

GREAT IMPETUS IS GIVEN IRRIGATION

GOVERNMENT AND STATE WILL ADD MILLION ACRES TO CULTIVATED AREA OF OREGON.

IRRIGATION is making great strides in Oregon, and a few years will see vast tracts in the eastern part of the state highly cultivated and densely populated through its agency. Until 1902, not quite 400,000 acres had been watered by individual and corporate effort. To this 424,618 acres are being added by the joint action of the state and private corporations in the Deschutes Valley. The Government has definitely adopted the project for irrigating 100,000 acres in the Malheur Valley, at a cost of about \$3,000,000,

tion on the part of the present landowners. The enterprise as an engineering problem is exceptionally attractive. The total area of land now irrigated from the Malheur River does not exceed 15,000 acres. Less than one-third of this area is fully irrigated, even in years of average run-off. The total run-off of this year will be nearly six times that of 1891. The average run-off of which there is any record is about 400,000 acre-feet of water, or sufficient to cover 100,000 acres, the approximate area it is contemplated to cover under the project, four feet deep each

year. The Harper reservoir, as estimated with dam 160 to 175 feet high, will hold over 600,000 acre-feet of water, or enough with minimum run-off recorded to furnish three years' full supply. This will not need to be spread over the land early in the Spring before it is needed, and to the detriment of at least the first crop, but can be used just as needed throughout the driest parts of the season. Some of the best-watered land in the

to get it into practical operation and secure contracts with the Department of the Interior, very few irrigation enterprises have progressed so far that water has been turned upon cultivated land. About 5000 acres has already been put under cultivation, and water is available for the irrigation of over 60,000 acres the coming season. Twenty reclamation enterprises have been started in Oregon under this law, the tracts to be irrigated ranging in area from 800 acres to 85,000 acres. The smaller tracts will be reclaimed by individuals, who will take the land themselves. The larger enterprises have been undertaken by corporations. The State Land Board fixes the rate to be charged for the use of water. The cost of construction in the larger enterprises is placed at \$20 per acre, and the annual charge at \$1 per acre, which also goes to the company. When apportioned to the several 40-acre tracts, the liens range from \$2.50 to \$14.75 per acre, the amount being determined by the area of irrigable land in each 40-acre tract.

Only two large concerns have already contracted extensive irrigation systems. The Three Sisters Company, on 27,500 acres west of the Deschutes and north of the Tumalo River, taking water from the latter stream; and the Deschutes-Irrigation Power Company, on 141,000 acres east of the Deschutes, south of Crooked River, and north and east of Bend. The latter company has an application pending in the Department of the Interior for a grant of 74,000 acres more, increasing its total to 215,000 acres. It will also water land already taken under the homestead and school land laws, which will raise its aggregate acreage to 250,000.

The Deschutes Irrigation & Power Company has constructed a main canal aggregating 20 miles in length, and laterals nearly as long. The estimated cost of construction is \$27,500. Water is now available for nearly all the land, and about 15,000 acres has already been irrigated by settlers, who have cultivated much of the necessary requirements to insure the Government a return of cost of construction. It seems probable now that the chief delay may be from the "road land" syndicate.

JOHN T. WHISTLER, Engineer U. S. Geological Survey.

FUNDS AVAILABLE UNDER THE RECLAMATION LAW ON JUNE 30, 1904.

State or Territory	Aggregate
Arizona	1,371,908.21
California	1,581,167.56
Colorado	1,581,167.56
Idaho	1,581,167.56
Kansas	1,581,167.56
Montana	1,581,167.56
Nebraska	1,581,167.56
New Mexico	1,581,167.56
North Dakota	1,581,167.56
Oregon	1,581,167.56
South Dakota	1,581,167.56
Washington	1,581,167.56
Wyoming	1,581,167.56
Total	13,012,536.46

Other large concerns are preparing to construct irrigation systems.

BY PRIVATE ENTERPRISE.
Many Companies Also Irrigate Large Tracts of Arid Land.

NOT only are the Government and the State of Oregon putting water on huge tracts of land, but many private individuals and corporations are putting water on land which they have purchased. The majority of these enterprises are in Umatilla County, where the land has proved most fertile under the influence of irrigation, but many others are being carried out in Malheur, Harney and Klamath counties.

