

# REPORT OF COMMITTEE

APPOINTED BY THE

PHOENIX  
AND MARICOPA COUNTY  
BOARD OF TRADE

AT ITS REGULAR MEETING, APRIL 10, 1900, TO INVESTIGATE  
THE

WATER SUPPLY  
OF THE SALT RIVER VALLEY

AND TO REPORT ON HOW IT CAN BEST BE INCREASED.

## HISTORY OF IRRIGATION.

Irrigation, or the art of watering lands for agricultural purposes by artificial means, was practiced before history and prior to tradition. It had its birth in the needs and necessities of mankind. The cradle of human existence was placed in an arid region, similar in many respects to Arizona. The hot dry winds smote the struggling vegetation, causing it to wither and die. The sun rose and set in clear skies and there was no change, for every day was the same. The Patriarchs gathered their flocks and herds around some timid spring, or ancient well, and "all the country round about" was theirs, because of the possession of all the water.

As the years went by, the people began to increase and multiply, together with their herds and flocks. The country was explored for more water and journeys were undertaken into distant parts. Thus, the people became scattered and the country settled. With increase of flocks came prosperity and wealth, which brought ease and content and love of the land that enriched. Then followed the wish to remain in the land of their hearts desire, and permanent improvements were made. Homes were built and wells were dug, from which the patient, plodding oxen laboriously raised the precious water in rude buckets made of skins, whence it was poured into tiny trenches which conducted it to the thirsty soil.

Thus, was begun the village system with its society features and co-operation.

Coming on down through years and years of struggle and warfare and tardy progress we stand upon the shores of the new world and see an Indian village with numerous tents gleaming like polished spearheads. Camp fires are lazily smoking. Herds of ponies are feeding near. Men are carving with much labor and infinite care their rude implements of warfare, or sleeping neath the forest shade, while women, like beasts of burden, are packing great ollas of water upon their heads with which to moisten their tiny patches of garden.

Historians differ much as to what people first practiced the art of irrigation. Some claim the honor belongs to the Egyptians: some the Armenians; some the East Indians, and others the Chinese. Still others aver that the art was conceived by the Incas of Peru; others the Nahuatl nations, which include the Toltecs and Aztecs of Central America, Mexico and Arizona. The exact date has never been determined, and probably never will be. Moreover, to any one other than the antiquarian it does not matter.

What more concerns us is the fact that the art has been practiced in all ages and with success, and that such systems of water storage as are now in use and in contemplation in the Salt River Valley have brought wealth and content to millions in ages past.

Another lesson to be learned and prized, is the fact that where

the science of irrigation was carried to its highest perfection, there the arts and industrial pursuits were most perfect and elaborate, and inestimably higher than the civilization of the degenerate races who inhabit those regions today.

It is not the intention of this report to go deeply into the history of the art of irrigation in all the ancient countries of the world, but no history of the subject would be complete without touching upon the system as practiced in the Salt River Valley in pre-historic times.

#### HISTORY OF IRRIGATION IN ARIZONA.

In Arizona are found remains of ancient canals, which with their laterals are nearly a thousand miles in length. One of the largest of these canals takes the water from the south side of the Salt River about 25 miles east of the present city of Phoenix. This canal runs for many miles through hard volcanic rock. The evidence of the immense amount of labor expended in the construction of this canal, which runs many miles through hard volcanic formations that must have been excavated solely by the chipping process, is plain upon the face of the rock itself. While other evidence is found in the vast number of worn out stone axes and hammers along the sides of the canal.

The storms and winds of ages had almost filled this old canal, when it was discovered by a party of Mormons who cleaned away the accumulated debris and restored it to its original purpose and usefulness, thus converting the barren wastes along its sides into fertile alfalfa fields and orchards. This canal is now known as the Mesa canal, and supplies Mesa City and vicinity with water for irrigation and other purposes. About two miles east of the Mesa canal, but on the north side of the river is the starting point of the great Arizona canal—the largest in the southwest, if not on the Pacific coast, carrying as it does nearly 50,000 inches of water. The location and direction of this great ditch was also suggested by the remains of a pre-historic canal that could be traced for many miles, and the promoter of the new enterprise, in the firm belief that what had been done could be done again under like conditions, had the pleasure of seeing completed a water way which reclaimed over 100,000 acres in and around the city of Phoenix.

