

average yield and quality of our grain crops, and the consequent increase in monetary value, this objection sinks into insignificance. Half a day's work for two men will be sufficient to secure all the hand-selected heads necessary for furnishing the seed for next year.

ADVANTAGES.

Insures a trustworthy basis for supply of pure seed.
Increases average yield per acre—best heads selected—like yields like.

Reduces the work of grain-growing to a science.

The simplicity of the system commends it to every farmer.

Increase in financial returns adds to the prosperity of the farming community.

The commercial aspect of the question: Farmers and seedsmen will pay good prices for guaranteed seeds.

A FAMILY FAVORITE.

I have been your supporter since 1872, excepting one year or so. Have all the numbers in that time but two or three. I am very much pleased with the paper. It is a family favorite. For the encouragement of "Hope," editor of "Quiet Hour," would say we like it very much. Many things it says are beautiful. Wishing you the compliments of the season, and good success in the coming year.

W. PHILLIPS.

The Good Roads Session at Guelph.

"GOOD ROADS RIGHT NOW."

Some of the simplest things are the greatest, and some of the greatest are the hardest to understand because of their simplicity. A man whose name will go down through all the ages was famous for two of the simplest things imaginable. Columbus set an egg on end, and discovered America. In the one case, all he had to do was to crack the end a little; in the other, to sail straight ahead. With a few succinct observations along this line, D. Ward King, of Missouri, opened his breezy address on "Good Roads Right Now," in the lecture-room of the Ontario Winter Fair. "Here's the problem with the roads," he continued. "I understand you have about 25 per cent. of hard-surfaced roads in Ontario. The road problem, therefore, is largely one of treating the native soil. Seven dollars a year will keep a mile of ordinary road in the finest condition, if the people will have the sense to use simple methods so as to keep the water off the roads. On my way through to Guelph, I caught a glimpse of the Sarnia road, a magnificent highway, which probably could not be constructed for less than \$10,000 a mile, but it appeared to be dished in the middle. It would be cheaper to work that road so as to take the 'hips' off than to leave them there."

REQUISITES OF A GOOD ROAD.

What are the requisites of a good road? It must be oval, hard and smooth. To maintain it in this condition, the cheapest, simplest and most easily-applied method is the best, and the simplest method is the Missouri split-log drag. It does things no other implement does, and does things more cheaply than could be accomplished by other means. Any man with an axe and auger can make a drag that will benefit the road 100 per cent. Mr. King read letters from men in different parts of his own country telling how some of the worst pieces of road in their neighborhoods had been transformed into the very best simply by dragging. One man, with a drag that cost him eleven cents to construct, said he had made a piece of road which he afterwards used for a speedway. The speaker himself had, by dragging his own road, from his front gate to his neighbor's gate, towards town, made a wonderful improvement. He told of standing one morning watching his neighbors' teams, with loads of hogs, plodding along through the mire, steaming wet, until they came to the road he had been dragging since 1896, and then go off on a trot. The only difference in the road was due to the split-log drag.

IT FILLS THE RUTS.

How is such improvement possible? What does the drag do to bring it about? First, it smoothes the road, levelling down the high places and obliterating the wheel tracks. In Missouri, and, he presumed, in Canada as well, they drive down the same rut till the axle rubs, and then they strike a new one. The depth of the rut is regulated by the length of the spokes. On a dragged road, you can't travel in the same track if you want to. Sometimes rolling the roads is resorted to, but a load of grain on an inch-and-a-quarter tire exerts a greater pressure per square inch than any steam roller.

WHEELS ACT AS SLICERS.

The trouble is the wheels do not act as rollers, but rather as slicers. To illustrate how they work, the speaker told how a lightning-rod agent went to work to put the rods eight feet into the ground. He got a spade, a rod, and a bucket of water; dug a small hole, filled it with water, and then jammed the rod down a few inches, then more water and more ramming, till in a short time it was down 8 feet. That's the way wheels work the roads. They slice them up. The drag prevents this. How well it prevents it is an astonishment even to its users.

THE THEORY OF DRAGGING: WHY THE HOG WALLOW HOLDS WATER.

In 1896 he decided to go out and improve his road, thinking his neighbors might follow his example. In twenty-four hours after a two-weeks spell of rainy weather, he made a race track out of that road. But people, when told of the results, wouldn't believe it, so he had to dig up a theory to explain them. The illustration which appealed most to the Winter-fair audience was

the hog wallow. You have all noticed, he said, how, in the hog wallow, after a rain, when the high places have all dried up, water will stand for days in the hollows. But go into the garden and empty a tubful of water on the loose earth, and it will disappear almost as fast as you pour it out. The hog wallow is composed of puddled earth—the hogs have puddled it, made a sort of cement—while in the garden the soil is loose and pervious to water. A dragged road will become like the hog wallow, in that it will be nearly impervious to water, and, being also oval and hard, it will shed the rain, instead of holding it to soak down into the roadbed.

