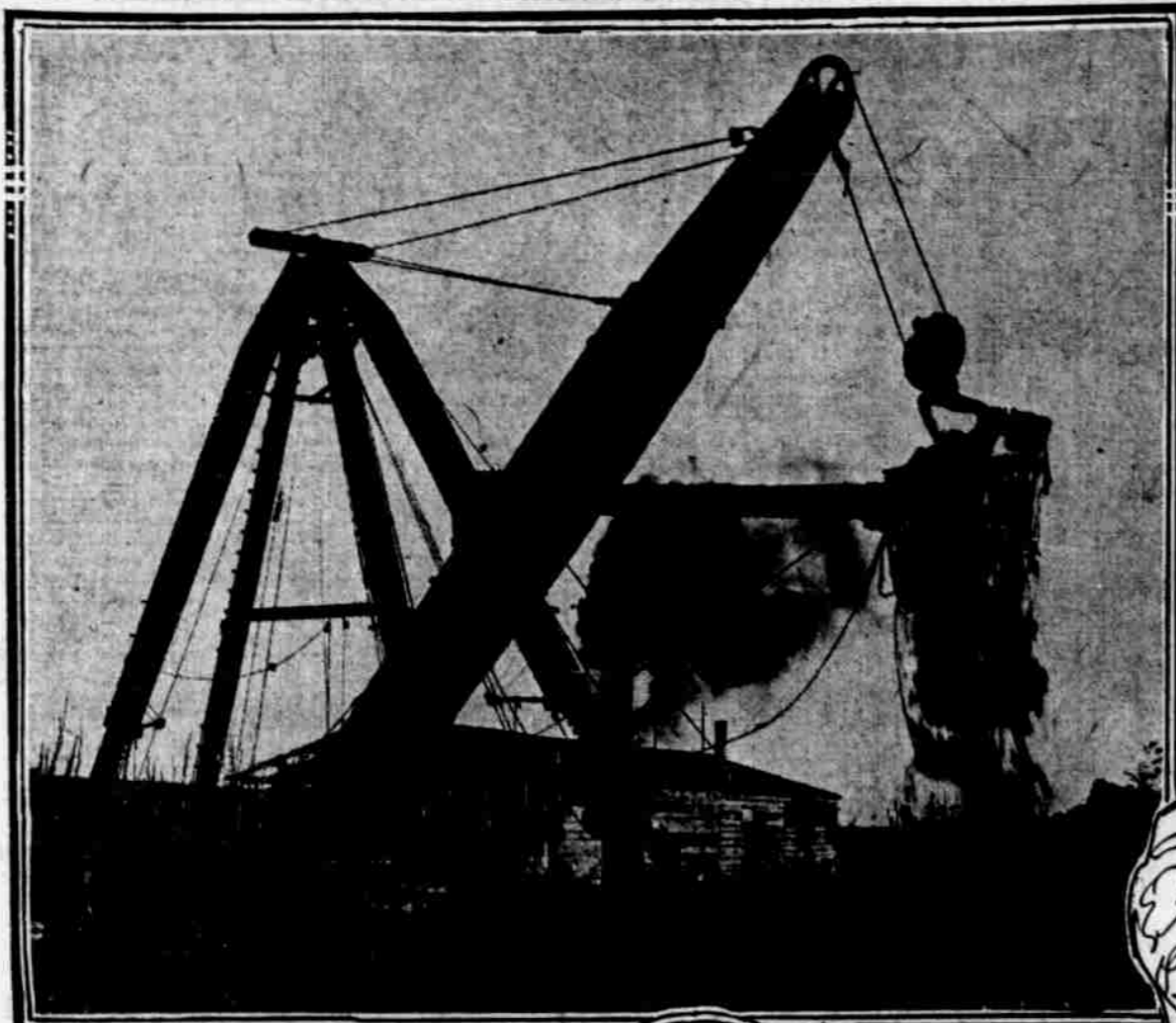


## Draining Wet and Watering Dry Land to Increase Yield



Ditches and Tile Work

**P**UTTING water on the dry land and taking water off the wet land are two of the most popular and surest ways of creating wealth that the west knows. In both directions it is putting its knowledge to excellent use. On some Douglas county and Dodge county farms a great many hundreds of carloads of drainage tile have been delivered and laid under the soil to drain the bogs and marshy places. In the wider field, drainage districts have been promoted by farseeing men that have involved vast expenditures, and with immense amounts yet to be spent.