Portions of this canal have been reclaimed, but those parts which modern civilization has not touched are still so distinct that their depressions may be traced without difficulty for some 50 miles, while between it and the Gila River, in the lands which were formerly irrigated from it, can be found the relics of ancient civilization in profusion, not only in the shape of ruined buildings, but in pottery, stone implements, weapons, ornaments, etc.

"The Acequa of the painted rocks," which is found about 40 miles west of the Arizona canal and a few miles below the junction of the Salt River with the Gila, is even of more interest than those already mentioned.

The location of this ditch is proof of the excellent judgment exercised by the ancient inhabitants, inasmuch as it commences where it can take from the Gila, not only the waters of that stream,

but also, the water of the canals lying north and east of it.

The question naturally arises, how great was the skill and ingenuity this pre-historic people possessed in their day? The best skill and science of modern intelligence has been unable to improve on the lines of these ruined canals. The selection of the location from which the water was taken from the rivers exhibit the greatest intelligence and judgment. It was these ancient ruins that gave the idea in the early 70's to the few hardy settlers then in the Territory of reclaiming the valleys where now exist a large and prosperous population. The first canal simply followed the line of the pre-historic ones.

Judging from the extension of the ancient irrigation system, the Salt River Valley at one time must have supported a population of more than 500,000 people, who irrigated and cultivated some two or three hundred thousand acres of land. What has been done in the past may be accomplished again.

It is impossible, of course, to ascertain with any degree of certainty whether our pre-historic brothers had at their command greater quantities of water than we possess. We know the sources of water were the same then as now, but whether the precipitation was greater is a question impossible of demonstration. There seems to be no satisfactory evidence of the existence of pre-historic reservoirs.

The probabilities are that they had no more water than we now possess, but that they exercised greater skill and judgment in its use. It is highly probable too, that while the estimates of the best judges are correct as to the vast population existing in the valley, they are wrong as to the amount of land cultivated. A very small patch of ground is sufficient, if properly cultivated, for the maintenance of a family, and as there are no evidences of the accumulation of vast herds and flocks, and as there could not have been an extensive commerce with other nations, it is unreasonable to suppose that more land was cultivated than would be required to produce the necessary subsistence. Probably 200,000 acres would more than supply their necessities.

However, the solution of this problem is not so important as satisfactory answers to two questions that more directly concern us, viz :

#### QUERIES.

1. How may we increase our present water supply?
2. How may we best husband the surplus waters so as to make them available during seasons of scarcity?

Disguise the fact as we may, it is nevertheless true that we have reached a period of stagnation in local agricultural progress. We can go no farther forward under present conditions. Neither can we stand still, for while we may be satisfied to let present conditions alone, believing, as is undoubtedly true, that our beautiful valley even in its misfortunes is better than the fortunes of other localities; yet, we cannot forever keep this valley to ourselves. There are others who are willing to share our misfortunes, and they have as much right to live here as we have, and every acre of new land that

is cultivated but reduces the amount of water available for the older farms.

Stagnation, then, means annihilation. A languid interest in this most important subject means industrial consumption.

#### **FACTS.**

These facts stare at us and will not down :

1. That the present water supply is entirely inadequate to present demands.
2. That we have reached and exceeded the maximum acreage that can be irrigated under existing conditions.
3. That all the available water in the streams and lakes has been utilized.
4. That every year brings an increased population with whom the present supply of water must be shared.
5. That each year the situation must grow worse, until we are in the same condition as our Pima neighbors, who are now starving where once they revelled in plenty.

These facts are distressing, but true. There is no use in dodging them; they must be met and fought to a finish.

#### **HOW TO INCREASE THE WATER SUPPLY.**

Now, in answer to the first question at the beginning of this section, viz : How may we increase our water supply? we have two solutions :

1. By the creation and protection of forest reserves in our vast drainage districts. It is the supposition that the more trees and vegetation in a given district, the greater the precipitation. When our water-sheds are denuded of their forests and perennial grasses, and miles upon miles of barren waste and unshaded rocks are left exposed to the direct rays of a tropical sun, not only are they deprived of that which invites and coaxes the rain from the heavens, but the bare ground presents a most excellent radiating surface which transforms the surrounding atmosphere into a dry, hot blanket, so that when currents of saturated air are wafted from the ocean there are no cool breezes to meet and wring from them their blessings.

