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# IRRIGATED LANDS

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THE BEST IN THE WORLD FOR FRUIT AND VINE CULTURE

Are found under the GILA BEND CANAL on the Lower Gila River.



WATER FRANCHISE FOR SALE BY

## THE ARIZONA CONSTRUCTION CO

LANDS STILL BELONG TO THE GENERAL GOVERNMENT  
AND SUBJECT TO ENTRY



# ARIZONA CONSTRUCTION COMPANY

INCORPORATED UNDER  
THE LAWS OF THE STATE OF ILLINOIS  
1891

PRINCIPAL . OFFICE . PEORIA . ILLINOIS

BRANCH OFFICE, GILA BEND, ARIZONA

PRESIDENT....J. W. GIFT  
VICE-PRESIDENT....WILLIAM JACK  
SECRETARY....JAMES M. RICE  
TREASURER....ELIOT CALLENDER

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# IRRIGATION.

Most Americans know little or nothing of the subject of irrigation for agricultural or horticultural purposes. Our lands have been so abundant that the farmer has simply selected his tract where he could receive the quickest returns for the least outlay, and where his purpose could be accomplished without combination with others and without aggregation of capital. The time has come, however, when the most successful agriculturalist has ceased to take his "prairie schooner" and farming implements and drive off by himself to a quarter section of land to make himself a home in his isolation and loneliness and independence of the co-operation of his fellowmen. Profitable irrigation generally requires the use of a large aggregation of capital.

Irrigation is one of the oldest arts. Probably one-half of the most civilized people of the earth live from the products of irrigated land, and always have done so from the earliest dawn of history, and those who have lived by irrigation have been the most civilized and enlightened. The Europeans settling in America have probably been the one exception, for America itself, when discovered, possessed examples of the highest irrigation, and irrigation itself was practiced in America at that time by all of the most civilized natives.

Irrigation was practiced largely by the Egyptians, Arabians, Assyrians, Babylonians and Chinese. The lands in the dominions of the Queen of Sheba in the days of King Solomon were irrigated by large canals from a reservoir, made by constructing a dam two miles long and one hundred and twenty feet high of large hewn stone. The canals of the Pharaohs were their principal and certainly their most useful public works, and the most ancient history tells of the Lake Meotis constructed as a reservoir for irrigating purposes.

The plains of Assyria and Babylon were covered with immense systems of canals, some of them hundreds of miles in extent, the ruins of which are among the most interesting in the world. Babylon itself was captured by turning aside the waters of a canal and entering the city through the canal bed.

In the agriculture of Italy, France and Spain, great attention is paid to irrigation. One of the first and most important results of the extension of the civilization of the east into Europe was the introduction of irrigation into southern Spain by the Moors, by which vast territories, which had been almost barren, were made most fruitful, so that in the tenth century the revenues therefrom were over \$30,000,000.00 a year, which the great historian, Gibbons, says, was more than the combined revenue of all the monarchs of Christendom of that time. The Romans, during several centuries, constructed extensive irrigation works which are still in use.

When America was discovered the inhabitants of Peru had in use the most costly works constructed for irrigating their land, and the inhabitants of Peru were the most intelligent and civilized of the aborigines of America. Canals and aqueducts were seen crossing the country in all directions. The Aztecs of Mexico also used irrigation, and the beautiful gardens of Iztapalapan, watered by canals and aqueducts and moistened by the spray of fountains, were exhibited to the astonished Spaniards as a perfection of horticulture at that time unknown in their own country.

### Ancient Irrigation in Arizona.

Arizona presents more evidences of ancient cultivation and irrigation than any other portion of the United States. Mr. Farish, Commissioner of Immigration for Arizona, in his report for 1889, page 2, says:

#### AN OLDEN LAND.

"The ruins of the Casa Grande, the traces of old waterways, and the mounds that dot the surface of the Salt and Gila valleys are evidences of a civilization that was extinct before the Spaniard set foot upon the soil of central America, three hundred and fifty years ago.

The ruins of Casa Grande, situated in the Gila valley, about five miles south of the river, and six miles from the town of Florence, were thoroughly explored by Coronado in 1540, and are described by Castenada, the historian of the expedition.

This is the oldest description extant. He says: 'One of them is a large edifice, the principal room in the center being four stories high, and those adjoining it on its four sides; with walls two varas (thirty-three inches is a vara) thick, of strong adobe material, so smooth on the inside that they resemble planed boards, and so polished that they shine like pueblo pottery. For a distance of two leagues (six miles) these ruins are visible. The remains of a large canal for irrigation were traceable from the river to a point at which it reached the plain on which the city rested, and could be followed for a distance of nine miles around the city, with an average width of ten varas'—27½ feet.

Lieutenant Frank H. Cushing, well known in connection with his investigations among the Zuni Indians, has lately been investigating the ruins of the Salt river valley, under the patronage of Mrs. Hemingway, of Boston, and gives it as his opinion that at one time, between the eighth and ninth centuries, this valley alone contained a population of 300,000 souls, supported by agriculture, with several cities, the largest six miles long."

President Harrison has declared a tract of land comprising 480 acres, including the old Casa Grande ruins, to be a reservation. This has been done for the purpose of protecting the ruins and the Casa Grande building. The reservation will be under the control of the Bureau of Ethnology of the Smithsonian Institute.



# FRUITS AND FARM PRODUCTS

## COST OF AN ORANGE GROVE.

In answer to the oft-repeated question, "What is the cost of an orange grove?" we can give no better authority than that to be obtained from the orange growers of Riverside, California, who have achieved greater success than any other colony of orange growers in the United States.

A conservative estimate of the cost of a ten-acre orange orchard in Riverside, when the raw land is valued at \$300 per acre, and when good trees cost \$1.25 each, was at the end of the fifth year \$7,650, or \$765 per acre.

The unimproved land in Riverside is worth from \$300 to \$600 per acre, and we take the lowest figure.

Now we will take new land in the Gila Valley, under the Gila Bend Canal, that costs, say \$20 per acre, and the same quality of trees as those planted by the Riverside orchardist, which can now be contracted for at 90 cents each, delivered here for the spring of 1893, and we find the cost to be about as follows:

Ten acres of land at \$20 per acre.....	\$ 200 00
Clearing, plowing, and digging the holes \$10.....	100.00
1000 best budded trees, at 90 cents each.....	900.00
Planting same at \$5 per acre.....	50.00
Interest at 8 per cent on first cost for five years.....	500 00
Care of orchard, 1st, 2d, and 3rd years, at \$15 per acre	450.00
Care of orchard 4th year, at \$20 per acre.....	200.00
Care of orchard 5th year, at \$25 per acre.....	250.00
Taxes and incidentals.....	200.00
Water for five years, at \$1.25 per acre per year.....	62.00
Fertilizer for fourth year.....	240 00
<b>Total.....</b>	<b>\$3152.50</b>

Assuming that the orchard has been properly planted and cared for, the yield during the

Fourth year should be one-half box per tree 500 bxs at \$2.25	\$1250.00
Fifth year, one box per tree, 1000 bxs at \$2.25.....	2250.00

Total income at the end of the fifth year..... \$3500.00

having returned more than the total cost of the orchard, and is now in condition to yield a rapidly increasing income, which at the tenth year should exceed \$5000.

These figures are not merely an estimate based upon a theoretical conception of what an orchard ought to yield. They represent what has been done in Riverside time and time again. What is being done, and what may confidently be expected to be done in the future.

The wise man profits by the experience of others. What was a daring risk twenty years ago is now undertaken with the *assurance* of success.

Conditions being equal, what has been done can be done again. By the proper application of water for irrigation the desert has been made to blossom as the rose, and many blades of grass to grow where none grew before.

Land that a few years ago had no value except the scant pasturage that it afforded during the rainy season, has, in less than ten years, by means of irrigation, a high state of cultivation, rich soil and warm sunshine, been converted into orange groves and vineyards, that to-day pay good interest on an investment of \$3000 per acre. This is no fanciful flight of the imagination, but the legitimate result of planting orchards and vineyards, and the production of large crops through the intelligent methods evolved from pioneer experience.

No section of the union promises better opportunities for those with small means at their command; and the intelligent and industrious workingman can more easily get a start in life here than is possible in the older settlements; and here men with small fortunes may become rich.

#### PROFITABLE ORANGES.

Col. J. R. Dobbins of Alhambra has just delivered his crop of Valencia oranges free, on board cars at that place, at \$4 per box. From 130 trees, 8 years old, he realizes \$2400 gross, or \$2000 after paying all expenses. The Valencia (sometimes called the Du Roi) is the latest orange to come into the market, and generally is at its best in July. This year the crop is later than usual. Within the past two years a great many trees in nursery have been budded to this variety, and, a few years hence, there will be a considerable production of late oranges. It will not be advisable to plant so extensively of these trees, however, for the reason that they come to maturity in the midst of the deciduous fruit season, and the market might easily be overdone. For the present, however, a man who has a Valencia orchard in good bearing has a very profitable investment, as the transaction above noted shows. A profit of \$2000 from an acre and a quarter or an acre and a half of orchard is not to be sneezed at.

#### SANITARY VALUE OF ORANGES.

An orange fad is among the possibilities, says the "Farm and Fireside." Free consumption of the fruit is said to be good for the complexion, and many American ladies are testing the claim. The value of the orange in other ways has long been recognized. It is reported that in some inebriate asylums oranges have proved an efficient substitute for alcohol, patients sucking the juice of them abundantly every time the thirst for liquor comes upon them. This fact is so well recognized that often at temperance coffee stands piles of luscious oranges are also kept.

## FRENCH PRUNES FOR PROFIT.

A handsome fortune can be made in ten years from eighty, or even forty acres of French prunes, and large incomes can be had from ten and fifteen acre prune orchards. The trees must be grafted or budded on plum stock, and be one year old trees—planted twenty feet apart, or one hundred to the acre. Good trees are worth twenty cents each. Dig the holes two to three feet square, according to the quality of the soil. They should bear some fruit the third and fourth year, and by the fifth year you will get about 60 lbs. to each tree, and the sixth year 120 pounds or more to the tree. After that your trees are in full bearing. Prunes are not picked by hand, but are shaken about once a week for four weeks. When all are shaken off, they are placed on trays and dried in the sun.

## COST OF A PRUNE ORCHARD.

10 acres of land at \$20 per acre.....	\$ 200 00
1000 good trees at 20 cts each.....	200.00
Cleaning and plowing land.....	50.00
Digging the holes and planting the trees....	75 00
Cultivating for five years at \$100 per year.....	500.00
Taxes and incidentals for five years.....	100.00
Water for five years at \$1.25 per acre.....	62.00
Five years interest on investment at 8 per cent.....	375.00

Total cost at the end of five years..... \$1562 50

## PROFIT.

The fifth year you will have one thousand trees bearing at least 60 pounds each, or thirty tons, equal to ten tons of dried prunes, worth 10 cts. per pound, or two hundred dollars per ton..... \$2000.00

If you deduct 10 per cent. for labor of handling the crop, you will have a balance of \$1800 net, paying for the whole investment and \$275.50 to spare.

The sixth year you should have 60 tons of green fruit, or 20 tons of dried prunes worth..... \$4000.00

By the seventh year your trees will be in full bearing condition, and will bear each year from 150 to 200, or even 300 pounds to the tree, and I believe I am on the safe side when I say that each tree will bring you five dollars net each year, or five thousand dollars from ten acres. It will thus readily be seen that, on an outlay of less than \$1600 a person can have an income of \$5000 per year in ten years time. These figures are made with care, and on a basis of actual results obtained from the owners of prune orchards in Pomona, California, based upon prices received this season—1892.

