Crook County Journal

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Irrigation and Its Problems

By Geo. T. Cochran, Supt. Water Division No. 2.

The future development of all that part of Oregon lying east of the summit of the Cascade mountains depends almost entirely upon irrigation. This arid region extends beyond the boundaries of Oregon into Idaho, Utah and Nevada, and this whole territory naturally follows the water grade to its outlet down the Columbia.

Irrigation is a complex problem because of the numerous conditions and mixed situations under which it is carried on; to solve this problem necessarily means that there must be put in some systematic methed of administration. It is the tendency of the human race in its development to follow this line of least resistance.

In settling up this territory the pioneers took up those pieces of land first which did not require irrigation; as these lands were absorbed, other farmers ventured to the less productive semi-arid lands. As transportation facilities grew and crops became more valuable, those lands which were nearest the streams and more easily irrigated were put under water by the owners; this would occur most generally in the most arid sections.

Putting water upon the lands was a means of insuring a crop; soon the effect of water upon the land was shown by high values, and this compelled the putting of water upon the semi-arid lands, and even upon lands which ordinarily do not require irrigation. As this value of land increased the production of that land begin to decrease. In order to bring the production up to a reasonable return upon the capital invested the application of water was neceseary. With such application the value of land still increased beyond our comprehension. Our population has also increased and all these conditions have united to make our irrigation problem not only of state wide but also of national interest and importance.

When you buy a piece of real estate, the first thing considered is the title. No one will invest his money in such property unless the title is good. As the clamor for water has become larger so in porportion have our water titles become more and more chaotic. Indeed, throughout our part of the state, land values depend almost entirely upon water. It can be truly said that investments in our lands of Eastern Oregon depend upon the value of water.

In order to make these titles to water stable, there must be some system devised. That system must be capable of enforcement. All water users must conform to it; if one water user is not compelled to conform to the system then you lose this system. Furthermore, this sysmust be flexible so that it can be adapted to the various conditions thah rise. No stream flows a regular and certain amount of water. It varies with the seasons, and no year even, cau be found hardly the same. This flexibility therefore is absolutely necessary. Our present state law is an attempt to put in force a system in irrigation. Titles to water are first investigated, adjudicated and settled; in that investigation there are a few very important matters to understand.

First, it is necessary to settle the date when water was first used under each right. It is the attempt of the law to enforce that old principle of law, first in time, first in right. Therefore, we need this date fixed. When water begins to get short; when there is not a sufficient amount to supply all the users; the younger rights are cut off and the older rights supplied. This is determined by three dates.

The next question that is important is, what land has been irrigated. This is comparatively easy to determine and is rarely disputed. In order that the water titles may be permanent our law makes them appurtenant to the land itself.

In former days appropriators have sold their water rights indiscriminately. But in spite of all these sales, they have kept using the same amount of water. By making these water rights appurtenant to the land, and compelling a transfer in a certain mode which is done under our law through the Board of Control; these rights are made permanent. It becomes easy when a sale is made to cut the water off from the seller and give it to the purchaser. Again the acreage of the land irrigated should determine the amount of water that the appropriator can use.

Water is a natural resource and no one should be allowed to monopolize it; his requirements are limited by a beneficial use of that water.

Another question that arises, is how much water is necessary to irrigate an acre of land? This is sometimes called the duty of water. No more should water rights be granted upon opinion and guess work testimony. Testimony as to the duty of water should be direct, and the results of agricultural experiment as to the application of the water. Our agricuitural college and our national department of agriculture and many other organizations and men are making a study of this question.

Experiments in soil moisture has shown that agricultural crops will not live where the moisture is less than 10 per cent. In fact crops begin to wilt when moisture in the soil reached about 15 per cent. Nor will our agricultural crops live in land where there is an excess of moisture. This excses occurs when the soil contains somewhere around 30 per cent of water. Crops usually begin to feel the effects of too much water when the soil moisture goes over about 25 per cent; there is therefore a happy medium between this 14 or 15 per cent of water in the soil and the 25 or 26 per cent. The result of numerous experiments along this line shows that the nearer the soil moisture can be kept to 20 per cent the larger will be the crops. The irrigator of course, desires some practical method of knowing when they have about this per cent of soil moisture. As long as the farmer can take his spade and go into his field, sink the spade its full depth, lift out the dirt, take a handful of it, and press it into a ball so that it sticks together the soil contains plenty of water. When he presses the dirt together and then releases it, and it begins to fall away in particles, the moisture in the soil is getting close to the wilting point. Of course, there are other methods of determining when to irrigate the land, such as watching the plant growth, etc., but these more particularly enter into questions which are brought home to the irrigator after his title to water has been settled.