The accumulation of humus on the forest floor—the litter of twigs and dry leaves, the carpets of moss and lichen, the grasses and larger undergrowth—all tend to retard the flow of rain and melting snows and to assist percolation. The slower the water moves the more it is soaked up by the earth and the longer the streams are fed. The forest shade is helpful because it hinders the melting of snows and evaporation. Fallen leaves and branches are friendly because often they obstruct the flow of rivulets and streams thus causing them to form pools which drain slowly. The whole tendency of forests and mountain vegetation is to cause the process of percolation, evaporation and run-off, to proceed slower, thus causing the streams to be fed more regularly. The floods in forest-protected regions, after a heavy rain-fall, or melting snows, will not be so great nor destructive, and the dry seasons will not be so prolonged.

Another great benefit that large areas of forest protecting the headwaters of streams (particularly these from which water is taken for irrigation purposes) affords, is in preventing heavy and disastrous erosion. A small stream of water flowing rapidly will cause vastly more damage than a large volume moving slowly, in carrying away soil and debris and depositing it where it is not wanted. Where mountains and hill sides are covered with forest growth the rush of waters is greatly retarded, but on an open slope there is no hindrance to its violence and destructiveness. In deforested districts, and especially in regions of frequent and heavy storms as in Arizona, erosion is enormous, and it is only a question of time when the accumulation of detritus renders the lowlands barren and unprofitable.

2. By the construction of underground dams to bring the waters now going to waste in the sands of the rivers to the surface.

#### **CONSOLATION.**

Assuming that the people of this valley are too proud to beg, too energetic to starve, and too ambitious to be satisfied with conditions that fall short of the best possibilities, we have these facts to console us and lead us on :

1. That the flood waters in the Territory are ample, if properly conserved and distributed, to irrigate all the valley lands therein.

2. That there are many good reservoir sites in the adjacent mountains that can be utilized for the conservation of these flood waters.

3. That the conservation and proper distribution of the flood waters of the Salt River Valley drainage district will furnish ample water for the proper irrigation of the 300,000 acres now partially cultivated, causing many blades of grass to grow where one grew before, and increasing four-fold our income by a very slight additional expense.

4. That it will supply sufficient water for 100,000 or 200,000 acres more than are already under cultivation, thus adding many thousands to our population.

5. That additions to our population means lower taxes, increased values, greater prosperity, vastly enlarged commercial opportunities and importance, increased railroad facilities, with the inevitable trunk line and lower freight and passenger rates, better society, vastly more influence and statehood.

#### **HOW TO PRESERVE PRESENT WATER SUPPLY.**

And this brings us directly to the second question propounded at the head of this section: "How may we best husband the surplus waters so as to make them available during seasons of scarcity?"

There is but one answer to this question, and that is by the construction of adequate storage reservoirs.

Nature has not only been magnanimous to Arizona in her magnificent scenic endowments, but most generous in her provisions for industrial wealth. Her hills are graves of buried treasure; her mountains are covered with a wealth of trees and grasses;

her valleys are hotbeds of riches, but neither wealth nor prosperity will come at our call. They must be sought for and some equivalent given in time and labor. So it is with storage problems. Nature, with miraculous foresight and knowledge of future requirements, has provided the most admirable sites and arranged her water sheds for the rapid centralization of the abundant precipitation of rain and snow, and left the details of her great plans to be completed by man's skill and ingenuity.

The principle storage projects which have been surveyed by individuals and corporations, or examined by the Government, are known as the Rio Verde, Tonto Basin, Walnut Grove, Agua Fria, Lower Gila, Queen Creek, Buttes, and Cave Creek.

It is essential to a proper understanding of the irrigation question as it concerns Arizona, and for the general information of the public, that a short description of the more important of these reservoir schemes be given.

The great bulk of irrigable lands in the Territory lie within the borders of Maricopa County; consequently, it is here that developments must be made.

The people who are to pay the bills and be the beneficiaries of increased water supplies should have all the facts before them. Nothing should be hidden or veneered by sophistry or falsehoods.

If the present projected storage schemes could be carried to immediate completion there would remain scarcely a foot of tillable land in the entire country in five years unclaimed and uncultivated. This state of affairs would mean a voting and producing population of 100,000 men, counting a family to each 20 acres. These producers with their families would mean a population of 500,000 people maintaining and enriching themselves by agriculture alone. An additional 500,000, or more, would be maintained in our cities by traffic and by manufacturing enterprises. This is no idle dream but a very conservative estimate based upon reliable data.