Of the new enterprises of this character which are in process of execution in Umatilla County, the Hinkle Ditch Company, of Echo, is digging canals and ditches to carry water to 11,000 acres near Echo; the Milton, Freewater & Hudson Bay ditch, near Freewater, is being extended to cover 10,000 acres, of which 2000 is already under water; the Maxwell ditch is being constructed to cover 15,000 acres in Maxwell and Cold Springs valleys, near Maxwell, a postoffice of which the name is to be changed to Hermiston, and water is now available for 2000 acres, and the Irrigon Company has watered a large tract at Irrigon. The custom is to sell a perpetual water right with the land, which remains subject to an annual charge for maintenance of the water supply, ranging from \$1 to \$1.50 an acre on the different tracts.

The land in that section has a deep soil of volcanic ash, which contains all the elements of fertility in inexhaustible quantity. It will grow melons, grapes, apples, peaches; in fact, any fruit which thrives in a semitropical country. English walnuts, soft-shell almonds and peanuts have been grown with great success in that section. Alfalfa grows there to perfection, and proves a highly profitable crop, for after the ground is once seeded, it can be grown, cut and stacked for \$1.50 a ton, and has been sold in the stack this season at \$1.50 a ton. This is an unexcelled feed for stock, producing pound for pound of flesh with corn. An acre will grow seven tons of alfalfa, or 14,000 pounds, but 40 bushels, or 2500 pounds, is an uncommonly good crop of corn, so that an acre of alfalfa is equal to nearly seven acres of corn as a food-producer.

By such enterprises large tracts of land are being put under irrigation in sections of Eastern Oregon, where the opportunity

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are too large for single individuals, but too small for the Government, or for operations under the Carey act. Thus, by the several methods, every tract, large or small, for which water is available, is being brought under cultivation.

CROPS UNDER IRRIGATION.
What Oregon Arid Land Yields When Water Is Given.

SUCH abundant crops are grown on irrigated land that 40 acres in fruit or hops will make a comfortable living for a family. Hence dwellers in an irrigated country are comparatively close neighbors, and do not have to endure that isolation which has caused many to flee from country to town. Their situation may be compared to that of residents in a suburb of a great city, each house standing in the center of roomy grounds, but all within calling distance.

Such a community is that of Hood River Valley, in which the town of that name has 1000 people, the population of the whole valley of 60,000 acres being 5000.



SITE OF PROPOSED DAM ON MALHEUR RIVER.

