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# THE ILLUSTRATED JOURNAL OF AGRICULTURE

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## Notice to Secretaries of Societies and Circles of Agriculture.

The Secretaries of the above societies are requested to fill up the blanks in the lists which we send them this month. These blanks should be filled up in such a manner that the names of all those who have the same *post-office address* should be placed together one after the other. The *post-office address* must be given and not that of the *parish*, for it often happens that the two do not agree, or that there are several post-offices in the same parish. The blanks having been filled up, the lists should be immediately forwarded to Ed. A. Barnard, Director of Agriculture, Cap St. Michel, P. Q. : they should contain the names of the subscribers for 1882, and none others. In order to avoid all complaints and all useless correspondence, the Secretaries will please to remember that the despatch of the Journal of Agriculture will only be arranged in accordance with the new lists from the February number of 1883; and no further correction of the lists will be made until December 1883.

## APATITE—GROUND VS. DISSOLVED.

The following letters from the three principal agricultural chemists in England and Scotland, Sir John Bennet Lawes, Professor Voelcker, chemist to the Royal Agricultural Society of England, and Professor Aitken, chemist to the Highland and Agricultural Society of Scotland, will be read with interest by all Canadians. *Qui vult decipi, decipiatur.*

ARTHUR R. JENNER FUST.

## ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Laboratory, 12, Hanover Square,

London, Oct. 30th 1882.

Dear Sir,—In my judgment it is a gross perversion of the truth to represent finely ground *apatite* superior in fertilizing properties to the same material dissolved in sulphuric acid. I go so far as to maintain that a hard crystalline material, such as *apatite*, ought never be applied to the land merely in a finely ground state. It appears to me a great pity that an expensive and valuable raw phosphatic mineral should be recommended for manuring purposes in a merely finely ground

condition, for such a recommendation if followed must inevitably do harm to the best interests of the farmer.

Believe me yours faithfully,  
To Arthur R. Jenner Fust, Montreal, P. Q.

## CHEMICAL LABORATORY,

8 Clyde Street,

Edinburgh, 31st Oct. 1882.

Dear Sir,—I am this morning favoured with yours of the 20th instant regarding *apatite*. All my experiments with ground Canadian *apatite* have been such as to prove that phosphate to be unsuited for a manure until dissolved.

Where I have applied it to roots the result has been usually equal to "no phosphate," and I have never seen any effect produced by it on the succeeding cereal crop. I think farmers should be warned not to use it in the undissolved state until they have proved, each for himself, by experiment on his own land, on the small scale, that it is useful. It would indeed surprise me to hear that it succeeded any better in Canada than it has done here, but I should like to hear of careful comparative experiments tried with it on the small scale. I am, dear Sir, yours very truly,

A. P. AITKEN.

To Arthur R. Jenner Fust, Montreal, P. Q.

Dear Sir,—For several years a controversy has been going on in this country in regard to the relative value of soluble and insoluble phosphates, in which I have taken no part. There can be no doubt whatever that soluble phosphates act far more rapidly than insoluble phosphates however finely ground, and as in this country the bulk of the phosphates used are required to push the young turnip out of the reach of the fly, soluble phosphates will continue to be used. The turnip, moreover, is a plant which requires both sulphur and lime, and the gypsum plays an important part in the growth of the crop. If I used phosphate for cereal crops and not for turnips, I should be quite content to use a certain portion of phosphate in the ground state, provided; 1st, that the phosphate was derived from some *non-crystalline* (1) source, such as *Cambridge coprolite*, or *Carolina rock*; 2nd that the phosphate was reduced by grinding to an extremely fine powder, for instance, capable of passing through a sieve of 100 holes to the inch. I have recently seen some phosphates, sent from the States, beautifully ground. If, farming in the States, I should not at all object to use a portion of that phosphate in this form. Our experiments appear to indicate that plants can take up large quantities of soluble phosphate, or soluble potash salts when first applied to the soil, but afterwards, when these substances have become fixed in the soil, they are taken up with extreme slowness, and thirty or forty years may elapse before one application is accounted for. Under these circumstances, provided a sufficient amount of soluble phosphate is furnished for the first crop, I see no

reason why the residue should not be applied in a very finely ground state. Yours truly,

J. B. LAWES, Rothamstead.

To Arthur R. Jenner Fust, Montreal, P. Q.