Taking up the various projected storage schemes in the order given above, we have, first :

#### **RIO VERDE.**

This enterprise contemplates the storage of waters at a site on the Rio Verde known as the Horseshoe Reservoir. The drainage area tributary to this reservoir is nearly 6,000 square miles. The proposed height of the dam at this point is 150 feet above the present surface of the river, and it will extend to a maximum depth of 25 feet to bed rock. It will be 386 feet long at the low water line of the river and 1,250 feet long on top. This reservoir will have a length of about six miles, and a surface area of 3,204 acres, and a capacity of 204,935 acre-feet. Estimating the duty of water to be two acre-feet to the acre, which is sufficient if irrigation be intelligently accomplished, and we have sufficient water from this reservoir to suffice for 100,000 acres.

Work upon the dam itself has not yet been begun, but the outlet tunnel is completed. This tunnel is 715 feet long and twelve feet in diameter. This scheme is very comprehensive and perfectly feasible, although it may be some years before capitalists can be induced to take hold of the matter again.

About 18 miles below the Horseshoe Reservoir the water is to be diverted from the river by a dam 90 feet high and 475 feet long. Here the canal is to head and will be continued to a distance of 54 miles, a considerable part of the distance being through rough country. At the end of the 54 miles the canal is to be reduced in size to a width of 20 feet and maintained 15 miles further to the crossing of New River. At New River it is proposed to construct another reservoir, partly to impound the storm waters of this stream, and partly to receive the waste waters from the canal. The proposed dam for this reservoir will be 100 feet high, with a top length of 1,800 feet, and will impound over 100,000 acre-feet of water. It is then proposed to continue the canal from this reservoir on a grade line across the Agua Fria, around the base of the White Tank mountains and across the Hassyampa, and to utilize another reservoir west of the Hassyampa just above the Buckeye canal near the Four Buttes. The estimated cost of the dam for the Horseshoe reservoir is \$600,000. The diversion dam is estimated to cost \$200,000, and the canal to the Hassyampa is estimated to cost about \$1,200,000, making \$2,000,000 in all, exclusive of the two reservoir sites in the plains.

It is estimated that from the head gates of the Agua Fria River the canal covers an area of 125,000 acres of irrigable lands, including a very desirable tract of nearly 50,000 acres in Paradise Valley. West of the Agua Fria the land to be irrigated is an almost unbroken plain of sandy loam comprising more than 125,000 acres above the Buckeye canal and east of the Hassyampa. The magnitude of the undertaking, the natural difficulties to be overcome, and the fact that there are now no settlers within the region to be irrigated, render the prosecution of this scheme a matter of peculiar difficulty.

#### **TONTO BASIN PROJECT.**

This site appears to have been created by nature solely for the conservation of water to be utilized on the lands now under canals in and around Phoenix. The site is just below the junction of Tonto Creek with the Salt River near the line of the Gila and Maricopa Counties, where the Salt River passes through a deep narrow gorge of solid rock. Above this rock both streams flow through wide valleys which are settled and cultivated to a considerable extent.

The Hudson Reservoir and Canal Co. has made surveys and estimates contemplating the situation of a dam at this point about 215 feet long on top, which it is claimed will give a reservoir capacity of over 800,000 acre-feet. Several lines have been surveyed for a location of a canal to conduct these waters to irrigable lands on the south side of the river, and it has been shown that by diverting the waters well up in the canon of Salt River, they can be delivered high enough to water a large tract of land at present not under canals, and to irrigate the greater portion of the valley lands on the Pima Reservation. This involves a large amount of costly construction in the canon. Large tracts of uncultivated land are already under existing canals, especially the Arizona, the Mesa Consolidated, and the Highland canals.

Many of the older canals have also under them considerable tracts of uncultivated lands for which they hold no water right, and whatever waters are left, after supplying all these demands can be distributed from the line somewhat higher and parallel to the Highland canal without involving much heavy construction.

Here let us quote from a description of this project by Engineer Davis who investigated the matter thoroughly in 1897 under the auspices of the U. S. Geological Survey.

"It would probably be impossible to find anywhere in the arid region a storage project in which all conditions are as favorable as for this one. The capacity of the reservoir in proportion to the dimensions of the dam is enormous. The lands to be watered are of remarkable fertility in a climate which may be classed as almost semi-tropic, and are vastly greater in area than the water can supply. To a considerable extent they are already settled upon and the water is in lively demand. The character of rock at the dam site is said to be excellent for the construction and foundation of the dam. There is tributary to this reservoir about 5,756 square miles of mountainous country ranging in altitude from 2,000 to 12,000 feet, and include some of the best drainage area in Arizona.

"Many of the tributaries of the Salt River find their source at the foot at the bold escarpment of the Mogollon Mesa.

