

Thomas B. Reed in a speech at Pittsburgh, in 1894, said: "Mighty as has been our past, our resources have just been touched upon, and there is wealth beyond the Mississippi which, in the not distant future, will astonish even the dwellers on the shores of Lake Michigan.

"From the time my eyes first rested on the great uncultivated plains which lie between the Mississippi and the Pacific Ocean, my waking dreams have been filled with visions of the incalculable wealth which the touch of living water will bring to life from those voiceless deserts. There wealth only can produce wealth, and man, singly and alone, might as well try to subdue the Himalayas as to cope with these wastes; but the hand of united and associated man is already reaching forth to grasp the great results.

"The same power which wastes millions on the Mississippi can be utilized to make the deserts blossom with the homes of men, for whom and for all us the now blighted soil will bring forth the fruits of the Garden of Eden." †

CENSUS REPORT: The Census Report of 1900 gives the following brief summary of the progress of irrigation in the West:

"There are no statistics concerning the area irrigated in 1870, but it is probable that in that year there were not over 20,000 acres under irrigation in the whole United States. From 1870 to 1880 was an era of rapid development of small ditches, constructed by individuals and associations of farmers. At the end of that period there were probably 1,000,000 acres under irrigation.

"In the decade 1880 to 1890 occurred the 'boom' of speculative enterprise in irrigation canals. Large sums of money were obtained for irrigation works by the sale of stocks and bonds, and great enterprises were projected, canals of upward of 100 miles in length being planned, and in some cases built. Nearly all of these failed of financial success, and although they have aided in the extension of irrigation, they have not enriched the investors.

"The Eleventh Census was the first to devote attention to irrigation, and the statistics obtained show that in 1889 there were 3,631,381 acres irrigated on 54,136 farms, with an average irrigation area of 67 acres. During the following decade the irrigated acreage doubled in extent. This has been due rather to the extension and enlargement of the many canals already existing in 1889 and to more complete practice of irrigation on the lands then under ditch, than to the construction of new and large systems of irrigation." (Vol. VI, Pp. 801-802)

STATISTICS: During the decade 1889 to 1899 the number of irrigators in the arid area increased from 52,584 to 102,819, an increase of 95.5 %, and during the same period the irrigated acreage increased by 103.8 %. The arid region is considered by the officials to comprise Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon and Washington (only some eastern counties), Utah, and Wyoming. The figures given in the paragraph

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quoted from the Census Report include the figures for the sub-humid region, that is, the States where some irrigation is necessary, namely, the Dakotas, Nebraska, Kansas and Texas, which States in 1889 had a total irrigated acreage of 66,965 acres.

In 1889 one half of one per cent of the total land area in the arid States was irrigated, and by 1899 this percentage had risen to something over one per cent, so that despite the great expansion of irrigated acreage during that period, only a very small portion of the whole area was under the ditch.

THE PROGRESS OF IRRIGATION by 1898 in New Mexico (as an example):

"There is in operation the Springer system of irrigation, with 50 miles of ditches and 5 reservoirs, covering 22,000 acres. The Vermejo system which controls 57 miles of ditches and ten reservoirs, supplies 30,000 acres. In the northwestern portion of the Territory there are 200 miles of ditches watering 24,000 acres. There are several tracts of fertile soil accessible to streams, which will afford an ample supply, awaiting the attention of moneyed men. Also extensive ditch systems are in operation in the Mimbres region of Grant County. The irrigation projects mentioned above are in the four corners of the Territory. In the meantime the great central portions are receiving attention, more than fifty companies having been organized for irrigation projects, and several having plants in operation, affording to the home-seeker at the present time ample opportunity for reclamation and settlement. -- Meanwhile individual enterprise is increasing the local supplies by the erection of multitudes of windmills, pumping from artesian wells in various parts of the Territory."

(Annual Report of the Governor, in Annual Cycl., 1898, 491)

LEGISLATION: The Desert Land Act of 1877 provided for the sale at \$1.25 per acre of desert land in California, Oregon, Nevada, Washington, Idaho, Utah, Wyoming, Arizona, New Mexico and the Dakotas to anyone who was a citizen or had filed his declaration of intention to become a citizen. No person could buy more than 640 acres and the sale was on condition that the buyer irrigate the land within three years. (U.S. Stat. L., Vol. 19, P. 377) This did not lead to very much irrigation, however, because irrigation to be successful had to be on a large scale, requiring much capital. The Greeley Colony in Colorado and the Riverside and Fresno colonies in California were co-operative enterprises and worked exceedingly well, Riverside now being the greatest orange-producing area in the world. The next important step in legislation was the passage of the Carey Act in 1894, (U.S. Stat. L., Vol. 28, P. 372 f), according to the terms of which a "public-land State" could enter a contract with the United States, whereby the latter bound itself "to donate, grant, and patent to the State free of cost for survey or price such desert lands, not exceeding 1,000,000 acres in each State, as the State may cause to be irrigated,

Irrigation (Cont.):

reclaimed, occupied, and not less than twenty acres of each 160-acre tract cultivated by actual settlers within ten years after the passage of this act." Two years later the scope of the act was extended permitting the issuance of patents to the States for any tract of land reclaimed "when an ample supply of water is actually furnished in a substantial ditch or canal or by artesian wells or reservoirs, without regard to settlement or cultivation." (U.S.Stat.L., Vol.29, P.434)

"In the eight years that elapsed between the enactment of the Carey Act and that of the Reclamation Act (1902), but seven of the States covered by the Carey Act took up steps to take advantage of its provisions. Out of the total area of 7,000,000 acres open to them for filing, these States had made application for less than 1,200,000 acres. Only four of the States had, moreover, filed their applications in approved form, their applications covering less than 600,000 acres, and of these only one State, Wyoming, had filed proper proofs of reclamation, as required by law, as to any of the land applied for; so that the 11,321 acres patented to this State constituted the whole of the net results of the Carey Act during the first eight years of its operation." (P.6 of The U.S.Reclamation Service, Institute for Government Research.)

