RECLAIMING THE DESERT: THE SALT RIVER VALLEY OF ARIZONA: BY FORBES LIND-SAY: NUMBER THREE

GES before the coming of the white man to America, a civilization flourished, waned and died in the Valley of the Salt River, leaving only ruins and misty traditions to perpetuate the memory of its existence. Phoenix, the capital of Arizona, derives its name from the fact that it was built upon the site of an ancient city. Between it and Tempe a huge quadrangle of debris surrounded by a hundred broken piles mark the remains of the central citadel and the main buildings of a Toltec town whose name has long since been forgotten. A few miles distant is “Los Muertos”—City of the Dead. Throughout the Valley are to be found traces of pueblos that ceased to be occupied centuries ago, and the lines of canals which their inhabitants used for transportation and the irrigation of the lands that yielded crops of corn and lentils. In the dim past this Valley supported a population of many thousands in comfort and comparative luxury. What became of them, why they abandoned their fertile fields and flourishing towns we do not know. But this rich region, once again blossoming into a garden spot, was allowed to relapse into desert waste, and when the Spanish passed through it presented so repellant an aspect that they deemed it uninhabitable.

Generation after generation left undisturbed the vast wealth locked in the soil of this Valley. The Indians shunned it for a ghost-ridden country. The white man called it “The Land that God Forgot,” and saw no gleam of promise in its desolation. At length some prospector, unsuspecting of the Aladdin’s lamp he was bringing into play, turned water on the thirsty land and scattered a few handfuls of seed. The earth responded with such bounteous celerity that the dullest mind could not fail to realize its marvelous richness. Here and there a miner, weary of the unsuccessful search for gold, built a hut on the riverside and dug a rude ditch through which to lead the water out upon the land. In the early sixties settlers began to come into the valley in numbers. Irrigation was extended and by degrees attained to pretentious dimensions. But the means at the command of these pioneers would not permit of the construction of permanent works. In seasons of flood the river swept away their dams and broke down the walls of their canals. Many settlers abandoned their holdings in despair and others embarrassed themselves in the effort to raise sufficient money for the construction of an adequate irrigation system.
CATTLE FEEDING NEAR PHOENIX, WHICH IS THE CAPITAL OF THE SALT RIVER VALLEY.

A TYPICAL SCENE AT SHEARING TIME IN THE BEAUTIFUL ARIZONA VALLEY.
A PALM BORDERED CARRIAGEWAY LEADING TO A DWELLING IN PHOENIX.

AN IRRIGATION DITCH IN THIS REGION WHICH HAS THE BEAUTY OF A CENTURIES-OLD RIVER.
OSTRICH FARMING IS HIGHLY PROFITABLE IN THE SALT RIVER VALLEY.

A COOL AND PLEASANT SPOT IN WHICH TO PACK UP A LARGE ARIZONA MELON CROP.
THE CAPITOL AT PHOENIX, BUILT OF VOLCANIC TUF A ON A FOUNDATION OF NATIVE GRANITE.

HOME OF MR. DWIGHT B. HEARD, BUILT NEAR PHOENIX, SALT RIVER VALLEY.
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At the beginning of the present century about two hundred thousand acres of land were held in the Salt River Valley by farmers who derived splendid crops from it but suffered periodical loss from floods and saw no means of remedying their condition. When the Reclamation Service, after looking over the ground, undertook to harness the unruly river and regulate the flow of water so that every acre should have just as much as necessary and no more, the dwellers in the Salt River Valley embraced the offer of assistance on the terms laid down. They formed themselves into an association to cooperate with the Government, agreed to pay for the works in the same manner as do homesteaders on the ordinary irrigation projects and to dispose of their land in excess of the maximum unit prescribed by the Secretary of the Interior. Thus it happens that although there is no public land in the Salt River Valley, settlers with moderate capital can secure fine farms on easy terms and at prices that will permit of one hundred per cent. return in three or four years. Such lands enjoy perpetual water rights and permanent interest in the electrical power which is generated and distributed as part of the system.

The irrigation system is already furnishing a considerable supply of water and will be completed before the close of next year. It is designed to irrigate with unfailing regularity two hundred thousand acres. At a cost of six million dollars it will make the district, of which Phoenix is the geographical, commercial and social center, the best irrigated valley in the world. The main features of the system are the lofty Roosevelt Dam and enormous Tonto Reservoir, the power plant and power canal, a transmission line to Phoenix and, probably, another to Prescott, several auxiliary power plants and electrically operated pumps, the Granite Reef Diversion Dam and headworks, and the extensive network of canals and laterals.