"Tonto Creek, for instance, heads at the foot of this Mesa with the volume of a very considerable rivulet within a few hundred yards of the divide. Such streams evidently obtain considerable water supply from the precipitation which falls north of the divide.

"These facts indicates that the water shed tributary to this reservoir is not only large, but favorable to a high percentage of run-off. It is doubtful, however, whether the immense reservoir capacity above referred to could be filled in the driest years, and what proportion of its capacity should be held as a reserve for years of minimum run-off cannot be determined exactly without a longer series of measurements of the discharge of the Salt River, between the mouth of the Rio Verde River and the mouth of Tonto Creek. Such measurements have been roughly carried on for over a year by the Hudson Reservoir and Canal Co. There can be not doubt that in this reservoir site lies one of the most important possibilities for the future of agriculture in southern Arizona."

#### **THE BUTTES RESERVOIR.**

This site is situated about 14 miles east of Florence, where the Gila River passes between two buttes, locally known as "The Buttes." It has long been proposed to construct a dam at this point to store the flood waters of the Gila River for the reclamation of the arid plains below. This reservoir will have a capacity of 200,000 acre-feet, and the rain fall seems to be sufficient to warrant the assertion that 75,000 to 100,000 acres can be reclaimed by waters stored at this point. The estimated cost is something over \$2,000,000.

#### **THE LOWER GILA STORAGE RESERVOIR.**

This project contemplates the construction of a large dam on the lower Gila in the gorge below Oatman & Cottonwood flats, not

very far from the railroad station of Sentinel. So great a diversity of climate and topography is embraced by the drainage tributary to this reservoir, that it is likely that it would receive a large run-off available for storage for irrigation, and very materially increase the area reclaimable, after all reservoirs in the upper portion of the basin are utilized. Work on this reservoir was begun in 1892, but was postponed the next year, owing to financial difficulties.

#### FUTURE DEVELOPMENTS.

As we have heretofore stated, further development of irrigation in Arizona by the simple diversion of water from the natural streams is impossible, it being a fact that the dry weather flow of these streams is over appropriated. We can increase the area irrigated only by more economical use of the water now at hand, by the development of under ground sources, or by storage of flood waters.

Southern Arizona has vast areas of land of surpassing fertility, admirably situated for irrigation, and with a climate, the dryness and warmth of which make it exceptionally healthful and marvelously productive. Without water these lands are utterly valueless, consequently, the question of increasing our water supply is the one matter before all others requiring earnest thought and consideration. In some respects the topography and climatic conditions in Arizona are favorable for the complete utilization of its hydrographic possibilities. Probably in no other section of the country are such excellent reservoir sites so favorably located for the conservation of the storm and winter waters and melting snows.

These conditions seem to apply not only to the location and great capacity of the reservoir sites, but to their engineering practicability.

Being convinced of the utter impracticability of further expansion of agricultural and industrial interests in southern Arizona, without a largely increased and permanent water supply, the question naturally follows, "By what means are we to obtain the desired relief?"

#### PLANS FOR RELIEF.

There seems to be four ways open and possible, namely :

1. By direct federal appropriations.
2. By ceding the Government lands to the respective states and territories.
3. Private enterprise and capital.
4. The voting of bonds by the county.

Each of these methods has its supporters and defenders. It would appear that it is just as much the business of the Government to construct irrigation works as it is to build harbors, or dykes and dams to confine rivers to their ancient beds. All are questions of national economy and importance. Indeed, it would seem that both the salvation of the arid regions and the confinement of mad rivers might be combined and regarded as the focus of centralized thought and effort. Both questions could be solved at once by the

construction of vast reservoirs at the head waters of the annually destructive streams. These would impound the dangerous element and control it for future uses, both of navigation and irrigation.

Suppose, for instance, the flood waters of the Missouri and its tributaries were held in leash and let out in quantities sufficient for navigation, there would be no more danger of over-flow to the inhabitants along the Mississippi River. Instead of months in the summer time when navigation is impossible, as now, there would be sufficient water at all times for ordinary river craft. This fact would lessen freight rates, increase the value of land and subdue the annual fear of terrible washouts. Besides, there would be water enough to irrigate all the arid lands in Kansas and Nebraska, thus transforming their miles of desert into gardens of profit and beauty. The waters held in check would form a great inland sea, with its blessings of more equitable temperature, cheaper transportation, etc.

