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**GOOD WORK DONE BY ROAD DRAG**

Present Implement Great Improvement Over Split Log.

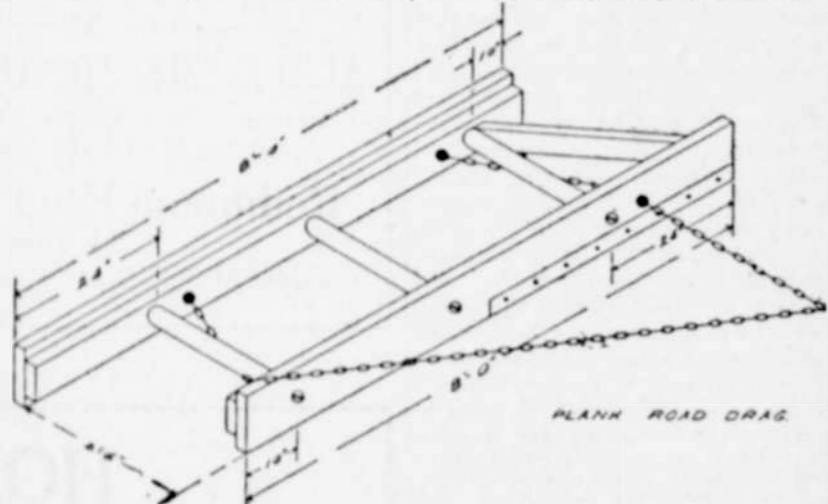
May Be Built in Any Country Blacksmith or Wagon Shop—Keeps Roads in Good Order.

(E. F. Ayres, Engineer, O. A. C.)

Oregon Agricultural College, Corvallis.—How to maintain the highways of the district and yet save enough money to improve some new section each year is the most perplexing problem confronting our supervisors. If any permanent improvement is attempted some road must be neglected, and if no gravel or macadam is laid he is accused of wasting funds by spreading them out too thin. In either case, the supervisor is sure to become unpopular with some or all of his constituents.

Wherever the highways are built of clay or other heavy soils, they may be maintained at slight expense by use of the drag. The supervisor alone cannot get the best results from this implement, each one must look out for the road in front of his own property. More depends on the time the road is dragged than on any other one consideration, and only by taking short stretches can the work be done when the soil is in proper condition.

No road can be built with a drag. Stumps and rocks must be removed from the traveled way, proper drainage must be installed, and the road



should be well crowned with the grader. The drag will make this crown in time, but it is better to fix this right in the first place and use the drag for maintenance alone. You can keep the road in first class condition at slight expense until the time when increased traffic necessitates the use of the macadam.

The success of the split log and plank drags has led to the introduction of the patented machines. Most of these are built of steel, some of them being so heavy as to be practically wheelless graders. All of them are excellent for filling ruts and crowning the road, and the heavier ones are particularly serviceable for spreading gravel. The theory of the drag, however, is that it deposits a thin layer of puddled clay over the surface. When this dries it leaves a water proof layer the full width of the drag, and while this will break through easily, in time enough films are formed to sustain traffic. The heavier drags move too much material at one time, the clay does not puddle well, and the layer never dries satisfactorily.

The first road drag was built from a split log by D. Ward King, a Missouri farmer. This material has certain advantages, but unless one has had considerable experience with an axe it will probably be as well to use planks. The accompanying diagram shows a drag built from 2 to 3 inch planks, braced with 2x6 inch pieces spiked to the inner sides. The cross braces are made from four inch pieces shaped to fit a two inch hole. These should be split and wedged in shape. The ditch end is braced with a piece of 2x4. A piece of iron about 3 inches wide is bolted to the ditch end of the front plank, extending half the length of the drag.

The holes for the cross pieces are bored 10 inches and 24 inches, respectively, from the ends of the planks so that these will track when the drag is hauled at the proper angle. The hauling chain should be arranged so that the hitch may easily be adjusted, and the end nearest the center of the road should be passed over rather than through the front plank. This allows the earth to slide easily along the face of the drag. A platform of one-inch boards is laid on top of the cross braces.

