, consists of a broad belt of nearly level prairie, extending from the timber line to the Gulf coast. In Louisiana, however, due to the deposits from the Mississippi river, the immediate coast line consists of a soft, impenetrable marsh, which encroaches on the arable land for a considerable distance from the coast line. The line of demarcation is well defined, and thus the fertile meadows of the Attakapas and of the Acadian parishes cease where the salt marsh begins.

The coast of Texas, well removed from the influences of the great Mississippi, however, presents a different picture. Here the black lands of the prairie stalk into the Gulf proper, or form bluffs from ten to forty feet above the level of the long bays or lagoons, which are peculiar features of the Texas coast topography, and which makes the Texas coast so pleasant as a place of residence, and so profitable as a farming country.

Broadly considered, the "Coast Country" extends from Lafayette, La., on the line of the Southern Pacific, for several hundred miles, or until it meets its extreme western boundry—Mexico and the yellow Rio Grande, near Brownsville. Its width is from fifty to a hundred miles and variety of soil almost infinite. In general character, it resembles the prairies of Illinois or Kansas, except that it is minus the "roll," which is more or less distinctive of the Middle West the Louisiana and Texas prairie being as level as a floor, with an almost imperceptible decline to the coast. This latter insures good drainage and lessens the expense in cultivation, a fact which the farmer may not disregard in the selection of a home.

The greater portion of the Coast country, at least of Texas, is virgin soil, undefiled by plow or spade, just as it was a hundred years ago; just as it was when La Salle landed at Matagorda and met an untimely fate because of his valor and enterprise. In Louisiana this condition prevailed until the cultivation of rice added to values and brought the vacant acres within the spell of the husbandman. The march of progress in this direction spread into the green pastures of Texas. It leaped the Sabine river, which marked the boun-

dary between the two States, and is today putting thousands of acres in the Texas belt into cultivation. The extent of these acres in the State of Lone Star is so considerable, however, that much land classed as "virgin soil" today will be virgin soil twenty years hence, even with the rapid settlement of the sections referred to, and the constant and continual influx of settlers from the more populous sections of the West and North.

The region along the Gulf coast, from the Sabine to the Rio Grande, is so vast, however, that no matter how great the inroads upon its extent, posterity only will be able to determine the real capacity of this fertile empire or the day when its surface shall be blossoming with the fruits of the orchard and of the field.

The coast country today offers more opportunities for the employment of brawn, brain and capital than any part of the United States. The facilities are remarkably extensive and the natural advantages without equal. Ever since the settlement of this favored country, the prairies have been devoted to the raising of live stock, and although thousands of finely bred Herefords and Durhams dot the broad green veldt, and make a component part of the wealth of Texas, the roof tree of the farmer is going up everywhere, and the "cow man" is realizing that the land that will produce rice to the value of \$35.00 per acre is too valuable to be given over to the steer, which needs five acres to produce a like value.

The rich prairie lands will produce abundantly any of the prime crops, and the future of intensive farming has been assured in the light of recent experiments, and the success which has attended the efforts of the farmers at various points in the coast country, and along the Southern Pacific, which penetrates and makes possible the development of the great natural resources of this favored territory.

Ninety-one counties form the Coast country of Texas, with a population of nearly 600,000 persons, yet it must be remembered that but a small proportion of the area is settled by farmers, practically the entire area being given over to the cattle people. As mentioned, however, the rice industry has put into cultivation 250,000 acres, and the present impetus bids fair to place five times that quantity in active crops within the next decade, to say nothing of the territory which will be devoted to other crops.

The future of the Coast country is fair, with the promise of a new agricultural dawn. Capital is now being invested in the favored region, and thousands of investigators from Illinois, Iowa, Ohio and Minnesota are now pouring into the counties along the Southern Pacific, with a view of making permanent location therein. There is room for half the population of the West in the great prairie belt, and therefore there will be no crowding for a long time to come, while the thrift, industry and intelligence of the new blood will make the Coast country blossom like a rose.

The following counties lie within the belt: Jefferson, Orange, Chambers, Liberty, Harris, Galveston, Brazoria, Fort Bend, Waller, Austin, Colorado, Wharton, Matagorda, Nueces, Wilson, Bexar, Victoria, Calhoun, Fayette, Lavaca, Goliad, Patricio, Bee, De Witt, Karnes, Guadalupe, Gonzales, Cameron and Hidalgo.



Flowing Well near Corpus Christi.

PRODUCTS OF THE COAST COUNTRY

Owing to the natural conditions, location and variety of soil, in the great Coast belt, it follows that the range of products is necessarily extensive, and of such character as to make it adapted to the demands of the farmer, no matter from what portion of the United States he may come.

Practically every crop grown and harvested in the various States of the Union, with the exception of wheat, barley and rye, may be successfully cultivated, and with profit, in the Coast country. So harmonious are the conditions that as many as five of the world's prime products may be raised to a complete fruition in the same field. Cotton, corn, sugar cane, rice and oats produce abundantly throughout the coastal plains, and the splendid fertility of the soil is taxed but little in the process.

Long summers of growing weather, mild winters and a genial sky permit the practice of husbandry for nearly twelve months of the year. There is scarce a day that work may not be carried on in the field. This fact is one which may be surprising to the farmers from the Northern corn and wheat belts, who are accustomed to the rigors and inconveniences of at least six months of exceedingly cold weather, when cattle must be housed and fed, and the plow remains idle—expense going on and the ground producing

nothing but frost. Then, too, the settlers on the wind-swept plains of Dakota and Minnesota are compelled to give their attention to one crop—a character of farming which must in the long run cripple both farm and farmer, and which renders the seasons long and arduous periods of anticipation, anxiety and complete ruin, when mortgages overwhelm and creditors become rampant.

Aside from the conditions which environ the cultivation of prime crops, and here the agriculturist may make his choice as to the variety, the opportunities for the raising and shipping of early fruits and vegetables are infinite. The Southern latitude and the comparative freedom from heavy frosts of many portions of the Coast country, enable the growers to cultivate the tender varieties of vegetables and ship to more Northern markets long before seed has begun to germinate in the vicinity of St. Louis, Chicago, St. Paul or any of the other cities of the Middle West.

The development of this industry has been steadily augmenting during the past few years, until shipments are now being made by the carload through Houston and San Antonio to the consumers in other States, and the trade is in its infancy. What the locations enjoy in the matter of early vegetables in the spring, they also enjoy in the fall. As late as November 15th and 30th, the irrigated gardens of Beeville, Cuero and Victoria are green with fruiting tomato vines, potatoes, cabbage, cauliflower, lettuce, radish, and all the varieties of garden truck which so delight the soul and appetite of the vegetarian.

The yield is in proportion to the effort and the labor expended. The quickness of growth in the Coast country is amazing. A branch of a grape vine grew forty-six feet in a single year and produced heavily. Figs grow well and produce large crops yearly. The opportunities in this direction are splendid, as 5-year-old trees often yield 400 pounds of fruit, which may be dried or preserved at a profit of \$30.00 to the tree. The tree is prolific and does well throughout the entire belt. The establishment of canning factories will make fig cultivation a splendid asset, as this delightful fruit is always in demand, and in the Coast country it practically takes care of its self.

Texas is the home of the plum. It grows wild in the woods and produces abundantly. The cultivated varieties pay well, while the tree varieties of the wild plum are used for jams and jellies.

The following will give a fair idea as to what the settler may anticipate as the result of his efforts in the sections under discussion.

The cauliflower when carefully cultivated, produces generously. A farmer near Beeville received \$900.00 from a single acre which he irrigated with the output of a three-inch well. It is sown early in July, set out in August and may be marketed in the latter part of December.

Cabbages are now being extensively cultivated in the Coast Country. Corpus Christi last winter alone sold \$100,000 of this vegetable. They are planted in September.

The tomato is another crop that will head the list for profit. It is safely demonstrated that the tomato will produce abundantly in the Coast country. It begins to ripen May 20, and at once finds ready sale at high prices all over Texas.

The small white navy bean make two crops a year on the same land and yields very abundantly.

The Creole and White Queen onions are as successfully grown here as around New Orleans. They mature in April, just when northern onions are sprouting, and the demand is unlimited. Two hundred dollars an acre net is considered an average profit, but much larger sums have been made when greater care and cultivation has been given to the crop.