## THE FIG.

This delicious fruit only needs a little familiarity to become very popular. It is most delicately flavored and refreshing, bearing no resemblance to the dried fig. It is a fine dessert fruit, and makes an exquisite dish served with cream. It is also very fine when stewed or canned. The manufacture on a large scale of fig preserves, fig syrup, and crystalized figs is an industry of recent origin. The business has already assumed large proportions though yet in its in-

fancy. The tree is easily propagated, and is very fruitful, and and prices for the fruit have been all that could be desired, \$50 per ton being paid by the crystalizing works.

Quite a number of planters in this territory have large fig orchards growing, and as the demand is constantly increasing, with but a limited supply, it is safe to predict that the culture and manufacture will be a business reaching far into the millions in the near future.

Arizona is proven to be the home of the fig—even found growing wild in the mountains, showing a phenomenal growth with proper cultivation, trees the third year from cutting having trunks from five to eight inches in diameter, and yielding three crops of rich, sweet, thin skinned fruit equal to any grown in California or Arabia.

The cost of maturing a fig orchard is less than that of any other grown in this latitude, and it also comes into bearing earlier than any other fruit.

The tree is grown from cuttings and cultivated as any other tree or vine, requiring less care than the orange or grape.

#### APRICOTS.

The apricot grows to a high state of perfection here, and matures from four to six weeks earlier than in nearly any other section, thereby insuring a good market for early shipments of fresh fruit. The bulk of the crop, however, is either dried or canned, and commands good prices in all the markets of the world. The tree makes a rapid growth, is hardy, and free from disease or insect pest. The cost of obtaining an apricot orchard is about the same as that of a prune orchard, found on another page. The profits to be derived vary somewhat with condition and prices. This year, from \$195 to \$225 per acre was obtained, or more from a ten acre orchard than many an eastern farmer realizes from his 160 acres.

#### THE ALMOND.

The almond makes a remarkable growth in this valley, and where old enough to bear are heavily loaded; trees three years planted being full of nuts.

About one thousand trees were planted in the spring of 1892. The cost of an almond orchard is no more than that of the peach, prune, or apricot, and it is more easily cared for, and the crop less trouble to harvest than either. The nuts not being perishable, can be held for the best market, or will bear long transportation; the market is good, making this a valuable tree to plant.

In a garden in Gila Bend is an almond tree two years and a half old from the time the seed was planted, that now measures thirteen inches in circumference, one foot from the ground, also yielding a crop of nuts when but two years old.

The almond is probably still in the experimental stage in California. Still enough has been learned regarding situation to know that it does best on bench or hillside lands free from fogs and more or less protected from direct winds.

Mr. A. T. Hatch, of Suison valley, the largest almond planter in the State, says that "the almond will not grow in the water nor do well in a heavy, poorly drained place, but will flourish and produce

good crops on soils that are too light or dry to grow peaches, apricots, nectarines or similar pulpy fruit. Almonds will make heavier returns from leaner lands than any other crops, except it may be vines, olives or figs."

\* \* \* \* \*

#### OLIVES.

The growing of olives for oil or for pickles, is destined to become one of the most important horticultural industries of Arizona, which in time may rival the orange as a wealth producer. The demand for olives and olive oil is constantly growing, and our supply comes largely from Italy, where it is one of the most important industries. Millions of dollars of our gold are annually sent to that country in exchange for olive oil adulterated with cotton seed oil, first shipped from the United States to be used in the adulteration of olive oil. More than two million gallons of cotton-seed oil are exported from the United States to Marseilles yearly, and more than half of this vast quantity is used for adulterating olive oils, a large part of which are re-imported to the United States through a thirty per cent duty. In time this will be changed, for in our own land the olive grows to perfection, as has been proven in southern California during the last three or four years, where the business has proved very successful and is now being developed on a larger scale. The olive is a tree that delights in a warm dry climate; it shuns dampness, and it fears nothing from the long drouths. It does the best in the region of the fig and almond tree. It is a beautiful evergreen, having a glossy, silvery appearance; is hardy and is very long lived, trees now living known to be more than a thousand years old. The olive under favorable conditions of climate and soil, is one of the most vigorous trees, and can even compete with the oak. It is very prolific, having been known to yield as high as 250 to 260 gallons each, from very old trees.

A few trees grown at different points in this territory have not only made a remarkable growth, but have fruited heavily, demonstrating very clearly that olive growing is no longer an experiment in Arizona.

The cost of an olive orchard is no greater than that of the prune or apricot, the time required for bringing into full bearing is about the same as the orange, will bear lightly at four or five years, but will increase for many years after. Where properly handled, the olive has proven more profitable than the orange.

The cost of planting olives is about the same as for pruned or apricots.

In a public address at San Francisco, Mr. Elwood Cooper, of Santa Barbara, the most extensive grower in the State said:

"The only test I ever made as to the quantities borne by an orchard—that is, taking all the trees—showed 122 pounds of olives throughout the orchard, large trees or small ones, seven years old FROM THE CUTTING.

"The best results in making oil has been ten and one-half pounds to one large bottle. The poorest results was twelve and a half pounds. We have for the tree seven years old at least ten bottles of oil, and these bottles will sell readily anywhere and everywhere at \$1 apiece."

There are 108 trees to the acre, being planted twenty feet apart. This gives over \$1000 as an average per acre for seven-year old trees.

The Executive Committee of Yuma County say:

"The olive grows luxuriantly, and will in the future become a most profitable investment. Whatever its characteristics elsewhere, here it requires water and cultivation—the more water the better."

Mr. P. R. Brady, of Florence, Arizona, says of the olive:

"The olive would thrive here equal to any part of the south of Europe from what we have seen of the few trees here in bearing, which were planted eight years ago, and have never had any care bestowed on them beyond irrigation."

(Florence is about 150 miles northeast up the Gila River.)

The Maricopa County Immigration Union say that olives grow well in Arizona.

Immigration Commissioners Hamilton and Farish, and also Governor Zulick, confirm this statement.

## Raisins and Grapes.

"As a raisin-producing country, all the conditions are favorable to make it the best in the world. We can not only grow the raisin grapes to perfection, but have the best climate to cure them in, and under no circumstances will recourse be necessary to artificial heat in completing the curing process."

There are more than five thousand acres of raisin grapes now growing in this county, many of them beginning to bear.

No finer vineyards for the age are to be found anywhere. The soil is identical in appearance to the soil of Fresno, California, now famous as the greatest raisin producing region in the world, and a gentleman from that city, when recently passing through Gila Bend, expressed it as his opinion that this would be as good a raisin country as Fresno is. The first raisins packed this season anywhere in the United States were packed in this county.

The California raisins reach the eastern markets later than the Spanish raisins, consequently the latter secures the advantage of the early eastern market, but Arizona can and will receive the benefits of the earlier market, as she deliver her raisins in New York ahead of California or Spain.

No fruit can be brought to maturity so cheaply as the grape; land, water and cultivation given, and at the end of the third year an income of from \$75 to \$100 per acre should be obtained, *more* if the fruit is shipped green, as it can be produced from four to six weeks earlier from this valley than from California, and will reach the market at a high time when high prices will be obtained.

We live in the sunshine belt where fog is unknown, and where the average rainfall is only 6.08 inches.

Alfalfa grows luxuriantly, and when properly managed produces seven or eight crops of hay per year, averaging at least two tons per acre for each cutting.

The usual method, however, is to pasture the land most of the year, cutting only three heavy crops of hay of about ten tons per acre each year, which finds a ready market at all seasons of the year. Large numbers of cattle are kept in the finest condition on these fields, in addition to three cuttings, with but little expense.

On account of the abundance and cheapness of feed grown throughout the year, and the absence of winter storms, stock-raising is a profitable industry, and will continue to be, for the reason that we have in California, at our very door, a good market for our beef, which can be placed in their markets cheaper than it can be produced in California.

## Beet Sugar.

The production of beet sugar is destined to become an important industry in this section, where the conditions of soil and climate are so favorable to the growth of sugar beets, containing a high percentage of saccherine matter. Samples recently sent by the Fowler Company to China, for analysis, showed 17 per cent. sugar and 86 purity, which is a very high percentage, and if produced in large quantities would insure large profits to both the grower and the refiner.

## Parks

No one feature of a new or strange land attracts the attention of the visitor, or impresses him more favorable, than the sight of well kept parks and finely shaded drives; and recognizing this fact, the Company will spare no pains in grading and ornamenting the wide streets and avenues.

A double row of semi-tropical evergreens, trees such as eucalyptus, pepper, palm, cypress, mountain ash, olive, and others equally attractive, will line either side, producing beautiful drives and shaded sidewalks. Sites for parks will be reserved and properly improved as rapidly as the growth of the settlement may require.

Plant trees abundantly along the public highways, where, in a few years they will cast a cooling, grateful shade, and form lovely arching drive-ways to shield man and beast from the heat and glare of the summer sun.

The public can overlook a poorly kept highway if trees grace the road-side, and the finest macadamized roads lack more than half their beauty and comfort if not supplemented by suitable trees; and the more tropical these are the more pleasing the effect.

### THE SOUR ORANGE AS A STREET TREE.

A correspondent of the Sacramento Record-Union puts in a strong plea for the Florida sour orange tree for streets and avenues. He says it is of beautiful shape naturally, and is a strong, vigorous

grower, much more so than any sweet orange; and that it is very hardy and long lived, the trees retaining their vigor and beauty from two to four centuries, which will answer very well in the matter of age. The sour orange, furthermore, has a dark, rich, glossy green foliage, and being an evergreen, retains its beauty the year round. In the matter of fruit it is not devoid of value, as it bears a medium sized and very handsome orange, which shows an especially strong predilection to hang on the trees all the year round. They are not tempting to the small boy, however, as they have much of the bitterness of a green olive. With sidewalks lined with these trees, what a beautiful aspect our streets would present, the gold of their fruit contrasted with the redness of the pepper tree berries. The sour orange is sturdy, as well as beautiful and productive, and when one comes to add the fragrance of its blossoms to its good qualities, a really formidable case is made out for it as a shade tree.

### Comparison of Season

The land along the lower Gila River is equal, if not superior, to California's best land, and California land, with water, is held at from \$150 to \$500 per acre for unimproved land.

Yet you can obtain these Gila River lands, with water, for \$16.50 per acre. That these lands are equal, if not superior, the following high authority proves conclusively.

The Special Committee of the United States Senate on the Irrigation and Reclamation of Arid Lands, in their report, Part I, page 23, says:

"The lower valley of the Gila River is clearly shown to be the most promising field for semi-tropical fruits, sugar-cane and cotton."

And on page 60:

"Within our borders there cannot be found a soil so uniformly fertile. Analysis of this soil shows its fertile qualities to be superior to that of the Nile earth."

Arizona has been misrepresented, like California was some years ago. The same magic revolution awaits Arizona. First, it will astonish the world with its immense mineral wealth. Second, with its rich soil and fabulous agricultural products, and third, with its wonderful winter climate. Let everybody know the advantages of our winter climate, and let all the sick and feeble of the land try our blessed air, and they will soon cast their lots with us and build their homes here, making our mountains chime with their songs of joy and happiness.

The Citizens' Executive Committee of Yuma county say:

"For nine months of the year the climate is simply superb. Three months are warm, but not excessively so, although the thermometer ranges far higher than would be conducive to health or comfort in any section of the East."



Lieut. W. A. Glassford, of the U. S. Signal Corps, in a letter to the Governor of the Territory, says:

"A few words about the heat. It is recorded as extreme, yet no one suffers and sunstrokes are unknown. This is usually accounted for from the purity and dryness of the air. Both are true, but the dryness is, perhaps, the correct reason. There are neither sunstrokes in summer, nor pneumonia in winter; neither fever nor malaria live and generate in this section.

