

**THE BEND BULLETIN**

"For every man a square deal, no less and no more."

CHARLES D. ROWE, EDITOR

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FRIDAY, APRIL 5, 1907.

And so Harriman says he can buy legislatures, congress and even the judiciary. The man who practices such deeds should be behind prison bars, regardless as to whether he is a magnate of high finance or an ordinary boodler.

The Bulletin is in receipt of a copy of an address delivered before the Farmers' Institute at Meridian, Ida., by Prof. Elias Nelson, formerly of Bend, now in charge of irrigation and dry farming investigations of the United States Department of Agriculture in Idaho and Irrigationist of the Idaho Auxiliary Experiment Station at Caldwell. It is a very instructive article and will appear in The Bulletin's irrigation department in a few weeks.

A few scientists and preachers are endeavoring to determine the weight of the soul. It is a perplexing question and ranks somewhat with that question of the olden times that asked how many angels could stand on the point of a needle. The Bulletin has a question that it wishes to profound, viz: Has the ordinary family dog any characteristic that corresponds to a soul, and can a dog receive benefit by attending church services? If it cannot, The Bulletin would respectfully suggest that the dogs be left at home, where they will not prove a disturbance to both the preacher and the congregation. If we don't keep them at home, let's keep them at least out of the church.

Eastern papers say that Governor Hughes of New York is at the crisis of his political career; that in his fight for good government he has arrayed all the old machine politicians and their powerful influences against him and the critical time has come when the governor must either carry through his policies and show himself strong enough to defy the "machine," or succumb and be a quiet cog in the great wheel. Some surmise that if Hughes can not get what he wants from the legislature he will throw his cause over the heads of the politicians directly to the people. Whatever may be his campaign in the fight, we "bank" on Hughes. Watch him! He has proved himself a good fighter.

Is there a significant prophecy in the recent action of the railroad managers when they asked for arbitration, under the Erdmann act, of the present trouble between themselves and their employees? Does it indicate that the idea of a compulsory arbitration law is gaining ground? New Zealand has such a law and it is said there has not been a disastrous strike or lockout in that country since the enactment of the law. Would a similar act prove as beneficial in America? The Bulletin believes it would. True, it is difficult, indeed, to force any man, or body of men, to work against their will, but with such a law in force there would be a predominating public opinion that would demand compliance with the arbitrating board's decision. And there are very few employers and very few unions that would stand out long against such public opinion. In any great strike or controversy both sides work diligently and shrewdly to obtain the favor of the public. They know that it is of tremendous

force in determining the outcome. They may discommodate the public and cause it suffering and loss to a certain point, but when the public demands, in no uncertain terms, an end of a strike the end generally follows in a short time. The enforcement of compulsory arbitration would not be impossible—or difficult. That the railroad magnates should be the first to ask for arbitration in this late trouble is also significant. It is generally supposed that the laboring class is the first to ask for government interference in an actual or threatened strike.

If pride leads the van, beggary brings up the rear.—Ben Franklin.

**NOTICE FOR PUBLICATION.**  
 Department of the Interior,  
 Land Office at Lakeview, Oregon,  
 March 23, 1907.

Notice is hereby given that William Everingham, of Rosland, Oregon, has filed notice of his intention to make final five year proof in support of his claim, viz: Homestead Entry No. 2386, made October 8, 1905, for the neky sec 14, tp 21 s. r 10 e w m, and that said proof will be made before H. C. Ellis, U. S. Commissioner, at his office at Bend, Oregon, on the 14th day of May, 1907.

**NOTICE FOR PUBLICATION.**  
 Department of the Interior,  
 Land Office at Lakeview, Oregon,  
 March 23, 1907.

Notice is hereby given that Ralph Patterson, of Rosland, Oregon, has filed notice of his intention to make final five year proof in support of his claim, viz: Homestead Entry No. 2386, made March 1, 1907, for the wky sec 14, tp 21 s. r 10 e w m, and that said proof will be made before H. C. Ellis, U. S. Commissioner, at his office at Bend, Oregon, on the 14th day of May, 1907.

**NOTICE FOR PUBLICATION.**  
 Department of the Interior,  
 Land Office at Lakeview, Oregon,  
 March 23, 1907.

Notice is hereby given that John N. Masten, of Rosland, Oregon, has filed notice of his intention to make final five year proof in support of his claim, viz: Homestead Entry No. 2386, made March 1, 1907, for the wky sec 14, tp 21 s. r 10 e w m, and that said proof will be made before H. C. Ellis, U. S. Commissioner, at his office at Bend, Oregon, on the 14th day of May, 1907.

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**Problems That Confront The Irrigator.**

**Irrigation in Fruit Growing**

From Farmers' Bulletin No. 116, issued by the U. S. Department of Agriculture.

**IRRIGATION AND CULTIVATION, AND THEIR MUTUAL RELATIONS.**

The issue between irrigation and cultivation arose at the very beginning of systematic fruit growing in California. No adequate understanding of the tillage principles involved was then exhibited; the empirical discovery of the facts was a surprise; the quick and wide use of the facts constitutes one of many striking illustrations of the versatility of the American mind in dealing with the strange phenomena of an arid region, which has marked the advancement of California agriculture. The experience of California fruit growers in the matter of tillage as related to moisture conservation and to stimulation of plant growth affords unique and emphatic illustration of the principles laid down by our best writers on these subjects. As these writings are readily accessible, attention will be paid rather to the effectiveness of proper cultural methods, as learned by experience, which are widely applicable, even beyond the arid region in which they have secured adoption.