Irish potatoes do well everywhere; the early planting



The Forest in the Coast Country.

rarely brings under a dollar a bushel. They are a sure and profitable crop. The early crop is ready to be dug from the 20th of April to the 10th of May. One grower near Wharton, in 1894, by shipping in car load lots to Chicago and St. Louis markets, netted \$60 per acre clear of all expenses, including cultivation, shipping and commissions, and immediately planted the same ground in cotton and picked three-fourths of a bale to the acre that fall. This same farmer, in 1895, shipped some fifteen cars to Chicago with even better results, and at once planted cotton on the same land.

Beans, peas, cucumbers, squash, beets and cantaloupes are grown in quantities, reach an early stage of perfection and find a ready market.

Peanuts almost grow wild and are a profitable crop when cultivated. The nut flourishes best on sandy soil and requires lime. It is planted in rows, about like beans, only one nut in a place, and is cultivated thoroughly to keep down the grass and weeds until the vines nearly cover the ground. The established weight of the peanut is 22 pounds to the bushel, and the yield ranges all the way from 25 to 100 bushels per acre. The price ranges from two and one-half to six cents per pound, and the crop as a rule, is expected to pay better than the corn or potato crop. Before planting, the nuts must be shelled by hand and great care taken not to injure the inner skin. They are planted by hand, cultivated largely by hand, ploughed out when ripe, and the vines are carefully lifted with most of the nuts adhering to them, and stacked up in small piles, just as beans are harvested in many places. Here they stand for several weeks until the nuts and the vines are both cured. Then the nuts are picked off and sacked for transportation to market.

The melon crop is a very important and profitable one. One county realized from 230 acres last year the handsome sum of \$32,966. This county was equally successful with "garden truck," as it reports 399 acres valued at \$130,660.

Experiments with California apricots and cherries in the vicinity of Victoria have proven most successful.

Of sweet potatoes there is literally no end. They grow here as they grow nowhere else, and numberless instances could be cited in proof of the fact. Two crops a year are grown on the same ground. B. C. Moffet, of Galveston

county, raises 400 bushels to the acre, and finds a ready sale for them at \$1 per bushel. Single specimens weighing over nine pounds were shown the writer. J. Brogden, living near Bryan, in Brazos county, demonstrated that cotton was not the most profitable crop by planting six acres in sweet potatoes last year. He sold 200 bushels at fifty cents a bushel to the local trade, and shipped 400 bushels to Waco, Texas, at forty-five cents per bushel, and had at home 200 bushels more. The money value of the crop thus reaches at least \$380, or nearly \$65 per acre. The sweet potato is one of our most important vegetables, according to the statistics of the fifth annual report of the Agricultural Bureau of Texas. The value of the potato crop for that year was \$1,503,764. Total number of acres planted was 20,928. The value per acre was \$50.25. The cost of growing crops of corn, wheat, cotton and potatoes is very nearly the same. The tops of sweet potatoes make a fine feed for cattle, especially milch cows. The vineless potato tops are particularly valuable in that they remain green during severe drouths, when it is difficult to get green grass with which to feed. They may be cut with a mowing machine and put up like fodder. They should be mixed with cotton seed or cotton seed meal.

Peaches of varieties adapted to local conditions of soil and exposure have proven very profitable.

WHEN AND WHAT TO PLANT

A truck farm may and should have something growing on it every month in the year. And this is as much as need be said about the climate. In order to have this the sowing should be done as follows:

November. To start now, cabbage, spinach, peas, onions, etc., and red oats, clover, alfalfa, rye, barley, lettuce, turnips and radishes.

December. Peas, carrots, cabbage, raddishes and parsley. Latter part of the month potatoes may do.

January. Turnips, lettuce, cabbage, cauliflower, peas, potatoes, and transplant onions, shallots and cabbage.

February. Beets, mustard, leek, peas, beans, main crop of potatoes, early corn.

March. Beans, squash, cucumbers, melons, okra. Potatoes may be still be sown and corn, sorghum and millet.

April. All tender vegetables may now be sown, and plants from hot beds, tomatoes and peppers set out; also sweet potatoes, millet, corn, beans and okra.

May. During this month very few vegetables can be sown, but where potatoes, onions, and other crops have been taken off, corn, melons, cucumbers, squash, pumpkins, etc., may be planted; also some varieties of cabbage, late Italian cauliflower, sweet potatoes, cow peas, sorghum and black eyed peas.

June. If the weather is favorable plant and sow same as in May, but the most of the time will be demanded by the growing crop.

July. Bush and pole beans, corn, sweet potatoes, millet, broom corn, cow peas, etc., may still be planted, and seeds of cabbage, cauliflower, etc., should be sown in cold frames; for the fall garden sow cow peas.

August. Carrots, celery, potatoes, shallots, millets and peas.

September. Early peas, beans, parsnips, salsify, onions, kale and spinach. Set out cabbage, etc.



Growing Tomatoes in Coast Country.

October. Onions, marrowfat peas, cow peas, salsify, oats, barley and rye may be sown.

The list might be enlarged, but enough has been said to give the intelligent truck farmer a hint as to what class of vegetables or products are suitable to this southeast Texas Coast country for each season or every month in the year, and from which a selection can be made for an intelligent and practical succession or rotation of crops.

Strawberry plants should be set out this month or as soon after as land is in condition but any time from September to April will do.

Trees of all kinds should be transplanted as soon after growth has stopped as possible, but may be done successfully as late as February.

Nearly all kinds of clover and grass do best if sown in the fall months.

It is of course understood that hot beds, cold frames and like protection and helps are desirable and necessary for the forwarding of crops.

The average net profit per acre from tomatoes, according to the reports given by experienced farmers, is from \$300 to \$400; onions \$250 to \$400; strawberries, \$350 to \$500; peas, \$100 to \$300; snap beans, \$100; sweet potatoes, \$150; Irish potatoes, \$150; raddishes, \$150; spring turnips, \$100; cauliflower, \$400; cabbage, \$300; peaches, \$150; pears in full bearing, from \$400 to \$500.

The bee industry is one which promises much in the Coast region. At a late California convention of bee-keepers, Mr. Francis W. Blackford, in an essay on bee keeping, among other facts said that the annual value of honey in the United States is close upon \$100,000,000 and the number of colonies of bees kept by apiarists equaled about one-fifth the number of sheep in the United States. This would place the number of colonies of bees at 9,000,000, which, at an average value of only \$3 a colony, would represent an investment of \$20,000,000 in bees alone.

Mrs. Jennie Atchley, of Beeville, who is one of the most successful apiarists in the country, says:

"Since I have located my queen rearing establishment and bee keeping plant in Bee county, I have spared neither time nor pains to fully explore this as a bee country, and I find wild bees in great profusion here as well as tame bees, and

find that the bees kept here are the native stock with only a touch of the Italian blend occasionally, and they are rich in stores and prosper without attention. I am fully satisfied that this country will never experience a failure of a honey crop, as does California and other parts of the Pacific coast, because our honey here is gathered from trees and shrubs that are not affected by dry weather like the sages and honey plants of California. I find that the honey here will compare favorably with the clearer honey of the North, and is pronounced by A. I. Root, a noted bee man of Medina, Ohio, as being as fine honey as he ever saw. The climate here is just right for the propagation of the honey bee the year round, and to make a long matter short will say that I consider this the finest bee country in the United States."

In regard to the cultivation of grapes, the Coast country and the valley of the Río Grande is, so far as known, the only part of the republic east of California where the finest European grapes attain the greatest perfection. As they ripen here from four to six weeks earlier than in California the viticulturists of this coast have the run of the markets when there is no competition, and their comparative proximity to the body of consumers gives them great and permanent advantages over the Californians. These grapes are pruned down to a mere stump and the trailers or vines permitted to run out over the ground as in California vineyards, without the viticulturist being put to the expense of supports, wires or stakes. They are ready for market by June 1st, and frequently obtain high prices. The experience of practical viticulturists in the Coast country pronounces in favor of any or all of the following: Chasselas, Muscat, Chasselas Rose de Peru, Empiror, Black Morocchoor Tokay, Malaga, Black Spanish, Lenon or Black Burgundy, Goethe, Rogers No. 1, Solem, Rogers No. 53, Magara, Black July, Concord, Roulander, Delaware, Missouri, Rissling, Herbe-mont. If well fertilized, most varieties come into bearing the second year, and when three years old may be counted on for a yield of from ten to fifteen pounds.

