

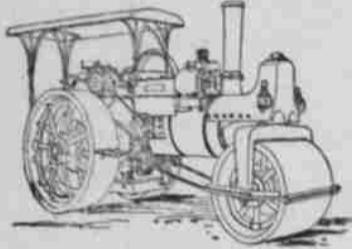
ROLLING ROAD FOUNDATIONS.

On Its Thoroughness the Durability of the Road Depends. To construct a good roadway, one that is permanent, solid and smooth, without an undue or wasteful expenditure of money and labor, the use of the road roller is indispensable.

And first of all the earth foundation upon which the broken stone is to rest should be well rolled. It cannot be rolled too solidly. No matter what may be the appearance of the earth bottom after the excavation is completed, it is more than likely to contain many soft spots, which can be brought to light very quickly by the passage of a heavy roller.

If the material is very soft and mealy, it may be best to begin the process of rolling with a moderately light roller, and sometimes the rolling will be hastened and made more effective by sprinkling the earth, though this cannot be practiced in all kinds of soils.

In rolling the earth bottom it is generally best to begin at the sides of the excavation and work toward the center—that is, begin by rolling along the outer edge of the excavation from end to end, and on the second passage of the roller let it move along parallel with the



STEAM ROAD ROLLER.

first course of the roller and slightly lap the portion already rolled. When a point near the center of the road is reached, begin on the other side of the excavation and repeat the operation, finishing at the center. Rolling is omitted when the soil is of a hard, gravelly nature, or when a stiff clay is found which presents a firm surface, but whatever be the nature of the soil the use of a heavy roller will generally develop weak spots, the presence of which would not otherwise have been suspected. This fact may be demonstrated by passing a heavy steam roller over the earth foundation after excavation has been made for the macadam roadway. It will be found that the passage of the roller over what appeared to be a well graded surface of compact material will develop a series of humps, holes and undulations, utterly destroying the uniformity of the grade in places, and revealing many soft and weak places which are wholly unfit to sustain a permanent stone roadway and the wagons which are to pass over it.

These holes and hollows should of course be filled with good, firm material and the rolling process continued until the roadbed becomes uniform in grade and thoroughly compact. In soft soils and in places where a steam roller may not be easily sustained or worked to advantage, it is best to begin the rolling with a light roller and one of large diameter, but the rolling should be completed by the application of as heavy a machine as possible and the surface made as solid and unyielding as the nature of the material will permit.

Use a steam roller if possible. It can be purchased of any weight, from 5 to 20 tons, though steam rollers having a weight of from 10 to 20 tons are most commonly used. For all ordinary country roads a roller of 10 tons in weight is about right.—Good Roads.

A Test of Civilization.

Not simply comfort and convenience in the daily intercourse of social life, but economical considerations of vast importance are involved in the question of improved roads throughout our country. The most cursory study of statistics showing the distance over the average wagon roads of our country through which a load of wheat will pay its own transportation is a convincing object lesson to any man concerning the wealth producing, labor saving, food cheapening effect of good roads. A farm 12 miles from a railroad station in a district with good roads is worth more than one equally good three miles removed from the railroad where the roads are as bad as they are in many farming districts where the land is rich.

Co-operative Roadmaking.

The system in New Zealand of constructing roads is by what are called co-operative contracts. In these a small party of men, generally six in number, is allotted a certain section or length of road; one of them is elected a "ganger" and trustee for the others to deal for them with the government. The government engineer states a price for the portion of the work, and as this is done by an unprejudiced officer it is generally accepted without a murmur by the men. The results usually have been very satisfactory. Progress payments are made fortnightly for the benefit of the men's families, and the whole amount is paid up in cash on the work being passed by the engineer. It is the intention of the government to provide small farms of 10 or 15 acres each for these workmen in village settlements so that they may be induced to make their homes in country districts and thus in some degree neutralize the centralizing tendency of modern industrial life.—Pall Mall Gazette.

FOR IMPROVED HIGHWAYS.

The Movement For Better Roads is Steadily Progressing.

Among many signs of interest in the movement for good roads, perhaps none is more noteworthy than the attitude of college presidents and other officers, as disclosed in the replies made by a large number of them to a letter of inquiry sent out by an earnest promoter of road improvement. It is undoubtedly the fact that the importance of good roads has not yet been appreciated by those who ought to show the deepest interest in this matter—namely, the farmers, who would be among the first to feel the direct benefits of good roads were they once built.

But such a reform must inevitably move slowly. That it is making steady progress in the right direction is the main consideration. The interest shown



UNIMPROVED HIGHWAY.

by the educators of the country is extremely important, and some of our institutions of learning have already made special arrangements for stimulating the study of the road question and imparting proper instruction on the subject of road building.

The Massachusetts Institute of Technology may be cited as an example. It began this work in 1890, and an instructorship in this department is now filled by a competent engineer, while a large road library has been collected, road materials have been gathered for examination and apparatus has been devised for tests of these materials, and during the last two years some special instruction has been given to the students by experts in special lines of road building or highway engineering.

It is coming to be understood that there is a science of road construction, and it may be hoped that the day is not distant when the truth will be recognized that carriage road engineers are as essential as railway or bridge engineers. President Andrews of Brown university says that he would establish a regular professorship of road engineering at once if he had the funds for it.

All this is encouraging and significant in one direction. In the other, however, not much progress is to be noted. The legislature of this state last winter passed a law permitting the board of supervisors of any county, by a majority vote, to adopt the county road system, and then designate as county roads such highways as it might deem best for the purpose, outside of incorporated cities and villages, such roads thereafter to be properly maintained at the expense of the county at large.