NORWOOD LODGE,

Ste. Anne de Bellevue, Oct. 26th 1882.

My dear Sir,—In answer to yours of the 19th instant wishing a statement of the yield of butter and milk from my herd of Jerseys, not having tested them all separately, I can only give a few tests. One of the two year olds' Norwood's Queen, first calf, gave (on grass) 14 qts. per day of very rich milk. Another a 4 year old, gave 17 qts of milk, per day, from which was made 9½ lbs butter, per week, (on hay only); she, afterwards, having been better fed, gave 20 qts and 14 lbs 1 oz butter. Another gave 14 lbs per week. The herd averaged for 3 months, on grass, 1½ lb butter each per day. The milk is very rich. Some of it was tested with Champion Creamer at the exhibition of 1882, and from a setting of 12½ inches of milk 5 inches of cream were taken, I was shown a test (by the same creamer) of a celebrated herd of Jerseys in Ontario, and from a setting of 16 in. milk 6½ in. of cream was taken. Hoping you will find the desired information, I remain yours resp.,

W. A. REBURN, per GEO. W. H. R.

Mr. Reburn's statement may be depended upon. Mr. Drummond, of Petite-Côte, has an Ayrshire cow, v. p. 117, which has given as much as 18½ lbs of butter a week for some weeks in the flush of the grass. It is very desirable that an official test of the produce of such animals should be had, and next spring I shall be very happy to aid in obtaining one.

A. R. J. F.,

**Cotton Seed Meal.**

The following article is condensed from the "Country Gentleman."

About six or seven years ago, I began to feed my cows with cotton-seed meal, and have continued its use ever since. My cows are kept for making butter, and it is, therefore, necessary that this food should be not only productive in quantity, but the quality must be looked to as well. As no one can live upon beefsteak or essence of beef and remain healthy, so the meal cannot be used alone. Professor Atwater, in his report of the Connecticut Experiment Station, 1882, gives the following as the composition of feedings generally in use.

	ORGANIC MATTER				VEGETABLE MATTER				Nutritive ratio
	Albuminoids	Fibre	Other Carbo-hydrates	Fat	Albuminoids	Other Carbo-hydrates	Fat		
Cotton seed meal.	41.6	3.1	24.4	18.0	33.2	17.6	16.2	1.8	
Corn meal.....	8.9	2.0	70.8	4.1	8.2	66.8	3.1	9.2	
Bran.....	12.6	2.5	67.0	2.2	10.6	50.0	2.3	5.3	

By this, we see at a glance, that though cotton seed meal contains a great deal more nutritive matters than corn, it cannot take its place with advantage. The equivalent of fat in terms of starch is 2: 5; thus we have:

Cotton seed meal equals 91.3 0/10 of nutritive equivalents.

Corn meal equals 82.7 0/10 of nutritive equivalents.

But cotton seed contains nearly five times as much albuminoids as corn meal, and in this lies its great value to the feeder; the albuminoids resembling the flesh-meat of human diet.

Nitrogen cannot be used in so large a quantity in animal food as carbon, for it would unduly enrich the blood, and

(1) Apatite is a crystalline form of phosphate. A. R. J. F.

throw too much work upon the kidneys, the principal duty of which organs is to eliminate the nitrogen from the system. Carbon is, on the other hand, needed in large quantities for the sustenance of vital heat. And we have often found that too much cotton seed meal given to cows produces garget or udder clap, a malady almost invariably arising from over richness of blood. In horses and pigs, the same cause produces congestion of the brain, *vulgo*, staggers.

After long experience, I find the safest ration to be: one quart cotton-seed meal, one quart of corn meal, and one of bran, given twice a day, for a cow in full milk. The effect of cotton seed meal on the butter is to harden it, to give it a good texture, and a fine nutty flavour. I must advise all to pay great attention to their cows while on this meal; they should never have it within two months of calving, or within ten days afterwards, and it should be given in small quantities at first, gradually increasing till the animal gets used to it. The best plan is to mix one ton of corn meal, one ton of bran, and one ton of cotton seed meal, on a floor, and then your men will not be able to use too much of the last material, as they are very apt to do if they get a chance: seeing how much good a small quantity does, they are naturally inclined to try doubling it.

