

while the dam is at work. At nights, however, both are better turned out on a grass plot. The foal of a working mare can, if taught to eat well and take cow's milk, be weaned at from three and a half to four months old, with advantage to both, and if her double duty tends to interfere with her getting in foal, their permanent separation may materially aid the mare becoming pregnant, provided she is bred to a sure horse.

Uniformity in Live Stock.

The live stock of the country presents a paradox. It may truly be said to show the highest excellence side by side with the lowest mediocrity. Year by year, strange as it may seem, our farmers (or at least too large a proportion of them) continue to breed inferior, unprofitable animals, though having the best types constantly presented to them, and the best paying types. It cannot be for lack of means, for the male animals from which improvement would come can now be purchased at figures more reasonable than can the inferior ones. This can be proved to a demonstration, and for illustration we will take the case of a Shorthorn bull. At the present time, a yearling pedigree bull can be purchased from a good herd for, say \$100. The purchaser can see the sire and dam, and so convince himself that his future sire is descended from parents good alike in symmetry, in milk, and in fleshing qualities. That bull will work manifest improvement in his own cattle, and tend to grade upwards his future herd; it will command the attention of his neighbors, and probably pay for his keep in extra service fees. When he has been used as long as the ties of kinship will permit, he will be fattened at the minimum of expense, and realize more to the butcher than his original cost, and he will leave behind him in the farmer's hands a class of cattle superior to those he found when he came upon the farm, and each worth, say, from \$5 to \$25 more. Surely this is a grading up which will make a considerable advance in the annual receipts of a farm. On the other hand, a farmer purchases a mongrel bull of which he literally knows nothing, except that he is told that he is by a pedigree sire. He may be, or may not be. He pays about the same price, or possibly buys him for a trifle lower. The neighbors fight shy of him, or only use him from necessity, or from his fee being a nominal one. He brings no improvement to the bulk of the farmer's stock, but he deteriorates the produce of the best of his cows. Either the herd stands still, or its value is lowered by his use. When done with, he requires greater expenditure to get fat, and his quality being poorer, his price to the butcher is lower. Taken all round, he has decreased the cattle receipts of the farm, and the owner becomes annually poorer. In most farmers' herds you find a few good cows of greater merit than the rest, and these are kept at a profit; you find a few of moderate excellence, which possibly pay for their keep and leave a trifle over; and you find a percentage which are kept at a loss, which neither pay for their keep as milkers, nor do they clear their fattening keep when they go to the butcher. And yet these unprofitable cattle are bred from, in alliance with sires as unprofitable as themselves. The result is a general grading downwards. All alike deteriorate, and their selling prices are materially reduced. What is the reason? Here are two courses, and they apply equally to all the other animals of the farm as to cattle—to horses, sheep, pigs, and to poultry. Why should not the upward one be taken when it is so manifestly the best paying one? Possibly the reasons are various: Lack of judgment; indifference; they did for my father, why not for me; all right enough for gentlemen with long purses, but not for me. But if any or all of these reasons are sufficient, whence has come the manifest improvement in the live stock of the country during the present century? If the animals of 1800 were good enough, why should we have the improved ones which 1900 presents? And if this latter argument is good, why should not every farmer of today so grade up his cattle that, in place of having a comparatively few remunerative cows and a greater percentage of non-paying ones, they should be all alike of the higher type? Just as it has been possible to breed these half-dozen good ones, so it is possible to breed all good, if the right materials and the proper steps are taken. Get a male of the right type, bred true to type, and he will get true to his type. Gradually get rid of the unprofitable females in beef, do not rear any of their produce, but let the calves go in veal. Rear only the female calves from your best cows, and year by year you will see your herd approaching the type of what was once your best half-dozen. It does not need capital, only judgment. Note in what respect your dams are deficient, and select a sire good in that defect. Let the dairy be ever to the front, for that brings a daily return, but the animal goes but once to the butcher; the other essentials will come naturally once a start has been made. We knew a man who, when asked if he had done so-and-so, invariably replied, "No, it just wants starting on." That is the key to the whole question. Once a start is made, it is astonishing how things fall into line. The best farmer's dairy herd in the country has been built up on these lines. Its owner had no capital, only a determination that he would not own a moderate animal, and he has won. The herd today presents a splendid object-lesson to all farmers. Where he has led, others can follow. —*Agricultural Gazette.*

Live Stock at Paris.