The drag should be used soon after a rain. Wait until the ground has lost its stickiness and the material will slide easily along the face of the drag, but do not wait until the road is dry in any place. Dragging a dry road simply breaks up the layers formed in previous operations and actually hurls the highway. Very little improvement will be noticed after the first trial. Some of the ruts will be filled and some

**Antients Used Glass Mirrors.**  
That the ancients did not exclusively use mirrors of polished metal, as generally believed, has just been proved by the finding of a number of small glass mirrors in a graveyard at Laibach, Austria. They are said to date from the second or third century.

**Idea of Prosperity.**  
Having money to deposit in the bank in the middle of the week would be our idea of getting on in the world.  
—Detroit Free Press.

bumps may be slightly cut down, but after a few trials the benefits will become more apparent. It is perfectly true that anyone can use the drag, but the skill to get the best results will only come with practice. If you can manage to keep your feet on the platform during the first trip you are doing better than the average novice.

The following points should be remembered in the construction and use of the drag:

Build a light drag, one that you can lift if necessary. Any drag that requires more than two horses is too heavy and should be discarded or used on the gravel roads.

Hitch so that the drag will travel at an angle of 45 degrees with the center line of the road, and do not try to move too much material at one operation. The amount moved depends wholly upon the length of hitch and of the position of the driver. A long hitch will move more earth than a short one. When a hard spot must be cut, the driver throws all his weight on the front plank; when a soft spot must be filled, he moves back. If the crown gets too high, reverse the drag and move some of the material toward the ditches, taking care to smooth it down well. Few of our country roads are apt to get too much crown until they have been dragged for some time.

Drive the team at a walk and ride the entire distance. Drive up one wheel track and back in the other. Do not try to improve too wide a section at one operation.

Do not build too large a machine. For narrow roads the drag should be half the width of the traveled way, and a nine or ten foot drag is long enough for any highway.

Do not attempt to maintain too long a section. So much depends on the time the machine is used that there is danger of dragging with the road too wet at one end and too dry at the other. This is the reason the supervisor cannot do the work alone; everyone must take

hold and help.

Remember that the drag is only good in clay or similar soils. A sand road will not be benefited in the least, and if the drag is used to form a crown, the results will be positively harmful. A sand road needs all the moisture it can hold, and the drag drains this away.

The cost of maintenance under this system is simply nominal. Few farms would have to purchase any of the materials for its construction, although the district could easily afford to furnish lumber to all who would agree to build and use one. Roads in the Middle West have been dragged as low as \$2.50 per mile a year, and the highest cost was a trifle under \$10 per mile. Assuming that the roads of Oregon would cost \$10, the district would still have sufficient funds available for new culverts and other permanent improvements. Many would be willing to donate their time, but even where the district pays all the bills, the saving would be decidedly worth while.

A well dragged road will be free from mud and ruts in winter, and comparatively free from dust in summer. The tractive force required to haul a load over it is as low as over the gravel, and in most cases no further improvement will be required until it needs macadam.

We can give good roads if we are willing to work for them. We must decide whether we prefer to pay high taxes for stone and gravel, or whether we will do a little of the work ourselves. Don't blame the supervisor; like the piano player in the music hall, "He is doing the best he can." Just use the drag and help both the district and yourself, and at the end of the year take note of the difference in your roads, your community, your bank account and your temper.

**Paternal Wisdom.**  
"Pa, how much is a peck of trouble?"  
"Apparently it isn't very much, my son."  
"You mean it doesn't take up much room, pa?"  
"Yes, I have known a peck of trouble to be carried on the tip of a woman's tongue."

**Wasn't Near Enough.**  
Bluff—I understand that Jones was let in on the ground floor in Smith's financial scheme of 50 per cent. profit. Is that so?  
Sham—He got in on the ground floor all right, but the trouble was that he found the cellar already full.  
—Judge.

**Breeding Shows for Itself.**  
College may teach you form—contact may brush some things away; but breeding, like a complexion, is more than a surface. Unless it's real, it only makes one wonder what's really underneath. When it is assumed, it's bound to wear off from time to time.—Herbert Kaufman.

**The Question, "How Much?"**  
The millionaire's daughter, even though she is not personally so very prepossessing, is likely to be taken at her "par" value.



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