A. R. J. F.

**Hampshire Downs:** My readers will see in our next, a letter from an American on the Hampshire Downs at the great London market. The sheep exhibited at the R. A. S.'s annual meeting and other great shows are doubtless crossed with the Southdowns, but the sheep I propose as the most useful for this province are not show sheep at all. Mr Cochran's Shropshires would beat them into fits at any exhibition. But they are the earliest maturing sheep we have in England, and I believe them to be the most profitable to the farmer. They sell for precisely the same price per stone as the Southdowns.

Mr Wrightson, Principal of the Agricultural College at Downton, near Salisbury, Eng., writes: "The fact that Hampshire lambs are capable of reaching 76 and 80 lbs. carcass weight by August 12th, is in itself astonishing and perhaps incredible to many. As we realised 72s. each for 100 wether lambs on that day, we may be allowed to mention the fact as proving the wonderful aptitude of the race for early development. The knowledge of this is gradually spreading. We do mean its appreciation by agricultural journalists or leading men, but by the rank and file of farmers. A fact may be what is called known—i. e., recorded—but it is another thing for it to be grasped and acted upon by men who, comparatively speaking, never read even an agricultural paper. It is in this sense that a knowledge of the wonderful value of the Hampshire Downs is spreading. A demand for ram lambs of this breed is springing up in Lincolnshire, in Yorkshire, and in the Midlands. The cross-bred lambs are hardy and fast growing; they are less subject to illness and the market price of the mutton exceeds that of any long-wooled sheep. And, moreover, the wool of the Hampshires has for the last few years sold at a comparatively higher price, thus placing them at an advantage to their rivals, the longwools, in both the important points of produce. A large dealer sold four Hampshire lamb rams last year in an important district in Yorkshire. This year, he has had no difficulty in disposing of a hundred in the same locality."

**First steps in Farming—Young man's Department—Cattle feeding.**

I am glad to get back to our subject again; and I hope to be able to continue it throughout the winter without a break

It is of more importance that you should understand the theory of cattle-feeding than you can, perhaps, imagine, before you have gone regularly through the question; much more important than the theory of manuring land; for in the latter case, an overdose of manure may be a waste of material for the season, but the overplus will remain in the land ready for the next crop; but an overdose of food will often lead to the detriment, sometimes even to the loss, of the animal under treatment.

I must repeat myself a little here. As it is nearly four months since we talked together, it would be as well to remind you that the constituents of animals, that is the materials of which their frames are composed, are exactly the same as the materials of which plants are composed, so far as the essentials of life and growth are concerned. Teeth and bones, hair, wool and feathers, contain *fluorine* and *silicon* in addition: the *combustible* elements are:

Carbon

Oxygen

Hydrogen

Nitrogen

Sulphur (partly combustible)

The incombustible:

Potassium

Magnesium

Calcium

Iron

Phosphorus

Sulphur (partly incombustible)

Besides these, sodium, silicon, and chlorine, with some other elements in minute quantities, such as manganese, are often present, but do not appear, according to the most recent researches, to be absolutely necessary to plant life. Of course they discharge some useful functions, or nature would not have put them there.

Again, we saw (v. p. 52, vol. 4) that the three proximate principles, albumen, casein, and fibrin, were common to both animals and plants, and that it was clear that they both spring from a common origin; but, whereas from such simple substances as carbonic acid, nitric acid, water, and salts, a plant is able to manufacture a vast number of different compounds by a simple consumption of force external to itself, which force is *sunlight*, an animal has no such power: it wants its materials ready made—it finds little assistance from any external force; in fact, the keeping up of the natural heat of the body is effected by the combustion of the food consumed; and every stroke of work done by horse, ox, mule, or ass, is derived from the same source. Thus, while food merely provides plants with materials for building up vegetable tissues; animals must, in addition, be furnished with the means of producing heat and mechanical force.

The combustible matter of animal bodies is composed chiefly of nitrogenous substances and of fat. These nitrogenous bodies used to be called *protein* compounds, from their appearing in so many different forms, but they are now generally classed as *albuminoids*; *gelatinoids*; and *keratin*, or the horny matter. These are nearly allied to each other, but they serve for varying purposes: albuminoids make up the mass of animal muscle and nerve, with the greater part of the solid matter of blood; skin and sinew, cartilage and bone, are largely indebted to the gelatinoids; while keratin is demanded by horn, hair, wool, and feathers: they are all nitrogenous, remember, and are the most valuable and important parts of the animal economy.