There is certainly a feeling of considerable disappointment with the small number of British live stock entries made at the Paris Show. In a way, this, of course, is not surprising, when, no matter what they may make, the whole must be sold there, as none return alive to Britain. Though the entries are not numerous, they are more general than their numbers would have led one to anticipate. Judging from the names of the enterers, Shorthorns will be represented by a couple of entries, Red Polls by one or two, and Herefords by one. Sheep entries are rather larger, Southdowns taking pre-eminence with three entries; Shropshires follow with a couple of entries, whilst Lincoln Longwool sheep, Kent or Romney Marsh and Hampshire Downs will be represented by a single entry each. The swine breeders of England appear to be also represented by a single entry, whilst the various breeds of poultry have nine separate entries.

Speaking generally, the cattle entries, which are largely of the continental dairy and general purpose sort, number 2,140 head, sheep 800 "lots," and swine about 300 head.

Horn Fly Remedies.

Regarding remedies for horn fly, we have never found anything more effective than the mixture of seal oil and crude carbolic acid, in the proportion of a tablespoonful of carbolic acid to a quart of oil. It is a good deal of trouble to apply this remedy, the simplest way being to apply with a brush. To be an effective remedy, it should be applied about twice a week, but it will be found a great help if applied once a week. I do not know of anything which will prove effective against these pests that does not entail a good deal of trouble.

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FARM.

A Fruitful New Brunswick Farm.

On the occasion of a visit to St. John, N. B., in September last, some notes were taken by the writer on the beautiful and fertile farm of Mr. James Manchester, of that city. Mr. Manchester is the chief partner in one of the leading mercantile establishments of St. John, but being an Englishman, and raised upon a farm in the Old Country, he evidently likes the smell of the land, and devotes considerable attention to the operations of his farm, which is beautifully located on the shore of the Bay of Fundy, some four miles from the City. The farm comprises 200 acres of strong clay land, most of the portions under cultivation being systematically underdrained, and farmed under a rotation suited to the crops which succeed best in the Province, which are oats, barley, hay, turnips, potatoes and parsnips. Heavy crops of clover are raised in most seasons, and made into hay of high-class quality, which is fed principally to the dairy cows and to beef cattle, a few of which are fattened each year. Green oats are also largely used for fodder in summer as a soiling crop when pastures fail, and are made into hay for winter feeding when clover fails, producing a large bulk of palatable fodder, fed either whole or cut and mixed with pulped roots, with a sprinkling of bran and meal. Besides the manure produced on the farm from the feeding of stock, commercial fertilizers have been used to a considerable extent, as well as mussel mud from the sea shore, and gas lime (composted with the barnyard manure), and also coarse-ground bone dust, which latter has been found especially valuable and satisfactory.

As an evidence of the high state of fertility to which the farm has been brought, the following extracts were made from the record of crops produced. From a plantation of Early Rose potatoes, 151 yards long and 32 yards wide, drills 30 inches apart, uncut seed, 115 barrels of merchantable potatoes were gathered. From less than 7 acres of land 623 bushels Black Tartarian oats, second remove from imported seed, was harvested. From 2 acres and 1 rod of land, and 3 bushels and 1 peck of barley sown, 127½ bushels were threshed, weighing 50 pounds to the bushel. Two hundred and forty-seven barrels of mangels were taken from a measured half acre of land.

These returns from land not naturally rich, but requiring skillful management, serve to show the possibilities of well-directed farming in producing bountiful crops, which are a source of pleasure and satisfaction to the husbandman.

Testing Fertilizers at Ottawa.

Dr. Wm. Saunders, Director of the Dominion Experimental Farms, in his report of the work at the Central Farm, Ottawa, gives in the following tables the results of special trials with fertilizers. The barnyard manure used was composed of about equal proportions of horse and cow manure. Trials were made with barley, oats and corn, as well as those given below.

PLOTS OF WHEAT.

The seed sown on the wheat from the beginning has been in the proportion of 1½ bushels per acre, excepting in 1891; and the varieties used were as follows: In 1888-89-90 and 1891, White Russian, and in 1892-3, Campbell's White Chaff. In 1894 the Rio Grande wheat was used, and shortly before sowing, it was tested as to vitality and found to be deficient in germinating power, less than half the

kernels sprouted. As it was not practicable then to secure better seed, double the usual quantity was sown, namely, 3 bushels per acre, which gave a proportion of growth on each plot of about the usual thickness. In 1895, 1896, 1897, 1898 and 1899, Red Fife wheat was used in the usual quantity of 1½ bushels per acre. In 1890 the Red Fife was sown May 5, came up May 13, and was ripe from August 17 to 20.

The season of 1890 was moderately favorable for the growing of spring wheat at Ottawa, and has given in most instances crops above the average.

EXPERIMENTS WITH FERTILIZERS ON PLOTS OF WHEAT, ONE-TENTH ACRE EACH.