The strawberry season opens early and about thirty days in advance of all competition. The sandy lands of Southeast Texas are well adapted to this berry, and the annual net returns for some years have been \$1,000 to every three acres of berries. The blackberry grows over a much larger territory, and by many has been found to be more profitable than the strawberry. Strawberry picking and shipping begins about the middle or latter part of January and not later than February 15th, in any part of the Coast country, and the early berries often bring \$1 per quart in the northern markets. The shipping season last about three months. One man reported that he had gathered 1,000 quarts of ripe berries from one acre in one day. Another, who said he was only an amateur in gardening reported that he made \$500 per acre profit on strawberries last season. Another, living two miles from Alvin, reported that he fertilized one acre of ground with stable manure, and, without any assistance whatever, he raised and marketed from that one acre, in 1893, a crop of strawberries from which he realized the sum of \$1,326. On the same acre of land, in 1892, he raised a crop of celery which he sold for \$1,000, doing all the labor himself. The celery grown here is ready for market about the time the northern crop is exhausted.

The following estimate taken from a reliable source is considered conservative. The cost of production in the estimate is sufficiently high to cover every item of expense, while the estimated profits are much less than the actual average, and is for an acre of raw prairie land:



Saturday during Cotton Season.

One acre of land, say	\$ 8 00
Breaking first time	3 00
Harrowing and rebreaking	2 50
13,000 strawberry plants	26 00
Planting	7 00
Cultivating twice and fertilizer	7 00
Total	\$53 50

This one acre of strawberries, set out in June, July or August, will, if properly cared for, net the owner the following spring \$300 to \$400. The second year it will net from \$600 to \$1,000.

COTTON.—The cultivation of cotton is common to the Coast country, as it is the great central belt of Texas—the state contributing one-third of the cotton grown in the United States. All character of soils produces this staple in abundance although the bottom lands make the best crop. In years of good yields the average return is from \$20 00 to \$25.00 per acre.

SUGAR.—In the rich bottom lands of the Brazos, Caney, Oyster Creek, Trinity, Colorado, and in the black prairies near the coast, sugar cane is almost an indigenous product. Little of the land is in cultivation, although there is a strong element of profit in the culture. The yield averages thirty tons of cane to the acre, and this should command not less than \$2.50 per ton when sold to some central factory. The industry is a very attractive one, and is gradually growing in importance. The sugar area of the Coast country would produce, if all in crop, over one billion pounds per annum. The sugar lands are without equal in fertility. In connection with the industry several refineries are in contemplation, while “cane trains” in season convey the cane to the factories which now exist. Many of the planters grind their product and convert the juice into fine syrup, which commands a ready sale at good prices, and yields a profit of about \$60.00 per acre.

CASSAVA.—The Coast country is well adapted to the growing of cassava, the tapioca plant, which has proven so valuable as a food for cattle and hogs. The yield under favorable circumstances is astonishing, one plant of one

year's growth weighed fifty pounds. Eight hundred to one thousand bushels per acre can be confidently counted on. It is very productive; it has a remarkable immunity from drouth, flood and disease; it is easy to harvest, easy of cultivation and occupies the ground during the whole growing season to the exclusion of noxious plants. The pork made from feeding it is solid and delicate as chicken, and the lard is as firm as that of a corn-fed hogs. It produces a good flow of rich milk and firm, golden butter. From one acre of cassava enough roots may be obtained to fatten ten hogs or feed three milch cows during the entire year.

Soil suitable for corn is appropriate for cassava. It must not, however, be wet land, or subject to overflow, as that will rot the tubers. Frost, if severe, will kill the plant so effectually that but a small proportion will sprout again. By saving the stumps when the roots are dug and planting them they will sprout and grow, though the tops be killed two or three times.

The cassava root contains a large proportion of starch, twenty-five per cent of the weight of the fresh root.

That a tobacco of a superior quality, equal in some notable instances to the products of Cuban fields, can be raised in the Coast country, is an assured fact.

The idea that tobacco grown here is not so strong and well flavored as that from elsewhere is a mistake, because when properly handled and cured it has both strength and flavor. Texas tobacco is like all other kinds. It must go through sweats and other curing processes to bring out its qualities, but its qualities, when brought out, are perfect, and will sell anywhere. In East Texas and along the coast of Texas tobacco should be cultivated extensively, and with big profit.

There is no danger in losing money in any of the varieties. If the Burley, or Pryor, or any of the large and heavy varieties are planted, the great number of pounds which they produce to the acre will more than cover all expenses in raising and marketing. If the finer fibered varieties be planted, such as Connecticut, Cuban or Sumatra, the high price they command will more than make up for the smaller number of pounds per acre.

A government expert recently investigated the tobacco lands of East Texas and the Coast country, and found soil and climate conditions such that he unhesitatingly pronounced the several localities visited as superior to any other portion of the United States. His official report, to be made sometime during the closing days of 1902, will give a detailed history of his investigations, mentioning the character of these tobacco lands and the most successful methods to be followed in selecting locations for growing the alluring weed.

The fact that good tobacco lands may be secured in the varied coast country at prices less than one-tenth what similar lands would fetch in Kentucky or Virginia, will naturally prove of interest, and will doubtless surprise the man unlearned of Texas and its possibilities.

LAND IN THE COAST COUNTRY

Due to the wonderful extent of the Texas Coast country, it follows that there necessarily exists an infinite variety of soils which thus provide for nearly all of the great prime crops of the country, and for the smaller products which constitute no inconsiderable feature of the farmers' prosperity.

The open prairies are formed of light grey, dark brown and black sandy loam, and of a soil commonly known as "black waxy," or "hog wallow." The loams are friable and easily worked and kept in condition. They are well supplied with the chemical constituents necessary to force vegetation. The black waxy is very rich, but requires more power to thoroughly subjugate, but well returns all trouble and expense.

The bottom lands following the course of the larger rivers which traverse the belt are of wonderful fertility and depth. The bottoms of the Brazos, Colorado, Guadalupe, Old Caney and Oyster Creek, are richer than the famed alluvium of the Nile, and constitutes the finest sugar land in the world. All temperate zone crops yield to a remarkable degree in these lands, and cotton grows to a height of seven to eight feet. Garden truck makes a splendid yield. All products common to an alluvial country attain a rare degree of excellence in the sections indicated, while the sub-tropical fruits, including the pomegranate, fig, Japanese persimmon, ginger, cinnamon, and the cassava root thrive well, while near the immediate coast, oranges, lemons and limes produce well.

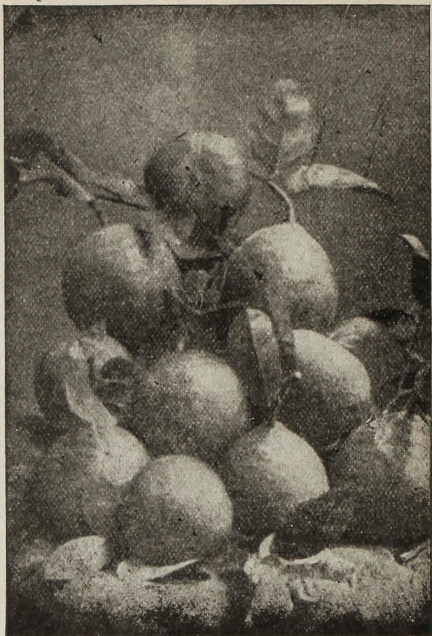
The price of lands vary according to location and not particularly because of their inherent qualities. Near any of the larger towns or cities, land frequently sells for high figures, but in the areas devoted entirely to farming fine lands may be purchased at prices running from eight to forty dollars per acre, according to natural advantages, improvements, etc.

These figures are very low, all things considered. Land in Illinois, Iowa or Minnesota, which yield a net return of from eight to ten dollars per acre, are never on the market at values lower than \$75.00, while more commonly \$100.00 per acre. Lands in the Texas Coast country however, yield from \$15.00 to \$500.00 per acre, according to the crop grown. A farmer near Beeville on an acre of irrigated land grew \$900.00 worth of cauliflower. Another in the more arid section received a gross return of \$5,600.00 from 240,000 pounds of onions grown on seven acres by irrigation. A profit of \$200.00 on watermelons, canteloupes and strawberries, is not uncommon, and yet it is on \$20.00 land, and frequently less.

These illustrations only serve to indicate the possibilities of the Coast country, and do not consider the possibilities contained in the cultivation of rice, which will be treated under another head, its magnitude justifying this distinction.

CLIMATE OF THE COAST COUNTRY

Few portions of the United States enjoy a more delightful climate than does the gulf coast. It is free from the extremes of temperature which characterizes the North, East and West, and the balmy winds which sweep during the summers from the Mexican Gulf carry coolness and health in their every breath.



Lemons in the Coast Country.