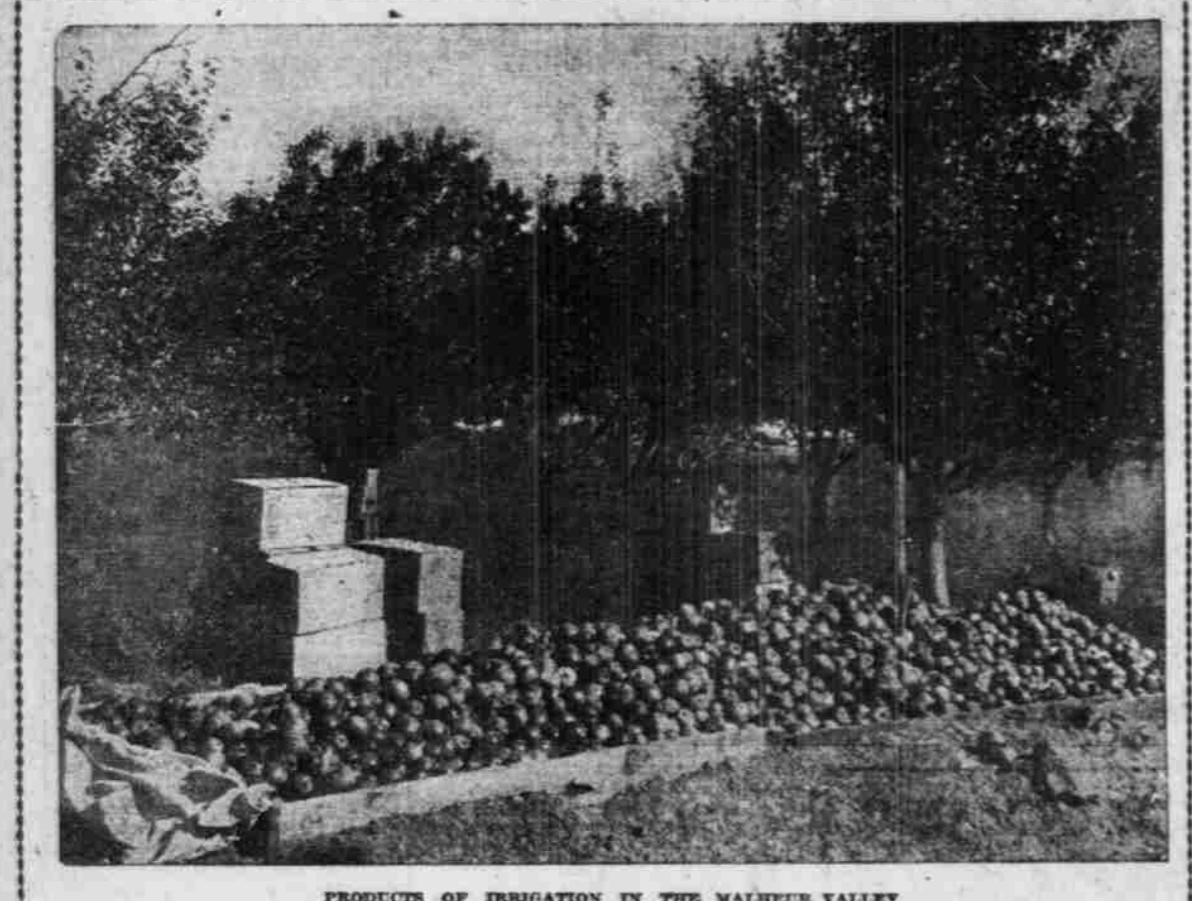
There are 6000 acres under irrigation, mostly planted with fruit trees, strawberries and other berries. The area under ditch, which can be watered, is 20,000 acres, there being 100 miles of furrows, ditches and laterals. Apple and strawberry land cleared ready for planting near the town is worth \$150 to \$250 an acre; further out, \$50 to \$100; uncleared near town, \$15 to \$100; uncleared further out, \$10 to \$50. The profit on strawberries ranges from \$15 to \$200 an acre; on apples, from \$50 to \$200. A few sample yields of strawberries in 1904 are: D. L. McClure, 94 crates from three acres, sold for \$773;

ties, on the extreme east, Lake and Klamath counties, on the southern boundary, just east of the Cascade Mountains. It yields three crops a year of two tons each, but one can best form conception of what this means when told that one stack 600 feet long and 40 feet wide was made of hay from one 640-acre tract in Malheur County.

Honey is a valuable by-product of the alfalfa fields, for bees gather great quantities while they are in bloom. C. W. Mallett has 500 stands of bees on his field near Vale, Malheur County, which gather 3000 pounds a day. He packs it in 90-pound

One settler, named O'Neil, has cut his second year's crop of alfalfa, which aggregated five tons an acre, and sold at \$15 a ton. As his land was a homestead, it only cost him \$1.25 an acre, and the labor of clearing and until the irrigation canal was dug he obtained water by pumping from the river.

Another rich irrigated country is near Baker City, where peaches make a highly remunerative crop. On the Cook ranch is an orchard of 100 peach trees to the acre, which yields 1500 boxes, weighing 20 pounds each, to the acre; some trees producing 30 boxes each.



PRODUCTS OF IRRIGATION IN THE MALHEUR VALLEY.

and now proposes to carry out an even larger scheme in the Klamath Valley, whereby over 325,000 acres will be watered. A number of private individuals are constructing canals and ditches to tracts which they own. Altogether, the schemes in execution or projected will increase the irrigated area in Oregon to over 1,200,000 acres.

The Klamath scheme is the largest yet taken up by the Government, its adoption having been announced since Mr. Whistler wrote his article on Government irrigation. The tract to be watered is cut by the state line between Oregon and California, and two large lakes which are in both states are to be drained. Storage reservoirs will be built in each state for the irrigation of land in the other.

IRRIGATE ON MALHEUR.
Government Reclamation Project Will Add \$10,000,000 to Valuation.

UNDER the act of Congress commonly known as the reclamation act, surveys and other investigations have been carried on in Oregon since early in the year 1903. Appropriations by Congress prior to the passage of the act had provided for the measurement or yearly run-off of a few streams only in each state. The projects which can be recommended for early construction are, therefore, limited to those in which at least three or four years' record can be had of water supply available. Of such projects in Oregon, that of the Malheur Valley has appeared the most attractive, and surveys and other investigations have there been made most complete.

