

pure-bred lambs of the different breeds, and beginning with younger lambs and putting them on the market at an earlier age and lighter weight. All of our lambs were considered too large and too fat by the Chicago buyers, although they sold 15 cents higher with the fleeces off than any other sheep on the market that day, including fleeces.

Trusting that this information may be of interest, I am,

C. F. CURTISS,
Dept. Animal Industry.
Exp. Station, Ames, Iowa, May 6th, '96.

Horse Breeding -- Its Prospects and Needs.

SIR.—In compliance with your request, I take pleasure in the furtherance of your worthy efforts to direct the attention of breeders of horses to the necessity of giving the matter more careful consideration than has been done for the past year or two. Complaints of "too many horses" we hear all over the country. But send a buyer through the stable of the man so complaining and the probability is he will come away without making a purchase. He will tell you there was "nothing good enough" or "nothing fit." The trouble is not so much the want of judgment as the lack of the use of it in selecting suitable sires, and the want of more liberal feeding.

The outlook for the horse breeding season this year is very much brighter for the stallioner, but it is still far from satisfactory. Fees of ten and twelve dollars (and these are current) are not sufficient inducement to importers to invest their money in the business and travel horses of superior merit and breeding for what there is to be made out of it. I believe it would be better if some system of governmental inspection—optional, not compulsory—were adopted, and make this inspection very rigid both in regard to soundness and purity of breeding. Then the present custom of insurance is all in favor of the owner of the mare. If a portion of the fee were made payable at the end of the season it would bring out a higher class of breeding mares.

There are too few good, young, vigorous brood mares. What would have answered admirably have been sold out of the country. The non-salable females, and those past the marketable age, are too frequently put to breeding. Is this not courting failure in the enterprise?

Without hesitation, I would advise breeding the best mare on the farm. She is none too good for it, and because the horse best suited to her doesn't call at her stable door, a little extra trouble and expense to have her mated suitably will repay the owner and induce better care of the foal. The combination saddle and harness horse and the heavy draft horses can be depended on to sell in the future as in the past, at remunerative prices.

Buyers have been very alert all winter, and in this western portion of the Province, at least, there are several posted in every district shipping as fast as they can buy.

There are very few colts of any class in this locality.
ROBT. McEWEN.
Middlesex Co., Ont.

Good Demand for Good Horses.

Reviewing the horse market outlook, the New York Herald sizes up the situation in a few words, as follows:—"There is nobody in the horse business just now doing any worrying. It is many years since there was such a genuine demand for good horses, and at really good prices. This has been brought about mainly by three prime factors: First, the restrictions in breeding operations, which are now beginning to tell; second, the fact that the number of those who can afford to buy and drive high-class horses is continually on the increase; and thirdly and lastly, everything that Americans are not smart enough to secure is gobbled up by agents for English and European firms."

The Sow and Pigs.

It is a long time since Ontario farmers rejoiced more when the time of turning out stock arrived than at this present season. The sight of dirty, lean cattle and swine is not a pleasant one to behold. We hear of heavy losses in young pigs, and no doubt the damp board beds have a right to a large share of the blame for such a condition. The farmer who has a nice red or lucern clover patch, or even a good grass pasture, to turn his sows and few little pigs upon has something to make him feel well. Whether or not such a favorable plot is at hand the growing pigs will do much better out upon mother earth than in the pens. Too close confinement causes "thumps" and straight tails, neither of which accompany money-making growth. Idleness and gluttony are deadly enemies to sleek, curly tailed pigs.

If the sow is to bear two litters a year, the pigs may be weaned at six weeks old; but when the dam is to be turned off fat next fall, or have no more offspring until next spring, many of our most practical authorities would say allow them to run together upon the grass until they wean themselves. When the feeding is liberal and succulent the milk flow will continue copious and very beneficial to the youngsters until they are nine or ten weeks old. Where the pasture lot is small, and desired to be kept in sod, the pigs are better "rungs" but should they have access to a bush or other large run, the rooting of the surface for phosphates and worms will do much towards their growth and prosperity. A pig does not, as some suppose, root from "devilment," but for something which its system requires.

FARM.

Better Road Work.