A feature of the summer climate, and one which explains the ability of the dweller in the coast country to smilingly assert his belief that no other portion of the country enjoys a more delightful temperature, is the fact that the variation of the thermometer during the heated term is about twenty-five degrees from maximum to the lowest reading during each twenty-four hours. Thus, particularly in the country districts of the coast, the use of a light cover becomes imperative during the early morning hours.

The average rainfall is in the neighborhood of forty-six inches per annum, and this precipitation is well distributed during an average year, insuring, in a measure, a certainty of harvest, no matter what be the crop. The growing months are usually marked with abundant rains and the winter season, usually during the latter part of January and all of February, are also characterized.

The heated term is very healthy. Summer is usually a period of freedom from the ills which affect mankind. In this connection the Texas Commissioner of Agriculture, in his fifth annual report, said: "Away from low places sub-

ject to periodical overflows, there is no cause for sickness, and there is no reason why the state should not become a health resort as well as a refuge for persons seeking to escape the rigors of a northern winter."

At all points eastward on the gulf and at all points above this latitude northward along the entire Atlantic coast to New York the thermometer indicates a lower temperature in winter and a higher temperature in summer than at Galveston and along the Texas Coast country. In other words, it is hotter in summer and colder in winter at any point on the gulf or Atlantic coast above this latitude than in the Coast country of Texas. The "norther," an important feature of Texas climate, is nothing more than what is called elsewhere a cold north wind. The wind usually attains its greatest velocity in twenty-four hours, then gradually ceases, veering again to the south.

The winter is a succession of pleasant days, with the temperature ranging from forty to sixty degrees, falling three or four times each winter to thirty-two or thirty-three degrees, and in seasons far apart as low as twenty-five and twenty-nine degrees, but these seasons of low temperature are of short duration and rare occurrence, and seldom cause injury. In summer the temperature ranges from eighty-four to eighty-eight degrees for weeks and months; the highest temperature reached in Galveston in three succeeding summers was ninety-one, nine-three, and ninety-six. Injury from sunstroke is almost unknown. July is the warmest month. Killing frosts do not usually occur at Houston or Galveston until after December 1st, and the unwelcome visitation is frequently delayed until January. Four years in twenty there was no frost whatever in Galveston, and in five different years there was but a single frost. The last hard frost appears any time between January 5th and February 1st.

The Galveston weather station also issued the following table, which shows the distribution of the rainfall, the variations of temperature and the comparatively few cloudy days:

Months.	Rainfall precip- itation		Temperature.		No. days no sun- shine.
	in inches.	Highest.	Lowest.		
January -----	2.86	74	35		4
February -----	1.92	75	34		3
March -----	4.96	76	30		9
April -----	5.14	81	56		8
May -----	5.38	85	63		2
June -----	7.42	90	65		2
July -----	1.82	92	71		22
August -----	5.09	90	70		1
September -----	4.79	87	56		1
October -----	4.38	89	54		2
November -----	2.37	79	49		5
December -----	2.23	75	47		4
Total -----	48.36				

What these tables show as to the average annual temperature at Houston and Galveston applies pretty much to all the Coast country. A record kept for thirty years at Victoria by Dr. Cook, and verified by the U. S. reports, show the annual mean temperature to be 70 to 75; in July 80 to 85; in January 55 to 65; maximum 95 to 100; minimum 20 to 30 above zero. Annual rainfall 35 to 40 inches, the same as in Missouri, Iowa, Michigan and Wisconsin, and for spring and summer is 20 to 25 inches, the same as in the above states, together with Illinois, Indiana, Ohio, New York and Pennsylvania. A. W. McLain, late of the United States Department of Agriculture, and ex-director of the Minnesota State Agriculture Experiment Station, made a careful study

of the Coast country, and says of the matter of temperature and rainfall: Average temperature in the Texas Coast district, as shown by the signal service records, taken at an elevation of forty feet above sea-level, for the last fifteen years, has been for the spring months 70.5 degrees Fahrenheit; for the summer months 82.2; for the fall months 69.8, and for the winter months 55.7 degrees.

The brief description given here of the towns, cities and general conditions which exist and obtain in the Texas Coast country, will serve to give a general idea of what the homeseeker may expect. There is much room for absolute detail, but the scope of this pamphlet is too limited to permit a minute description of the peculiarities and characteristics which are features of this favored region. Suffice it to say that the sections of the state referred to and covered by all the foregoing are exactly as represented. There has been no attempt to exaggerate conditions. On the contrary, we believe the settler upon making an investigation of the Texas Coast country will come to the conclusion that we have not done justice to the claim the territory has, or should have, upon the consideration of prospective settlers.

The several counties are gradually undergoing marked changes, due to the injection of new blood and of new ideas from other parts of the country. The advantages of the Coast country are being recognized and realized by the farmers of the western states, and as a result of this many thrifty and intelligent people are building anew their homes in one portion or another of the country described. Thus the prospective settler will find much to his liking and little to his dissatisfaction in making a tour of the great coastal belt along the line of the Southern Pacific-Sunset Route.

RICE CULTURE

(From Southern Pacific Texas Rice Book.)

While scores of people throughout the length and breadth of our state and the United States hear of rice culture and read of the great profits and plenty it pours into the laps of the fortunate producers thereof, still these same scores of people are in blissful ignorance regarding the mode, methods and general details of this "king of all crops."

LAND.

The first essential in the cultivation of all crops in selecting land suited to the growing of the crop you desire to cultivate. In rice farming the lands must have a nearly level surface, so that the water will stand evenly on the land and enable large fields to come under the smaller levees, which hold the water on the land. The soil should be from four to fifteen inches in depth, under which must be clay so as to prevent the sinking of water into the earth. There are also several other important reasons favoring shallow soil. The growth is not so rank which gives a better head and less straw, the ground dries out more rapidly than deep soil, and the harvesting is much easier.

IRRIGATION.

Probably the greatest element in the transformation of the industry from a small and significant beginning to what is recognized today 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. The most sanguine believers in rice culture



How Cabbage Grows near Corpus Christi.

never expected to see the many inexhaustible streams and bayous, with which the prairie region abounds and which connect the large bodies of fresh water lakes and bays lying close to the gulf coast, utilized for irrigation purposes, on account of the high lift from these streams which, in many instances, is from twenty to sixty feet. In consequence, thousands upon thousands of acres of rice which were supposed to be inaccessible for this purpose have proven to be a "bonanza" to their owners. They have on this account suddenly developed an intrinsic value that readily places them by the side of the most valued agricultural lands in the United States. The development of rice culture requires considerable preparation and goes much further than planting and harvesting. In the first place 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. These levees are made the same as railroad dumps, except not so wide, often extend fifteen miles, and from these main levees, smaller ones extend four to six miles, and are termed lateral canals. Some canals have as many as six and eight laterals. 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. Now, get pictured in your mind these parallel levees of the main canal and branching therefrom the lateral canals, all of which penetrate, say twenty thousand acres of land. The levees of the main canal begin on the bank of some inexhaustible stream, or its tributary, at which point the immense pumping plant is located. Whenever it becomes known that a rice canal is going to penetrate a certain territory, there is a rush for lands, and by the time the canal is finished, houses are completed and many farmers are engaged in breaking the sod. The two-ten gang plows and four large mules do the work. After plowing, the disc 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.

started and a regular stream is sent boiling and foaming through the levees, filling them bank full. The flood gates to the later canals are loosed, and they are soon filled. You will note the water is now from one to six feet above the lands to be irrigated. You behold field after field of rice, which resembles so many wheat fields in appearance, and which are now ready for the water. The canal superintendent goes from farm to farm and the flood gates from the main and lateral canals are lifted, and thousands of gallons of water go pouring into the fields, which is held on the land by small levees constructed for this purpose and with a view to have the water stand as evenly on the lands as possible.

The rice farmer from this time until harvest begins, has only to watch his levees and cry out, "Give me water, water," which he keeps up for about seventy days, the usual period of irrigation. The flood gates are now closed and the drainage gates are 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. The rice straw is larger and the yield of grain greater than wheat, hence the increased strength of machinery. Rice is shocked and permitted to stand about twenty days, when it is either stacked or threshed from the shock.

