

POWERS TALKS ABOUT ALKALI

SUBJECT IS IMPORTANT TO FARMERS

Superintendent of Demonstration Farms Discusses Causes and Effects of Alkali, and Tells How to Combat It.

By W. L. POWERS.

Thirteen per cent of all the irrigated land in the West is injured more or less by alkali. It appears where the rainfall is less than twenty inches and causes more or less trouble in all the older irrigated sections. Exclusive use of irrigation water and poor drainage of low lying land are the chief causes of alkali troubles.

Causes.

In all soils mineral particles are continuously being weathered and soluble salts are liberated by this process. In soils where there is over twenty inches of rainfall and leaching occurs, the excess of these salts is carried away in the drainage water. Where the rainfall is limited and there is poor drainage, these salts are dissolved by rain or irrigation water and carried thru the soil until the water moves to the surface and evaporates, bringing the salts to the top and depositing them there on evaporation. This is the usual method of accumulation of alkali. Heavy irrigation is apt to cause water logging and seeped areas in the lower part of the project and seeped areas are the forerunners of alkali. In the lower part of the river valley, water that has been used and reused for irrigation may become salty with soil leachings so that it is unfit for use in irrigation.

Composition.

Alkali is spoken of as white or black alkali. White alkali is mainly table salt, epsom salt, and glaubers salt, or in other words, sodium chloride, magnesium sulphate and potassium sulphate. One-fourth per cent is harmful and few agricultural plants will tolerate half to one per cent of this in the soil. Black alkali is sodium carbonate or sometimes potassium carbonate. It can be recognized by its pudding, crusty effect on soil surface, its dark brown color, and the kind or absence of vegetation. It is worse than white alkali because it causes shrinkage of the plant cells and dissolves plant tissues of young plants just at the surface, causing them to blight off at this point. One-tenth per cent is harmful and three-tenths per cent is fatal to many plants. Alkali in general where there is greasewood, salt-wort, or salt grasses; also in flat land not naturally drained or underlain with impervious subsoil.

In reporting analysis of composite samples of soil from the Demonstration Farm at Redmond, Prof. Tartar, of O. A. C. says: In the surface soil, I find total alkali salts to be six-tenths of one per cent and consisting of bicarbonate and chloride and only a trace of sulphates. Total alkali salts in the second foot is fifteen-tenths. These salts contain some normal carbonate, some bicarbonate and some sulphates and bichloride. Analysis shows the soil to be comparatively free from alkali and that the soluble salts have been largely carried into the second foot by the nat-

ural rainfall. In many cases alkali hard pan has been caused. This suggests at once the necessity of maintaining a soil mulch to prevent their being brought to the surface by capillary evaporation.

Control.

Manure will form acids upon decaying which tend to neutralize alkali spots. Seeding delicate plants where the alkali is down after rain or irrigation is helpful. Blasting may provide an outlet, where there is hardpan.

Cultivation of the surface, after it has been wet by irrigation or rain, as soon as it is dry enough to crumble and form a crumbly mulch is exceedingly important to control capillarity and prevent evaporation.

Growing resistant crops such as alfalfa is helpful. Black alkali is changed to less harmful white alkali by adding gypsum.

Deep plowing and organic matter increase water capillarity of soil and checks evaporation and accumulation of alkali.

Sometimes alkali crusts can be scraped off or washed off the surface.

The most permanent and effective way to reclaim alkali land is to underdrain and wash the salt down and out of the soil.

Drainage of Alkali Land.

There is not a large amount of our land which is underlain with strata so solid and unporous as to prevent natural drainage. In some cases it may be possible to reach the porous strata underneath by digging down in the low spots and letting the water out in this porous strata. The first step in draining alkali is to take a soil auger or spade, make a study of the subsoil and seepage channels, trace the water to its source and put in a deep drain if possible. After that put in as thorough a system of drains as needed to supplement this. The depth of drains should be such as to lower the water table so that capillarity or wick action can not reach from the water table to the surface. Tile or cement are dangerous because alkali causes disintegration. Burned clay tile are expensive to ship long distances and box drains or stone drains are the best for draining alkali spots in this section. Size of drains should be larger the deeper and further apart they are. The dirt should be tamped back into the trench where alkali land is drained and watch kept to see that irrigation water moves thru the soil and leaches it instead of running thru holes into the drains directly. Drainage is the most effective means of reclaiming alkali spots tho the removal of alkali by drains will be nearly as slow as its accumulation and may be encouraged by the use of more water.

EDEN VALLEY PROSPEROUS.

J. A. Banks and W. Reagan, of Eden Valley, in Lake county, were here last week getting freight for that territory, 110 miles distant. They report a prosperous new country, with 4,000 acres of vacant good land, and water easily obtainable. A road for auto trucks is being laid out in that region to Alkali Lake, for the transportation of equipment to the reduction plant of the Oregon Borax company, and on which borax will be freighted to Bend for railroad shipment. Superintendent Young of the company was here last week.

PROSPECTORS RETURN.

M. R. Knutson and J. W. Pettitt returned Friday from a five week prospecting trip, chiefly devoted to work in the Taylor Burn country on the McKenzie divide. They have filed on two prospects which they report promise well, and have sent a number of samples to be assayed. As well as finding quartz they killed a buck deer.

SCENERY WOULD DRAW TOURISTS

TRAIL TRAVELERS BACK FROM TRIP

McKay Says Road Would Open up Beautiful Country and Attract Many Here for Forests, Mountains, Fish and Game.