In this great interior valley the climate is remarkably fine, and in many respects even superior to the cooler and more humid climate found directly upon the coast. It is undeniably better as regards those characteristics sought by people with a tendency to lung or throat troubles. The altitude and the dryness of the atmosphere proving especially beneficial for asthmatic difficulties.

One of the greatest peculiarities of this climate consists in the relative condition existing between the degrees of temperature and the degrees of relative humidity. It is this atmospheric condition that puzzles all new comers, and that is incomprehensible to the average observer of meteorological conditions and their results. Nature has so arranged it that when there is a rise in the thermometer, there is a diminution in the humidity, and with a fall in the thermometer there is an increase in humidity which produces equability.

This accounts for the fact that men can work in the sun with perfect safety in a degree of heat that would prove fatal in the Mississippi valley or the Atlantic coast States; and this no doubt explains why invalids suffering from lung or throat trouble receive so much benefit here.

We jest sometimes at "buying" and "selling climate," but it is a remarkable commodity, nevertheless, that has an intrinsic value, and is worth in most cases all, and more, than the prices asked. It is the only property where the acquisitions of the buyer do not in any degree diminish the possessions of the seller.

With all our other advantages, it is climate rather than commerce that lures to this semi-tropic land the pleasure seeker, the health seeker, the wealth seeker, the home seeker, the investor and the speculator.

Have you weak lungs? Have you any throat trouble? Are you troubled with rheumatism? Have you malaria? If so, for any of the kindred diseases, then you cannot take a better step for your health.

Hon. J. De Barth Shorb, of California, whose full letter is published elsewhere, says:

"The climatic conditions are not excelled anywhere; the temperature either in summer or winter is faultless, and the health of the people could not be improved. There are no malarious conditions to produce fever in summer, nor are those rapid changes incidental and common to other parts of America in winter, producing colds, pneumonia and consumption, present in Arizona. The excessive heat of the summer months is more imaginary than real, being, in fact, not as hot as it is in many parts of the Sacramento, San Joaquin, and upper portions of Napa or Sonoma Valleys of Califor-

nia, and in no wise equaling the Mississippi Valley. The quality of the temperature being entirely dry, makes even the hottest day tolerable in the open sun, while a lower temperature in any of the Eastern States or Canada, would not only be intolerable, but dangerous to human life."

Mr. Hamilton, Commissioner of Immigration in 1886 for Arizona on page 96 of his report, gives a letter from N. H. Matas, M. D., in which the Dr. says:

"The climate of Florida is far inferior to ours, and can not be compared but as a shadow of our winter resort.

"The celebrated shores of Italy and Spain cannot compare either with any spot of southern Arizona as a winter climate, and it is only a question of time when the people of the East and other parts of our country, and even of Europe, who have delicate health or are actually afflicted with consumption, asthma or other troubles of the respiratory organs, will come here by thousands. We never have any sunstrokes in summer.

## Arizona Mountain Resorts.

The Phoenix Gazette calls special attention to the fact that Arizona has many mountain resorts: the trouble is they are difficult of access. Up in the Mogollons are glades and forests cool as the soul of man could ask for.

There are brooks filled with trout; there are mountains covered with snow, inviting the adventurous tourist to climb; there are all things desired but an easy way of reaching them.

Were it not for this difficulty many persons would visit them more often. The way is long and difficult. A stage coach is the only public conveyance, and that is never a luxuriant mode of travel, as anyone can testify who has jolted along all day through the rocky cañons. To go in a buggy or on horseback, or on foot, has also its inconveniences. But, in spite of this, large numbers of Phoenix people find their way every summer into the wildest regions of the Mogollons, and there spend an excellent time resting, hunting and fishing. When the north and south road is completed things will be different.

## Rights, Franchises and Lands

The Dam and Canal-head of the Gila Bend Canal are located on the Gila River, Arizona, about twenty-three miles north of Gila Bend Station, on the Southern Pacific railroad, and at a point on the Gila River where the Mesa-Point on the west and the mountain on the east bank narrow up the valley. The mountain is the first one on the east bank of the river north of Gila Bend Station. The dam is a segment of a circle, and six hundred feet long, with the ends securely protected to resist pressure and wash, and an embankment of rubble rock with puddle lining 1200 feet long, which fills the entire distance between the mountain and Mesa Point. The dam is formed of piling, driven to the hard bottom, on which a superstruc-

ture of heavy timbers is framed in the segment of a circle, and then filled up with rubble rock, the front or overflow being protected by a double apron, supported and protected by piling, thus combining a timber and gravity dam in one. Heavy masonry abutments at the east end, with iron headgates between and raised above all possibility of overflow, constitute the head of the canal.

The dam raises the water twenty feet above the low water, and from this elevation the canal line starts. This elevation raises the canal above all overflow or backwater from floods in the river. It is above the flood line of February, 1891, and even Indian traditions do not exceed that flood.

The Reservoir Franchise covers a dam and reservoir site, from which in the future it will be possible to irrigate one hundred and twenty thousand acres of land. No finer scheme presents itself in the United States; its possibilities are almost beyond imagination.

From its head the canal runs in a southerly direction for about twenty-two miles, then it turns to a westerly direction, following the valley of the Gila River. The canal crosses the Southern Pacific railroad about a half a mile above and east of the village of Gila Bend and passing through the village continues in full view from the S. P. R. R., and at ten miles west of Gila Bend Station, crosses the S. P. R. R., and from there west, waters land each side of the S. P. R. R., and from the canal to the Gila River, except where the Painted Rock Range of mountains are.

The Arizona Construction Company is now building the Gila Bend Canal, having a force of between six and seven hundred men at work, and dam and canal will be finished by Jan. 1, 1893. This company has water privileges for fifty thousand acres of land for sale at present.

The value of the water depends entirely upon the value of the crops it produces; it is therefore of the first importance to this company to promote the value of the crops. One hundred acres poorly cultivated may bring the owner in debt, while ten acres properly cultivated can in a short time be made to yield a fine income over expenses, and after four years will average \$200 per acre or \$2,000 annually.

Ten acres in oranges after four years brings an income of from \$100 to \$150 per acre, and after seven years brings \$500 per acre, or \$5,000 annually. As shown by the preceding statistics, a man of moderate means can plant forty acres in grapes and figs at but little expense except his own labor, or he can save part for oranges and other fruit, and after the second year his raisins and figs will bring a good income. By planting the seed he can be raising seedling oranges and bud them, or have them budded, and the fourth year plant budded oranges, either among his vines or in the ground reserved for them. While the trees are young they and the vines will do well together, and later the vines can be removed. If he has planted his entire forty acres in raisin-vines and figs, at the end of three years they will average fully \$100 per acre; at four years \$150 per acre; and after that fully \$200 per acre, or \$4,000 the third year,

\$6,000 the fourth, and \$8,000 every year after; his oranges after seven years will average him \$500 per acre; after ten years his forty acres should yield him from \$12,000 to \$15,000 annually.

This is no fanciful picture; on the contrary, it is a very conservative statement based upon the foregoing reliable data, and no statistics are more reliable than those on horticulture and viticulture. In view of these facts the company will to the best of its ability *discourage holdings in excess of forty acres*, believing it to be for the best interests of all concerned to have the lands thoroughly cultivated, rather than by over holdings to have poor crops and inferior fruits. To obtain and keep control of the markets it is absolutely essential to establish and maintain a high standard for quality, and quality cannot be gained or maintained except by intelligent and thorough cultivation.

The company will maintain in its employ persons competent to instruct and advise as to the best modes of cultivation and care of all the fruits, whose duty it shall be to advise, without charge, any and all asking their aid; in fact, it will be their duty to inspect and advise in the interests of their company.

#### TO THOSE CONTEMPLATING INVESTMENT.

All the lands watered by the Gila Bend Canal are government lands, and can be taken up under the Homestead or Desert Land Act. The Homestead requires actual residence of five years. Only 160 acres can be taken up by one settler. Under the Homestead Law the land is free.

It is necessary to complete "final proof" and payment to the government that the lands shall be irrigated by works of a permanent character. No less than forty or more than three hundred and twenty acres can be entered by one person. The price is \$1.25 per acre, 25c of which must be paid on filing the claim, and \$1 on "final proof" that the water is on the land. By the new act above mentioned four years is allowed before making "final proof," and at least one eighth of the land must be cultivated.

Under this new law assignments are allowed to any citizen of the United States, and if the entry-man does not "prove up," the citizen holding his assignment can.

When it is thoroughly understood that the Gila Bend Reservoir and Irrigation Company own the only available site by and from which the land below can be irrigated without fear of washouts by floods or a change in the river channel, then it will be understood why water rights under it will be most valuable. The dam is between two mountains, so that the channel cannot change, and the canal is taken out from the side of the mountain, and it is impossible for the water of any flood to get behind it or around it.

"When irrigation is employed the production is almost wholly in the hands of men often of some education and some capital, who have found an attractive field for the exercise of their intelligence in bringing small allotments into a condition of the highest productiveness."

For ages past the cultivation of fruits has been the occupation of intelligent gentlemen. The horticulturist and members of horticultural societies are, as a rule, educated and refined.

Are you inclined to consumption? There is no country under the sun to which you can go with half the certainty of being benefited. There is no pursuit that will be better suited to your health than fruit raising. You need the outdoor life, and by the fifth year you will forget that you were ever troubled with consumption, provided you have not waited too long before making up your mind to go there. Thousands die because they do not go, and hundreds wait until there is not enough vitality left to build up on. Hundreds have gone in time and been cured. If you know that you are troubled with consumption, pick up and go; do not wait for to-morrow; it is the land that will give you health, life and independence.

The Gila river carries fully 1,100 cubic feet per second, past the point where the dam is, or enough for double the amount of land at present proposed to be irrigated.

Hon. Alfred Deakin, M. P., in his report before referred to, says:

“Possibly a better idea of the importance of water than can be derived from any list of purchases and rentals in particular places may be obtained by a glance at its capital value. It has been calculated that the flow of a cubic foot per second for the irrigating season of all future years is worth from £15 to £25 per acre in grain or grazing country to £30 in fruit lands. This is the price paid to supply such a stream to a special piece of land as long as the farmer may think necessary, the knowledge that an excess of water will ruin his crop being the only limit. But if a flow of a cubic foot per second were bought in perpetuity, without any limit as to acreage, it would be worth at least £8000--\$40,000.

#### WATER FRANCHISES.

The Company offers at present perpetual water franchise at \$17.50 per acre on time, or \$15.00 cash. The land under this canal is equal to California's best raisin or orange land, held at from \$200 to \$400. The land in the Gila valley is all government land and can be taken up at \$1.25 per acre, 25 cents on filing, and the balance on “final proof,” which must be within four years from original entry. Land office fees, making “final proof,” including ditching for flooding the land and cultivating one eighth of the land with water, will cost not to exceed \$4 per acre. The annual rental for the first five years will be \$1.25 per acre.

Where water rights are sold on time, the first payment shall be over \$5 in cash. Deferred payments bear 8 per cent. interest.

The object of extending the second payment to two years is to afford the settler an opportunity to derive an income from his land before making another payment. When all cash is paid, the Company makes the liberal discount of \$2.50 per acre.

These water privileges are sold at these remarkably low figures in order that the money may be used in completing the canal and

are intended to give the early investor his due proportion of the profits of the enterprise. The price will undoubtedly be considerably advanced within a few months.

AS A HOME OR AN INVESTMENT.

If you saw an acre of land that you could buy now for \$18, and could be convinced that within five years it would bring you from \$200 to \$500, would you buy it? Certainly you would.