THRESHING

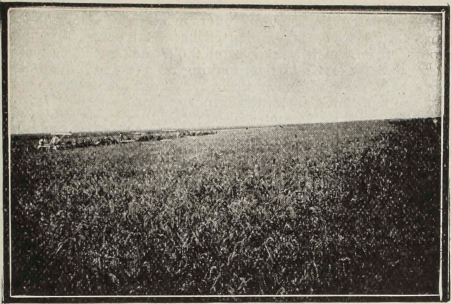
proceeds just as with wheat or oats. There is but little difference between the rice and wheat thresher. The charges per bushel are practically the same. Rice is sacked at the machine, and the average weight is one hundred and eighty pounds. It is not unsacked until emptied into the bin at the rice mill for the reason, each field may have a different grade, and hence it is sold in lots. The unloading of a field of red rice into an elevator of pure white rice would depreciate in value the entire lot, hence the handling of the crop in sacks. Rice is sold by the barrel, which weighs one hundred and sixty-two pounds.

THE YIELD

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. Some farmers greatly exceed this, and I shall show herein some top crops as a possibility to those who have the best seed, land and plenty of water.

MARKETING.

Rice warehouses are found in all 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 forty 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."



A Field of Rice, Matagorda County.

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 \$1900 from one hundred acres. These figures are conservative, and many farmers make much more. Having recently obtained some statements, of last year's crops, I give a few of them in this article to show the possibilities where all conditions are favorable, and the best seed is used.

Mr. Bob Andrews planted rice in Jefferson county in 1899, and from forty acres of Japan rice, he harvested twenty-three barrels per acre, and sold it for \$3.40 per barrel, making \$3,128, or \$78.20 per acre. He also harvested from ninety-six acres of Honduras rice, thirteen barrels per acre, for which he received \$3.60 per barrel, or \$46.80 an acre, making a total of \$4,492.80 from the ninety-six acres.

Mr. William Day is from Illinois, but is living in Jefferson county, Texas, along the Beaumont Irrigation Canal, and in 1899, planted a crop of rice, and reports that from sixty acres of imported Honduras rice, he made the following sales: Four hundred barrels at \$4.50, 150 barrels at \$5.00, 75 barrels at 5.00, \$100 barrels at \$5.00, and 175 barrels retained for seed to use on his farm, which is worth \$5.00 per barrel, making a total of 900 barrels from 60 acres, with a total value of \$4,300, or \$70 an acre.

D. C. Turner, living in Jefferson county, Texas, at China Station, writes as follows: "I only had thirty-five acres of last year's crop sufficiently watered. It made sixteen sacks per acre, averaging one hundred and eighty-seven pounds per sack. Ten acres were seeded with pure seed, second year from importation, which I sold for \$5.00 per barrel. The other twenty-five acres were seeded with rice which had red in it. I sold it to the Beaumont Rice Mill for \$3.55 per barrel. You can make your own figures and see what it is worth per acre. I farmed rice in Louisiana four years."

Mr. Frank Hammond, manager of the Port Arthur Rice Canal, which is located in Jefferson county, under date of April, 1900, says: "We planted here last year 750 acres of ground, from which we harvested 9,627 sacks. This amounted to 10,500 barrels of rice, making an average of 14 barrels per acre. We had one piece of new land amounting to 110 acres, upon which I planted imported Japan seed. We harvested from this 110 acres about 2,270 sacks of rice, which averaged 193 pounds each, making about 2,700 barrels. I have sold this rice at an average price of \$4 per barrel for seed purposes. This makes \$10,800 gross receipts from the 110 acres of ground. I fully expect to repeat the operation this year."

The difference between rice culture and other agricultural pursuits is, that a rice planter grows nothing else. He does not want to do so, for the product from one acre of rice will buy several acres of corn, oats, hayseed. Therefore, he buys all his feedstuff, except, possibly a portion of his rice straw, which, when properly saved and cured, is used instead of hay. The rice farmer is not a competitor, as regards any other crop grown in our state. In fact, he has gone on to lands heretofore unoccupied, and being a good consumer, he is creating a market for great quantities of corn, oats and hay. In fact, he goes further than this, and buys practically everything to eat and wear. He can afford to. Rice farming also takes just that much corn and cotton land from these crops, and pushes up the notch of diversification as regards this state.

RICE BY IRRIGATION

("Rice Industry," Houston, Texas.)

What is there in rice growing for me?

Is it a sure crop?

Is it healthy?

How is rice raised? On marsh, is it not?

Past attempts to answer such questions have proven futile, because the truth is not credited when told.

Come with me to China, or to any one of the bustling rice milling towns along the Southern Pacific railroad. It's a warm October day. It reminds you vividly of the hustling days of a big wheat crop in a Northwestern town. See the beautiful shock-dotted rice fields coming up to the very edge of the village. Count the smoke of two, five, eight—no fifteen threshing machines in sight. And here are seven long lines of wagons, heavily laden with sacked rice waiting their turn to unload at different rice mills or warehouses. Come to the roof of this building, and sweep the prairie roads with the glass in every direction. On each of them the incoming rice hauling teams are so near together as to appear a continuous procession. Now, mingle with the people on the streets. You're an insensate soul indeed, if you can not feel the prosperity that permeates them! Does it not call you back to the dear old days of the early eighties, way up in the Red River valley in Minnesota and Dakota, when we all were so busy?

Spend a month or more interviewing these farmers. Visit their farms. Cross-question them within an inch of their lives. See the merchants. See the bankers, millers, farm implement dealers, rice buyers, doctors (if you can find them.) Inform yourself thoroughly about the whole rice



Rice Harvest Scene.

situation (and you have heretofore been taken for a fool) Now you may go back to conservative old chaps in the Northwest (as I have done), and tell it all to them. No, not all. Cut what you know to be average returns one-third, so as to secure a respectful hearing—tell them:

1. The average farmer raises 200 acres of rice.
2. Tell them the average yield per acre is 11 barrels (44 bushels) rough rice as it comes from the thresher—162 pounds to the barrel. Very many planters make from 15 to 20 barrels per acre.
3. Tell them the price fluctuates from \$2.75 to \$3.50 per barrel, according to quality.
4. Allowing the farmer ordinary wages for himself and teams, it costs to raise \$5 per acre more than wheat, or a total of \$14 per acre at most.
5. Tell them \$4,000 is the average clear profit of the average rice farmer on the average rice farm of 200 acres. Right here your reputation for truth and veracity will suffer a rent, which nothing will ever mend except a visit by every one of your hearers to the rice farms anywhere along the Southern Pacific from Crowley, La., to Eagle Lake, Texas. But you'd better tell it all.
6. Lands suitable for rice are smooth (not necessarily level), comparatively high and well drained—a marsh is not used for rice growing.
7. Fields are plowed with a gang or sulky plow, and cultivated thoroughly with a disc harrow, just as for wheat or oats. As good crops as any on new breaking.
8. One and one-fourth bushels of seed per acre is used and is sowed any time from March to July. Good farmers use the best press drills for planting.
9. Levees or dykes are constructed with a plow and a V-shaped scraper on lines previously laid out by an engineer. These hold the water on the fields at an average depth of of three inches.
10. When rice is 6 to 8 inches high it is flooded with fresh water by pump, canal or otherwise. Water is delivered at the highest point on the farm, and by little flood gates in the levees fills level after level between the levees, until the whole farm is flooded at least three inches deep. It is kept so flooded for about 70 days.
11. An ample supply of fresh water, affording daily from one and a half million to two million gallons for 200

acres, is absolutely necessary for 60 to 70 days. This keeps the rice flooded three inches deep, and makes up the daily loss from evaporation.

12. Irrigation is supplied by canals built upon the highest ridges of the prairie, from a fresh water bayou or river from which water is pumped into the canal. Or water is had from deep wells 8 inches in diameter and varying in depth from 135 to 200 feet. From one such well a 16-horse power engine can pump enough water for 200 acres.

13. When rice is ripe, all water is drawn off, so that the land is as dry for harvesting, as in seeding—(One can't drain water from a marsh).

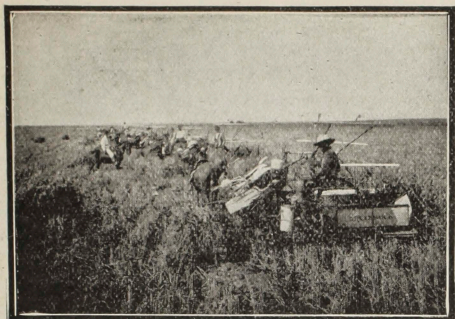
14. Rice is cut with standard self-binders, harvested, shocked, threshed just like wheat or oats.

ONE THOUSAND ACRE RICE FARM

Careful Estimate of Cost of Land, Improvements and Machinery—Annual Expenses and Profits

(From "Rice Industry.")

