reservoir sites. Then not only will it be unprofitable to use the forests for anything except regulated saw-milling, but the climate will be so far chilled that there will be little temptation to embark on agriculture or dairying. Without such preventives it is hardly possible that these forests will long stand before the pressure of increasing population, and popular clamor to get on the good lands.

One word more on ground waters. It has been remarked that the proportion of rainfall that finds its way into our rivers points to the fact that there is a very considerable proportion of ground water in Australia. In most countries at the same latitude, or rather with similar isothermals, spring water of a perennial character is found within five hundred feet lower elevation than the top of the range feeding it. Here in the part of the country mentioned, forming the watershed of the Goulburn and the Yarra, exactly the same is found, and at the higher elevation, say, 4,000 feet and upwards, where barometric pressures are lighter, and the atmosphere is cooler, with frequent rains, these perennial springs are found close to the summit. Elsewhere in Victoria, unless the slope of the range be very flat, indeed, such springs are in existence, but do not come to the surface. This continent, being almost the oldest in the world since its formative eruptions, has a greater depth of alluvial and aerial deposits than are found elsewhere, and hidden in the gravels and sands of these are the springs which in other climates would be running on the surface. It is only necessary to quote the Ballarat and Maryborough, or the Rutherglen alluvial fields, to satisfy the enquirer on this point, and elsewhere in Australia, not only stock and domestic uses are served from our wells, but they also supply water for irrigation.

The future will see far more use made of such ground storages than the past, when it becomes realized that if a horse-power cost one penny an hour, sufficient water to irrigate one acre one foot deep can be raised from fifty feet at a cost of only 4s. 2d., or less than any of our irrigation trusts charge per acre foot for water from their gravitation channels. The trouble that the bulk of our ground storages contain too much alkali is one which often corrects itself with constant pumping.

The author is aware that in passing over the question of natural surface storage he has neglected what is, perhaps, the most important of all the aspects of the water storage question. Its bearing on irrigation, as well as water supply questions, is too important and too complicated to be adequately dealt with in a general paper on water storage. But there is one aspect of the question too prone to be lost sight of, namely, the effect on the health of the community of the large shallow basins. In the mountains, and surrounded by eucalypt forests, no evil effect need be feared. But shallow surface basins in irrigated areas, with the consequent hot, moist summer atmosphere, and the sanitation of an agricultural or horticultural community, are veritable fever beds.

In view of the fact that so many of our Canadian soldiers are fighting on the battlefield of Flanders, the model military camp which will be one of the special features at the Canadian National Exhibition this year, will attract great interest. In this camp will be quartered a detachment of the Royal Canadian Dragoons, artillery, Royal Canadian Engineers, Royal Canadian Regiment, as well as machine guns and armored cars. The work of the A.M.C. Transportation Corps, A.S.C. and field kitchen will be an interesting feature. The camp will vividly portray life under active service conditions, showing trench digging and landing of hydroplanes.

USE OF THE ROAD DRAG IN MAINTAINING EARTH ROAD.*

By S. R. Henderson,
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IT does not matter how well drained and graded an earth road may be, if the maintenance is neglected, a large amount of the money expended on construction will be lost, and the benefit will not be derived by the taxpayers for the amount invested. The earth road is by far the most common type of highway in this country. Its cheapness in comparison with other types of construction, and the absence in many sections of our country of stone, gravel and other hard materials for road building will render its use necessary for many years to come.

The split-log drag is of great service on roads of this class. It is now coming into general use in Manitoba, and its adoption in most localities where there are earth roads will doubtless increase the construction and use of the drag. Two mistakes are commonly made in constructing the drag. The first lies in making it too heavy; it should be so light that one man can easily lift it, besides a light drag responds more easily to various methods of pitching and to the shifting and weight of the operator, both of which are essential considerations. A drag can be made heavier at any time by proper weighting.

The other mistake is the use of square timbers instead of those with sharp edges, whereby the cutting effect of the sharp edges is lost, and the drag will glide over instead of levelling the irregularities on the surface of the road. These mistakes are made because of badly constructed drags and also the wrong idea that a large amount of dirt must be moved at one time.

To construct a drag is almost more simple than to describe it, for the implement is simplicity itself. A log from 5 to 8 feet long and 8 to 12 inches in diameter is split in half. The halves are placed parallel to one another, the edges down and the flat face to the front. They are firmly braced together with three cross bars wedged into holes bored through the logs. A chain hitch is attached in such a manner as to incline the drag to the desired angle—about 45 degrees, the forward corner being at the outer edge of the road and the rear corner at the centre. By dragging this implement up one side of the road and down the other, making a number of circuits and using two horses, the edges of the log plane off the top of ridges and rough places, drawing the material sideways and forward to fill hollows and ruts. This drag used a few times during the season on an earth road while the earth is in a moist condition after a rain, will keep an earth road in the best condition that an earth road can be made to reach.

Drags are often constructed of planks instead of logs. There is nothing in the construction of a plank drag that calls for special mention except the strengthening of the planks along their middle by a 2 by 6-inch strip and a strip of iron about four feet long and four inches wide; quarter-inch thick may be used for the blade. This should be attached to the front slab or plank so that it will be one-half inch below the lower edge of the plank at the ditch end, while the end of the iron toward the middle of the road should be flush with the edge of the plank. The bolts holding the blade in place should have flat heads, and

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* From paper read at the Good Roads Congress, Agricultural College, Manitoba.