Most men invest in life insurance—a game in which you have to die to win. Is there any life insurance that offers from \$200 to \$500 at the end of five years, on an investment of \$18? None.

Of course, if you could be convinced that the land that can be bought now for \$18 would be worth even \$200 in five years, you would be anxious to invest.

The fact that California was a desert only a few years ago where now grow rich vineyards and orange groves, is a fact that every well-informed man is fully acquainted with.

Now the question left is to convince you that the Arizona lands are the equal of the California lands that produce these results.

If you and your neighbor had a field in common, and every appearance of the field indicating that it was all of the same character of ground, and after a time you and your neighbor each take a half and put up a dividing fence and he proceeds to cultivate his half and produces a very profitable crop; such being the facts, there could be no question in your mind but what you using the same means, could do equally well with your half. Our neighbors at Phoenix above, and Yuma below, are cultivating what was a common field, they all being in the Gila Valley, and we present you their testimony as to their productions. Water rights are now selling at Yuma freely at \$250 per acre.

In fact, the evidence we give you is convincing beyond question, not only that we have land equal to California, but *superior to California, and that our seasons are from three to six weeks in advance of those of California, and the fruits superior in quality*, due to the fact that all fruit-raisers will recognize—we have no fogs and little or no rain during the ripening of the fruits.

The following extracts from the Irrigation Edition of the Chronicle of June 17th, 1891, show the wonderful jump in land values from the moment water is a possibility; of the Bear Valley lands it says:

These lands furnish a marked illustration of the immense increase in values brought about through irrigation. So long as there was no prospect that they would ever be supplied with water they could not be sold for as much as \$5 an acre. Just as soon as it was demonstrated that water could be put on them they were eagerly bought up at \$20 to \$40 an acre, and as soon as the plans were made for putting the water on the land thousands of acres were sold at from \$60 to \$100. Before a drop of water was actually in sight, over 8000 acres had been sold at the range of prices mentioned, and the value has been steadily increasing ever since.

## ALESSANDRO DISTRICT.

Prior to the organization of the district and the discovery of a feasible source of supply, this land was slow or almost impossible of sale at from \$5 to \$10 an acre. As soon as it was learned that water could be obtained the price went to \$50, and now that water has been put on the land, the selling price is \$100 to \$150 an acre. Yet the water cost but \$30 an acre.

## COME TO ARIZONA.

There are thousands who would better their condition a thousand fold if they would come here where they could reasonably expect to succeed in life.

If the reader of these lines is strong, able-bodied, energetic, full of hope and not afraid to work, Arizona offers better inducements than does any other new country.

"There is a tide in the affairs of men that, taken at the flood, leads on to fortune." The tide that leads most men to fortune is, beginning at bed-rock, and growing up with the country.

The possibilities of Arizona are just beginning to be known, and when once known her development will be rapid.

Having climatic conditions similar to those of Southern California, but better, our pioneers will have the benefit of their experience, and be able to accomplish more in five years than they did in ten.

It is the invariable custom of writers to refer to all arid lands as a desert, and to magnify those features which might in a measure justify its being so classed.

This is not warranted by the facts. The bare appearance of unirrigated lands is in no sense due to any lack of fertility, but entirely to the light winter rainfall, which is frequently insufficient to mature even hay or grain crops; these lands are simply *dormant not desert*. The so-called American desert will, wherever water can be obtained for it, eventually disappear before the enterprising irrigator.

Corn may be king in Iowa and Kansas, cotton in Mississippi and Georgia, whiskey in Kentucky, but in Arizona king water wears a more honored crown, and sits more firmly on his throne than any monarch in the world.

"RAMONA, CAL., July 18, 1888."

"DEAR SIR: In compliance with your request, I herewith submit to you my views of the Salt River Valley, agriculturally, horticulturally, and viticulturally. It may be granted without argument, or appeal to historic records, or the proofs furnished in various parts of the world at the present time, that the country, which is a natural wheat country, producing a fair yield of average quality of wheat, is one that is capable of supporting a very large population to the acreage; and if should be added to this a capacity of producing the other cereals in equal excellence, a greater value necessarily attaches to such a country, and its lands must in time increase in value and its owners in wealth and importance. That quality of land and climate which produces good wheat may be then considered as forming the solid basis on which the natural wealth can be founded; and just in proportion as it is capable of producing

other products of value, either of necessity or luxury, is its natural wealth increased. *Only a small area of the cultivable world produces the higher soil productions, which may be considered luxuries as far as the maintenance of human life is concerned, and yet have by reason of their general introduction and use become necessities, the deprivation of which would make the lives of civilized men almost intolerable.*

“Now, to the practical man, what are the facts presented for his consideration respecting the Salt River Valley?

“First. The climatic conditions are not excelled anywhere; the temperature, either in summer or winter, is faultless, and the health of its people could not be improved. There are no malarious conditions to produce fevers in summer, nor are those rapid changes incidental and common to other parts of America in winter, producing colds, pneumonia and consumption, present at Phoenix and Salt River Valley. The excessive heat of the summer months is more imaginary than real, being in fact not as hot as it is in many parts of the Sacramento, San Joaquin and upper portions of Napa or Sonoma Valleys of California, and in no wise equaling the Mississippi Valley. The quality of the temperature, being entirely dry, makes even the hottest day tolerable in the open sun, while a lower temperature in any of the Eastern States or Canada would not only be intolerable, but dangerous to human life.

“Second. I have seen wheat growing under the very best conditions, in the finest wheat producing sections of America, and am familiar with the records of competing sections in Europe, Asia, and Egypt, and have no hesitation in asserting that Salt River Valley surpasses the world in its wheat production, both in quality and quantity. With equal truth can I say the same as to its barley and rye. Kern Island, in Kern County of this State, is acknowledged to be the best alfalfa section in California, and yet, in comparison with the production of the Salt River Valley, it cannot be considered. **HORTICULTURALLY CONSIDERED, THE SALT RIVER VALLEY I BELIEVE EXCELS ANY OTHER PORTION OF THE WORLD known to civilized man.** Every variety of fruit tree I saw growing showed such evidence of luxurious health as are not observable in any other section that I am familiar with, personally or by statistics. A close examination of the growing trees failed to show any disease due to climatic or soil conditions, and as to insect pests that are so troublesome and injurious elsewhere, you are entirely from them.

Third. **THE VITICULTURAL POSSIBILITIES OF YOUR SECTION ARE BEYOND ANY MAN'S COMPREHENSION.** From all the evidences furnished me by the growing vines, I must say here is the natural home of the vine, for they attain a greater size in the short space of two years than they do in this State in five years, the yield corresponding to their growth and size.

“The irrigating facilities are not excelled anywhere, and this system of agriculture, which insures the laborer against all loss by reason of the uncertainty of the seasons, can be more economically followed in the Gila Valley than anywhere in Europe or America.



Considering every factor that goes to make a country great and prosperous, I believe you are more particularly blessed than any other portion of the world's surface. All that Egypt can claim in the way of natural advantages, which made her the granary of the world for ages, you may also claim in greater abundance, and while civilization had its origin in the Nile by reason of its agricultural conditions, it should have its highest achievement in the Gila Valley for the same reason.

Very truly yours,

J. DE BARTH SHORB."

The Lower Gila Valley, where the Gila Bend Canal and lands are situated, is but the continuation in a southwesterly direction of the Salt River Valley, and is more beautiful, freer from frost and freezing, and will produce its fruit crops some weeks earlier in the season.

The following extract from a report on American irrigation to the Governor of the Australian colony of Victoria, made by the Hon. Alfred Deakin, M. P., Chairman of the Royal Commission on Water Supply, 1884-85, is one made after most thorough investigation, and certainly with no intention of overstating our American industries. It is full of good sense and good suggestions:

"FRUIT RAISING BY IRRIGATION.

"But the products for which irrigation is most necessary, and in which it yields the largest, are grapes and fruit. When irrigation is employed, the production is almost wholly in the hands of small proprietors—MEN OF SOME EDUCATION AND SOME CAPITAL who have found an attractive field for the exercise of their intelligence in bringing small allotments into a condition of high productiveness.

"Judging by the results obtained in Southern California, to which this class of cultivation is as yet chiefly confined, it has not proved an unprofitable speculation.

"TWENTY ACRES UNDER VINES OR FRUIT ARE PREFERRED TO 160 ACRES UNDER GRAIN. There is more regular employment and more regular leisure, with less stress at a particular season for adult labor. An acre in raisins was reckoned as valuable as five acres of wheat, when the price of wheat was nearly twice as much as it is now.

\* \* \* \* \*

The lemon tree is more tender than the orange, and hence the acreage suitable to lemon culture is more limited than that which is adapted to the orange. So far as the crop is concerned, however, the lemon has an advantage over the orange because it is largely picked in November and December, before the heavy frosts are liable to come, while the orange hangs on the tree all winter, and is therefore subject to all the cold weather that we liable to have.

A location with a suitable climate having been found, the question of water becomes important—very important. The Dutchman's statement, relative to his lager beer, is applicable in this connection. He said: "Too much lager beer is shust right," and the man who

gets too much water for his orange or lemon orchard will some day discover that it is just right. If you have too much water you don't have to use it, but if you don't have enough the situation is a serious one.

Our Arizona soil is, as a rule, naturally rich, and hence does not need as much fertilizing as does the clear, sandy soils of Florida, and yet the man who attempts to raise either oranges or lemons without the free use of the best fertilizers makes a costly mistake. As well might a man attempt to eternally check against a bank account without making any deposits. A man who attempts to draw either upon the soil or the bank without making deposits equal to his drafts will soon find that his drafts in either case will be dishonored.

Get a good place to put both trees and fertilizers and do not forget the latter if you would expect the former to prove a good investment.

"In a few years fruit culture promises to become the chief industry in the farming valleys of Arizona. There are few countries that possess the soil and climate so well suited to the business. Already farmers are discovering that there is more money in fruit than in raising of grains and grasses. The rapid growth and marvelous yield is a prime factor in inducing people to engage in the pursuit.

It is unsatisfactory to talk about profits. There is a case on record of \$1800 an acre; Riverside can furnish proofs of \$1000, \$1100 and \$1200 an acre; but it would be very difficult to get at the average net profit. If I had capital I would not hesitate to offer for all bearing, complete, well cared for orchards of good varieties, \$300 per acre in advance for the next ten years, or \$3000 cash per acre for the property. For ten years to come I believe choice oranges will bring good prices. If the growers are not fools they will get their just share of the profits.

The fact that these lands lay immediately along this great transcontinental railroad is of itself a great advantage to settlers.

It is impossible to insist too strongly on the great advantages of being in the Gila Valley, 500 miles nearer the eastern market than Southern California. Fruit being carried through the Indian desert from California is exposed to intense heat by which great loss is often incurred, while twelve hours from Gila Bend will carry fruit to cooler weather. As it can be shipped in the cool hours of the night, it need not be exposed to heat at all. This advantage added to the fact that fruit matures in Arizona from four to six weeks earlier than in California, establishes the claim of the Gila Valley to the pre-eminence over all other places for successful fruit culture.

The Special Committee of the U. S. Senate, Report 928, Part I, May 5, 1890, page 60, after seeing Southern California, and all the arid and irrigable region, say of these Gila Valley lands:

*"Within our border there cannot be found a soil so uniformly fertile and so capable of varied production under irrigation as that of the valleys of the Gila, Salt and Santa Cruz rivers, in southern and central Arizona."*

Enough data has been obtained to warrant the assertion that the lower Gila Valley will be the great citrus belt of Arizona, possibly of the United States. A large tract of over 100,000 acres of the very choicest of this land is now being placed upon the market for settlement and improvement. This large body of land is a high and level mesa, or tableland, having an elevation of 750 feet above sea level and from 100 to 200 feet above the waters of the Gila river. The surface is smooth and level, with just enough fall toward the river to admit of perfect irrigation. No leveling is necessary, a very important feature where irrigation is required.

