

classes, it was generally conceded that the best were not here, and that there was more and better to follow at the coming contest at Windsor. The same remarks generally may apply to the show of pigs at Exeter, Mr. Benjafields young Berkshire boar "Rising Star," winner of the championship over all breeds at the Oxfordshire show the previous week, being the only really shining mark in his class. The Essex or small black breed made a very creditable showing, and there were a few very good white pigs.

The owners of sheep and pigs were asking very high prices for their stock, the price of mutton having advanced considerably in the last few months, and the stock of both sheep and pigs in the country being very much lower in number than in the average of years at this season.

There were no prizes offered for heavy draught horses at this show. Agricultural horses, hacks and hunters were out in goodly numbers, and generally of very fine quality.

#### Notes on Pasture Land.

BY JOHN DRYDEN, M. P. P., BROOKLIN, ONT.

After a visit to England, there is one thing which I do not think it is sinful to covet, and that is the thick, closely-grown grasses which abound in that country, and upon which their animals are permitted to graze. I do not suppose that we shall ever attain the degree of excellence in Canada which is known there. Our climate and soil are so different, that it seems to be impossible; and yet it has often occurred to me that some improvement on what is generally found in this country might be easily obtained. I do not think the system of permanent pasturage would succeed in many districts in this country. We are therefore driven to a system more generally adopted in the north of Scotland, where the land is alternately cultivated, and laid down for grass. It may be that precisely the same kinds of grass will not answer for us which succeed so well for them. But if the same preparation of soil, and the same care afterwards were given to this matter, I apprehend we might occupy a much advanced position even here. No grass will grow successfully without moisture, and during seasons such as the last two now passed, it is almost impossible to lay down a field of grass successfully. But in ordinary seasons this will not be the case. Success in this matter depends somewhat on the kind of grain chosen, with which to seed the field to grass. My own choice is decidedly in favor of spring or fall wheat. Timothy, if sown with the fall wheat in the early autumn, will be almost certain to grow successfully. The clover may be added early in the spring, after the harrow has been passed over it. I have strong objections to seeding with barley, for the reason that it is extremely inclined to lodge badly, having the tendency to smother the grass and compelling the reaping machine, if the grain is well cut, to be set very near the ground. The roots of the clover are thus laid bare, and if dry weather sets in, sometimes are destroyed. In any case, it will be left in poor condition for hard weather, throughout the winter. Spring wheat is more likely to stand; and if the stubble be cut fairly high, it will remain during the winter, preventing the snow from blowing off, and thus forming a protection to the young plants. These young plants ought not to be eaten off during the autumn, for the same reason suggested in the cutting. They are weakened, and less liable

to stand the winter. The second year the grass may be used as pasture, but it ought not to be eaten off too close. How often have I heard the expression, "What an amount of grass is going to waste in this field." To me, it is not waste at all. There is no surer way of enriching the land than to have a thick after-math and plenty of long grass fall down for the winter. If the field is to remain in grass for a number of years, then I think the plan adopted in Scotland might be carried out, at least partially, in this country with excellent results. It is a mistake to suppose that grass will continue to grow luxuriantly in the same field year after year without some stimulant in the way of manure. Ordinary barn-yard manure will, no doubt, accomplish excellent results. But where this cannot be had in sufficient quantities, it may be supplemented by a preparation easily accessible to all who are willing to put upon it the necessary labor. Large quantities of earth are piled adjacent to the stables. This earth is usually mixed with a greater or less quantity of lime. The urine of the cattle from the stables is then conducted from the stables into a tank or other receptacle. Out of this it is pumped upon the earth thus prepared, until it becomes thoroughly saturated. In this condition it is spread upon the grass, accomplishing the very best results. No one in that country, laying claim at all to first-class farming would think of leaving grass to grow year after year without manuring in this way. The earth is gathered by cleaning up the ditches on the road-side, through ravines and elsewhere.