This Government has a most valuable precedent for the construction and control of irrigation projects in this country in the measures taken by the British Empire toward improving the condition of its India possessions.

#### HOW ENGLAND DOES IT.

Since the British have had control of India, irrigating works have been constructed on stupendous plans. The hydraulic engineering vies with the best in the world, and no longer is irrigation precarious, for the streams and storm waters are controlled by the highest human art.

In that country, according to the recent statistical reports, \$360,000,000 have been invested for that purpose, and more than 35,000,000 acres of land have been reclaimed during the last thirty years. The problem of irrigation in India commands the brightest imperial statesmanship. They involve the humane government of a dependent and conquered population of over 50,000,000 of people. They involve the feeding of vast communities heretofore ever liable to the horrors of famine. They mean the reclamation of vast tracts of land otherwise unoccupied, and the creation of a vast revenue from land rent to the Government, which is practically the sole landlord in that great Empire.

The greatest of all these works is the Ganges canal which cost \$15,000,000, and controls 10,000,000 acres, of which 1,000,000 acres are irrigated. It has 456 miles of main canals, 2,599 miles of tributaries, 895 miles of escapes and drainage cuts, and its total mileage is 3,910. Each tributary would be a large canal in America, and has enormous masonry bridges, regulators and aqueducts in its line.

In addition to the Ganges, and almost as large, is the Sirhind canal in Punjab. The main canal and principle branches are nearly 5,000 miles in length. The greatest area commanded by the canal is nearly 5,000,000 acres, of which 800,000 acres are irrigable.

These canals are built so large that they not only serve for the purpose of irrigation, but also of navigation. The total length of

canals and tributaries including the larger irrigation works, amounts to about 28,000 miles, and about 3,000 miles are navigable.

According to official reports there were in 1890 under cultivation in India by means of irrigation, about 35,000,000 acres. Thus in a thickly populated country, scorched by the tropical sun, the famine days are fading away before productive fields.

Other countries such as Italy, Spain, France, Australia and Africa are spending millions and millions upon great irrigation works.

The prospects, however, for any immediate favorable action in the premises by our Government are not worth considering. The construction of irrigation works has not yet become an imperative necessity, as it has in British India, for instance, where without the means for irrigating the desert lands famine would be rampant. Moreover, while many members of both Houses see the wisdom of spending Government funds in the promotion of this great economical measure, there are yet a great majority of Congressmen who are either not great and broad enough to grasp the grand statesmanship of this problem, or are too busy with personal or partisan politics to undertake any such praise-worthy scheme.

Legislation in these latter days is either partisan, being forced to conclusion by one of the great parties, or a compromise between what should be and what may be. It appears to be useless for the people most interested to wait for the slow movement of the Government in this matter. The dilatory tactics employed by our Government representatives in the matter of international cable lines and the Nicaragua canal is enough to convince us that the present generation will not live to see the accomplishment of their desires in this matter.

#### **CEDING OF GOVERNMENT LAND TO THE STATES AND TERRITORIES.**

Opponents of the plan for direct federal aid favor the ceding to the several states and territories the government land within their respective boundaries. The people than, acting through their legislatures, could sell these landed donations and use the funds thus obtained for the building of irrigation works.

While this plan has its supporters, and while it is possible that the accomplishment of the desired end could be secured by such means, still this proposition is open to the same objection as that just stated against the federal aid proposition; that is, that if we wait on the Government to take the initiative for our relief, we may, perhaps, in the course of a generation or two, look down from above on the beginning of the undertaking.

#### **PRIVATE ENTERPRISE AND CAPITAL.**

The third proposition is the construction of these irrigation works by private enterprise and capital.

Much preliminary labor has already been done on each of the above mentioned reservoir sites, but work has been discontinued on all now except that in Tonto Basin. The completion of this project is what directly concerns us, as this reservoir, when completed, will have a capacity ample for the irrigation of all lands now under existing canals, and enough more to reclaim an additional 200,000

acres. It would seem that the scheme is bound to become an accomplished fact in a short time, for, while its construction will require an expenditure of \$2,000,000, or more, a comfortable and permanent income awaits it from the start. It will furnish water to a large and eager constituency. The existing canals have contracted to pay \$300,000 per year for their product. Not having to depend on the sale of land and water rights for its income, but being assured before active work is begun of quick and prompt returns on its investment, it would seem that the promoters of this scheme would be eager to see the dam completed, and they assure us that such is the case, yet years have passed since its inception and no tangible results are in evidence.