The reclamation act provides that lands in private ownership may acquire a water right under any project, but also requires that charges for all water rights "shall be determined with a view to returning the cost of construction." It is therefore necessary that the Government hold a lien in some form on all patented lands applying for a water right, in order to assure the return of cost of construction. Of the 100,000 acres, approximately, coming under the project, about 85,000 acres are patented, and of this about 35,000 acres is road grant land. At this time the owners of some 60,000 acres have signified their intention of applying for Government water right. The so-called "road land" is now held by a foreign syndicate, and the owners have not yet signified a desire to avail themselves of the project. A complication of vested water rights exists, and the Malheur Water-Users' Association has been formed to determine and take up these rights, if possible, and otherwise assure unity of ac-

TYPICAL STRAWBERRY FARM UNDER IRRIGATION IN EASTERN OREGON.

INVESTMENT PER ACRE.	
Land	\$125.00
Plants and planting	25.00
Irrigation	7.00
Cultivation until first crop	25.00
Total	\$182.00
Annual cost of cultivation	150.00
Interest at 6 per cent on investment	10.95
Picking and packing	\$2.50-\$3.75
YIELD PER ACRE.	
Clark's seedlings, 125 crates	\$21.25
Profit	\$67.80
Or Sharpless and Magoons, 200 crates at \$1.25	\$250.00
Profit	\$176.55

supply. This will not need to be spread over the land early in the Spring before it is needed, and to the detriment of at least the first crop, but can be used just as needed throughout the driest parts of the season.

IRRIGATION IN OREGON.

Total Government arid land fund	\$20,012,536.46
Oregon contributed of this sum	4,236,539.75
Area to be irrigated by Government on Malheur River, acres	100,000
Cost of reclamation	\$2,000,000
Area to be irrigated by Government on Klamath River, acres	320,000
Area already irrigated under Carey act, acres	54,000
Area to be irrigated under Carey act, schemes in process of execution, acres	264,018
Area irrigated by private enterprises in 1902, acres	385,710
Value of irrigated crop in 1902	\$1,526,958
Average crop of alfalfa per acre, tons	14
Average crop of apples per acre, bushels	130
Average crop of strawberries per acre, crates	1,500
Average crop of peaches per acre, bushels	177,844
Acres of irrigated land in 1902	287,000
Average cost of construction per acre of irrigation system from surveys	\$4.71
Same from wells	\$2.97

valley has produced as high as 10 tons of alfalfa to the acre in one year. An average price for alfalfa hay is \$5 per ton in the stack, and the last two Springs it has sold for from \$10 to \$12. The best-watered land in the valley cannot now be bought for \$100 per acre, improved. Land certainly cannot be worth less under the water supply proposed by the Government. This will mean that, when the land is all watered and improved, a farm value of nearly \$10,000,000 will have been added to Eastern Oregon. Other improvements, such as railways, cities and fac-

RECLAIMING A DESERT.
Farmers on Deschutes Irrigated Land Raise Great Crops.

UNDER the terms of the Carey arid land grant the State of Oregon has applied for 424,618 acres in Eastern Oregon, of which 100,000 acres have been approved by the Interior Department, and this will be reclaimed by private enterprise. In the Valley of the Deschutes River, in Crook County, the most extensive reclamation works have been undertaken and the greatest progress has been made.

The Federal law grants to the state not more than 1,000,000 acres, upon condition that it be reclaimed. The state law authorizes the State Land Board to grant contracts to corporations for the reclamation of specified tracts, the companies to get their compensation from actual settlers.

The State Land Board fixes the total

cost of reclamation, and this is apportioned among the 40-acre tracts according to their relative value, and is a lien upon their land in favor of the reclamation company. Persons desiring to secure the land must pay off the company's lien, whereupon the state issues a deed conveying the state's title to the applicant. The title is derived by patent from the United States, when reclamation has been proven, and then by deed from the state to the settler.

As the state law accepting the terms of the Carey act was not enacted until 1901, and considerable time was necessary



UNIMPROVED IRRIGABLE LAND AT UPPER END OF MALHEUR VALLEY.