During the late visit of Hon. S. Uchidi, consul general from Japan to New York on a tour of inspection and investigation for the benefit of his people, he became deeply interested in the American methods of cultivating rice. Desiring to get all the information possible, so as to impart it to his people in Japan, and have the best class of farmers of that country, those who are independent and careful, considerate thinking business men become interested in rice raising in this country, he secured the services of Mr. Oswald Wilson, of this city, of the Division of Statistics, United States Department of Agriculture, to give him figures on the expense and profits of 1000-acre rice farm. Mr. Uchidi wanted this, so he could go before the better class of his people with a plain business proposition, one which they could readily understand, one which they could rely on and which would be of great value to them. A better man to make this estimate and furnish these figures than Mr. Oswald Wilson could not have been found. Deeply interested in the development of this country, with no lands for sale or axe of any kind to grind, save for the best interests of the country, thoroughly familiar with the cultivation and growth of rice, and the expenses attached, careful and conservative in his estimates, naturally, and made more so by his position as statistician of Texas in the United States Department of Agriculture, he was the man of all men to make and furnish this estimate, to be used in a foreign country. This estimate, which has been furnished Hon. S. Uchidi, and forwarded by him to his own country, has been very carefully made by Mr. Wilson, and it is a very conservative and truthful set of figures, which will, upon test, prove accurate in every instance. These figures have been kindly furnished to Rice Industry and they appear for the first time in public print in these columns. Believing that the information contained in this estimate will prove of great value to our own people, who are or may become interested in rice culture, we give them to our readers as figures which can be depended upon, and assuring them that expenses and profits in rice raising can be safely based on the estimate furnished below:



Harvesting Rice at Bay City.

Estimated Cost of Land, Improvements and Equipment.

1000 acres at \$12.50 per acre.....	\$12,500
Machinery for irrigating—boilers, engine and pumps erected ready for pumping.....	6,000
Necessary canal work.....	3,000
Fencing.....	600
Levees outside and contour.....	500
Six houses and barns.....	3,000
28 mules.....	3,500
6 sets implements, harness, plows, discs, rollers, binders.....	3,000
6 wells and 6 lots.....	400

Total investment.....\$ 32,500

The above estimate will vary in the price of the land according to location and quality, and may be bought cheaper.

The estimates for the canal work, fencing, houses, etc., are based on contract, that is, hiring everything done.

If the farmers do this work themselves, the actual cash expended would be reduced about \$3,000.

Cost Per Year of Operating Farm After Improved.

Feed for 28 mules, in addition to pasturage (estimating everything bought).....	\$ 2,500
State and county taxes.....	100
Incidental expenses.....	100
Repairs.....	400
Extra labor during planting and harvest.....	3,000
Interest on investment used as a sinking fund.....	2,000
Fuel for operating plant.....	900
Engineer.....	300
Living expenses for six families, of say four persons each.....	3,000

\$12,300

Seed rice.....1,350

Total annual expense.....\$13,650

The above estimate is based upon buying supplies, and only hiring extra labor during planting and harvest time—six men, one from each family, working all the time.

Earnings.

900 acres planted in rice, yielding 35 bushels
of 45 pounds each, rough rice, per acre,
sold at 85c per bushel ----- \$34,425.00
Less annual expenses ----- 13,650.00

Net income ----- \$20,775.00

Which could be applied to paying off permanent investment.

100 acres should be reserved for pasture, lots, garden and building sites.

It might be found profitable to set aside an additional 100 acres for raising feed for the teams—and other crops.

Dividing up the investment among six farmers.

Each farmer would pay ----- \$5,416.66

And would own:

166 2-3 acres of land;

1-6 of the machinery;

1-6 of the canals, fencing and levees;

1 house, barn and well;

4 mules;

1 set implements.

The share of each farmer in the gross earnings would be ----- \$5,770.82

His share of annual expenses ----- 2,275.00

Leaving net profit ----- \$3,485.82

Which in two years would repay his original investment and leave him a handsome sum.

After the land has been bought, and as I have stated may vary according to location and quality, but I am advised that fair rice land can be bought close to the railroad, with school and social facilities, for the amount named.

Then the irrigating plant can be established either from surface water, i. e., river or lake, or from wells, and I am sure that the above estimate will cover either.

I have provided four extra mules in case of sickness or death, thus a team will not be broken.

The houses for each family to consist of a box house, made of plank, with four rooms and a gallery.

The barn is two story, and holds enough feed for the teams, a room for implements, and stables for four mules.

Each house can be comfortably furnished for a family of four persons, in American style, for \$100.

This would include:

One bed room set;

Extra bed;

Chairs, tables;

Dining table and chairs;

Kitchen stove, safe, dishes, etc.

Each farmer would have a team of four mules and set of implements and harness;

One gang plow;

One harrow disc;

One drill press;

One disc plow;

One wagon;

One set harness;

One binder.

By each farmer keeping a cow, a pig, and one dozen chickens, which is provided for in the estimate, and with a small garden and orchard to supplement the above, the expense of supporting his family would be much reduced, and there is always a ready market for any surplus products he may have to sell at remunerative price.



Threshing Rice near El Campo.

Each farmer will have 16 acres as a pasture and for garden and lot purposes, and can very profitably set aside two acres for garden and orchard.

Estimated Cost of Planting, Irrigating and Harvesting 900 Acres of Rice by Contract.

(That is, to hire everything done.)

Breaking the land, \$2 per acre ----- \$1,800.00

Per acre.

Plowing ----- \$1.77

Discing ----- .64 5

Harrowing ----- .47 5

Drilling ----- .37 5

Seed ----- 1.50

Total ----- \$4.76 5-4,288.50

Total cost planting ----- \$6,088.50

Irrigating.

Fuel ----- \$900

Engineer ----- 500

Repairs ----- 100

Labor ----- 300- \$1,600.00

Harvesting ----- 1,800.00

Threshing and sacks ----- 2,000.00

Total ----- \$11,488.50

RICE IN TEXAS AND LOUISIANA

(From "Southwest." Houston, Texas.)

The subject of rice and the growing of the cereal, for cereal it may with propriety be termed, is one that has been written upon ad infinitum since the inception of the industry in the prairie areas of Texas and Southwest Louisiana, chiefly along the Southern Pacific. So much has been said, in fact, that little information remains to be imparted to the readers of "Southwest," or in truth to the readers of any of the periodicals which effect the world agriculturally.

The possible rapid development in rice cultivation in the sections mentioned in the foregoing may be in the main due to the similarity which exists in the matter of this cultivation as applied to both rice and wheat. Although the growing of rice was taken up first by the Creole residents of the rice territory in Louisiana, it was pushed to a successful consummation by settlers from Iowa and Illinois, who left the overcrowded home sections to make their prosperous futures in a new and attractive land. The fact that rice could be grown with comparative ease in the Southwest was an apparent fact, which dawned upon one or two of the neophytes who sought the balm of southern winds to escape the rigors of a western winter. It was intelligent application following precept, and a broader conception taking advantage of practical illustrations.

Rice in the alluvial bottom lands of the great rivers of Louisiana and in the shallow basins of the prairie lands was cultivated and harvested in a way primeval and primitive. It was a labor of the hand and of the arm; all work, and the harvest was small in the one instance, and laborious, if plentiful, in the other. There were weeds and weeds, and lack of labor at times, so that the difficulties of the cultivation rendered the crop an "ill-advised" one, and the farmers or planters of the alluvial areas preferred to plant cane and let rice be the share of them who wanted it.

The Louisiana crop was not very large when the Iowa man discovered the hidden treasures in the barren prairies. The importation of new blood, new brawn, new ideas and a systematic application, worked wonders. The sickle and cradle speedily rushed into oblivion, and old methods gave way to new methods. The new twine binder and harvester came to stay, and made it possible for one man to do the work of a dozen, and rendered the harvest merely a matter of season, and not of hard and constant effort.

It was in the character of the prairie soil that rice found its popularity. Had the earth been incapable of good drainage, or the fields remained damp and soft after the waters had been carried off by the opened laterals, the twine binder would never have entered the field, and the wheat farmer, his heart and body filled with his old ideas, could not have harvested the grain from the top of a sulky twine binder, pulled by four horses. Instead, he would have reverted to the sickle, and had this been, the upland rice of Louisiana and Texas would not today have dominated the rice markets of this country, and made fortunes galore for the farmers, millers and canal men. The impervious hard pan sub-soil resists moisture as would a cement tank, and the water once drawn from the fields, the shallow soil speedily dries out, rendering it possible for teams, harvesters and threshers to traverse the rice areas and quickly gather the grain.