Common observation showed at the beginning that fruit trees and vines, if well planted during their dormancy in the wet season, would make a fine growth in the spring and continue it during the early part of the dry season, but would suffer, and in some cases actually perish as the dry season advanced, because the soil would become so dry to a depth of several feet that the root hairs would die and continued evaporation from the leaf surface would extract every particle of moisture from branch and root and destroy the young tree. If the soil were heavy, it became as hard as a rock, so that a post hole could be dug only with a crowbar; if it were light, it would lose all adhesiveness and become either ashy or sandy. In both cases the soil would become not only dry, but hot, and incapable of maintaining plant growth. On the other hand, in places only a short distance away, on the same soils, where the surface had been mellowed after the late rains had compacted the surface, directly opposite behavior of the plants was seen; growth was continued in good form and color, fruit was carried to astonishing size, and the trees and vines were thrifty and vigorous during months of cloudless skies, hot sunshine, and dry air. The suggestion of such a contrast was speedily made use of, and the discovery that better fruit could be grown by surface tillage than by the old Spanish practice of frequently running water over the hard surface was hailed with enthusiasm.

**CULTIVATION AS A RELIEF FROM IRRIGATION.**

From this early announcement of the efficacy of tillage of orchard and vineyard became general, and nearly half a century of experience justifies the conclusion that adequate cultivation obviates the necessity of irrigation, providing (1) there is sufficient rainfall or underflow at any season to support a year's growth and fruitage; (2) there is sufficient retentiveness in the soil to hold water from evaporation or leaching; (3) there is sufficient depth of soil to constitute a reservoir of adequate capacity. Soil and moisture conditions are of universal occurrence, and are therefore worthy of consideration wherever fruits are grown, and the understanding of them may be very helpful to those who are beginning in new regions, and in many cases suggestive of new methods and policies in older regions. It is important that we define them.

Adequate cultivation.—This has reference both to water reception and water conservation. Wherever the rainfall is liable to come in heavy downpours there is great danger

of loss by what has been called the "run-off." This will vary according to the nature of the soil and the local topography, but even under the most favorable conditions it is a great loss unless the rains are very gentle and occur at intervals. When the soil is hard and compacted at the surface it acts as a roof and sheds almost all of the water into the drainage channels. The writer has seen instances in which rainfall enough to send moisture to a depth of several feet has penetrated only a few inches. Adequate cultivation begins, then, with the opening of the surface for reception, and unless this is done the game is stopped at its beginning. The subsoil reservoir will never be filled unless the cover is porous by nature or rendered so by coarse tillage at the beginning of the rainy season.

Adequate cultivation for water retention means such treatment of the surface after the rains have fallen as will reduce evaporation to a minimum. A compact surface layer is not only slow to receive water from above; it is also quick to lose it by surface evaporation as it rises progressively from below. The result of this loss is the deep drying which is destructive first to root hairs and finally to the whole plant. A loose surface layer prevents this escape of the moisture into the air and increases in effectiveness as the soil is more and more finely pulverized and as the loose layer becomes deeper. Cultivation, then, to retain moisture for the use of the roots of trees and vines during the dry season consists in maintaining a deeply pulverized surface. To secure such a surface pulverizing once is not enough; even though no rain may fall, the surface will become recompacted and must be repulverized. In a soil thus treated moisture is always present quite near the surface, and so great is the contrast between this and the deep dryness of an uncultivated soil that the impression currently prevailed that cultivation produced moisture. It does not produce it; it merely prevents its loss by surface evaporation.

Adequate moisture.—Evidently this condition is fulfilled when the natural moisture thus faithfully conserved is enough for the season's needs of the tree or vine. This moisture may come from rainfall on the particular area or from rainfall supplemented by underflow from adjacent catchment areas. How can it be told when there is enough? The experience of the arid region is that this can not be answered by measurement of rainfall. There are many places where an annual rainfall of less than 20 inches is adequate for the full growth and fruitage of the tree; there are other places where twice and even thrice that amount will not obviate the necessity of summer irrigation. The test of the matter is the behavior of the tree during its full cycle of growth and fruitage.

Retentive soil.—Another condition which will render adequate cultivation effective or not is the mechanical character of the soil. The soil must contain enough fine particles to make it hold water well. Excessive fineness makes adequate cultivation difficult; excessive coarseness makes cultivation ineffective; that is, the soil will dry out in spite of it, both by evaporation and drainage. The ideal fruit soil is a loam, because it is coarse enough to be cultivated readily and fine enough to prevent the too free access of air and to prevent the too rapid descent of water by gravity. This favorable condition between coarseness and fineness is prevalent among the predominating light loams of the arid region, in the alluvial soils of the river banks, ancient and recent and in many of the upland soils resulting from the decomposition of the country rocks. It is the highest type of soil for almost every cultural purpose, and meets its highest use, perhaps, in the growth of horticultural products, because they command highest values.

(To be continued.)

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