Again, experiments have been made as to just how much water it takes to produce a pound of dry matter, and the result of thousands of such experiments have been printed in various bulletins and government publications. Thes show that it takes about 750 pounds of water to produce one pound of dry matter in alfalfa. Five tons of alfalfa hay is an ordinary season's crop, or 10,000 pounds. Alfalfa hay after it has been cured contains ordinarily about 15 per cent water. Deducting this 15 per cent from the 10,000 pounds leaves 8500 pounds. Multiplying this by 750 makes 6,370,000 pounds of water which is necessary to grow the five tons of alfalfa. Now one acre inch of water weighs 226,885 pounds. Dividing the amount of water reguired to produce the crop by the weight of one acre inch we find that to produce five ton of alfalfa it requires 28.1 acre inches This calculation does not take into consideration seepage or rainfall or water received from any other source than irrigation.

After having determined what all the water titles along a certain streams are, it is then necessary to administer them. This adminstration is the only method whereby stability of title can be achieved.

A water-master is appointed who has all the authority of a sheriff and all the authority and power of the court behind him. Under the decrees he has a great deal of discretion. He has the power to compel headgates to be put in; to arrange for rotation, and as the water begins to get short he has the power to set the time of irrigation and the amount of water that can be used at each time. In order, therefore, for our system to be a success the water master must be a man of good judgment and able to deal with men and handle them. He also must know his stream and know the land. He must learn the various differences between the different pieces of land. He must keep minute records so that these records will show the differences. As his system works out better and better each year and comes more nearly towards the goal of perfection, then it is that our development will reach its highest point. All the land possibly in our great state will be under irrigation. The hum of industry will resound from every part. Earm production will be at its highest. All the valleys will be thickly settled and dotten here and there with schools and churches, and the songs of children will gladden the hearts of all those who hear them. Country life will be a pleasure and a joy and our whole state will prosper for when the valleys laugh and sing, it is not the farmer only but all creation that rejoices.

News Snapshots Of the Week

The army maneuvers in Connecticut, with the capture of New York city's approaches as the problem to be solved, attracted great interest. Secretary of State Knox started for Japan as America's representative at the funeral of the late mikado. A posthumous heir of John Jacob Astor was born. Dr. R. E. Doolittle was named as probable successor to Dr. Harvey W. Wiley as the government's chief chemist. Jacob Gould Schurman, president of Cornell university, was appointed minister to Greece. Emory R. Buckner, a young lawyer of considerable ability, was named as special counsel to the aldermanic committee which is investigating alleged graft in the New York police department.

Work Wanted

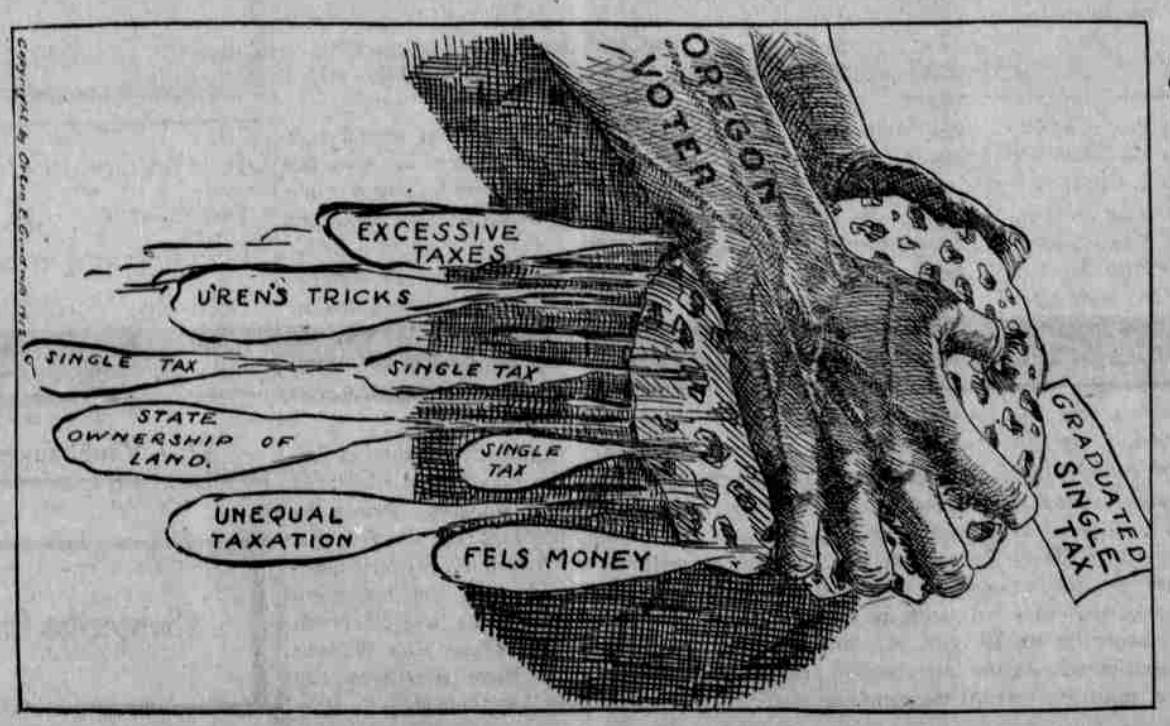
Girl wants place to work for board and go to high school. Address "O" care of Journal. 8-22