In The first annual report of the U.S.Reclamation Service, it is also stated that "no extensive action has been taken in order to obtain the benefits which might be possible under the Carey Act." (P.59) As pointed out before, however, private enterprise did increase the irrigated area to some extent.

THE ATTITUDE OF THE PEOPLE TO IRRIGATION is illustrated by the following account by WM.E.Smythe, who was one of the leaders in the irrigation movement:

"In 1887 Congress recognized the importance of investigation in its relation to practical progress and large appropriations were made for the study of specific reservoir sites. In 1889 a committee of United States Senate, headed by Senator Stewart of Nevada, made a personal investigation of the arid region by means of an extended tour, and gave public hearings at numerous points.

"Up to 1890 there was nothing which could be regarded as a public sentiment in support of irrigation as a broad economic movement and, much less, anything in the nature of organized public sentiment. Neither was there a popular literature to bring the matter to the attention of the masses. Irrigation was an unpleasant word, repellent and depressing. The word 'arid' was synonymous with worthlessness. Scientific men like Major Powell, social reformers like Richard J.Hinton, and a few members of Congress who urged appropriations to assist Western development, were not taken seriously by the country at large. It was felt that they were ahead of their time and that at best there could be nothing but a sectional interest in the matter with which they dealt.-----

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"Such was the situation when the region of the Great Plains was overtaken by the drought of 1890, a calamity so deep and widespread that it staggered even the optimism of the West. While it, known and probably acknowledged that irrigation was necessary in many localities west of the Rocky Mountains, the men of the semi-arid plains clung stubbornly to the belief that, in some mysterious manner, rainfall increased with railroad building, settlement, and the cultivation of the land. This delusion was effectually dispelled by the great drought." (Conquest of Arid America, P. 264, Revised ed.)

First Annual Report of the U.S. Reclamation Service, 59: "Popular interest in irrigation was greatly stimulated by the discussion arising over the report of the Powell Irrigation Survey (yearly from 1879 on) and the controversies over the report of the Senate Committee on Irrigation. This led finally to the holding of a series of national irrigation congresses, the prime mover in which was Mr. Wm. E. Smythe, of San Diego, Cal. The first was held in ~~St~~ Salt Lake City, Utah, September, 15 to 17, 1891."

EFFECTS OF IRRIGATION AS SHOWN IN CALIFORNIA: "The growth of population in California during the past decade (1880-1890) will illustrate, not alone the economic importance of the cultivation of the soil, but the social significance of the changes which such methods of cultivation tend rapidly to produce in farm life and habits. Under its influence striking changes are going on in the character of that State. During the past ten years California has gained at the rate of 39% in population. The cause of that gain can be seen when it is known that thirteen counties of the State have lost in population from one to 73%, while fifteen, including the most important irrigated areas, have grown more rapidly than the State at large. In the counties that have fallen back, mining, stock-raising, and lumber industries have been the principal support. In the fifteen counties that have increased so largely, farming pursuits under irrigation have become the chief feature of their development. The total population of the State in 1880 was 864,552. In 1890 it was 1,203,969. The gain in the eleven counties most deeply interested in irrigation has been over 753%. The percentage is as follows:

County of: Per cent.

Fresno	228
Kern	79
Los Angeles	234
Merced (Merced)	36
Orange	244
San Bernardino	227
San Diego	295
San Luis Obispo	77
Santa Barbara	66
Tulare	120
Ventura	98

"These counties comprise those affected directly or indirectly by the growth of irrigation enterprises and horticultural progress.----Another evidence of the value of this form of farm life may be found in the banking statistics of California. There are 232 banks in the State. Of these 28 are in San Francisco, and 63 in the southern counties, (i.e. Santa Barbara, Los Angeles, Orange, San Diego, Venturs and

San Bernardino.) Putting aside the San Francisco bank statement,

it appears that the 63 banks had on the first of July, 1890, of cash on hand \$6,264,000; the remaining 141 banks, scattered over the State, held as cash in hand only \$9,265,000. The State at large shows \$26 in cash to each inhabitant. Southern California, however, shows \$31 to each one of its population. Leaving San Francisco and southern California out of account, the average cash per capita elsewhere would be \$11. The deposits of the San Bernardino banks show an average of \$93 to each man, woman, and child within the county. It is claimed that the property of the State will give an average of \$9000 to each family. These figures are presented in illustration only of the remarkable tendency towards small farming which irrigation produces everywhere, and of the still more remarkable results as to security and prosperity which, under favorable circumstances as now developed, has followed its progress."

(Hinton, Irrigation in the U.S., P. 21-22)