It has been stated that the existing canals have contracted to pay \$300,000 for the product of this reservoir. This means, of course, that these canal companies intend reimbursing themselves by a charge of an extra dollar per acre for water. We are now paying \$1.25 per acre. This extra dollar will make \$2.25 per acre for water. According to this proposition, the canal companies are giving nothing while the people are paying a bonus of \$300,000 to the reservoir company. This, of course, the cultivators of the land can well afford to do, yet it is a question whether this plan is the best way out of our present difficulties. The reservoir company has already been aided greatly by an act of the last legislature exempting it from taxation for a period of years.

#### VOTING BONDS.

The fourth proposition is to bond the county for funds sufficient to purchase and construct suitable reservoirs. It would seem that the last proposition has many points in its favor over any of the others. The ownership and control would be in the hands of the people directly concerned. No high salaries need be paid and the expense could be kept at the minimum. The executive officers could be elected for short periods and their tenure made entirely dependent on merit.

If any corporation has the control of our water supply, we may rest assured that the people will be required to pay about all the traffic will bear. Our rents will never be less than they are now no matter how many acres are under cultivation, nor how large the profits accruing to the corporation.

Corporations are not given to lying awake nights devising ways and means for alleviating the conditions of its patrons.

Business acumen and sagacity would at once suggest the bonding of the country for funds sufficient to purchase outright not only the Tonto Basin reservoir site, but the existing system of canals, provided they can be purchased at a reasonable figure.

The only objection to this plan is its enormity. The canal companies claim to be willing to dispose of their stock at bargain figures, yet upon being requested to furnish your committee with an idea of the amount sufficient to purchase their plant, the lowest approximate estimate given was \$4,000,000. The purchase of the Tonto Basin reservoir site and the construction of a dam would cost, approximately, \$2,500,000 more, making a total of \$6,500,000.

While we think that the people would be willing to vote even this immense sum upon a reasonable guarantee of ample supplies of water, yet it may be that it would be impossible to float bonds of that value upon our present assessed valuation of \$10,000,000.

In this connection, and before proceeding further, your committee desires to state that the secretary of the Hudson Reservoir Co., and the local officers of the existing canal systems, have met us in apparent good faith; have been willing at all times to furnish us with data and information; claiming that they will never act the dog in the manger policy, but that they are now and will be ever ready to meet the people more than half way in any proposition looking to the welfare and prosperity of the Valley.

For purpose of argument let us assume that we create by our votes a bonded indebtedness of \$6,500,000. These bonds, if they would sell at all, could be placed at  $4\frac{1}{2}$  per cent per annum, which would mean an annual indebtedness for interest of \$292,500. Add to this an expense account of \$100,000 (probably necessary for repairs and improvements, dredging, salaries and emergencies) and we have \$392,500, which must be paid each year for water rents.

The men who cultivate the valley lands are today paying \$1.25 per acre for just what water they can get. When we buy water for 100 acres of land there is absolutely no assurance that we can get enough for ten acres. With water stored ready for use when needed, and in quantities required, we could well afford to, and would gladly pay \$2 or \$3 per acre. There are 300,000 acres now reclaimed under existing canals, and 200,000 acres more available. According to the figures of all engineers who have examined into the matter, the Tonto Basin reservoir has a capacity of 800,000 acre-feet, which with what water we are now getting from the Verde and annual rains would be ample for 500,000 acres.

We have then this proposition:

500,000 acres at \$1.25 per acre.....	\$625,000.00
Annual interest and expense account....	392,500.00
Balance to the Valley's credit at the	<u>                    </u>
end of the each year.....	\$232,500.00

This sum would create a sinking fund that would pay the bonds in about 25 years, and this without increasing the cost per acre for water, or the investment of a single dollar in cash.

These figures are based, of course, on the assumption that every acre of the 500,000 available pay its water rent. The fear that water would not be purchased for all the land could be dispelled by a clause requiring such purchase. This would do away with the holding of vast areas of land by non-residents for speculative purposes.

The proposition outlined above is in no sense visionary. The site for a large and ample reservoir is a fact. It is so located that by the expenditure of about \$2,000,000 a lake of 800,000 acre-feet of water can be impounded. The drainage area is so immense, and covers such a vast extent of territory within the heaviest precipitation belts, that, without taking into account the extraordinary floods, which cannot very well be measured, enough water is assured beyond the shadow of a doubt, for all the purposes of irrigation re-

quired in the cultivation of 500,000 acres, and the necessities of 1,000,000 people.