The soil is a warm chocolate-colored, sandy or gravelly loam, recognized by the highest authority to be the best soil in the world for the production of the orange to perfection. Soil of this character is much more easily worked, and is believed to require less water than the heavier clay or adobe soils.

The water supply is obtained from the Gila river through a canal some forty miles in length, and large enough to carry water sufficient to irrigate 120,000 acres.

In countries where irrigation is a necessity, the projectors of the water systems are too often either short-sighted or else governed by selfish motives to such a degree that they limit the supply of water to the smallest amount possible necessary to produce a crop, which, in every instance, is a mistake that must sooner or later be remedied. There *must* be an abundant water supply, if good results are to be obtained.

A water franchise, or right, under this system consists of one cubic foot per second continuous flow with each 160 acres of land, or almost an inch to three acres, which is considered to be an ample supply for all purposes.

By comparing with the following figures it will be seen that the supply is liberal, and is more than in many of the most successful irrigated colonies.

Hon. Alfred Deakin, M. P., chairman of the Royal Commission on Water Supply, 1884-85, in his report to the governor of the Australian colony of Victoria, gives the following data :

“ Taking the flow of one cubic foot to the second without making allowances for differing rainfalls, this supplies San Gabriel, Cal., 120 acres ; Fresno, Cal., 160 ; India, 150 to 200 acres ; Los Angeles and Anaheim, Cal., rather over 200 acres ; Riverside, Cal., nearly 300 acres ; Ontario, Redlands, Cal., Algeria and parts of India, 400 acres ; Sierra Madre, Cal., 580 acres ; Spain, as high as 1,000 acres ; Pasadena, Cal., 1,665 acres, and by sub-irrigation, according to one or two experiments, from 1,500 to 9,000 acres.”

This great difference can be accounted for, first, by the different character of soils ; second, by the difference of crops ; and, thirdly, by difference in judgment of its use. A sandy soil will take more than a clay soil, and some crops more than others.

It is believed that one cubic foot per second to 160 acres is an ample allowance in Arizona.

One cubic foot of water per second to 160 acres is the amount that the company have decided upon for present use.

In an acre of ground there are 43,560 square feet. At one cubic foot a second it would, therefore, take 43,560 seconds to flood the land one foot deep,  $43,560 = 726 = 12\frac{1}{10}$  hours for one acre  $\times 160$  acres would take  $160 \times 12\frac{1}{10} = 1,936$  hours, equal to  $80\frac{2}{3}$  days to be flooded one foot deep. In one year 160 acres would receive as many feet of water as  $80\frac{2}{3}$  days is to 365 days, or  $4\frac{1}{2}$  feet of water per year. In fruit orchards not exceeding one-half of the land is flooded. *What is flooded would, therefore, receive nine feet of water per year.*

This is a perpetual water right deeded with the land, and not separable from the land upon which it becomes attached.

The Southern Pacific Railroad crosses these lands, two stations being under the line of the canal — Gila Bend and Painted Rock — the former being the end of a division and an eating station.

The Santa Fe system is now building a road from a station on the Atlantic and Pacific to Phoenix, and it is fully believed that by the time that point is reached they will continue on down through this valley to some point on the coast, and, in doing so, will pass through the lands of this company. The development of these lands will create a vast amount of business for the railroad, and other towns will also spring up to accommodate the settlers upon the vast body of land between these two stations, which are eighteen miles apart; and should the Santa Fe Railroad cross the Southern Pacific over these lands, it would not be a wild assertion to predict that the largest city of Arizona would grow up at that point, which would, without question, become the county seat of a new county that could be sliced from this overgrown county and hardly be missed, a result that would be better for both the old and the new.

These mammoth-like counties must eventually be divided into smaller, and the sooner it is done the better. Along the line of the canal at different points water power can be obtained for electric light plants, ice or other manufacturing purposes.

The whole tract of land will be carefully laid out with broad streets and avenues, and some of the principal drives will be graded this winter, and double rows of beautiful semi-tropical trees planted on either side.

MR. WM. S. LYON, Los Angeles.—The olive makes a good street tree, its foliage being a beautiful green which does not carry the dust, and it can be trimmed several feet from the ground as it matures without necessarily marring its beauty. Its longevity is proverbial and its drouth resisting qualities are well known; besides these virtues it has a commercial value in its fruit. The English walnut is only perfect under favorable conditions. It cannot withstand a drouth, and unless cared for and in a deep loamy soil, many of the outer branches die. Neglected trees in Los Angeles do not do well.

Some varieties of Eucalypti are in every way superior to the pepper as a shade tree, with none of its objections. They afford a variety and beauty of bloom that would in a short time beautify our streets and highways and afford a comforting shade for man or beast.

## A Few Questions Answered.

1. What is the climate? Semi-tropical, with little or no frost, and moderate rainfall in the winter.

2. What is the summer temperature? In June, July and August from 90 to 110 degrees, with occasional extremes of 115 to 118 degrees, with cooler nights, but not the great change so noticeable in California.

3. Are sunstrokes frequent? They are never known.

4. How does the same degree of heat affect one in Arizona as compared with other States? A temperature of 95 degrees in the Atlantic States has an effect far more prostrating and dangerous to comfort and life than 115 degrees in Arizona.

5. What is the cause of this difference? The dryness of the atmosphere.

6. How are lung or throat troubles affected? Favorably; they are alleviated in the worst cases, and cured in most others.

7. To what productions is the climate adapted? Citrus and deciduous fruits, grain, hay, vegetables, sugar cane, sugar beets and cotton.

8. What are the principal characteristics of the soil? Alluvial deposits in the low lands; decomposed granite on the mesas.

9. What hay crops are raised? Alfalfa and barley; alfalfa being the most productive, which, with proper irrigation, is cut from five to eight times during the season, yielding six to ten tons of superior hay, worth from \$6 to \$10 per ton.

10. What are the principal fruits grown? Citrus and deciduous.

11. What are citrus fruits? The citron, lime, lemon, orange and kindred fruits.

12. What are deciduous fruits? Apple, pear, peach, plum, apricot, nectarine, fig, grapes and other leaf shedding fruits.

13. What is the leading market fruit? The orange and the raisin.

14. Is the acreage to orange culture being enlarged? It is, and very rapidly.

15. Is there not danger of over-production? The orange crop of 1891, estimated at 130,000,000, would barely give each person in the United States an orange once in six months. With the rapidly increasing home market, and displacement of imported fruit, a hundred fold increase of orange production in the next ten years will not equal the demand. The area of land capable of producing oranges, lemons and raisins, is very limited. That in California is already developed, except a little that will hereafter be irrigated at an expense of hundreds of dollars per acre. In southern Arizona, New Mexico and Texas, there are not properly more than 1500 or 2000 square miles with suitable climate and soil, and with water within an available distance.

16. How about over producing in other fruits? The same line of reasoning and estimate leads to the same conclusion. The fruit business is but in its infancy.

17. What can good orange land be bought for? Good orange land in California is worth from \$100 to \$500 per acre, yet we are offering what we have reason to believe is as good orange land at \$20 per acre—only until these lands become known, when they will advance to their true value.

18. You ask what makes this difference in value? Quality of soil, climatic conditions, proximity to town and railroad, and lastly, the reputation of the location.

19. What is the cost per acre of setting out an orange orchard? For preparation of ground, trees and labor, of setting out, from \$100 to \$150 per acre.

20. Is the cost decreasing? It is; owing to improved methods slightly, but mainly to reduced cost of trees as the supply increases.

21. What is the cost of caring for a producing orchard? From \$20 to \$25 per acre annually.

22. How many years after planting before the orange tree begins to bear? Three to five years.

23. What is the value of the product per acre after the tree begins to bear? At present prices, from \$75 to \$100 after the fourth year, and after the seventh or eighth year from \$300 to \$400 depending upon circumstances.

24. What do older orchards pay? At twelve to fifteen years of age and upwards from \$500 to \$800, and occasionally \$1,000 per acre?

25. Is the orange tree hardy? It is one of the hardiest fruit trees.

26. Are the profits as large on other fruits? The lemon promises to rival the orange in some localities.

27. How do the Arizona oranges compare with California and Florida oranges? Some of the finest oranges in the United States have been grown near Phoenix in this valley, where they ripen from four to six weeks earlier than in California, thus avoiding competition with the California orange, and the land near Gila Bend are much freer from frost and produce earlier than those near Phoenix.

28. For what are olives grown? For pickles and oil. The olive industry is yet in its infancy, but bids fair of being, before many years, one of the leading branches of horticulture in Southern California and Arizona.

29. What are the leading and most profitable varieties of deciduous fruits raised? Apricots, peaches, grapes, prunes and figs. The raisin grape is grown to perfection, and the drying is done in the sun, producing a raisin equal to the finest imported product.

30. What is the leading nut crop? The almond; it matures and fruits earlier here than in any other part of the United States. No other tree requires so little care or expense.

31. What are the inducements materially for immigration to Arizona? The very low price of land with water, and the certainty of large returns under proper care and cultivation.

32. Why should Southern California and Arizona become the fruit packing center of the world? Because it produces its own

tin and sugar, and its fruit is of the best quality. The completion of the Nicaragua canal will provide cheap transportation to the markets of the east and the world.

33. How many acres of good land with water will support an average family comfortably in Arizona? Fifteen to twenty.

34. What inducements are offered to the dairyman? Dairy products find a ready market at higher prices. Alfalfa and vegetables are easily raised, and make the best of feed.

## Come to Arizona.

WHY SHOULD THE EMIGRANTS DO SO?—REASONS SET FORTH WHY HE AS WELL AS THE CAPITALIST SHOULD SETTLE IN THE TERRITORY—WHY THE EMIGRANT SHOULD COME TO ARIZONA.

Because the soil is fertile and prolific.

Because land is abundant and cheap.

Because a home can be made with little labor.

Because so great a variety of products can be grown.

Because there are chances for a poor man which he can never hope to find in older countries.

Because the country is advancing, and property values are increasing.

Because it does not require a small fortune to secure a piece of land.

Because capital does not block all the avenues to wealth, nor crowd the poor man to the wall.

Because Uncle Sam has yet in Arizona many farms waiting for occupants.

Because schools, churches, newspapers and railroads are fast developing the moral and material elements of the territory.

Because this country is one of the few regions of the United States that yield the products of the temperate and semi-tropic zone.

Because the worker receives a fair compensation for his labor, and the "rustler" has a field for the display of his energy and enterprise.

Because there are neither blizzards nor tornadoes, earthquakes nor inundations, snow-storms nor cyclones.

Because the vast and varied resources of the country are yet to be developed.

Because the wealth of its mines, its farming valleys, its grazing lands, and its forests, will yet build up a great and prosperous state.

Because a man can make a livelihood here with less labor than in any part of the United States.

Because there is health in every breeze, and strength and vigor under its cloudless skies.

Because the settler need not spend a life-time in felling trees and grubbing out stumps.

Because the products of its coal fields and forests will find a profitable market in its towns and mining camps.

Because the profits from its stock ranges are more than in any other portion of the union. Because there is a demand for additional facilities for ore reductions.