It is doubtful if any other agricultural product has so speedily attained a high position in the minds and affections of the farmers and others, as has rice. When it is considered that one man may cultivate a hundred acres, it is manifest at once the possibilities of the venture. It is a matter of history, and oft repeated history, that rice farmers have paid the cost of their farm, seed, harvesting and put money in the bank as the result of the first year's crop. This of course, means hard work, thrift and energy. Yet it has been accomplished more times than it has failed. Canal companies have declared immense profits from the sale of water to rice growers not owning their own water, nor wells. The tax of two sacks per acre seems a large one, but without water there is no crop, and it takes a large capital to institute a pumping plant capable, as many of them are, of lifting more water than the city of New York could consume in 24 hours. Rice mills declare dividends of fifty and seventy-five per cent annually. The scale of profits is large, and, as yet, shows



Rice Irrigating Canal.

no signs of diminution. The country does not produce as much, by a still large percentage, as the people of the country consume. The production and consumption of the United States has constantly been on the increase. The consumption last year reached the total of 372,000,000 pounds, of which quantity 59,000,000 pounds were used in manufactures; 313,000,000 being actually eaten at the tables of the good people of the various states. Of the entire quantity, 253,139,200 pounds were raised in the rice fields of the United States; 58,257,187 having been imported from Japan and China. The consumption of the country has been steadily increasing, but hardly in proportion to the increase in population, nor in proportion to the attractiveness of rice as a food. In fact the cereal has generally, save in the southern states, been regarded as a luxury, its price being nearly twice that of grits, or hominy, which is one of the staple foods of the poor people, as well as one of the most nutritious. Rice, however, is one of the most delicate of grains. It is possible of combination with every article of food prepared for the table. In this fact is one of its chief attractions. It is, in its highly polished state, comparatively tasteless, and takes on the flavor of the article it is cooked with, while losing none of its wonderful nutritive properties in the combination.

Rice is the chief food of nearly eight hundred-millions of people, and the bulk of these merely mix with their rice diet, an occasional service of fish and beans, these two articles supplying to the system everything lacking in the rice grain. It must be remembered that the rice of the Orient, is not divested of its polish, and in that fact, is more stimulating and heat producing than the white polished rice of commerce and of consumption among the classes of this country and Europe. The polish is sweet, and contains the taste of the grain. Before this substance is removed, the grain is rough looking and yellow. Prepared in this condition the grain is of a golden yellow, not unattractive, and particularly affected by our neighbors in Porto Rico and Cuba.

The total consumption of rice in the United States is about five and a fifth pounds per capita; a small percentage when the qualities of the cereal are considered. The mills and rice associations are now endeavoring to devise methods which may stimulate this consumption, and thus find avenues

for the continued output of their fields. In Cuba and Porto Rico there exists a market for nearly 160,000,000 pounds of rice, if the duty be reduced to admit it in competition with the rice of the Orient, it being impossible to compete with the cheap labor and immense production of China and India unless given special advantages.

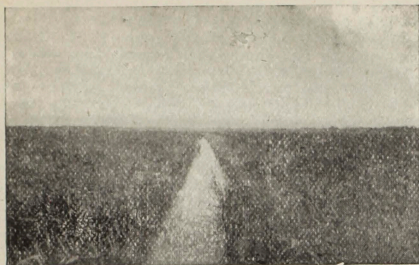
The development in the cultivation of rice in Louisiana and Texas is proceeding with considerable rapidity. The area is extensive in both States, it only depending upon a staple water supply to demonstrate its capabilities. Water is the great desideratum, as without irrigation rice can not aspire to an extreme elevation. The rivers of the two states, however, are capable of supplying an immense area with the necessary moisture, and, underlying the prairie coast line, exists an apparently inexhaustible water bearing gravel stratum that rises sufficiently near the surface to be reached and applied with but little trouble. These individual wells are proving great helps to the small farmer and particularly in sections away from the water courses.

The development in Texas will in the course of the next few years add millions to the wealth of the state and to the individuals engaged in the enterprise. It has already built towns, factories and increased the importance of the trade centers in the wonderful Coast country. It has caused the investment of several millions of dollars and added as much as 300 per cent to land values, although lands are yet comparatively cheap. Rice has proven the salvation of the barren prairie sections, and is rapidly bringing civilization to new centers. Texas this year will cultivate over 200,000 acres, the valuation of the crop thereon, with a fairly good season, being in the neighborhood of \$7,000,000.

The Dunovant Plant.

In 1899 Captain William Dunovant irrigated 250 acres of rice near the town of Eagle Lake, Colorado county. This was the first rice irrigated along the Colorado river and it proved so successful that in 1900 30,000 acres were irrigated in the Colorado valley and in 1902 50,000 acres. Near Eagle Lake lies a beautiful, clear fresh water lake of the same name, covering an area of about 2,500 acres and having an average depth of six feet, and a drainage of fifty square miles. It was not until 1899 that the idea was first put into practice of utilizing this body of fresh water for irrigation purposes. In that year Captain Dunovant's plant consisted of a 12-inch Van Die double suction pump, throwing 4,000 gallons per minute. The lift was then twenty-seven feet. The three boilers were old-style tubular and the engine of 300-horse power. With this equipment Captain Dunovant irrigated his crop of 250 acres in 1899. The plant has been added to from time to time till now it consists of three pumping stations, two on the lake and one on the river. Other companies are preparing to put in rice farms in this section to be irrigated both from the lake and the river.

West of the Colorado river and near the stations of Altair and Rock Island, on the San Antonio and Arkansas Pass railroad, several small rice plants have been established. Between Rock Island and Garwood a number of small rice farms that derive their water from wells have been opened up. The wells are somewhat similar in construction and always consist of a pit, either circular or rectangular in cross-section excavated to a depth of eighteen or twenty-two feet, with a bored well in the bottom of the pit. Such wells must always extend through sufficient flow for the farm. The first step in a proposition of this kind is to get the well bored and do nothing further until the amount of flow is established, then the arrangements for screening from sand



Lateral Canal in Rice Field.

and pumping onto the farm may be completed. The engines for pumping are usually for a single well, a small steam engine of fifteen to forty horse-power, or a gasoline engine of twelve to twenty-eight horse-power. A good well outfit ought to be put in for \$1,600. Windmills for irrigating have been thoroughly tested at the plant of Adam Adams, near Eagle Lake and were found impracticable. They were supplanted by gasoline engines, which are now in use.

Instead of having several distinct power plants, each to carry its own pump and acreage, the Bernard Rice and Irrigation Company, Charles B. Sloat, manager, has on its plant, two miles east of Lissie, erected a central power plant, consisting of a steam engine and boiler, with a capacity sufficient to carry three whole pumping plants. The power is conveyed to a seventy-two Kilowatt electric motor and by this the energy is transmitted electrically by wire to smaller motors of twenty horse-power capacity at the three pumping plants on the farm. The experiment will demonstrate clearly the most economical method of operating plants where pumps are located on different parts of the farm.

Wharton County.

In that section of Wharton county west of the Colorado river, along the line of the New York, Texas and Mexican railway near the towns of Pierce, El Campo and Louise, more well plants are in operation than in another section of Texas. The systems of wells are the shallow and the deep. The principal power used for pumping is the gasoline engine. The well plants around El Campo are all similar, the greatest variation being in the machinery in operation. The extent of the well system is shown by the fact that there are forty-one established plants near El Campo containing an aggregate of 4,635 acres. Near Louise there are 1,180 acres under cultivation.

Eight miles below Wharton and surrounding Lane City is the rice farm of the Bay Prairie Irrigation Company (often called the Lane Company). The pumping plant is located on the banks of the Colorado river, from which it takes its water. There are in all three pumping plants. The river plant has a lift of thirty-three feet and consists of two fifty-four-inch Van Wie pumps operated by a Bates-Corliss 250-horse-power engine. The capacity is estimated at 120,000-minute gallons and the engineer, L. E. Beedle, estimates that it will require three gallons per minute for

each acre, but he has provided for an emergency of ten. There are two flumes, one at the river and the other across Jarvis creek. The former is five by twelve feet, 182 feet long, while the latter is four by twenty feet and 350 feet long. There are thirty-four and one-half miles of main canals and laterals varying in width from eighty to 120 feet. At the second lift of seven feet a 250-horse-power compound engine operates a 45-inch centrifugal pump, which has a capacity of 50,000-minute gallons. At the third lift an Atlas-Corliss 200-horse-power operates a 24-inch Van Wie pump, which, with a lift of three and a half feet, is estimated to have a capacity of 200,000-minute gallons. The water is carried under the tracks of the Cane Belt railroad by terra cotta and heavy timber invert. In 1902 under the first lift 9,500 acres were irrigated; under the third 1,500, making a total of 16,000 acres, the largest acreage by any single plant in Texas.

