EVENING ROSEBURG REVIEW

OCTOBER 21, 1913.

Douglas County Creamery butter only 85c per two pound square. Ask your grocer for it. Patronize home industry.

FINAL NOTICE.

Notice is hereby given that the undersigned, administratrix of the estate of Minita Bell, deceased, and of the partnership estate of Bell Sisters, a firm consisting of the said Minita Bell and Minnie Bell, has filed her Final Account as such administratrix with the County Clerk of Douglas County, Oregon, and that the Honorable Dexter Rice, County Judge, has set Monday, the 17th day of November, 1913, at the hour of 10 o'clock in the forenoon as the time and the county court room in the courthouse at Roseburg, Oregon, as the place for hearing objections, if any, to said Final Account and for settling the said estates.

Roseburg, Oregon, October 14, 1913. MINNIE BELL, Administratrix of the estate of Minita Bell, deceased, and the partnership estate of Bell Sisters. T

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way to inform yourself of the wholesomeness and purity of our products is to order a case of our soft drinks and get the concerted judgment of the whole family. One trial will convince all of you that there is nothing quite so good in every way as our sodas and soft drinks. There is a reason.

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Also a full assortment of other stock. To sell them, we will have to put the

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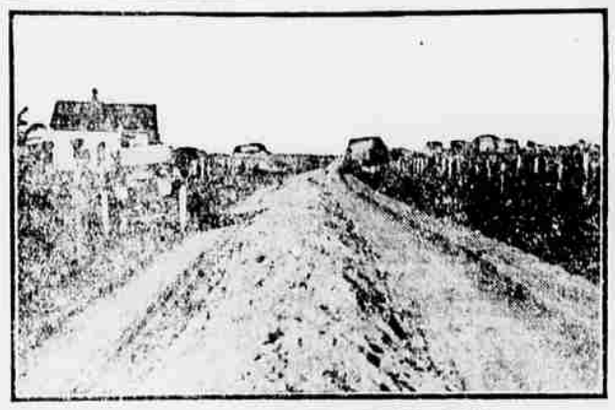
Fall Care of Roads

III.—Gravel and Sand-Clay Highways—Necessity of Systematic Road Management.

THE repair and maintenance of gravel roads are very similar to those of earth roads. Before a gravel road can be effectively maintained it should be put in thorough repair. The repair should restore, in the first place, the drainage structures of the road to proper condition. The graveled way itself is repaired by first clearing away all refuse and vegetable matter or other perishable material which may have worked on the surface from the sides or otherwise. The road should then be carefully reshaped by a scraping grader and by hand work with rakes. Sometimes a harrow is useful. Unless the road is directly underlaid with pure sand or clay there need be no hesitation in breaking up the old hard surface, for a new layer of gravel will not otherwise bind well with the old layer. If there is an excess of large pebbles or stones on the surface these should be removed, or they may be used if of sufficient amount as a new bottom course on some considerable section of the work. New gravel may then be applied for a wearing coat. Before beginning this operation earth shoulders should be thrown up to hold the new material and to prevent waste.

Where gravel contains an excess of sand it does not bind and form a hard, smooth surface. A moderate amount of clay is not harmful, but where considerable clay is present the gravel becomes softened in wet weather and the road may go to pieces. It may sometimes be necessary to screen gravel into sizes for repair work, as in gravel construction. The "fines" should not be piled on top of the road in a thick blanket, however, but only enough should be used to fill the voids. Excess "fines" or surface clay may be used as a binder in low spots. The amount of gravel necessary for repairing any road will, of course, be governed by the existing conditions of the road. If a road has been allowed to continue in bad shape it will require from four to five times as much consolidated gravel as if it had been kept in good condition.

A gravel surface will not "stand up" under traffic as a macadam road does, and every precaution should be taken to prevent the passing of vehicles in one rut. It is ideal to have a gravel road at least three fourths [illegible] wide, as it will always be [illegible] somewhat. It is well to have a little excess size on a [illegible] surface. It must be remembered that a sharp



POORLY CONSTRUCTED GRAVEL ROAD.

A [illegible] MOUNTAINS.

crown [illegible] tends to make the road [illegible] track exactly in the [illegible]

The [illegible] good spreading gravel [illegible] careful consideration [illegible] possible to remove [illegible] spreading at the [illegible] scattering [illegible] time is lost [illegible] depositing [illegible] in a little [illegible] spaced and the [illegible] that much [illegible] job is finished [illegible] with gravel [illegible] spread the gravel [illegible] but a careful operator [illegible] scraping machine can do an excellent job and much cheaper.

The road [illegible] should be well established by lines and shoulders and, if possible, rolled before any new material is spread. If the gravel is merely dumped upon the surface and roughly spread with shovels, a good job will not result. It is usually necessary to have one or more men with rakes who can constantly remove larger stones and keep them ahead of the dump in the bottom of the layer. If large stones form a considerable percentage of the gravel, men should be placed with rakes at the pit or on the road to remove them. Frequently there is sufficient gravel on the road, and it requires only reshaping with the grader to put the road in good condition for maintenance.