I have found excellent results from harrowing old pasture-land in the spring. The droppings from the cattle and horses become thus thoroughly scattered over the land, and the marks which the teeth make, only seem to give new life and vigor to the plants. What is needed in the start is to have the ground thoroughly covered with grass. To accomplish this, too much economy in seed must not be allowed. A thick seeding is in every way better for land intended for pasture. Then let it be protected as far as possible; first, by the stubble, and afterwards by avoiding too close cropping. The grasses upon which it is safest to depend are Timothy, orchard-grass and clover, red-white and alsike. Others may be added, but these could be the main stay.

Land well manured will be most likely to produce healthy and vigorous plants. Grass seeds, soon after turnips, are less liable to be successful; the soil being excessively pulverized is inclined to cement or bake. Land-plaster should be sown early in the season, if early vigorous growth is required. Some suppose it must be scattered on the leaves, but it is of no service until it is washed into the soil. Good grass is the foundation of successful farming. Give me good luxuriant grass, and I can get anything afterwards.

In the cordial union of the chemist and the farmer there is a great store of strength to agriculture—a fertile source of benefit to the entire community. But it must be a union in the real sense of the term. We do not mean that the chemist is to step in and supplant the practical farmer in the management of his farm. That would be no union, and we would have little faith in the result. Neither do we mean that by enlisting the aid of the chemist the farmer will at once turn a loss into a profit. The chemist can not regulate the prices of farm produce.

#### How to Build a Silo.

BY JOHN S. PEARCE, LONDON.

Within the past few years ensilage has passed the experimental stage, and has been adopted by so many stock-raisers and intelligent dairymen, that it may now be considered an established method among many who devote themselves to stock-raising and dairying. The facts concerning silos are few and simple, and in no way difficult to understand. We already know that any kind of a green crop can be preserved in a silo. But why does it keep? Is it because of heavy pressure? No; because it keeps without any pressure. It is because it has been tramped? No. Is it because the silo is air tight? Not that alone; although that is essential. But is simply because the silage has been allowed to heat up to the temperature of 125 degrees, and then after remains in an air-tight non-conductive enclosure.

Success in preservation of the ensilage depends very much on its compactness, and the exclusion of the air. When the mass of ensilage in a silo has been allowed to reach the limit of temperature desirable, say to a temperature of 150 degrees, the silo is covered tightly to exclude the air.

At the ensilage congress held in New York City, Dr. M. Miles, Professor of Agriculture in the Massachusetts Agricultural College, stated that the fermentation was caused by the minute organisms known as bacteria. These organisms rapidly develop in the presence of air, but their functions as ferments are greatest in the absence of free oxygen, and as the air is excluded the bacteria take their necessary oxygen from organic substances, which results in fermentation. They are killed by a temperature ranging between 122° and 140°, though the minute germs from which they develop stand a higher temperature. There may be as many fermentations brought about as there are kinds of fermentable substances, just as the excrement of the animal will vary with the character of the food and other conditions. If the bacteria can be killed when the silo is weighted, the ensilage will be practically preserved under the same conditions as the fruit in the jar during the process of canning. An extended series of experiments at the college indicate that the bacteria cannot bear a temperature above 115° to 122°, maintained for several hours. In the ordinary filling of a silo, when the end aimed at is to prevent fermentation, by tramping the mass the temperature frequently rises to 105°. With less tramping and a longer time in filling, the temperature may rise still higher. This may account for the ensilage being kept sweet when hurry of other business sometimes delays the filling, and it may be found best to fill the silo without any packing, and allow it to remain until the desired temperature is reached, when the cover may be adjusted; but it is best for farmers to use thermometers in order to notice the heat and give the method a trial.

The temperature falls rather gradually, and as the mass settles and the bin is forced out, the heat disappears and the ensilage becomes quite cool. It will be found to be cooler near the bottom than it is near the top, because the greater pressure there expels the air to a greater degree. Ensilage will be ready to feed any time after it becomes cool, but the period required for cooling varies under different conditions, varying usually from six to ten weeks. Remember, although ensilage may have been cooled off, that it is still liable to become heated again if exposed to the air, or if water gets into the silo.

Whenever ensilage is laid bare by the removal of the daily rations and exposed to the air, it will be in nice condition to feed at night, and the same again in the morning.

[TO BE CONTINUED.]