Near Bay City, in Matagorda county, eight large companies have opened up extensive rice farms.

Summary of Matagordo Plants.

Bay City Irrigation Company	5,000 acres
Matagorda County Rice Company	9,000 acres
Colorado Company	4,000 acres
Nile Valley Company	2,500 acres
Stewart Canal Company	1,700 acres
Sexton Canal Company	500 acres
Moore-Cortes	10,000 acres
Planters' Canal Company	950 acres
Total	33,650 acres

The only water power plant in Texas that irrigates rice is that of Otto Buchel, three miles north of Cuero. A masonry dam across the Guadalupe river produces an effective head of ten feet. This is one of the most substantial dams in Texas and its cost, with its equipment, \$100,000. The power is generated by 24-inch turbines, which operate the pumps to raise into an adjacent reservoir. An auxiliary steam plant of 400-horse-power is used for supplementing the energy generated by the water plant. This plant furnished power for three rice farms—that of Mr. Buchel, Schleicher & Crouch and Rathbone & Wofford.

Summary by Counties.

Jefferson	43,400 acres
Matagorda	33,650 acres
Wharton	24,300 acres
Liberty	15,000 acres
Colorado	11,260 acres
Orange	10,500 acres
Harris	10,070 acres
Chambers	9,000 acres
Fort Bend	8,830 acres
Cameron	6,100 acres
Brazoria	3,150 acres
Victoria	2,770 acres
Austin	1,220 acres
Galveston	800 acres
De Witt	750 acres
Jackson	700 acres
Total	181,500 acres

This is represented in area by a square whose sides are a little less than seventeen miles.

In addition to the systems described above there will be several big plants operating in 1903. The Treadway

Canal Company will take its water from the Neches river northwest of Beaumont and irrigate land on each side of the Southern Pacific railroad. It is contemplated to bring 25,000 acres in cultivation by this canal. The canals are already under construction.

The Texas Land and Irrigation Company is installing a plant to take its water from the Brazos river northeast of Wallis. Its canal, already under construction, will extend in a southerly direction and it is intended to bring the land between Wallis, Rosenberg and East Bernard under canal.

The Illinois Irrigation Company proposes to take out a canal from the Brazos river west of Sealy near San Felipe and irrigate lands to the east and southeast of Sealy.

The San Jacinto Rice and Irrigation Company expects to put in a plant on the San Jacinto river east of Houston in 1903.

The Wallace-Radford Company intends to irrigate lands east of Eagle Lake by putting in a canal system to take its water from the Colorado river.

CONDENSED TEXAS

Texas contains 265,780 square miles, of which 3,490 square miles represents its water area. A fence about its limits would contain 4000 miles of single wire.

Its 170,499,200 acres represents a territory larger than six Pennsylvanias, and Connecticut, Delaware, Rhode Island and District of Columbia would fit within the limits of Pecos County alone. England, Scotland and Ireland would comfortably nestle in one-half of the state, leaving room for Italy and Switzerland in the other half.

Texas has a population of 3,048,710, an increase of 36.4 per cent over 1890.

The value of the main crops of the State aggregated \$202,150,000 in 1900, not including cattle, shipments which reached \$4,000,000, and garden truck and fruits, which sized up respectably in the sum of \$20,000,000, leaving a possible \$18,000,000 for the production of milk, butter, poultry and eggs.

The state has nearly 3,000,000 of acres capable of being put into rice. The acreage for 1902 was possibly 225,000. The following year will easily manifest 300,000 acres with a gross crop value of nearly \$9,000,000.

Over 300,000 farmers till their own soil in the State.

Texas measures 947 miles from the Sabine river to El Paso, following the line of the Southern Pacific to the border.

Texas produces one-third of the cotton of the United States and one-sixth of the corn, one-fourth of the wheat, one-half of the hay and one-third of the oats of the entire South, and harvests one-fifth of the peach production of the same States.

The State has 10,000 miles of rail lines, and will in another twelve months have the greatest mileage of any State in the Union.

It owns a permanent school fund of \$42,817,730, and controls 28,000,000 acres applied to the support of the educational system. Over 15,000 teachers occupy desks in the public schools.

Texas contains so great a variety of soil and climate that any product of the United States may be grown within its limit. Corn cotton, rice, sugar cane and oats may be grown in the same field.

Texas cattle are now short horned. The long horn has lapsed, being succeeded by the Hereford, Durham and Angus, while the Angora goat and Merino sheep browse upon the herbage of the hill sides.

The most extensive quicksilver deposit in the world has been discovered in Brewster County, and the richest silver mine in the West, producing for eighteen years, is located in Presidio County.

The spouting oil wells of Beaumont represent the greatest output of fuel oil the world has known, and the extension of the territory will demonstrate a source of unending wealth for the State, and prosperity to the surrounding country, because of the cheap and easily applied fuel. The possibilities in this connection are unlimitable.

The Bessemer steel iron ores of the Llano district, and the soft hematite ores of the Eastern district of the State, are in sufficient quantity to supply the entire consumption west of the Mississippi river.

Vast deposits of kaolin and brick clay exist at many localities, while the lignite beds are inexhaustible. Prof. Munson says Texas, from Del Rio on the Rio Grande to the Gulf coast, will eventually excel California in the production of grapes and wine.

The over cut pine lands of East Texas are proving to be the most desirable fruit lands in the South.

The bottom lands of the Brazos, Colorado, Guadaloupe, Medina and Nueces are the most fertile in the world and the cheapest.

The "Big Bend" of the Rio Grande in Texas is practically a *terra incognita*—one of the few unexplored sections of the United States, containing mountain ranges, extinct volcanoes and lava rocks, with possible minerals yet unsought.

The largest cattle ranch in the United States is the X I T ranch, in the Texas Panhandle. It contains 3,000,000 acres, and belongs to the syndicate which built the State capital at Austin. The X I T contains nearly 5000 square miles, and with its 125,000 head of cattle and 1,600 horses is valued at \$10,000,000.

Seven different flags have waved over Texas since its discovery 200 years ago. France, Spain, Mexico, Independent Texas, the Confederate States, and lastly the United States have exercised dominion over its area. Texas joined the Union of its own free will, being annexed by treaty made and ratified by the free suffrage of its citizens. It retained its public domain.

The State contains 12,289 industrial establishments, with a capital of \$90,433,882. The output for 1900 was \$119,414,982.

Texas is the greatest producer of honey in the United States, with an output for 1900 of 4,780,204 pounds.

The oil fields of Beaumont have to date produced about 15,000,000 barrels, of which about 5,000,000 remained in tanks October 1, 1902.

Texas produced nearly 2,000,000 barrels of rice in 1902.

The value of cotton and cotton products of the State for 1900-1901 was \$173,000,000.

The census of 1900 gives Texas 352,190 farms, the greatest number of any of the States, with a total valuation of \$964,476,273. Of the 125,807,017 acres included, 19,576,076 acres are in cultivation. Value of live stock is placed at \$240,576,955, and the farm products at \$239,823,244.



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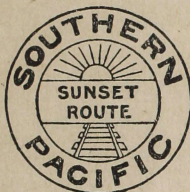
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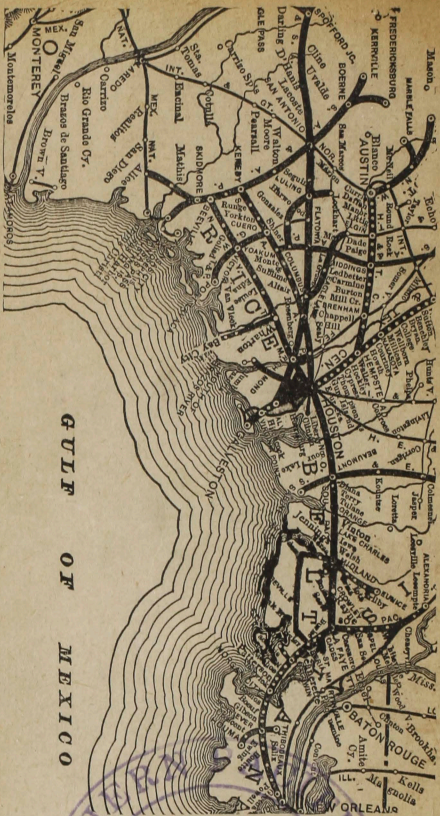
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