

The Problem of Graveled Roads

EVIDENTLY the Klamath, Coos and Curry Highway District, Coos County, Ore., has solved the problem of graveling the highways at moderate cost. Three years ago the district decided to gravel the district's share of the highway between Seaside and Goldwell. A half mile away, Arline Foster runs parallel with the highway and there an abundant supply of gravel was procured. Fortunately the very heavy traffic incident to heating plants and also for the numerous Electric line trucks out through the gravel, mixing the underlying soil with the superimposed gravel in suitable proportions for cementing a firm, smooth surface. A per centum of clay or calcareous soil mixed with gravel makes a hard, smooth surface for heavy traffic. The result of the treatment has been to secure a very satisfactory road which is highly commended by local and Eastern States engineers.

Under the inspiration of this successful method a neighborhood being at the west, called Seaside avenue, decided to gravel on the following plan: The farmers to furnish the use of teams and wagons with dump loads.

Nampa Highway Methods.

The Nampa Highway district to provide gravel, usually donated by those who have it, gave the districters and a man to help dump the loads and also spread and smooth the gravel on the roadbed, using for this purpose a King drag. The freshly gravelled roadbed should be smoothed with a King drag or other implement weekly for two months or until settled and cemented with the underlying soil. Four inches of gravel in the middle of the roadbed with two inches on the sides will in such proportions as to shed rain and form a smooth solid bed. Heavy traffic through the gravel in wet weather will enough underlying soil has been mixed and cemented with the gravel to shed rain and create a solid roadbed.

A moderate percentage of clay will

mixed with the gravel as applied will pack and cement from the beginning. The clay gravel banks along the reclamation ditches filled by the dredges supply ideal material for graveling our roads. This mixture of clay, sand and gravel packs from the very first and does not need underlying soil cut in by heavy traffic.

Admixtures Needed.

Coarse gravel, free from clay or soil, will need an admixture of soil from below to secure a hard, smooth roadbed. Orchard avenue has now been gravelled two years. Its success from the start has been such as to attract the attention of other neighborhoods. This Fall the Lone Star and Midway districts have been gravelled and other lines will soon be completed to the extent of 13 miles of gravelled roads in this neighborhood.

The Midway district, one and one-fourth miles, 400 rods, required 800 loads of gravel and 16 hours to apply. The gravel was hauled from 30 to 100 rods. On December 5, eight shovellers and 15 teams hauled 270 loads, covering 135 rods of road at a cost of 15¢ cents each and a rod cost 41¢ cents, making the total cost of one and one-fourth miles \$207 or \$141.44 the mile.

On the Lone Star road the gravel was hauled from three-fourths of a mile to the length of the gravelled road three miles. The number of loads was 1405 or 460 loads to the mile, at a total cost of \$776.99. Each load cost 41 cents or \$258.99 the mile. To this must be added \$10 the mile for work the next two months with team and King drag smoothing the surface.

Ancient Grasshoppers.

Recent explorations near Cook City, Alaska, have revealed a glacier peculiarly filled with grasshoppers, which are supposed to have existed uncounted ages ago. In July of this year two scientific prospectors, J. C. Witham and Howard Morris, visited the place and found strewn over the

brought to the surface by the receding glacier and already drying in the sun to be wafted away in tiny particles by the wind. Mr. Witham dug ice parts of countless grasshoppers a hole two feet deep into the mass of frozen grasshoppers, reaching a place where the insects were whole, preserved just as they were when they alighted in some cross-country flight, probably ages before the first Norwegians landed on the coast of Greenland. Those who remember the grasshopper invasion in 1875, when a mammoth cloud of insects that blackened the sun swept like a scourge from Montana to Texas and back again, will recollect that the year of 1875 was unusually mild. The theory that eggs of the grasshoppers laid in the glacier before the original horde was frozen might have gained the surface, thawed and hatched, is held to be feasible. Experiments have proven that grasshopper eggs may remain frozen for an indefinite time and still remain fertile.

As a tribute which the lavish land may send
To keep the Storm King's host,
Of which the northlands boast,
From the mellow clime where Summers never end.

And the hymn that labor sings
Is the chant of joy that springs
From the blessings of a fat and pregnant soil;
For there's not a dell nor plain
But yields up the joyous grain
When awakened by the magic touch of Toil;
Where the people wait to meet
With their outstretched hands to greet,
And a welcome that no snowy chill may spoil.

And the roar of whirring steel
Bursts amid the crash and peal
In the factories that art has set alive;
And the deep and mighty ships
Gently glide into their slips,
With the cargoes of the nations, as all strive
To send the finest wares
That the land of commerce bears
To the land where labor, love and capital may thrive.

There's a welcome for the world
Where the valleys broad are curled
Through the land of endless Summer
In the West;

Where eternal sunbeams play
'Mid the golden boughs that sway
As the zephyr whispers songs you love
The best,
While the mountains stand snow-crowned
Neath a sky that's seldom frowned—
Come, this Winter—you are welcome
With the rest!
—Gordon Ray Young, in Midwinter Number, Los Angeles Times.

About 400,000 automobiles are turned out each year by factories located at Detroit, Mich., while the total value of automobiles and automobile supplies produced annually in that city amounts to over \$650,000,000. These factories give employment to 120,000 men and have a weekly pay roll of over \$1,500,000.

Come This Winter

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The best,
While the mountains rise snow-crowned
'Neath a sky that's seldom frowned!
Come, this Winter—you are welcome
With the rest!

Over every garden bed
See the petals, ruby red,
Of the flaming rose a-waving in the air!
And by forest, stream or field
Not a spot may be revealed
But the treasures of nature are laid bare,
In this land of oil and gold
Where the people, young and old,
Have a welcome for the pilgrims that may fare.

And the yellow popples dance
In the playful sunbeam's glance,
Whose golden glow it never fails to lend;
While the blossoms of the trees
Throw their perfume to the breeze

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