The rural counties have not been eager to avail themselves of the privileges thus conferred. In fact, we believe that none of them has yet adopted the county system. Nevertheless the law was a step in the right direction, and will undoubtedly bear fruit. Certainly the system of road maintenance that now prevails is antiquated, and its results are most unsatisfactory. Most country roads are an abomination during a large part of the year. Good roads will cost a good deal at the start, but will pay largely in the end.—New York Tribune.

A successful application has been made, it appears, of the newly invented road concrete, some time ago described in the papers of Germany, and its usefulness in various directions seems to be assured. Curious enough, shavings and planing mill chips, either of common or fancy woods, and which may be obtained before use if desired, are mixed with cheese—or rather, casein—calcined magnesium limestone, glycerin, silicate of soda and a little linseed oil, and this combination of substances is forced by hydraulic pressure into molds, where it is allowed sufficient time to harden. When dry, the composition is strong and solid and can be sawed, planed, polished and varnished. Among its various proposed uses are ornamental panels and wall surface coverings, etc.—New York Sun.

Receipt, note and order books at the ENTERPRISE office.

"For Years,"

Says CARRIE E. STOCKWELL, of Chesterfield, N. H., "I was afflicted with an extremely severe pain in the lower part of the chest. The feeling was as if a ton weight was laid on a spot the size of my hand. During the attacks, the perspiration would stand in drops on my face, and it was agony for me to make sufficient effort even to whisper. They came suddenly, at any hour of the day or night, lasting from thirty minutes to half a day, leaving as suddenly; but, for several days after, I was quite prostrated and sore. Sometimes the attacks were almost daily, then less frequent. After about four years of this suffering, I was taken down with bilious typhoid fever, and when I began to recover, I had the worst attack of my old trouble I ever experienced. At the first of the fever, my mother gave me Ayer's Pills, my doctor recommending them as being better than anything he could prepare. I continued taking these pills, and so great was the benefit derived that during nearly thirty years I have had but one attack of my former trouble, which yielded readily to the same remedy."

Advertisement for Ayer's Pills, including a small illustration of a person and text describing the medicine's effectiveness for various ailments.



A STRANGE CASE.

How an Enemy was Foiled.

The following graphic statement will be read with intense interest: "I cannot describe the numb, creepy sensation that existed in my arms, hands and legs. I had to rub and beat those parts until they were sore, to overcome in a measure the dead feeling that had taken possession of them. In addition, I had a strange weakness in my back and around my waist, together with an indescribable 'goose-flesh' in my stomach. Physicians said it was creeping paralysis, from which, according to their universal conclusion, there is no relief. Once it fastens upon a person, they say, it continues its insidious progress until it reaches a vital point and the sufferer dies. Such was my prospect. I had been doctoring for a year and a half steadily, but with no particular benefit, when I saw an advertisement of Dr. Miles' Restorative Nervine, procured a bottle and began using it. Marvellous as it may seem, but a few days had passed before every bit of that creepy feeling had left me and there has not been even the slightest indication of its return. I now feel as well as I ever did, and have gained ten pounds in weight, though I had run down from 170 to 135. Four others have used Dr. Miles' Restorative Nervine on my recommendation, and it has been as satisfactory in their cases as in mine."—James Kane, La Rue, O.

Dr. Miles' Restorative Nervine is sold by all druggists on a positive guarantee, or sent direct by the Dr. Miles Medical Co., Elkhart, Ind., on receipt of price, \$1 per bottle, six bottles for \$5, express prepaid. It is free from opiates or dangerous drugs.

For sale by Charman & Co.

Advertisement for Dr. Miles' Restorative Nervine, featuring a bottle illustration and text describing its benefits for various ailments.

Advertisement for Southern Pacific Company, featuring the text 'GREATLY REDUCED RATES' and 'MADE BY THE SOUTHERN PACIFIC COMPANY'.

Advertisement for Midwinter Fair, Round Trip Tickets, Good for 30 Days, Oregon City to 'Frisco and Return, \$27.50.

Advertisement for STR. SARAH DIXON, a steamship line, listing routes and schedules.

Advertisement for SHILOH'S CATARRH REMEDY, describing its effectiveness for various ailments.

Advertisement for SHILOH'S CATARRH REMEDY, featuring a bottle illustration and text describing its benefits.

Advertisement for Postoffice Store, Milwaukee, Or., listing various goods and services.

Advertisement for Family Groceries, Dry Goods, Notions, Hardware, Boots Shoes, and other items.

Advertisement for Gary & Wissinger, Portland Competition, offering various goods.

Advertisement for BROWN The Photographer, offering first class style photography.

Advertisement for Cooke's Stables, W. H. COOKE, Manager, offering livery services.

Advertisement for Portland-Clatskanie R.O.U.T.E., listing routes and schedules.

Advertisement for STR. SARAH DIXON, a steamship line, listing routes and schedules.

Advertisement for STR. G. W. SHAVER, a steamship line, listing routes and schedules.

Advertisement for Portland-Cowlitz River Route, via WILLAMETTE SLOUGH.

Advertisement for STR. JOSEPH KELLOGG, listing routes and schedules.

Advertisement for STR. NORTHWEST, listing routes and schedules.

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Advertisement for WILLAMETTE SLOUGH, listing routes and schedules.

Advertisement for STR. JOSEPH KELLOGG, listing routes and schedules.

Advertisement for STR. NORTHWEST, listing routes and schedules.

Advertisement for Society Directory, listing various organizations and their members.

Advertisement for EAST AND SOUTH THE SHASTA ROUTE, listing routes and schedules.

Advertisement for SOUTHERN PACIFIC COMPANY, listing routes and schedules.

Advertisement for THROUGH TICKETS, listing routes and schedules.

Advertisement for UNION PACIFIC OVERLAND ROUTE, listing routes and schedules.

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