WHEN TO DRAG.

Q. At what stage should the road be dragged, and how often?

A. Drag when the road is moist, but not sticky.

THE DRAG AS A GRADING IMPLEMENT.

It is a mistake to suppose that the drag will not grade a road. He had driven over roads where stumps had been buried by repeated use of the drag. Stones in the road will be either drawn to the center or covered up.

TREATING A SOD-SHOULDERED ROAD.

Q. How would you proceed to treat a road

some common ways of misusing the grading machine. In Missouri, he said, they are accustomed to hitch six or eight teams on the big grader, and, after a lot of parley and waste of time, they proceed to draw in a lot of loose mire, stones and rubbish, then a furrow of blue-grass sod, and then some nice black earth; and when they are through, they have a better place to plant onions than to drive. Then, after the next rain you drive down through this "loblolly," the rain gulley it up, and after that people take to the other side of the ditches.

Q. How about a gravelled road?

A. In dragging a gravelled road, it would probably be necessary to put iron on both faces of the drag.

A BENEFIT EVEN TO SANDY ROADS.

Q. Will the drag benefit sandy roads?

A. Until two years ago I answered that question according to the books, and said no; but from what I have been recently told, it is clear that the drag will be of benefit even to a sandy road.

MUD HELD IN COLD-STORAGE.

Q. How would you treat a seepy place in the spring?

A. Let us go back to November and see what causes that horrible mess when the frost comes out in the spring. There is the road, all cut up with ruts and hoofprints, each holding about a quart of water; that soaks down into the subsoil and converts it into mud. The frost comes and freezes it up, making it hard for a time, but the mud is still there. The frost gets the blame for spoiling the roads, but it is not the frost, but the combination of water and frost. Frost won't hurt a pump unless there is water standing in it. The roads will be all right in the spring if we don't put a lot of mud into cold-storage in the fall. If the roads are kept dragged, they won't be saturated with water, in the fall, and consequently will be much better in spring.

Q. Will the drag do away with metalling?

A. No, but judicious dragging will add to the

duration of a gravelled road. In conclusion, Mr. King announced that he had made arrangements with the Provincial authorities to send his bulletin to everyone who was prepared to make and use a drag. A show of hands revealed ninety requests for the bulletin.

OBSERVATIONS ON THE WORK OF THE SPLIT-LOG DRAG.

It was a happy arrangement of the programme of the Good Roads session, at the Ontario Winter Fair, which slated Mr. A. W. Campbell, Deputy-Minister of Public Works and Provincial Highways Commissioner, to follow Mr. King with an address on "Observations on the Use of the Split-log Drag." Though less pyrotechnical than Mr. King, Mr. Campbell is not less enthusiastic on the question of road improvement, and his speech was a model of Scotch-Canadian precision and conciseness. He began by remarking that many of the points the previous speaker had emphasized were of great importance to us in Ontario.

PRINCIPLES OF WORLD-WIDE APPLICATION.

There are certain principles of world-wide application that must be adhered to if we are to make good roads in the best possible way. He was pleased to hear Mr. King's enthusiastic description of the work of the drag, and hoped it would get the people to work. If, with a few



Highmoor Mikado 10435.

At head of herd of G. T. Inman, England. Winner of 22 firsts and seven championships.

that was flat in the center and bordered by high sod shoulders?

A. Drag it. First go over the sod with a disk when sopping wet, then go away and leave it. When it gets dry, go over it with the drag, and draw that loosened earth in a little at a time. The sod will be reduced to a fine condition, like gravel, the grass won't grow much, and you will be applying to the road layers of puddled clay. To widen the road, first drag it four, five or six times, till a crown has been produced, giving drainage. After the next rain, plow a shallow furrow along each side; drag that in and spread it over the road, thus widening it two feet. Repeat till the road has been made the desired width.

RED CEDAR DRAG THE BEST.

Q. What size of drag should be used?

A. It depends on the size of the team. For a pair of 1,200-pound horses it should be not over 7 feet. The best drags are of red cedar posts or poles. Set the halves of the log flat sides to the front, and not over 30 inches apart. It is well to shorten the right end of the front piece, so as to prevent it catching on the side of the ditch or furrow before the rear half comes to it.

AN ONION BED WHERE THE DRIVEWAY SHOULD BE.

Mr. King then volunteered a little satire on

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