From the outset, the operation has been beset by great difficulties and unusual conditions. The manner in which these have been met and overcome afforded early evidence of the energy and resourcefulness of the Reclamation Service engineers. The Roosevelt Dam, which is the key to the system, is situated at a spot that was considered well-nigh inaccessible and at a distance of more than sixty miles from the nearest railroad. The first step of necessity was to construct a wagon road on easy grades across the desert and into the mountains that the heavy machinery and material used in the work might be hauled in. This, one of the most remarkable highways in existence, was built by the labor of Apaches and with the financial assistance of the community, which bonded itself to the extent of seventy thousand dollars for the purpose. Large quantities of lumber
were needed in the operation. The nearest source of supply was a national forest thirty miles away. Sawmills were erected, a lumbering town was created and means of transportation established. For the construction of the Roosevelt Dam two hundred and forty thousand barrels of cement were required. To convey the material to the spot from the nearest factory in California would have made its cost approximate six dollars a barrel, adding materially to the total outlay on the project. In the face of this almost prohibitive condition the engineer in charge displayed his versatility by prospecting in the character of geologist and found limestone not far from the site of the great dam. A cement mill was put up and has produced an excellent and ample supply at a cost of little more than two dollars a barrel, representing in the aggregate a saving of something like one million dollars to the water users of the Valley. The labor problem was solved by inducing the Indians to take up the work. They have proved to be apt and faithful laborers, performing hard toil under conditions that no white man could endure. The difficulty of provisioning the army of men employed in the operation was met by running several irrigated farms, and here, again, a large saving was effected.

WHAT has been said will give some idea of the diverse qualifications the Reclamation Service demands of its project engineers. Aside altogether from the highest technical ability, each one of them must be a man of the utmost resource and originality. He must have tact, executive talent and some knowledge of law. In order to deal with the varied and sometimes conflicting interests involved, he must exercise a happy combination of firmness and tact. He must have some experience of social economy and be something of an architect. He must be a man of keen imagination and indomitable energy—an optimist from whose vocabulary the word “impossible” has been cut out. Such men as this are few and hard to find. Their services could not be secured in consideration of the modest salaries offered by the Government, but a sufficient inducement is found in the fact that a great deal of the work of the Reclamation Service is unique and unprecedented in engineering. Consequently some of the best men in the profession enter the Service for the sake of the experience and the reputation to be derived from it. The Roosevelt Dam, located about seventy miles northeast of Phoenix, will shut in the canyon of the Salt River by means of a solid wall of masonry, rising to a height of nearly two hundred and eighty feet above bed-rock. This massive structure will impound the waters of the stream and form the largest artificial lake in the world, having
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an area of more than sixteen thousand acres. The Tonto Reservoir will be twenty-five miles in length and two hundred feet in depth, containing enough water to flood the State of Delaware to a depth of almost a foot. The power canal flanks the reservoir for a distance of nineteen miles and drops its water through a penstock cut in the solid rock at the dam with a fall of over two hundred feet, operating several huge turbines.

The power feature of this project is a highly important factor in its utility. The immediate plans contemplate the development of twelve thousand horse power. One-third of this quantity will be used in raising for irrigation purposes water which underlies about one hundred thousand acres in the Valley. The balance of it will be sold and a ready market for it exists. The first demand upon it will be made by the towns within the irrigated district for the purpose of developing mechanical industries, serving public utilities and providing domestic conveniences. Whatever surplus the water users have to dispose of the neighboring mining centers will take at good prices. The sale of this power will greatly reduce the net cost of the irrigation system, which in the gross will amount to about thirty dollars per acre.

At GRANITE Reef, a short distance below the junction of the Salt and Verde rivers, an immense concrete diversion dam with headgates has been completed. In length upward of one thousand feet, it stretches across the composite stream and diverts its waters into the main canal. This dam takes the place of seven inadequate structures which were built by private interests for the same purpose. The Granite Reef diversion works are the largest and most substantial in existence and wrest from India the palm for excellence in structures of this kind.

The Government irrigation system in the Salt River Valley will embrace a compact area of two hundred thousand acres of land, all of which is extremely fertile. Phoenix, the capital of the Territory, Tempe and Mesa, flourishing towns, together with a number of smaller places, lie within this district which is reached by both the Southern Pacific and Santa Fé railroads. The Valley is undergoing a great development, and in the course of a few years it will be completely occupied by small farms given over to intensive cultivation. Here, in addition to an extremely rich soil, the settler has the advantage of ready markets, good transportation facilities and inviting social conditions. Prospective home seekers should fully understand that there is no land in the Valley to be secured by entry. In later years districts contiguous to the present project will probably be
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brought under irrigation, but until such improvement is definitely
decided on it would be unwise to file upon them. The soil of this
region is of little value without water. "Dry farming" is sometimes
advocated but is a somewhat slender reed to depend upon. With
the approaching completion of the Government works prices of land
are rising, but at present the best of it can be secured at an average
of one hundred dollars an acre, and at this figure it is undoubtedly
cheap. Purchases can usually be effected by the payment of one-
third down and the balance in easy instalments at eight per cent.
interest.