Bonds might be sold and work begun within a year by the exercise of a little energy and determination. It is customary, and oftentimes wise, to issue bonds for the purpose of building railroads, where private corporations are simply given the price of the bonds. The railroads do not guarantee reasonable freight or passenger rates; in fact they guarantee nothing. They create nothing. They are money makers pure and simple.

As the storing of surplus waters for times of need is the great object to be attained at this time, it might be well to consider nothing more now than the issuing of bonds for the purchase of the Hudson Reservoir and building of a suitable dam. This would require \$2,000,000 or \$3,000,000.

The existing canal companies would be willing to pay the \$300,000 per year to the new organization as to the old; or equitable arrangements could be made for the use of the existing canals.

The main object is to get adequate storage works and get them soon. The whole matter is left for consideration and action by the people.

It is wonderful the unanimity with which the people are getting together on this proposition. For once it seems that the residents of the Valley of all sections and interests can stand together on the basis of mutual interest and welfare.

Nearly all with whom your committee has talked have been emphatically in favor of pushing the bonding project. We have been met, however, by the following objections, viz :

1. The impossibility of raising the money on the bonds.

This objection we are, of course, unable to answer affirmatively or negatively. This we know, that the County has property assessed at \$10,000,000, which is worth \$30,000,000; that the construction of storage works necessarily increases the price of every acre of land available even though water rights have not been purchased, because of the fact that it is impossible to secure these. Upon the completion of such works there would arise an unearned increment in the value of all lands, for with the assurance of ample supplies of water to any portion of the county comes confidence and hope. This increment of value applies equally to all lands cultivated and uncultivated, and to all industries and interests in country and city, and is worth vastly more than the entire cost of the storage works.

This increment, with the increased population and values, together with the \$6,500,000 borrowed funds, would be our assets.

2. Impracticability of impounding water by means of reservoirs on account of the rapid accumulation of silt.

The best answer to this objection is the fact that reservoirs are now in existence that have been in use for more than 100 years. There are reservoirs now in the British Indies, Africa, Egypt, Spain, France and Italy that have been in use for several generations. The conditions there are exactly similar to those here. What the people of the old countries can do, the energy, determination and will of young America may certainly accomplish.

It is true that silt will accumulate, but equally true that man's

genius will by the usual methods of sluicing or hydraulicing, or by some other means, solve this problem.

If the storing of water were proposed for the first time there would be reason for long delay and much worry over this proposition, but this reservoir when completed will be but one of a great many thousand now in profitable operation. What has been done in India or Australia, certainly may be accomplished in the Salt River Valley.

3. That this committee is working in the interests of the canal companies.

This charge is met by the simple statement that to avoid any such suspicion your committee was selected. Not a member of this committee has any financial interest in any canal in the Valley. We are simply working faithfully and honestly to secure to the Valley the permanent prosperity and comfort that a bountiful water supply would inevitably bring, and we expect to reap our reward in sharing these blessings.

The benefits accruing from the inauguration of the scheme as outlined are so obvious that it seems a waste of words to go into details. The moment the undertaking is assured the value of every acre of land in the Valley will be largely enhanced; all available land will be reclaimed; farmers will be able to produce six crops of grass when now they cannot raise three, and the fruit men will be assured of prolific measures. Phoenix will grow by leaps and bounds and her business will be immense. Cattlemen will have no difficulty in securing rich pasture; we can feed the sheep of the world; lumbermen will be kept sawing night and day, while tanneries and factories will spring up as by magic. Society will be as good here as anywhere on earth, our influence will be powerful, and statehood assured.

#### **CONCLUSION.**

In conclusion your committee has the honor to suggest :

1. That it is desirable above all things to have an abundant and permanent water supply.

2. That the means for securing the desired end are at hand waiting only for intelligent action.

And we earnestly recommend :

1. That this community wait no longer in the hope of obtaining relief from private capital or Federal aid, but that an Act, entitled "An Act to provide for the organization and government of irrigation sections, and to provide for the acquisition of water, the acquiring of reservoir sites and canals and other property, and for the distribution of water thereby for irrigation and other purposes," be prepared at once, and a united and persistent effort be made to secure its passage through the short session of the present Congress.

2. That active measures be taken to educate and enlighten the people on the importance, extent and designs of the irrigation movement by the distribution of literature, mass meetings, etc.

S. M. McCOWAN, Chairman.

B. HEYMAN.

J. ERNEST WALKER.

VERNON L. CLARK.

B. A. FOWLER.