# Meteorological Record

—OF—

## GILA BEND VALLEY Arizona.

### August, 1889.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	94	110	100	
2	98	111	102	
3	98	110	104	
4	92	110	102	.15
5	94	108	100	
6	97	102	90	
7	92	102	94	
8	90	102	96	
9	92	102	98	
10	94	106	90	
11	88	109	102	
12	96	110	104	.20
13	88	104	90	.20
14	86	101	96	
15	92	104	94	.30
16	78	92	86	
17	84	100	94	
18	88	98	86	
19	84	100	92	
20	86	102	94	
21	88	106	98	
22	94	108	96	
23	92	100	94	
24	86	102	92	
25	90	104	96	
26	88	106	94	.08
27	90	108	98	
28	92	106	96	
29	90	106	94	
30	90	102	92	
31	88	98	86	.05

Mean.....99.....103.....94.....  
Total rainfall, .98

### September, 1889.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	82	96	90	
2	86	104	92	
3	88	102	94	
4	90	100	92	
5	88	98	90	
6	86	100	86	
7	80	96	90	
8	82	94	86	
9	80	96	88	
10	82	97	86	
11	80	94	84	
12	86	100	88	
13	82	96	80	
14	72	88	78	
15	74	90	76	
16	72	94	90	
17	82	96	84	
18	78	94	86	
19	80	92	76	
20	74	94	82	
21	72	90	80	
22	74	92	72	
23	82	96	80	
24	70	84	78	
25	68	80	72	
26	66	76	90	
27	64	80	74	
28	70	82	72	
29	68	84	74	
30	70	90	96	

Mean.....80.....92.....84.....  
No rain.



## October, 1889.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	88	98	86	
2	90	107	92	
3	92	104	94	
4	90	102	96	
5	90	100	94	
6	88	96	90	
7	80	90	78	
8	70	88	82	
9	68	80	64	
10	60	75	64	
11	60	80	78	
12	66	76	68	.04
13	62	70	64	.07
14	60	70	64	.06
15	60	74	64	
16	60	70	64	
17	60	70	64	
18	60	70	64	
19	60	70	64	
20	62	76	64	
21	62	76	66	
22	64	76	66	
23	62	74	64	
24	64	76	66	
25	62	74	64	
26	64	76	66	
27	62	74	64	
28	60	70	66	
29	58	68	64	
30	56	66	62	
31	54	64	60	

Mean.....67.....79.....73.....  
Total rainfall, .05

## November, 1889.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	56	64	60	
2	52	62	58	
3	50	60	56	
4	48	58	54	
5	46	56	50	
6	44	54	48	
7	42	60	54	
8	50	66	60	
9	54	70	54	
10	48	66	54	
11	48	68	54	
12	48	66	54	
13	48	66	54	
14	48	66	54	
15	46	64	52	
16	52	66	56	
17	50	70	60	
18	56	70	66	
19	60	74	66	
20	54	68	60	
21	52	66	60	
22	54	72	60	
23	56	72	64	
24	56	72	64	
25	56	68	58	
26	52	64	60	
27	56	70	62	
28	58	70	69	
29	60	74	68	
30	58	72	66	

Mean.....51.....56.....58.....  
No rain.

## December, 1889.

DATE	7 A.M.	2 P.M.	9 A.M.	RAIN
1	58	72	66	.04
2	58	70	64	
3	62	76	62	
4	64	76	64	1.4
5	64	76	64	
6	66	70	64	
7	60	70	62	
8	54	66	58	
9	50	64	60	
10	54	64	60	
11	52	66	58	
12	50	64	60	
13	54	64	60	.05
14	60	64	62	
15	62	65	60	
16	54	64	60	
17	52	60	58	
18	52	62	58	
19	48	60	56	
20	44	56	54	
21	46	56	56	
22	48	58	54	
23	58	58	54	
24	50	58	54	
25	50	58	54	
26	52	60	56	
27	58	66	56	.05
28	46	56	50	
29	42	54	50	
30	44	54	48	
31	44	54	48	

Mean.....53.....55.....57.....  
Total rainfall, 2.35

## January, 1890.

DATE	7 A.M.	2 P.M.	9 A.M.	RAIN
1	42	52	46	
2	40	50	44	
3	42	52	52	
4	50	60	56	
5	50	60	54	
6	50	56	48	
7	42	54	50	
8	48	54	52	
9	44	50	46	
10	44	56	54	
11	42	50	44	
12	36	50	42	
13	36	50	44	
14	38	50	46	
15	38	50	42	
16	34	50	48	
17	42	54	48	
18	42	52	46	
19	44	54	48	
20	36	52	46	
21	40	52	46	
22	40	52	46	
23	42	60	54	
24	40	60	54	
25	46	64	58	
26	54	64	54	
26	56	68	62	
28	58	68	62	
29	56	66	60	
30	56	66	64	
31	56	63	60	

Mean.....43.....59.....50.....  
No rain.

## February, 1890.

DATE	7 A.M.	2 P.M.	9 A.M.	RAIN
1	52	62	56	
2	52	62	56	
3	50	60	56	
4	50	60	56	
5	54	66	62	
6	52	64	60	
7	54	62	58	
8	46	66	60	
9	48	64	60	
10	48	66	60	
11	44	60	56	
12	46	60	56	
13	42	58	54	
14	50	60	54	
15	44	62	58	
16	44	66	62	
17	50	64	62	
18	52	64	62	.02
19	50	64	60	
20	54	66	62	
21	64	60	50	
22	48	54	54	
23	48	58	56	.02
24	48	58	54	
25	42	60	56	
26	48	62	58	
27	46	56	50	
28	34	56	54	

Mean ..... 48..... 61..... 56.....  
Total rainfall, .04

## April, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	56	66	60	
2	52	66	64	
3	60	76	70	
4	62	82	74	
5	62	82	76	
6	62	82	76	
7	72	82	76	
8	60	72	76	
9	60	84	78	
10	70	84	78	
11	74	84	80	
12	68	86	76	
13	66	86	76	
14	62	88	78	
15	68	82	76	
16	60	80	74	
17	58	80	74	
18	64	82	76	
19	66	74	70	
20	58	76	73	
21	60	80	74	
22	58	78	84	
23	60	80	74	
24	62	80	74	
25	60	82	74	
26	64	84	75	
27	66	86	80	
28	64	90	80	
29	70	88	80	
30	70	84	70	

Mean ..... 63..... 81..... 74.....  
No rain.

## March, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	42	62	58	
2	48	66	62	
3	50	70	60	
4	50	70	60	
5	56	64	68	
6	60	80	72	
7	62	75	70	
8	62	68	62	
9	50	62	58	
10	44	62	56	
11	46	60	54	
12	48	64	58	
13	48	68	60	
14	56	74	66	
15	56	74	66	
16	50	76	68	
17	52	76	70	
18	60	76	65	
19	60	64	60	
20	50	68	60	
21	54	76	70	
22	58	80	70	
23	58	78	72	
24	60	80	72	
25	60	80	68	
26	56	72	66	
27	52	74	68	
28	56	78	74	
29	58	78	70	
30	58	74	70	
31	58	66	62	

Mean ..... 54..... 71..... 65.....  
No rain.

## May, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RA
1	64	84	80	
2	64	88	82	
3	68	88	82	
4	68	98	83	
5	70	92	80	
6	70	94	86	
7	74	84	70	
8	66	82	76	
9	68	82	78	
10	70	86	80	
11	68	84	76	
12	68	88	82	
13	70	90	82	
14	76	90	84	
15	74	92	88	
16	74	98	92	
17	78	98	94	
18	64	100	92	
19	80	98	92	
20	80	98	92	
21	90	98	88	
22	84	94	96	
23	80	94	86	
24	80	96	90	
25	80	100	92	
26	80	102	90	
27	83	94	92	
28	76	88	80	
29	74	86	78	
30	74	92	86	
31	78	92	86	

Mean ..... 93..... 91..... 84.....  
No rain.

## June, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	74	94	84	
2	72	92	84	
3	76	90	82	
4	74	92	84	
5	76	96	86	
6	82	100	90	
7	86	96	92	
8	90	104	94	
9	83	104	94	
10	82	100	94	
11	82	102	94	
12	74	102	94	
13	84	100	90	
14	80	98	90	
15	80	96	90	
16	82	100	90	
17	86	102	90	
18	82	98	90	
19	78	98	90	
20	84	98	92	
21	78	94	88	
22	80	96	90	
23	78	96	96	
24	78	96	94	
25	82	98	90	
26	80	100	88	
27	78	98	90	
28	78	98	92	
29	80	100	96	
30	90	104	96	

Mean.....83.....97.....90.....  
No rain.

## July, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	90	102	98	
2	90	104	98	
3	90	106	98	
4	92	102	100	
5	92	102	98	
6	92	102	100	
7	92	104	102	
8	88	104	102	
9	90	104	90	
10	86	96	88	
11	82	92	90	
12	86	98	96	
13	90	102	98	
14	88	104	100	
15	90	100	96	
16	90	104	100	
17	90	100	90	
18	90	100	100	.4
19	88	94	90	.1
20	80	94	88	
21	86	100	96	
22	90	106	100	
23	94	106	100	
24	92	102	92	
25	94	103	91	
26	94	110	94	
27	90	106	98	
28	91	100	96	
29	91	102	96	
30	90	102	96	
31	90	90	90	

Mean.....89.....101.....96.....  
Total rainfall, 1.04

## August, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	88	96	90	
2	82	86	86	.1
3	84	90	82	1.8
4	80	88	88	
5	78	90	90	.1
6	84	92	92	
7	86	98	92	
8	89	96	92	.2
9	88	88	86	.4
10	82	94	88	
11	84	86	82	
12	82	88	84	
13	80	94	86	
14	84	94	86	
15	86	92	86	
16	84	98	90	
17	86	102	94	
18	86	102	94	
19	88	104	94	
20	88	100	90	
21	88	96	88	
22	84	90	84	
23	86	98	90	
24	86	100	96	
25	86	88	86	.1
26	80	90	88	
27	82	94	88	
28	84	98	86	
29	88	96	88	
30	86	96	80	.3
31	78	90	86	

Mean.....84.....93.....87.....  
Total rainfall, 3.9

## September, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	84	96	90	
2	86	96	92	
3	86	102	86	
4	86	98	88	
5	88	86	94	
6	88	96	80	
7	80	92	86	
8	86	98	88	
9	90	98	90	
10	80	98	90	
11	86	98	92	
12	86	98	92	
13	80	102	90	
14	86	100	90	
15	82	98	88	
16	86	96	88	
17	82	88	82	
18	89	84	90	
19	78	90	84	
20	82	94	84	
21	78	92	80	
22	76	96	80	
23	84	96	80	
24	86	94	80	
25	76	92	80	
26	74	98	82	
27	82	98	82	
28	81	92	82	
29	82	92	80	
30	74	88	74	

Mean.....81.....92.....85.....  
No rain.

## October, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	74	88	74	
2	74	88	74	
3	76	88	80	
4	70	76	70	
5	66	80	74	
6	66	80	76	
7	64	84	78	
8	70	86	80	
9	70	86	80	
10	70	74	72	
11	64	72	70	
12	58	78	76	
13	58	78	68	
14	58	70	72	
15	56	74	72	
16	66	84	74	
17	66	84	74	
18	66	84	76	
19	66	84	76	
20	64	84	76	
21	66	80	72	
22	62	82	76	
23	74	82	76	
24	66	84	70	
25	68	86	74	
26	70	88	78	
27	78	88	76	
28	70	84	76	
29	66	86	76	
30	64	86	76	
31	64	86	76	

Mean.....70... 83.... 78....  
No rain.