The use of bituminous binder on gravel surfaces has produced good results. The essential requirements are the use of well graded gravel with no large stones or pebbles in the upper layer and a thorough mixing of the binder with the gravel. Large stones on the surface tend to start ravel. It appears that the lighter asphaltic oils mix more readily with gravel and may be incorporated after applying by using a spring tooth harrow. Usually a new application of asphaltic oil will be required after one or two seasons where there is heavy frost. Where light asphaltic oil is applied to a gravel road surface a brush harrow has been used to mix the oil and gravel with good effect.

Maintenance.

A gravel road surface may be effectively maintained by the use of hand rakes, a scraping grader and sometimes by the split log drag. The ruts and horse track which develop may be filled by raking for a time, but later new material must be added. When holes are to be filled they should first be cleaned of dust or mud and the edges loosened with a pick.

Sufficient gravel of the proper size for such work should be placed along the road at intervals. The piles should be large enough not to be scattered and wasted, and a careful record of the quantity should be kept.

A split log drag or a plank drag can be used advantageously in gravel road maintenance when large stones have been removed. Sometimes a scraping grader is useful in reshaping gravel roads. The main benefit from the road drag is due to the smoothing of incipient ruts and the constant preservation of the crown. If serious ruts begin to form at the edges of the road they may be refilled by hand raking to good advantage.

The material should be drawn always to the center, as the gravel tends to work outward. In using a road drag upon gravel surfaces it is desirable to have both blades of the drag shod the entire length with strips of iron with the dimensions two inches by three-eighths inch in section. It is well wherever possible to roll gravel roads once a year.

Repair and Maintenance of Sand-Clay Roads.

All the general features of maintenance, such as clearing waterways and dressing shoulders, apply as well to sand-clay roads as to metalled roads. In all cases the cross section should be carefully maintained to insure good surface drainage, and all ruts, hoof marks and depressions likely to hold water should be smoothed away, so that there will be no standing water on the road.

The special feature of sand-clay maintenance is the repeated smoothing of the surface to close it against the penetration of moisture as far as practicable. The best method of effecting this is to use a single drag, such as the split log drag, as frequently as the surface seems to need it.

The dragging should always be done after a rain when the surface is plastic. There are two periods following rain when the soil is in suitable condition for dragging. The first period is almost immediately following the rain when the road is very wet and soft. Then follows a period when the soil is too sticky for dragging, and this is followed by a third state when there is a process in the soil analogous to setting, and at this time the dragging is of greatest benefit.

Dragging should be begun along the outside edge of the traveled way, and the first return trip should be along the opposite edge. It should advance toward the center, and the last trip should be made directly in the center with the drag tilted up straight so as to spread the accumulated material evenly.

If at any time the road becomes badly worn or out of shape, the entire section should be plowed, disk harrowed, reshaped with a drag or grading machine and rolled. It is not uncommon when sand-clay roads are new to find that there is an excess of clay. In this case there may not have been sufficient sand used in construction or it may have been lost by wash into the gutters. There should be a sufficient supply provided on the roadside to restore the proper mixture.

In case the road hardens in a rough condition, owing to careless dragging or to neglect, a grading machine will redress it satisfactorily. Frequently by reversing the blade of the grader the effect of an excellent heavy drag is produced that will iron out hardened ruts and hoof marks.

Road Management.

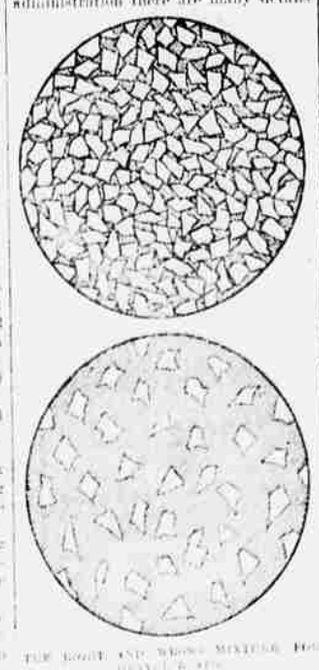
The repair and maintenance of public highways have suffered greatly from poor administrative systems. Such work is necessarily of a more routine character than the work of new construction, and the failure to recognize its importance has in the past led road officials to subordinate it to the execution of new work. It would seem that as just the point in road operations where stimulus of effective organization was most needed it has been absent. The only successful attempts at systematic repair and maintenance that are on record are those attempts which have been managed with skilled and strong central control.

MIXING THE SAND AND CLAY.

A fundamental difficulty with the organization of road systems which must handle repair and maintenance appears to be the failure to recognize that road work is a trade which requires training. Training for road work must necessarily be obtained at the expense of the community. As a rule, road officials are not in office long enough to mature their experience, and there is a constant economic waste of road funds.

It has been found that the best results follow in an administrative district where the mileage of roads is sufficient to warrant the continuous employment of a man who is either a highway engineer or a competent road builder, whose interest is primarily in road work and who has charge of road matters in his district. Where such a man is employed from year to year he can select competent men for road work, and he is able to plan with confidence systematic improvements which must wait for successive annual appropriations.

Under a competent and continuous administration there are many details



FOR ROAD AND WHERE MIXTURE FOR GRAVEL IS [illegible]

which can be [illegible] for road betterment [illegible] It is [illegible] to have a [illegible] plan [illegible] of all road [illegible] and placed [illegible] the quality of [illegible] road dragging [illegible] should be [illegible] and it should be [illegible] for use when the [illegible] greatest improvement [illegible] done by the [illegible] important road [illegible] in conformity with an established program toward which some work is directed each year.

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