Stud Horse for Trade.

Big registered Percheron. Will take broke horses. Walter Quackenbush, postoffice box 254, Redmond, Oregon. 8-15-2p

Notice.

Parties driving beef cattle on Burns road to Prineville can get pasture at Colby's ranch, one mile off the road, below the old Davis ranch on Crooked river 8-8-1m



SQUEEZING THE WATER OUT OF SINGLE TAX

Hints for Crook County Farmers

By P. H. Spillman, Assistant Supt. Demonstration Farms.

There is probably nothing that adds more to the home atmosphere of a farm than a few fruit trees and berry bushes. Still, in going over the country we notice that many of the new homes that are being established are without fruits of any kinds, either those that come into bearing early or those that we must wait several years before receiving returns. Yet there are few places where with the proper care hardy tree and bush fruits may not be grown. While they may not bear each year because of adverse climatic conditions, still they are ornamental and will give us fruit for home consumption occasionally, which means much where fruits are scarce. Still, such small fruits as gooseberries and currants yield heavily each year, while strawberries and raspberries also do well.

So with these small fruits bearing practically every year and an occasional crop of hardier tree fruits there is no reason why each farmer should not have an abundance of fruit of one kind or other each year.

In planting a home orchard under our conditions, it is preferable, when so situated, to plant the trees on a north or northwest slope. Never set your trees on your lowest ground, because of the added danger of frost. Always plant in your higher locations if they are so situated that you can give the trees proper care. This will give you less trouble with frost as the cold air naturally drains into the low places and your high places are so situated as to receive the benefit of any air currents that may be in motion, and this also tends to prevent frost injury. In any case give your trees as good a location as you possibly can as regards exposure, and always as deep soil as you can with the above principles in mind. Set your apple trees not less than thirty feet apart each way; pears and other tree fruits twenty-five feet apart each way.

Under our conditions the selections of varieties is an important matter and nothing but the hardier ones should be selected. Do not make the mistake of selecting some much talked of varieties that may require entirely different climatic conditions than exist here, for if you do you can at best expect but inferior fruit, while in all probability your trees will very seldom set fruit at all. This pertains also to the bush and small fruits.

With our altitude and cold winters it is advisable to set the trees in the spring—fall set trees are apt to be winter killed. In setting the trees cut back the longer roots and others that have been broken off, cut off with a sharp knife. Make the holes large enough to admit all the roots without their ends being bent upward. Set the trees several inches deeper than they were in the nursery row. If you have a prevailing wind, set the trees slightly leaning in that direction. Cut off the tree about two feet above the ground. Always where possible secure one-year old trees, as they can much more readily be made to take the desired form than older trees.

The selection of varieties is of much importance and often determines whether your planting will be a failure or success. Conditions as they exist over the greater part of this county call for hardy, northern grown, rather early varieties of apples. The Russian group fills these requirements quite well and include such varieties as the Astrachan, Yellow Transparent and Grav-

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