# The Ontario Agricultural Gazette

The Official Bulletin of the Dominion Cattle, Sheep, and Swine Breeders' Associations, and of the Farmers' Institute System of the Province of Ontario.

## THE DOMINION CATTLE, SHEEP, AND SWINE BREEDERS' ASSOCIATIONS.

**Annual Membership Fees:—Cattle Breeders' $1; Sheep Breeders', $1; Swine Breeders', $2.**

### BENEFITS OF MEMBERSHIP.

Each member receives a free copy of each publication issued by the Association to which he belongs, during the year in which he is a member. In the case of the Swine Breeders' Association this includes a copy of the Swine Record.

A member of the Swine Breeders' Association is allowed to register pigs at 50c. per head; non-members are charged $1.00 per head.

A member of the Sheep Breeders' Association is allowed to register sheep at 50c. per head, while non-members are charged $1.00.

The name and address of each member, and the stock he has for sale, are published once a month. Over 20,000 copies of this directory are mailed monthly. Copies are sent to each Agricultural College and each Experiment Station in Canada and the United States, also to prominent breeders and probable buyers resident in Canada, the United States and elsewhere.

A member of an Association will only be allowed to advertise stock corresponding to the Association to which he belongs; that is, to advertise cattle he must be a member of the Dominion Cattle Breeders' Association, to advertise sheep he must be a member of the Dominion Sheep Breeders' Association, and to advertise swine he must be a member of the Dominion Swine Breeders' Association.

The list of cattle, sheep, and swine for sale will be published in the third issue of each month. Members having stock for sale, in order that they may be included in the Gazette, are required to notify the undersigned by letter on or before the 9th of each month, of the number, breed, age, and sex of the animals. Should a member fail to do this his name will not appear in that issue. The data will be published in the most condensed form.

F. W. Hodson, Secretary.
Parliament Buildings, Toronto, Ont.

## STOCK FOR SALE.

The next list of members of the Dominion Cattle, Sheep, and Swine Breeders' Associations, with the stock they have for sale, will be published in THE ONTARIO AGRICULTURAL GAZETTE in the issue of August 30th. Matter for publication must reach the secretary on or before August 23rd.

As a very large number of the papers which publish this list will be issued about this date, and distributed at the Industrial Fair and other leading exhibitions, we are particularly anxious to have the list of stock for sale as complete as possible.

Members will please give this matter their immediate attention, and forward a list of stock for sale to F. W. Hodson, Parliament Buildings, Toronto.

## ROADMAKING

By A. W. Campbell, Provincial Road Commissioner, Toronto

The majority of roads as constructed are too flat to shed the water. The sides of the grade form square shoulders which obstruct the water from passing to the side drains. Drains of sufficient size are frequently made but no outlets provided; where this occurs they simply form receptacles for water which soaks into the roadway, and cause it to yield readily to the wheels. Proper outlets should be made for all drains, and these outlets should be obtained as frequently as possible. It is advisable to dispose of the water quickly after it falls and in small quantities; for this purpose all natural watercourses should be used. Deep open ditches provide good drainage, but are dangerous, unsightly, and expensive to maintain; shallow gutters with uniform fall are preferable. Where deep drainage is necessary, tile drains built under these gutters, sunk below the frost line, and provided with a proper out fall is more serviceable. When the ground becomes saturated the frost penetrates a depth of from two to four feet, causing considerable expansion, and when leaving creates voids which weaken the structure. Tile drains are constantly at work preventing largely this saturation, and removing the destructive action of the water and frost.

*Crown.*—Roads should be crowned so as to shed the water from the centre to the side drains, otherwise water will stand on the surface, soak into it, soften, and cause rapid wear and decay; but a crown higher than is necessary to properly drain the surface is also objectionable. A gravel road should be given a crown of about an inch of rise to each foot in width of grade from centre to the side. This is sufficient to properly shed the water if the surface is made hard and smooth. If a greater crown is given, the tendency is to concentrate the traffic on the centre and cause greater wear; again, an excessive crown causes the load in turning out to be thrown on two wheels in such a way as to cut the sides of the road. The form of the crown should be as near circular as possible.

*Gravel.*—Where gravel of a good quality can be procured within easy hauling distance, it is undoubtedly a valuable material for country roads and residential streets. Where such gravel cannot be obtained within easy hauling distance, it will be well to consider the use of other material. If gravel has to be hauled a considerable distance it frequently does not prove the most economical; the first cost may be the lower, but the final cost greater than a higher priced stone. Many municipalities are teaming poor gravel from five to ten miles; a first class metal could be supplied by rail at a little advance in first cost but much less expensive to maintain. Gravel has not very satisfactory qualities, especially when it contains a large amount of sand and earthy matter. Where much sand and earth are contained it should be removed by screening and the large stones broken. Foreign matter assists consolidation, and under traffic the mass quickly becomes smooth and hard. This remains during dry weather, but it readily attracts the moisture and permits the rain to pass down through the mass, weakening the bond and causing the metal to yield to wheels and create slush, mud, and ruts. Ruts form receptacles for water, the destroyer of roads. Gravel found in streams is usually of the best quality, as it can be washed by natural drainage. Lake gravel varies greatly; although usually of a good quality, the stones are much water-worn, and difficult to consolidate by traffic, but contain enough clean sand to properly bond under a heavy roller.