The precedent was set by other states, which have created commissions to study and develop drainage systems; and have finally made heavy appropriations from the state treasury after individual counties have bonded themselves in large sums to protect land subject to overflow and to reclaim extensive tracts that were permanently under water or too wet to be successfully farmed. Nebraska drainage advocates feel they are justified in their efforts by the results, not only in other states, but here at home. Much heretofore waste land has been reclaimed and made to produce in most generous measure. Ultimately all the waste land in Nebraska will be brought to a state of usefulness and value by the projects now under way, according to the engineers who have been making a systematic study of conditions. This work of reclamation is yet in its infancy in the west, even though much has been already accomplished.

### Omaha Men Among Leaders in Work.

Men like Walter S. Jardine of Omaha, and Jesse Lowe, son of the first mayor of Omaha, who have made something of a study of this work of reclamation, estimate that several millions of dollars have been spent in Nebraska alone in the last three or four years. R. B. Schneider and Congressman Stephens of Fremont, among others, were long ago convinced that much rich crop-growing land, lying waste because of a surplus of water, could be made immediately available for tillage by the use of dredges and drain pipe. They put their belief to the test, with results even beyond their expectations. Mr. Jardine tried the dredging plan for draining 1,500 acres he owns in one piece, and he is an enthusiast on the possibilities of reclamation work. Mr. Lowe is now president of the Association of Levee and Drainage Districts of Illinois.

Up to this time the bulk of this work, in Nebraska, has centered in the eastern counties, but the reports of the great results achieved have spread to other parts of the state, and extension of available land area is now the fixed policy of many land owners who have given the matter serious consideration. "Crop yields from these reclaimed lands will pay for the cost of draining in a year, very often," said an Omaha engineer. This has been proven by a good many men in the last season. The overflowed land is, of course, laden with the rich sediment from higher levels, the accumulation of years, and with rotted vegetation that supplies just the elements the soil needs to make it rich enough for the production of great crops of most everything that will grow in this latitude.

### Large Amounts Expended in Recent Years.

In many districts not a hundred miles from Omaha large sums of money were spent in drainage and reclamation work in 1910 and 1911. One project in the territory immediately surrounding Omaha begins at Ralston and runs southeast to Fort Crook. A second project begins at Lane and follows the Little Pappio to the river. This latter project has practically been begun and finished in the last six months. A district larger than the ordinary, where the work is being done by the proceeds of bonds and which promises to redeem an extensive acreage of heretofore dead land, is that known as the Logan valley project. This ditch begins at a point a few miles north of Fremont, and the surplus water is to be drained off so that it will run to the Elkhorn river, forty miles away. In connection with this project the engineers are straightening the crooked course of the Elkhorn. When accomplished, this work will add a very appreciable area of rich acreage to that



JESSE LOWE  
Pres. of Assn  
of Drainage and  
Levee Districts of Illinois

already being farmed by the land owners in the district. The work was begun north of Waterloo and runs south to the mouth of the Elkhorn river. A large number of lateral ditches in the district are planned to take care of whatever overflow there may be along this project.

In the neighborhood of Tekamah ditching and tiling was undertaken on a rather large scale years ago, and the same is true of the country tributary to Herman. Beginning at Gretna and running south to a point almost due west of South Bend, there is an extensive drainage district. In the Table Rock neighborhood there is another, and Tecumseh, Falls City and Auburn also view with keen interest work along this line in the sections tributary to them. Land owners along certain sections of Salt creek have started a campaign for a drainage district. Across the river, in Iowa, a good deal of similar work is being carried forward.

### Thousands of Acres to be Reclaimed.

Those who have been keeping track of the work of draining and tiling heretofore waste land in Nebraska, estimate there are still a good many thousand acres waiting only the magic touch of the engineers to put forth bounteous yields of crops. Rich as it now is in great stretches of the fertile soil of the Mississippi valley—in fact, containing more acres per capita of population than any other of the more populous states of the middle west—Nebraska has yet much to gain. It can have possession at a comparatively small cost. With increased interest in intensified farming has come an awakening all along the line leading to growth of crop yields, and these naturally rich submerged bottoms are to be rescued from their long era of uselessness. Instead of being trouble breeders, they are to be converted into luxuriant grain fields. Within the last two years, especially, this fight for reclamation of potential crop land has been widened, until the winding course of every river in the state and the bed of every bog, marsh and swamp has been invaded by the ditcher and the dredge, to be followed a little later on by the tiller.

As increased precipitation has rendered the yields in the western sections of the state more certain, thus augmenting the value of every acre of land, more and more money has been poured into the growing reclamation fund. In a very few years a really remarkable transformation has been brought about where advanced ideas have gained a foothold, where men have had their minds turned to the notion that by the expenditure of \$1 they can realize \$10 a little later on. Whole sections of land which rested for many years under the classification "valueless," have been brought into use and much of it put on the market at par. Treacherous stretches of "river" have been narrowed to half their original width, swamps have been thoroughly drained of their surplus water,

Dredge Used in Reclamation Work near Omaha



On Unreclaimed Land



Cutting Wheat on Reclaimed Project in Nebraska



WALTER S. JARDINE

and bogs, a few years ago impassable, have become the finest kind of agricultural plots.