The Salt River Valley is not a favorable point of immigration
for the man without means if home-making is his prime object, but
mechanics of all kinds and farm-hands constantly command good
wages. However, a little money, combined with good health and
energy, will go farther toward securing competency and happiness
in this section than almost anywhere else. Here fifteen acres is quite
large enough to furnish the support of a family and leave a yearly
margin of saving. A man possessing two thousand dollars can estab-
lish himself on such a tract with assurance of success. Let us sup-
pose that he makes a cash payment of one thousand dollars and gives
a mortgage for five hundred. With the balance he can build a com-
fortable, though small, house and buy the stock and implements neces-
sary to the working of the farm. At the end of the first year his place
should be in good condition and probably show some profit; at the
end of the second he should be able to pay off his mortgage, or the
greater part of it. After five years of intelligent effort he will have
a respectable bank account and be in a position to build a commo-
dious residence. As an alternative to buying outright there is the
plan, which has much to recommend it, of renting land for a short
term of years with an option of purchase.

In the Salt River Valley the settler finds a semi-tropical climate,
free from the enervating condition of humidity, and a soil rich in all
the ingredients favorable to plant life. The fertility of soil depends
entirely upon its content of soluble matter that plants can absorb.
The official chemical analyses show that the sandy and gravelly loam
of Maricopa County, in which the irrigated tract lies, contains upward
of twenty-five per cent. of soluble matter. The significance of these
figures may be gathered from the statement that the cultivated lands
of New England average but seven per cent. of soluble matter and
in Europe extensive areas are farmed where the ingredients in question
form no more than three per cent. of the composition of the soil.
The rich alluvial deposit of the Salt River Valley covers its entire

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extent to a depth that renders it absolutely inexhaustible for centuries to come.

STRIKING as are the foregoing comparisons, they pale in the light of the showing made by the tract of thirty thousand acres lying around the little town of Glendale, situated a few miles west of Phoenix. The soil of this section contains the most extraordinary proportion of soluble and insoluble matter known to science. Government tests of specimens taken at depths varying from six to six hundred feet show an average of nearly fifty per cent. soluble matter without the presence of any injurious substance. In the center of this tract of marvelous soil a large sugar factory has been erected at a cost of one million dollars, in anticipation of the beet culture to which a large portion of this land will be devoted. The industry is certain to become a highly important one in this Valley, where it is possible to run a factory during ten months in the year as compared with eighty days in the rain belt. The average yield here is sixteen tons of sugar from an acre of beets, and in the humid sections, nine tons.

It is needless to enumerate the crops that may be raised in the Salt River Valley. They include everything that grows in a semitropical climate and almost anything that can be produced in the temperate regions. It will be more to the purpose to give a few illustrations of successful farming that are selected haphazard from a wealth of such data.

James Davis of Mesa City raises beets the year round and they return him four hundred dollars an acre. He realized one hundred and thirty dollars from one-quarter acre of potatoes and sixty dollars from one-eighth acre of green peas, which were marketed in February. H. B. Lehman, of Glendale, devotes himself almost exclusively to raising chickens, a business that can be extensively carried on with five acres of ground. Last year this rancher derived twenty-two hundred dollars from poultry that cost him less than nine hundred dollars to raise.

It is a common practice for the Salt River Valley farmers to sow to barley and alfalfa in November and to pasture the land in the early months of the year. In May the first crop of hay is cut and two more cuttings are made later on, leaving a good supply of winter pasture. Forty acres treated in this manner yield one thousand dollars profit.

Cattle and sheep raising in the Valley show almost incredible returns. Money invested in these industries is often doubled in a single year. Another highly profitable field of endeavor is ostrich farming. The birds seem to thrive in this region better even than in
their native environment. The number of ostriches in the Valley exceeds the aggregate of those to be found elsewhere in the United States. The flock of a single ranch comprises over one thousand head. Its output of feathers represents thirty thousand dollars annually. The principal food of the bird is alfalfa, of which it eats about forty pounds a day. After it is six months old the ostrich is subjected to three pluckings a year, from each of which twenty dollars' worth of feathers are derived. A chick is worth one hundred dollars, and a pair of four-year old birds, eight hundred.

Perhaps there lingers in the mind of the reader a prejudice against Arizona, derived from the old-time stories of "bad men" and blood-thirsty Indians. All that is changed. In the Salt River Valley is a community whose moral status is quite as high as that of any community in the State of New York. The law is observed and very little force is required to maintain it. Gambling is prohibited and excessive drinking is not practiced. In Phoenix there are few saloons, the extraordinarily high license rendering the business almost prohibitive. The Valley enjoys ample educational facilities, good mail service, telephone system, and highways. With the development and application of the electric power many improvements will be effected, including the establishment of an electric railroad line traversing the farm land and connecting the centers.

**SONG**

A DEAD girl stirred beneath the grass,
And lo! a blossom blew;
And we who watched the Spring's old joy
A double wonder knew.
Flowers are the voices of the dead
Calling to me and you.

O living language, fragrant still,
Though Winter hushed your sound,
How magical your old words seem
As the glad years wheel round!
If from our lips such perfume flows,
Who fears the quiet ground?

*Charles Hanson Towne.*