

# The Commercial

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## VALUE OF IRRIGATION.

Irrigation is a question of interest and importance in Western Canada. We have in portions of Western Canada large tracts of excellent land, which, however, requires irrigation to make it suitable, one season with another, for agriculture. There are districts with splendid climate, and excellent soil, but lacking in average precipitation for successful cultivation. If these lands could be irrigated at a reasonable cost in proportion to their value, the area over which agriculture could be extended in Western Canada would be vastly increased, and proportionately also would the wealth of the country be extended. THE COMMERCIAL has several times called attention to the question of irrigation, and urged that the government should undertake the work of discovering what can be accomplished in the matter of irrigation in our dry regions.

In the United States the government has been making extended investigations into the matter of irrigation, and THE COMMERCIAL has on several occasions published summaries of the results of what has been accomplished in that country. A bulletin has recently been issued from the census office at Washington, treating upon irrigation in the western states. Statistics given show that out of 124,808 farms enumerated in the arid region in June, 1890, 52,584, or 42.13 per cent., contained land on which crops were raised in 1889 by the artificial application of water. The entire area of land irrigated was 3,564,416 acres, which constituted 20.72 per cent. of the total area of the 52,584 irrigated farms, and 9.66 per cent. of the whole number of farms, and about one half of 1 per cent. of the total land area of the arid region. There must be added also 1,552 farms, containing 66,965 acres irrigated, in the western parts of North Dakota, South Dakota, Nebraska, Kansas and Texas. In these districts irrigation is slowly making its way.

According to the figures given in the bulletin the average value of the land irrigated in 1889, with the improvements thereon, was \$33.28 per acre. The average value of products for the year amounted to \$14.89 per acre. Correspondence with more than 20,000 irrigators has disclosed the fact that the average first cost of irrigation is \$8.15 per acre. The average value placed upon the water rights where separable from the land is \$26 per acre, or more than three times the original cost. The average annual expenditure for water, as distinguished from the purchase of water rights, is \$1.07 per acre, while the average cost of the original preparation of the ground for cultivation, including the purchase of the land at the government rate of \$1.25 per acre, is estimated at \$12.12 per acre.

The statistics seem to indicate that the investment in irrigation has been profitable in a great degree. The total investment in irrigation systems utilized in 1889, in whole or in part, was, up to June 1, 1890, \$29,611,000. On the other hand, their value at that date is esti-

mated at \$94,412,000. A comparison of these figures shows an apparent profit of \$64,801,000, or 218.84 per cent. Again, the aggregate first cost of the irrigated areas with their water rights is estimated at \$77,490,000, while their value on June 1, 1890, is put at \$296,850,000. A comparison of these figures indicates an increase in the value of land and water rights amounting to \$219,360,000, or 283.08 per cent. To put the matter in another way, the land irrigated in the year covered by the census reports was, in consequence of its development and improvement by means of irrigation, worth nearly four times what it cost. The expenditure for water in the arid regions has been comparatively small. It appears from the statistics given that the total expenditure for water, including the maintenance and repairs of ditches in the arid states, in 1889 was only \$3,794,006, while the total value of products amounted to \$53,057,000.

Statistics regarding the use of artesian wells for irrigation purposes in the arid and sub-humid regions of the west were given in a previous number of THE COMMERCIAL. It may be recalled that the artesian wells used for these purposes in the census year numbered 3,930. The average depth per well was 210.41 feet, the total discharge of water per minute was 440,719.71 gallons, or 54.43 gallons per well per minute. The average cost per well was \$245.58, the average area irrigated per well was 13.21 acres and the average cost of water per acre irrigated was \$18.55. A comparison of the last-mentioned amount with that given above as to the cost of irrigation by the ordinary means, viz., \$8.15 per acre, would seem to indicate that the average cost of water per acre by ordinary means or irrigation is less than half the cost of irrigation by means of artesian wells. It has been pointed out before, however, that the lesser cost mentioned above is the average cost of water from successful wells, and that to arrive at the actual cost due allowance should be made for the fact that a great many attempts, aggregating perhaps thousands, have been made to obtain flowing water, but without success. The total number of these cannot be ascertained, owing to the fact that failures in this line are soon forgotten, but it seems clear the amount expended annually by individuals, cities, towns and corporations in fruitless attempts must be very large.

## ARTIFICIAL PROPAGATION OF FISH.

The fact that a fish hatchery is being established in Manitoba, should create some interest in the artificial propagation of fish. Though entirely an inland province, Manitoba has really great fishery wealth in her large fresh-water lakes. Our whitefish are one of the very finest food fishes, and they have become known over a large portion of this continent. A large fishing industry has grown up here, and thousands of pounds of fish are shipped annually to eastern Canada and the United States. Some fear has been expressed that the large quantities of fish annually taken from our lakes would in time deplete the waters, and it has become an important question how to perpetuate the industry in a vigorous and healthy state. The

value of the Manitoba fisheries is such that the government has been led to undertake the establishment and maintenance of a fish hatchery at Selkirk, on the Red river, for the artificial propagation of fish.

It is with the fish hatchery that the principal interest is connected. A question has been raised as to the value of artificial fish culture. In fact, while on the one hand great claims have been put forth as to the value of the hatcheries, there are others, and some who at that may be considered competent persons to judge, who unhesitatingly declare that the fish hatcheries are useless. This opinion, we may say, is not evidently concurred in by any officials of the fishery department at Ottawa, for it is from official sources that the claims of the great value of the hatcheries come. In this connection we may remark, that we could hardly expect officials to condemn a system which they had previously ardently advocated, and which they had been instrumental in carrying into effect. The statements that the fish hatcheries in eastern Canada had proved a failure, so far as they may be expected to have increased the supply of fish, have come from independent sources, mainly from those who are engaged in fishing, and who should have considerable knowledge of the situation.

In THE COMMERCIAL of Sept. 19, under the head of "The Salmon Hatchery," the editor of our British Columbia department casts a decided cloud upon the value of the government fish hatchery in that province. The doubts which he throws upon the value of the hatchery there, agree with remarks we have heard concerning the hatcheries in the east. These statements, coming from persons, and dealing with hatcheries remote from each other, seem to indicate that the real value of these hatcheries should be taken into serious consideration. Indeed, in spite of the great claims made by Mr. Wilmot, of the fishery department, and other officials, that a wonderful work was being accomplished in the propagation of fish, there seems to be a considerable doubt as to whether or no the hatcheries are really of any value at all, more than to provide employment for government officials.

Our British Columbia editor claims that the hatchery there has not made any perceptible change in the salmon runs, though it has been in operation a number of years. It is contended that artificial propagation does not produce a healthy fry. It seems to be in keeping with common sense to believe that fish propagated in nature's own way, should have a much better chance for existence than those artificially produced, especially as the latter may be propagated under conditions quite opposed to nature's way. We have heard it asserted that the young fry sent out from the hatcheries invariably succumb in a brief time. They are, it is claimed, defective in vitality, and unable to bear the change from the hatcheries to the open water. At any rate, doubts which have been raised seem to make the question as to the value of the fish hatcheries a very problematical one.

## THE FARMERS' LOT.

Recently a Manitoba paper contained a pitious wail about the burdens imposed upon the farm-