BY A. W. CAMPBELL, C. E., HIGHWAY COMMISSIONER FOR ONTARIO.

Country roads in Ontario are commonly divided into two classes—gravel and dirt. The terms "good" and "bad" are frequently regarded as synonymous with these, and as our roads are usually constructed, this interchange of words is to some extent not without reason. The way to construct a good gravel road is to first build a good dirt road from the natural soil.

A good dirt road to those who have driven through sloughs designated "bad" roads during the past spring will seem an impossibility. And yet these bad roads are chosen in June by the teamster in preference to the "good" gravel roads. These latter are now a collection of parallel ruts, with rocks firmly set, protruding or rolling loose under the wheels and the feet of the horses.

The diseases being so perfectly known, it is a poor recommendation for our inventive powers if we cannot produce the remedies. For dirt roads, take the water out and keep it out; for gravel roads, this and more. There will be less moisture remaining in the roads after the fall rains to assist the disintegrating and upheaving action of the frost. There will be less water to be carried away in the spring, and more ample means to do it quickly. A dry foundation for a road is as necessary as for any other structure. Were the benefits of drainage better known, our system of roads throughout this Province would soon be vastly improved.

Drainage must be secured at the surface of the road and beneath it. Underdrainage—there may be a few exceptions—will accomplish more than surface drainage. Where and how to place the drains is a matter regarding which no definite code of laws can be formulated, since each mile or less of roadway may lead to an entirely new combination of circumstances. Surface drainage is attained by rounding up the road-bed ordinarily with a rise of not less than one nor more than one and one-half inches to the foot, providing open ditches on each side of the grade. Crown the roadway on hills slightly more, so as to draw the water sharply to the ditches. Water allowed to follow the track of the wheels will wear them to ruts, and deposit a softened mass of mud at the foot of the hill.

Tile drains running parallel to the road about three feet below the surface and at the edge of the grade will usually afford the best method of underdrainage. Take advantage of all natural water-courses to relieve the ditches of their water. Use hard, well-burned tile laid carefully to a uniform grade, with a fall of not less than three feet to the mile, and if it can be obtained at reasonable cost, not less than six feet.

Provide culverts where needed, and do not allow the roadway to interfere with natural drainage. Do not build culverts higher than the approaching roadway, as muddy hollows in each side will result. If possible place small culverts below the surface, and cover with earth, as they will be then less subject to wear and will not interfere with the smooth surface of the road. Make culverts permanent. Avoid the use of perishable material. See that proper outlets are made for them and keep free. Water which is allowed to stand in them in frosty weather will destroy the best material.

The surface of the road should be kept smooth and free from ruts. Where gravel or other metal is to be applied it is best to dig a trench for its reception, otherwise the crown will be too high. Gravel is intended to perform the double service of a roof to shed the water and a floor to resist the wear of traffic and to lessen the amount of traction required. A forty per cent. greater load can be drawn by a team over a smooth gravel road than can be drawn over a yielding dirt road in an equally good state of repair. All the work should be done on a uniform plan in a systematic and permanent manner, with a view to its extension on the same plan in subsequent years; this in a short time will secure a perfect system of finished roads.

Modern road machinery, properly operated, is economical. The grader and roller are indispensable. The grader performs the work quicker, easier, cheaper, and more perfectly than can be expected from hand labor. The roller compacts the loose material, unites the different particles so as to better resist the load, prevents displacement which forms ruts, and reduces to a minimum resistance to traffic.

Lack of Drainage and Late Seeding.

SIR.—Most farmers are loath to plow up fall wheat, but in a run through some parts of Lambton, I have noticed several fields and portions of fields that will be an unprofitable crop. Several causes may account for the failure. In some cases the want of drainage has evidently soured the land, if not drowned the crop; but on making enquiries, I found late sowing is responsible. Many farmers are anxious to put in after a corn crop. The plan is a good one, but there is a deal of work in clearing corn land, and unless the farmer is well furnished with help, the sowing will be necessarily late. I have had a fair crop of fall wheat from sowing first week of October. That time is gone, and now I prefer the first week in September to anything later.

JOS. OSBORNE.
Lambton Co., Ont.

Rape Culture.