While Nebraska and other states have done much in the way of draining, tiling and permanent reclamation, Illinois is leading all other commonwealths, probably because the opportunity was greater, as the possible area to be reclaimed was very large at the beginning. At the head of the work in that state is the former Omaha boy, Jesse Lowe, who has his headquarters at Beardstown. He is a walking encyclopedia of information on this subject, which he is dispensing freely to all interested parties. He admits that, so far as the work has progressed in this state, it was well done and gives promise of wonderful results.

Authorities have endorsed without reserve the reclamation work of Illinois and other parts of the United States. In Nebraska it has been costing only from \$4 to \$10 per acre to reclaim the submerged lands, but Illinois has expended from \$10

to \$30 per acre and the land so reclaimed is selling at \$150 per acre now.

Referring to the reclamation work in Illinois and speaking of it generally, S. M. Woodward, in a pamphlet prepared for the United States Department of Agriculture, says:

"In Illinois and adjacent states, the bottom lands which have been reclaimed by pumping are in the heart of the corn belt and possess a heavy rich black soil, mixed in places with a varying amount of sand. They are adjacent to thickly populated lands, the best of which is worth \$150 per acre, and in some cases lies within a few miles of large centers of population.

### Tile Drainage is Necessary.

"Experience shows that to put bottom land into perfect agricultural condition some tile drainage is usually necessary. Where this has once been demonstrated the landowner, who has already been put to considerable expense for the main drainage of the district, is not content to have his land in anything but the most fertile condition, and hence is usually quite willing to go to the comparatively small additional expense involved in the necessary tiling. Parallel lines of 5-inch or 6-inch tile are laid at such distances apart as the elevation, slope, and nature of the soil require. Where the lines are long, larger sizes are used in the lower portions. The distances between parallel lines found necessary by trial is usually between ten and thirty rods, and their minimum depth below the surface should not be less than thirty inches."

Discussing reclamation and the possibilities of further improvement, a speaker at a meeting of the Illinois association which is headed by Mr. Lowe said, according to the report in the booklet published by the association:

"Follow up the great valleys like the Missouri, the upper Mississippi, the Ohio and the other trunk streams and you will raise the limit (of rich alluvial lands subject to reclamation) to over 50,000 square miles.

"Add to this the valleys along navigable tributaries, and streams capable of improvement for navigation and you will reach a total of about 75,000 square miles or 50,000,000 acres within the Mississippi valley.

"Now consider this in comparison with the semi-arid regions. Some years since I had occasion to make an investigation of the economic resources of the United States and Canada with respect to

freight producing capacity and ability to carry population in relation to the great lakes considered as the arms of the sea. I will not go into that further than to say that we have 1,500,000 square miles of semi-arid territory, 1,300,000 acres of which lies south of the boundary. The reclamation service estimates that the water that can be conserved in this region will irrigate 50,000,000 acres or about 75,000 square miles, say 6 per cent of the whole. There are 85,000,000 acres to be reclaimed by simple drainage alone. Higher estimates have been made, but these involve a scientific use of the waters, such as is not likely to obtain under our system of government and with our human nature.

"Consider the value of the lands that can be worked by dry culture, the wood lands and the grazing, and the aggregate rises to 490,000 square miles, or about three-eighths, measured in terms of normal human territory. We have 110,000 miles of absolute desert that does not produce enough herbage to carry a steer to the square mile. "Divide the United States into two equal parts along the semi-arid line, in the vicinity of the 100th meridian, and the aggregate value of the western half will be 690,000 square miles, or 46 per cent of the eastern half. The eastern half of the United States is much lower in altitude; it is humid; it contains the alluvium and great upland soil resources.

"I wish to call your attention to the fact that the alluvium of our valleys along navigable water courses equals the area of all lands that are to be reclaimed by irrigation, and that such lands are far greater in value and have a superior claim in any policy of conservation. The lands are as rich as lands can be; they lie along water courses which are to be developed as highways; they are near to the great markets; they are at the lowest altitude and adapted to the greatest variety of products, and their reclamation contributes enormously to the sanitary welfare."

On December 7, 1911, the National Drainage association was formed in Chicago, as a result of a split between the "drainage" and the "irrigation" interests at the National Irrigation congress held in Chicago. The first meeting of the National association will take place in New Orleans this month, at which time the National association will be perfected.