Fertilizers applied each Year.	12TH SEASON, 1899.		AVERAGE YIELD FOR TWELVE YEARS.	
	VARIETY, RED FYFE.			
	Yield of Grain.	Yield of Straw.	Yield of Grain.	Yield of Straw.
	Per Acre.	Per Acre.	Per Acre.	Per Acre.
	Bu. lbs.	Lbs.	Bu. lbs.	Lbs.
Barnyard manure (mixed horse and cow manure) well rotted, 12 tons per acre in 1888; 15 tons per acre each year after until 1899—no manure was used that season.....	23 40	5,280	21 10	3,839
Barnyard manure (mixed horse and cow manure) fresh, 12 tons per acre in 1888; 15 tons per acre each year after until 1899—no manure was used that season.....	27 40	5,910	21 26-12	3,883
Unmanured.....	10 35	1,300	10 17-11-12	1,849
Thomas' phosphate, 500 lbs. per acre.....	10 30	2,470	10 22-11-12	1,965
Thomas' phosphate, 500 lbs.; nitrate of soda, 200 lbs. per acre.....	12 20	2,490	12 31-8-12	2,842
Barnyard manure, partly rotted and actively fermenting, 6 tons per acre; Thomas' phosphate, 500 lbs. per acre, composted together, allowed to heat for several days before using, applied each year until 1899, no manure or phosphate were used that season.....	21 10	4,445	18 26-6-12	3,206
Thomas' phosphate, 500 lbs.; nitrate of soda, 200 lbs.; wood ashes, unleached, 1,000 lbs. per acre.....	12 50	3,880	12 43-10-12	2,372
Thomas' phosphate, 500 lbs.; wood ashes, unleached, 1,500 lbs. per acre.....	10 50	3,260	10 42-4-12	1,980
Mineral superphosphate, No. 1, 500 lbs. per acre.....	11 30	2,175	11 36-6-12	1,809
Mineral superphosphate, No. 1, 350 lbs.; nitrate of soda, 200 lbs. per acre.....	14 5	3,110	12 57-11-12	3,041
Mineral superphosphate, No. 1, 350 lbs.; nitrate of soda, 200 lbs.; wood ashes, unleached, 1,500 lbs. per acre.....	18 30	3,840	13 55-10-12	2,736
Unmanured.....	9 5	2,685	9 40-5-12	1,742
Bone finely ground, 500 lbs. per acre.....	12 15	2,635	11 43-2-12	1,900
Bone finely ground, 500 lbs.; wood ashes, unleached, 1,500 lbs. per acre.....	14 35	3,315	15 9-2-12	2,360
Nitrate of soda, 200 lbs. per acre.....	12 30	2,550	13 17-11-12	2,330
Muriate of potash, 100 lbs. per acre.....	15 10	2,800	15 17-11-12	2,067
Sulphate of ammonia, 300 lbs. per acre.....	15 50	2,940	12 5-2-12	2,332
Sulphate of iron, 60 lbs. per acre.....	11 30	1,680	12 26-3-12	1,881
Common salt (sodium chloride) 300 lbs. per acre.....	14 20	1,810	13 20-5-12	1,486
Land plaster or gypsum (calcium sulphate) 300 lbs. per acre.....	11 30	1,880	12 30	1,880
Unmanured in 1889; mineral superphosphate, No. 2, 500 lbs. per acre, each year since.....	13 50	2,400	12 33-2-12	1,805

*Finely-ground mineral phosphate was used on this plot from 1888 to 1897. Thomas' phosphate in 1888 only.

PLOTS OF MANGELS AND TURNIPS.

In conducting these experiments the roots only have been taken from the land, the tops have always been cut off and left on the ground to be plowed under, so that the plant food they have taken from the soil may be returned to it. One-half of each one-tenth acre plot in the series has been devoted to the growth of mangels, and the other half to turnips, and these crops have been alternated from year to year. The preparation of the land has been the same for both these roots. It was plowed in the autumn after the crop was gathered, gang-plowed deeply in the spring after the barnyard manure had been spread on plots 1, 2 and 6, and after gang-plowing the other fertilizers were spread by scattering them evenly over the surface, after which it was all harrowed with the smoothing harrow, then made in ridges 2 feet apart, rolled and sown.

In 1889, the variety of mangel used was the Mammoth Long Red. In 1890, three varieties were sown: 15 rows of Mammoth Long Red, 6 of Mammoth Long Yellow, and 6 of Golden Intermediate on each plot. In 1891, each plot again had three varieties: 18 rows of Mammoth Long Red, 3 of Yellow-fleshed Tankard, and 6 of Golden Tankard. In 1892, 1893, 1894, 1895, 1896, 1897, 1898 and 1899, one variety only was used, namely, the Mammoth Long Red. About 4 pounds of seed were sown per acre, each year. In 1890 the mangels were sown May 8, came up May 17, and were pulled October 16.

Two varieties of turnips were sown on the half