At the end of grain seeding on many farms the work of preparing for the season's crops is only commencing. This is due to the ever-decreasing acreage of grain and increasing area of corn, rape, roots, and other hoed crops, as stock farming increases and need for better feeding is realized.

The value of rape as a food for sheep and cattle is being appreciated more and more each year, as it is introduced into different sections. Rape, like corn and lucern, has come to stay and to be considered one of the mainstays of the beef and mutton producer. While most crops have a special season of planting, extending over a very short period, rape can be put in at any time between the early part of May and the 1st of August, and produce a profitable crop. It can, therefore, be used in the place of many of the other green fodder crops, and also at times when other crops are not obtainable. The greatest use, however, to which rape has been put so far is as a late summer or autumn pasture, especially for sheep, but frequently for young cattle. For the former it fills a great want when well grown at the time lambs are weaned, which is on many farms about the 1st of August. To this end it should be sown from June 1st to 15th, which is about the time turnips are sown. When land is put in good condition by that time, and the rape sown in drills, about two and a half pounds of seed per acre, it will yield a luxuriant crop of the best possible feed for growing stock. As is fairly well known, the preparation of the soil is much the same as for turnips or mangels. The rape crop is accused by some of being exhaustive to the land, which after all is not a bad fault, as a crop that will readily appropriate what we give it in the shape of manure affords us an opportunity of making the best use of the soil. Land is manured to give crops, and the more a crop uses of this, the nearer does it fulfill our requirements. It is not, however, exhaustive to the soil when it is pastured off by sheep or cattle. When land is clean and open, sowing broadcast about four pounds to the acre will answer well. But as such crops are generally sown on land that needs cleaning, it is well to sow the seed in drills like turnips, either flat or raised, say 26 inches apart. When the rough leaf has made a good start, about the size that turnips would be scuffled, the cultivator should be introduced. It should run as close to the line of the rows as is consistent with the safety of the plants. The value of frequent surface cultivation applies as much to rape as to any other crop. It is well to run through the crop with a hand hoe once or twice to remove weeds that have escaped the cultivator. Cultivation may well continue until the plants have made a near approach between the rows.

Bean Culture.

BY W. A. M'GEACHY, KENT CO.

Although present prices of beans are ruinously low, a large acreage will be planted to this crop the coming season; in fact, the area under beans is constantly increasing, owing, no doubt, to the fact that they have been one of the best paying crops up to the present time that the farmer could grow. As many are growing them this year for the first time, a few notes as to their culture would not be out of place.

Soil Preparation.—Although raised on all soils, from light sand to heavy clay, a well-drained but moist loam is the ideal bean land. If not rich it should be made so, and just here we might say opinions differ as to which is the better method of applying the manure, viz., to plow it under or work it into the soil after plowing. We have obtained best results by fall plowing a clover sod, manuring it during the winter and beginning to work the manure in as soon as the land permits it in the spring. It is worked over every ten days or two weeks from then until planting time, for the double object of incorporating the manure in the soil and sprouting any weed seed that it may contain, and also to secure a fine tilth, which is so essential to bean growing.

Planting.—In this section (Kent) we plant, if the weather is warm and favorable, about the 25th of May, although planting is often continued to the second week in June. It is poor policy to rush them in too early if the soil or weather is not warm, as it takes them longer to come up, and while sprouting they are liable to the ravages of a worm that cuts the two first leaves off, thus leaving the plant useless, or at best, so late in maturing as to be of little value. If, however, the season is favorable, plant early, as it is easier to replace the seed if the crop should be frozen in the spring than a frosted crop in the fall.

Planting is done with either an ordinary grain drill or a planter manufactured for the purpose. The latter plants two rows at once, twenty-eight inches apart, and drops the beans in hills about eight inches apart, which makes hoeing them a much easier matter. About three pecks is the quantity planted per acre, a little less than this is sufficient when Pea beans are planted.

Varieties.—The Medium, until late years, was the leading bean, but the Pea (late introduced) is a superior bean in every way. It ripens ten days to two weeks earlier, stands the drought better, yields as much or more per acre, and commands from five to ten cents more per bushel.

Cultivation.—As soon as they are up large enough, cultivation should begin by running the cultivator shallow, as the roots lie close to the surface, which