Back from an extensive horseback trip through the forest reserves, Clyde McKay, fire warden, and U. S. Forest Supervisor Roy Harvey, bring glowing reports of the scenic attractions and interests of the timbered and mountain country near Bend, and specially of its undeveloped possibilities for scenic highroads and tourist resorts.

"There is a territory here," said Mr. McKay, "which, when it is properly developed and exploited, will hold its own with any of the great

parcs as a drawing card for tourists and out-door lovers."

Trip is Long One.

The excursionists went from Bend to Paulina Lake, thence to Rosland ranger station, then Crane Prairie, Big Coultas Lake and thence along the Cascade divide past Irish mountain to Horse and Sparks lakes. From the latter the climb of the south peak of the Three Sisters group was made. From Sparks lake the return trip to Bend was made via Soda Springs and Broken Top, and down the Tamalo.

Mr. McKay is enthusiastically working for the establishment of a road from Bend to Soda Springs, and thence to Sparks, Elk and Lava lake and Crane Prairie, there connecting with the present road, and completing a swing that would cover some 100 or more miles through an extremely beautiful country, whose attractions combine magnificent scenery with excellent fishing and hunting, and unequalled opportunities for mountaineering.

The project is very feasible, from a road building standpoint, say those familiar with its features, and there seems little reason why an automobile route opening up this territory from Bend should not be constructed. Already, it is understood, the forestry officials are actively planning the first steps for the making of such a road, whose primary purpose, from their standpoint, is that of aiding in

fire fighting and the administration of the national forests.

Mr. McKay had much to say regarding the attractions of the hot springs at Paulina Lake, and believes that the establishment of a road direct to the lake will be undertaken.

RECENT LAND RULINGS

Digest of Decisions Recently Made by Secretary of Interior.

Section 4 of the enlarged homestead act of February 19, 1909, clearly indicates that an area equal to one eighth of the entry under the act must be cultivated for four years, beginning from the second year of the entry and that one fourth thereof must be cultivated for three years, beginning with the third year of the entry. Under section 3 of the act, all of the cultivation may be upon the original entry, provided a sufficient area thereof be cultivated to meet the requirements as to both entries.

Residence and cultivation on the additional may be completed by residence and cultivation on either entry for such time and such area as is required by the enlarged homestead act.

Section 2391 R. S., as amended, provides for commutation proof after expiration of 14 months from date of entry.

This necessarily implies that the 14 months period of residence and cultivation must be the 14 months immediately preceding submission of commutation proof.

Commutation proof cannot be established where the residence consisted of periods of from one to two weeks at a time at intervals of from two to three months.

In order to commute a homestead entry, the claimant must show substantially continuous personal presence upon the land.

THE DEVELOPMENT NUMBER.

(Chamber of Commerce Bulletin, Portland.)

July 3, the Bend Bulletin, of which George Palmer Putnam is editor and proprietor, issued a splendid special edition of 44 pages. It was all set up and printed in Mr. Putnam's office, and would be a credit to a town ten times as large as Bend. The office now has a fine brick building with all modern facilities, including a folding machine, a linotype machine, two job presses, a four-page cylinder newspaper press, etc. The plant contains 1500 square feet of floor space. This issue of the Bulletin is profusely illustrated. From it we glean a few facts regarding the booming city of Bend. It shows a population of 1760. The June payroll for the town was \$50,000. Several big lumber mills are soon to be built. The Central Oregon Irrigation Company is building a \$150,000 dam near Bend. Since the advent of the railroads last fall \$80,000 has been spent in permanent buildings. There is a good water system, five miles of sidewalks and a brick plant with a daily capacity of 20,000 brick. Building stone is abundant. The town has an excellent electric system and plans are in the making for a sewer system. School facilities are surprisingly good for so new a town.

School Books

We have just received the largest shipment of Tablets, Inks and other school supplies ever received in Bend. We are now prepared to furnish the school wants of every child in Bend. As a special inducement to those who will buy their supplies this week and thereby avoid the rush of the opening days of school, we quote the following attractive prices for

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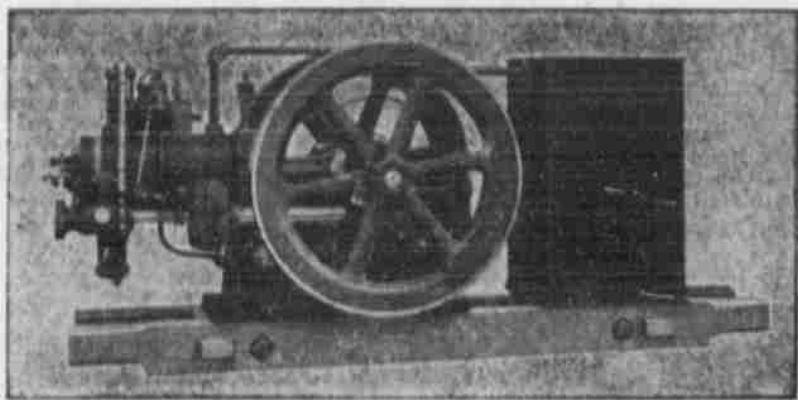
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M. W. of A.

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Deschutes Lodge No. 103 K. of P.

Meets every Wednesday evening at 8 p. m. in Castle Hall, post-office Bldg. Visiting Knights welcome. M. A. Palmer, C. C. N. P. Smith, K. R. & S.

BEND LODGE No. 139 A. F. & A. M.

Meets on Thursday on or before the full moon of each month. Visiting brothers always welcome. J. D. Davidson, W. M. H. E. Allen, Secretary

I. O. O. F.

Bend Lodge No. 218 Reg. Meetings every Monday night Visitors welcome Ralph Spencer, N. G. U. N. Hoffman, Secretary.

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