## November, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	62	84	74	
2	62	84	74	
3	60	82	74	
4	68	80	72	
5	66	82	76	
6	62	80	76	
7	74	82	70	
8	66	64	58	.6
9	58	64	58	
10	50	64	58	
11	50	66	62	
12	56	66	60	
13	56	66	60	
14	54	64	58	
15	50	66	56	
16	52	66	58	
17	52	62	56	
18	56	64	56	
19	60	70	68	
20	64	74	68	
21	60	72	66	
22	62	72	68	
23	64	72	68	
24	64	72	68	
25	64	72	66	
26	64	72	64	
27	62	72	64	
28	60	70	64	
29	56	70	64	
30	62	77	64	

Mean.....58.... 75.... 64....  
Total rainfall, .6

## December, 1890.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	60	70	60	
2	52	66	60	
3	56	66	62	
4	58	64	62	
5	58	62	56	
6	54	58	54	
7	52	58	56	
8	52	62	60	.6
9	60	62	60	
10	60	62	60	
11	60	64	60	
12	60	62	60	
13	56	64	54	
14	50	62	60	
15	52	62	58	
16	56	66	62	
17	60	68	62	
18	60	66	62	
19	60	60	62	
20	52	66	62	
21	52	68	62	
22	56	68	62	
23	56	68	62	
24	56	68	62	
25	56	68	62	
26	58	66	62	
27	56	66	62	
28	62	70	64	
29	62	66	62	
30	62	62	60	.5
31	54	60	54	

Mean.....52.... 67.... 60....  
Total rainfall, 1.1

## January, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	46	58	50	
2	46	56	50	
3	46	58	52	
4	46	50	54	
5	48	56	52	
6	48	60	52	
7	42	56	48	
8	42	52	46	
9	40	54	46	
10	38	56	46	
11	38	52	46	
12	40	52	50	
13	48	56	50	
14	38	60	48	
15	50	54	48	
16	40	58	52	
17	50	66	54	
18	52	60	56	
19	54	64	58	
20	46	64	56	
21	46	64	56	
22	46	64	56	
23	50	64	54	
24	44	62	54	
25	48	62	52	
26	44	64	54	
27	44	60	52	
28	46	54	52	
29	50	50	52	
30	46	58	48	
31	42	60	52	

Mean.....45.... 59.... 52....  
No rain.

## February, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	44....	60....	56....	
2....	48....	60....	56....	
3....	50....	62....	56....	
4....	48....	62....	58....	
5....	54....	62....	58....	
6....	54....	62....	58....	
7....	48....	62....	58....	
8....	52....	54....	48....	
9....	40....	54....	46....	
10....	36....	58....	50....	
11....	36....	58....	48....	
12....	40....	58....	48....	
13....	42....	64....	56....	
14....	48....	66....	60....	
15....	50....	70....	62....	
16....	60....	64....	60....	
17....	56....	62....	60....	
18....	60....	64....	58....	1.1
19....	56....	64....	54....	.2
20....	52....	60....	56....	
21....	52....	64....	58....	
22....	50....	60....	58....	
23....	50....	60....	58....	1.3
24....	54....	60....	54....	
25....	48....	60....	54....	
26....	44....	58....	56....	
27....	46....	60....	58....	
28....	54....	66....	60....	

Mean.....49.... 62.... 55....  
Total rainfall, 2.6

## April, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	52....	70....	62....	
2....	54....	72....	62....	
3....	56....	78....	68....	
4....	66....	78....	68....	
5....	62....	82....	72....	
6....	64....	78....	70....	
7....	60....	76....	68....	
8....	60....	70....	64....	
9....	56....	74....	68....	
10....	60....	82....	72....	
11....	60....	78....	70....	
12....	58....	74....	68....	
13....	58....	74....	68....	
14....	60....	72....	66....	
15....	58....	72....	86....	
16....	60....	74....	70....	
17....	60....	70....	62....	
18....	56....	68....	64....	
19....	58....	72....	66....	
20....	60....	76....	72....	
21....	66....	84....	74....	
22....	70....	88....	76....	
23....	29....	90....	80....	
24....	72....	86....	76....	
25....	72....	84....	76....	
26....	68....	86....	80....	
27....	70....	92....	82....	
28....	76....	94....	84....	
29....	74....	92....	82....	
30....	78....	94....	84....	

Mean.....65.... 81.... 71....  
No rain.

## March, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	62....	72....	64....	
2....	64....	73....	66....	
3....	56....	68....	62....	
4....	59....	68....	60....	
5....	56....	66....	60....	
6....	54....	62....	54....	
7....	46....	60....	50....	
8....	44....	58....	54....	
9....	48....	66....	58....	
10....	50....	68....	62....	
11....	56....	70....	64....	
12....	58....	68....	64....	
13....	58....	66....	62....	
14....	58....	72....	64....	
15....	60....	72....	64....	
16....	62....	72....	66....	
17....	56....	72....	64....	
18....	56....	72....	65....	
19....	64....	72....	66....	
20....	62....	76....	70....	
21....	60....	78....	70....	
22....	62....	76....	70....	
23....	62....	52....	60....	
24....	58....	68....	60....	
25....	56....	70....	62....	
26....	55....	72....	62....	
27....	56....	78....	65....	
28....	58....	72....	64....	
29....	54....	65....	58....	
30....	54....	66....	58....	
31....	52....	70....	64....	

Mean.....56.... 69.... 63....  
No rain.

## May, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	72....	90....	84....	
3....	74....	90....	84....	
3....	74....	86....	80....	
4....	70....	90....	82....	
5....	72....	90....	86....	
6....	78....	94....	86....	
7....	80....	96....	86....	
8....	80....	86....	80....	
9....	74....	88....	80....	
10....	76....	88....	82....	
11....	70....	80....	76....	
12....	70....	84....	78....	
13....	68....	80....	78....	
14....	68....	80....	78....	
15....	82....	80....	76....	
16....	68....	84....	78....	
17....	70....	88....	80....	
18....	72....	88....	80....	
19....	72....	86....	80....	
20....	70....	78....	72....	
21....	72....	80....	76....	
22....	70....	82....	76....	
23....	72....	84....	78....	
24....	72....	84....	80....	
25....	70....	90....	82....	
26....	74....	90....	82....	
27....	74....	86....	80....	
28....	74....	88....	82....	
29....	74....	84....	78....	
30....	74....	84....	82....	
31....	74....	84....	80....	

Mean.....72.... 85.... 80....  
No rain.

## June, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	68	80	74	
2	66	76	74	
3	68	78	76	
4	72	86	80	
5	72	90	84	
6	74	94	86	
7	80	94	90	
8	75	96	88	
9	76	92	86	
10	80	96	90	
11	80	94	86	
12	80	90	84	
13	76	90	82	
14	76	86	80	
15	76	88	82	
16	80	94	86	
17	80	96	86	
18	80	94	90	
19	82	94	90	
20	82	94	88	
21	83	96	90	
22	84	98	92	
23	84	96	94	
24	84	98	92	
25	84	96	94	
26	84	100	94	
27	86	98	94	
28	86	102	96	
29	86	106	98	
30	92	104	98	

Mean . . . . . 79 . . . . . 93 . . . . . 87 . . . . .  
No rain.

## August, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	88	100	98	
2	90	102	98	
3	92	102	98	
4	92	106	100	
5	92	104	100	
6	90	104	98	
7	86	102	98	
8	88	102	98	
9	90	100	96	
10	88	98	98	
11	86	96	92	
12	88	98	92	
13	88	102	96	
14	88	98	86	
15	86	92	90	
16	82	96	94	
17	84	92	94	
18	88	96	94	
19	86	98	94	
20	86	102	96	
21	88	102	96	
22	86	102	98	
23	88	104	98	
24	90	102	100	
25	90	100	98	
26	90	102	98	
27	90	102	98	
28	90	100	96	
29	90	100	96	
30	88	100	94	
31	90	96	94	

Mean . . . . . 89 . . . . . 100 . . . . . 96 . . . . .  
No rain.

## July, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	90	100	98	
2	90	106	98	
3	92	102	98	
4	94	104	98	
5	92	104	100	
6	92	104	100	
7	92	100	94	
8	86	98	92	
9	80	100	94	
10	84	98	92	
11	84	98	92	
12	86	100	96	
13	88	102	94	
14	88	106	98	
15	90	102	100	
16	94	106	102	
17	94	106	102	
18	96	106	102	
19	94	110	104	
20	96	108	102	
21	94	104	98	
22	96	108	102	
24	94	110	102	
25	102	108	102	
26	92	104	96	
27	98	98	96	
28	90	104	98	
29	92	104	100	
30	98	104	98	
31	90	102	98	

Mean . . . . . 91 . . . . . 104 . . . . . 98 . . . . .  
No rain.

## September, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1	90	98	94	
2	86	100	96	
3	90	98	94	
4	88	100	94	
5	88	100	94	
6	90	102	96	
7	88	102	96	
8	90	104	96	
9	90	106	98	
10	90	100	94	
11	86	98	92	
12	86	96	92	
13	78	94	88	
14	78	96	90	
15	80	94	90	
16	76	88	84	
17	76	90	86	
18	74	88	82	
19	72	90	82	
20	74	90	84	
21	80	80	80	
22	80	84	84	
23	68	86	78	
24	70	84	78	
25	70	80	76	
26	70	82	78	
27	72	90	82	
28	72	90	82	
29	80	92	90	
30	80	90	82	

Mean . . . . . 81 . . . . . 93 . . . . . 87 . . . . .  
No rain.

## October, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	70	78	70	
2....	60	76	68	
2....	60	76	70	
4....	70	90	76	
5....	74	88	78	
6....	70	90	80	
7....	82	90	82	
8....	52	90	80	
9....	80	90	82	
10....	74	90	84	
11....	94	88	82	
12....	76	88	82	
13....	73	86	80	
14....	76	88	82	
15....	70	86	80	
16....	70	84	78	
17....	68	82	78	
18....	72	86	60	
19....	74	88	80	
20....	72	88	78	
21....	70	86	80	
22....	70	86	80	
23....	70	88	80	
24....	70	88	78	
25....	68	86	74	
26....	68	86	74	
27....	70	86	74	
28....	70	86	74	
29....	70	88	72	
30....	72	86	74	
31....	70	84	72	
Mean....	73	86	77	No rain.

## November, 1891,

DATE	7 A.M.	2 P.M.	7 P.M.	RAIN
1....	70	80	72	
2....	70	80	70	
3....	68	78	70	
4....	66	82	72	
5....	66	84	74	
6....	68	80	74	
7....	68	78	70	
8....	66	72	64	
9....	60	68	62	
10....	58	70	60	
11....	60	74	66	
12....	58	72	62	
13....	58	74	66	
14....	60	74	70	
15....	58	72	60	
16....	50	66	56	
17....	52	68	62	
18....	50	66	58	
19....	50	66	60	
20....	48	64	54	
21....	48	64	54	
22....	50	66	56	
23....	50	64	56	
24....	48	62	56	
25....	48	62	56	
26....	52	66	60	
27....	52	66	58	
28....	54	70	60	
29....	56	74	62	
30....	56	64	56	
Mean.....	57	70	63	No rain.