*Broken stone.*—A good quality of broken stone is a much more durable material than gravel. The best stone is that which is tough, hard, and which will not readily decay by the action of the atmosphere. Field stone, stream, and pit boulders are to be found in abundance in a great many sections of the province. Generally this stone is of a good quality, but often contains a large percentage of "weathered" sandstone and granites. Care should be taken to exclude these boulders which are soft or weathered. Stone broken into cubical fragments will take on a mechanical grasp and a perfect bond formed by rolling without the assistance of foreign matter. This cannot be effected to the same degree with gravel or round pebbles. The stone should be broken into sizes varying from one inch to two and one half inches. The largest stone should be placed in the bottom of the roadbed, and the smallest on top, this should be done in layers, the thickness of which should vary in proportion to the strength of roadway required. Each layer should be thoroughly rolled before the next is applied. A coating of the fine screenings produced from the crusher by screening should be placed on the surface of each layer to fill the voids. A watering cart should precede the roller. By keeping the surface moist, consolidation will be more readily and perfectly effected.

*Width of Roadways.*—Main or much travelled roads should be made 24 feet wide between the gutters. Roads leading into these and accommodating neighborhoods or sections, and the next in importance should be 20 feet, and cross roads or concession roads but little used should be 18 feet. The metallic portion of the road should be from seven to ten feet in width, according to the importance of the road. The depth of gravel or stone must vary with the quality of the material, the amount and nature of traffic on the road, and the nature of the sub-soil. A dry, stony, and compact sub-soil will need less metal than would a plastic clay difficult to drain. From six to ten inches of metal well consolidated will afford a sufficient range to accommodate the circumstances.

*Rolling.*—Heavy rollers have been but little used in this country. Municipal officials are fast becoming convinced of their usefulness, and within the past couple of years several have been purchased in the province and in every instance they are greatly appreciated. London, Stratford, Galt, St. Catharines, Brockville, Kingston, Ottawa, Toronto, and Niagara Falls are using steam rollers from ten to eighteen tons in weight, while a number of municipalities are using horse rollers from five to eight tons in weight. In order that the best results may be obtained rollers are indispensable. Material should be carefully selected and applied. It should then be compressed so that the whole mass would be joined to support the traffic instead of a few individual or disconnected particles. Grading machines are being extensively used on country roads, and have established their merits in performing the work for which they were intended, but the good results are largely lost in the absence of their counterpart, the roller. When the grader has finished its work the soil is left loose to be displaced readily under traffic and absorb moisture, whereas if thoroughly consolidated by rolling the full benefit would be realized. All machinery should be in charge of one man, the township supervisor, and the teams and men required to operate them should be employed by the council for that purpose and should be experienced.

*Bridges and Culverts.*—In every line of business it has been proven that durable work is the most satisfactory and economical. The construction and maintenance of temporary bridges and culverts is the greatest drain upon the funds of a municipality. Timber is perishable, and being exposed to constant change of wet and dry soon commences to lose its strength, when repairs are demanded and in a few years a renewal. A large amount of this must be done each year requiring a considerable expenditure, and this is perpetual, whereas, if durable material such as iron, stone, and concrete were used in a few years these structures would be completed and a very large saving effected in maintenance.

*Wide Tires.*—Narrow tires produce ruts, wide tires produce a smooth and even surface; the one destroys the road, the other preserves it. Narrow tires are almost universal in Ontario. Narrow tired wagons are the greatest destroyers of gravel and broken stone roads. Even with the traffic which is not excessive, our country roads will not be kept in a moderately good state so long as they are subjected to the damaging effect of narrow tires. It is contended that the draft is greater on wide tires, that they set in the ruts made by narrow tires. This will be the case to some extent so long as narrow tires are commonly used, but these ruts would not exist if wide tires were general. It is further contended that wide tires come in contact with more loose stones on the surface of the road, with roads properly constructed and wide tires used loose stones would disappear. Tires on ordinary lumber wagons should be four inches wide, and this width should increase on all wagons designed to carry greater loads; such increase to be proportionate with the load. The reason, largely, that wide tires are not used in this country is that people are not accustomed to seeing them and studying their effect upon the roads. England and all progressive countries have laws regulating the width of tires according to the load the vehicle is intended to carry.