## December, 1891.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	50	65	60	
2....	57	66	64	
3....	52	58	54	
4....	48	62	60	
5....	48	56	46	
6....	32	52	44	
7....	42	54	46	
8....	36	58	46	
9....	32	58	43	
10....	32	56	52	
11....	50	56	48	
12....	46	56	50	
13....	42	58	52	
14....	46	60	50	
15....	48	62	52	
16....	48	64	54	
17....	48	64	54	
18....	46	62	52	
19....	44	60	52	
20....	46	60	52	
21....	44	58	50	
22....	42	54	46	
23....	36	52	44	
24....	36	50	42	
25....	30	46	36	
26....	30	46	40	
27....	34	54	46	
28....	44	56	46	
29....	46	58	48	
30....	50	62	56	.25
31....	50	56	46	
Mean.....	43	57	49	

Total rainfall. .25

## January, 1892.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	40	42	38	
2....	44	56	54	
3....	48	56	54	
4....	50	60	56	
5....	46	62	54	
6....	50	62	58	
7....	50	62	56	
8....	50	62	54	
9....	50	62	52	
10....	44	60	52	
11....	42	58	52	
12....	32	54	46	
13....	36	50	42	
14....	32	50	44	
15....	34	56	46	
16....	36	56	52	
17....	50	54	50	
18....	46	54	48	
19....	48	56	48	
20....	54	64	52	
21....	54	64	54	
22....	46	66	56	
23....	48	68	58	
24....	54	68	58	
25....	56	70	58	
26....	54	66	60	
27....	58	64	58	1.15
28....	60	66	60	.32
29....	56	62	60	.5
30....	60	60	58	
31....	56	58	56	.9
Mean.....	48	60	53	

Total rainfall. 2.77

February, 1892.

DATE	7 A.M.	2 P.M.	7 P.M.	RAIN
1....	50....	60....	56....	
2....	50....	60....	56....	
3....	50....	58....	56....	
4....	52....	60....	58....	
5....	50....	56....	48....	.75
6....	48....	56....	50....	.15
7....	48....	56....	50....	.45
8....	46....	56....	50....	
9....	46....	56....	52....	
10....	46....	56....	52....	
11....	50....	64....	56....	
12....	52....	64....	58....	.60
13....	54....	62....	56....	.25
14....	54....	62....	58....	.10
15....	54....	62....	58....	
16....	52....	66....	60....	
17....	54....	66....	60....	
18....	54....	66....	58....	
19....	56....	68....	62....	
20....	56....	68....	62....	
21....	56....	68....	62....	
22....	58....	70....	64....	
23....	58....	74....	66....	
24....	58....	74....	66....	
25....	60....	76....	64....	
26....	56....	68....	64....	
27....	56....	70....	64....	
28....	58....	74....	64....	
29....	60....	76....	68....	

Mean.....53.... 64.... 58....  
Total rainfall, 2.3

March, 1892.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	60....	76....	68....	
2....	60....	68....	62....	
3....	60....	62....	58....	.30
4....	56....	62....	58....	
5....	58....	64....	58....	.41
6....	56....	64....	60....	
7....	58....	66....	62....	
8....	60....	68....	64....	
9....	60....	70....	66....	
10....	62....	74....	68....	
11....	64....	78....	70....	
12....	66....	80....	72....	
13....	68....	80....	72....	
14....	64....	76....	70....	
15....	62....	74....	66....	
16....	60....	70....	64....	
17....	60....	72....	66....	
18....	58....	74....	68....	
19....	60....	72....	66....	
20....	58....	68....	60....	
21....	54....	68....	60....	
22....	52....	68....	60....	
23....	54....	68....	60....	.40
24....	52....	68....	60....	
25....	54....	70....	62....	
26....	56....	72....	64....	
27....	58....	74....	66....	
28....	58....	64....	58....	
29....	50....	66....	62....	
30....	50....	72....	60....	
31....	50....	62....	54....	

Mean. ....58.... 59.... 63....  
Total rainfall, 1.11

April, 1892.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	50....	66....	58....	
2....	54....	64....	56....	.33
3....	56....	62....	58....	
4....	54....	62....	56....	
5....	56....	66....	60....	
6....	58....	70....	62....	
7....	60....	74....	66....	
8....	64....	80....	70....	
9....	68....	84....	74....	
10....	70....	86....	74....	
11....	70....	88....	76....	
12....	68....	86....	72....	
13....	66....	84....	70....	
14....	68....	86....	72....	
15....	68....	86....	76....	
16....	66....	82....	76....	
17....	62....	72....	66....	
18....	60....	68....	64....	
19....	58....	70....	62....	
20....	56....	72....	66....	
21....	58....	76....	68....	
22....	60....	78....	70....	
23....	62....	86....	74....	
24....	64....	84....	76....	
25....	68....	86....	80....	
26....	70....	82....	74....	
27....	66....	82....	76....	
28....	64....	84....	76....	
29....	66....	86....	78....	
30....	72....	84....	76....	

Mean.....62.... 78.... 70....  
Total rainfall, .33

May, 1892.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	70....	84....	74....	
2....	68....	76....	70....	
3....	70....	82....	68....	
4....	64....	74....	66....	
5....	62....	74....	66....	
6....	60....	78....	68....	
7....	62....	74....	66....	
8....	60....	76....	70....	
9....	62....	80....	74....	
10....	66....	84....	76....	
11....	68....	86....	78....	
12....	70....	82....	76....	
13....	68....	86....	74....	
14....	68....	82....	76....	
15....	70....	86....	78....	
16....	70....	84....	80....	
17....	78....	94....	82....	
18....	78....	96....	84....	
19....	80....	96....	86....	
20....	80....	96....	88....	
21....	84....	96....	90....	
22....	82....	94....	88....	
23....	84....	96....	86....	
24....	82....	96....	88....	
25....	82....	96....	90....	
26....	82....	90....	86....	.20
27....	78....	88....	83....	
28....	76....	90....	84....	
29....	78....	94....	86....	
30....	80....	92....	86....	
31....	78....	94....	86....	

Mean.....73.... 87.... 80....  
Total rainfall, .20

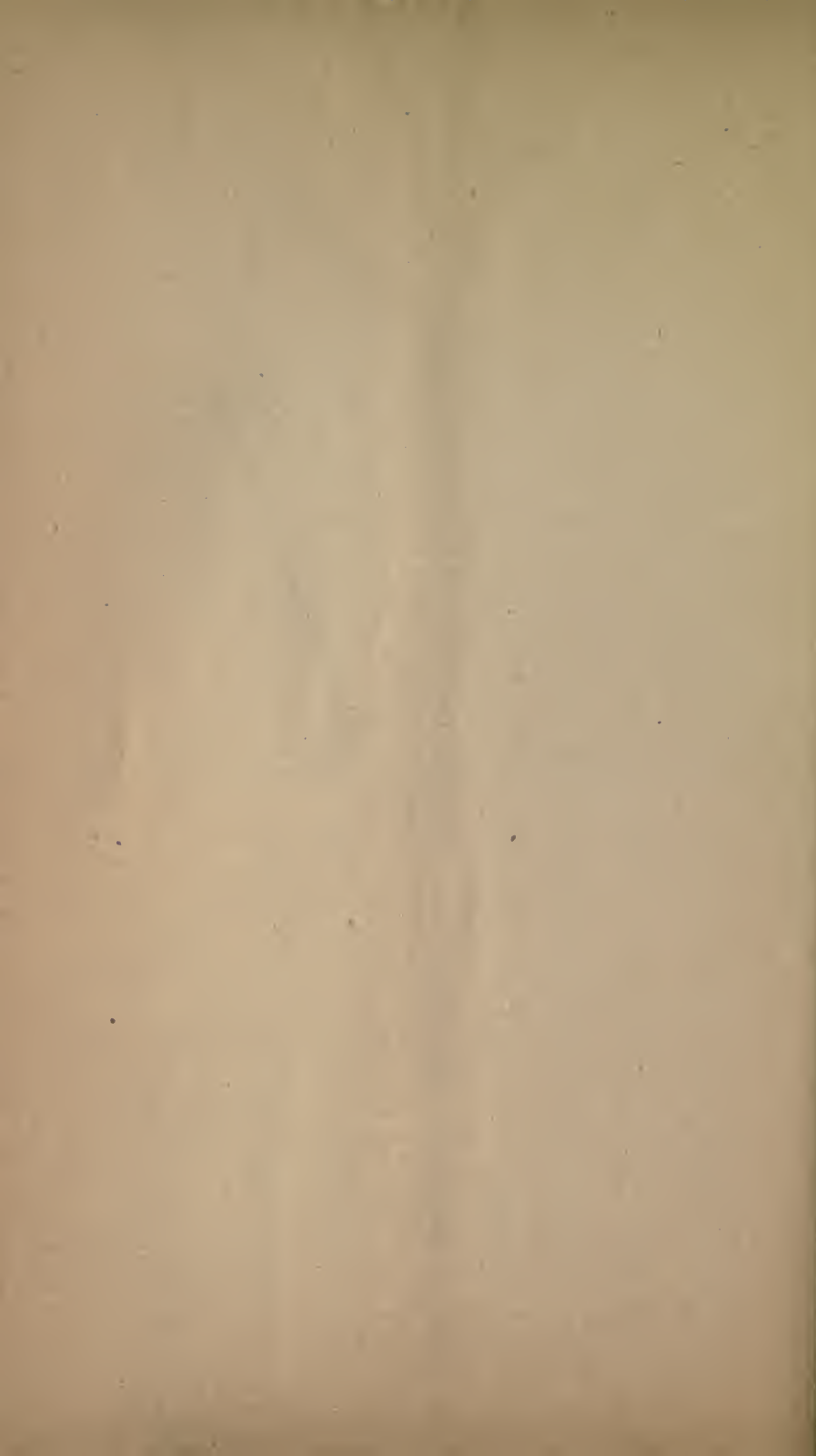


## June, 1892.

DATE	7 A.M.	2 P.M.	9 P.M.	RAIN
1....	78....	100....	90....	
2....	80....	100....	90....	
3....	80....	96....	82....	
4....	74....	90....	82....	
5....	76....	92....	82....	
6....	78....	96....	88....	
7....	80....	96....	88....	
8....	78....	94....	86....	
9....	74....	80....	92....	
10....	66....	78....	76....	
11....	70....	82....	78....	
12....	70....	84....	78....	
13....	74....	90....	84....	
14....	76....	88....	80....	
15....	78....	90....	80....	
16....	76....	90....	84....	
17....	78....	96....	90....	
18....	82....	104....	94....	
19....	86....	102....	96....	
20....	88....	108....	98....	
21....	86....	106....	96....	
22....	82....	104....	90....	
23....	82....	98....	90....	
24....	80....	98....	90....	
25....	80....	102....	96....	
26....	94....	110....	98....	
27....	90....	104....	98....	
28....	94....	108....	100....	
29....	90....	106....	98....	
30....	92....	108....	100....	
Mean.....	80....	97....	85....	
		Total rainfall,	.00	

## July, 1892.

DATE	7 A.M.	2 P.M.	9 A.M.	RAIN
1....	92....	110....	100....	
2....	94....	108....	102....	
3....	92....	106....	100....	
4....	94....	106....	100....	
5....	94....	96....	92....	.25
6....	94....	100....	92....	.18
7....	88....	106....	94....	
8....	90....	106....	98....	
9....	88....	98....	96....	
10....	98....	106....	94....	
11....	90....	108....	94....	
12....	88....	106....	96....	
13....	92....	100....	94....	
14....	90....	104....	96....	
15....	88....	106....	96....	
16....	86....	102....	100....	
17....	90....	104....	96....	
18....	88....	104....	98....	
19....	90....	104....	98....	
20....	90....	104....	98....	
21....	90....	108....	98....	
22....	90....	106....	98....	
23....	94....	100....	98....	
24....	88....	98....	92....	
25....	84....	96....	92....	
26....	82....	100....	90....	
27....	78....	100....	92....	
28....	82....	102....	84....	
29....	80....	102....	81....	
30....	84....	108....	98....	
31....	90....	106....	100....	
Mean.....	88....	103....	96....	
		Total rainfall,	.43	







J.W. FRANKS & SONS  
PR.S. LITH'OS. ENGRS  
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1872 J