Bones constitute by far the largest part of the incombustible matter of animals. If a really fat beast were burned, from 75 to 85 0/10 of the whole ash would be found to be derived from the bones. Bone ash, as we have seen (v. p.

167, vol. 3,) consists mainly of phosphoric acid and lime; but in the ash of the muscles potash and phosphoric acid form the chief ingredient, as they do in the yolk of wool: and a useful thing it is in that position, enabling us, as it does to wash our sheeps' fleeces clean from all impurities without any extraneous aid of soap.

Amongst other things for which we are indebted to Sir John Lawes, the following table of the composition of the whole bodies of animals will not be found the least valuable: Percentage composition of whole bodies of animals; stomachs &c. removed.

	Fat calf	Half fat ox	Fat ox	Store Sheep	Fat Sheep	Extra fat Sheep	Store pig	Fat pig
Water	65 1	56 0	48 4	61 0	46 1	37 1	58 1	43 0
Nitroge. matter	15 7	13 1	15 4	15 8	13 0	11 5	14 5	11 4
Fat	15 3	20 8	32 0	19 9	37 9	48 3	24 6	43 9
Ash	3 9	5 1	4 2	3 3	3 0	3 1	2 8	1 7

The fat pig was a *porker*, not a bacon-hog, or he would have shown a much higher percentage of fat. The table is very simple, but worthy of great attention. The first thing in it that strikes our eye is the immense amount of water contained in the animal body. In a fat calf, weighing one hundred pounds of meat, skin, and bone, there are actually 6½ imperial gallons of water; and the whole solid substance only weighs 35 lbs, and might be packed into a very small compass indeed! Again, while the carcass of the fat ox shows 15.7 0/10 of nitrogenous matters, the fat sheep gives only 11.5 0/10 and the fat pig about the same; no wonder that when, in bygone times, I was preparing for a boat-race at Cambridge, my trainer forbid all animal food but underdone beef! speaking with supreme contempt of "them sheep-nibblers," as he termed the eaters of mutton chops. (1)

We see that the half, fat ox contains a greater percentage of nitrogenous matters than the fat ox—18.1 to 15.4—while the calf gives as much as the fat ox, or nearly so. From this we gather, that the *percentage* of nitrogenous matters increases with growth, but decreases again in the process of fattening.

Another Rothamsted table gives ash constituents and nitrogen in the fasted live weight of animals slaughtered there. Each animal is supposed for convenience to weigh 1000 lbs. We have, also, nitrogen and ash constituents of wool and milk.

Ash constituents and nitrogen in 1000 lbs of various animals and their products:

	Nitrogen	Phosphoric acid	Potash	Lime	Magnesia
Fat Ox	23 18	16 52	1 84	19 20	0 63
Fat Sheep	19 60	11 29	1 59	12 80	0 50
Fat Pig	17 57	6 92	1 48	6 67	0 35
Wool, unwashed	73 00	1 00	40 00	1 00	0 70
Milk	6 40	2 00	1 70	1 60	0 20

Observe, how very large the proportion of nitrogen in the ox is compared with the other animals of the farm: again, look at the immense amount of potash in the wool of the sheep, 40 lb. in 1000 lb. of wool! At this rate, a heavy fleece must often contain more potash than the whole carcass of the shorn sheep.

Fast a fat ox thoroughly, and his dead weight will generally be to his live weight as 60: 100—that is the carcass of a

(1) The Greek trainers fed their athletes on pork! More, I fancy, to fatten them to prevent their feeling the blows in the "pancratium," than to barden them for long contests. I do not find that the pugilists aimed at defending himself: he had to "bide the buffet," v. the fight between Friar Tuck and king Richard—Ivanhoe, near the end. In the days of the *ring*, the fight often lasted two or three hours and demanded great powers of endurance.

bullock weighing 1000 lb. should give 600 lb. as the weight of the four quarters. A sheep newly shorn, and, in proportion, equally fat, should yield about the same, but when 8 or 10 lb. of wool encumber the body, a deduction must be made. We used to calculate in England that 14 lb. (a country or horseman's stone) should give 8 lb. (a London stone); but animals are rarely weighed alive in that country, though there are great attempts being made to introduce the practice. Farmers do not sell their cheeses by guess (*by hand* is the technical term); why should they not sell their cattle by weight. The opponents of the plan are the butchers and dealers, who, from constant practice, become most accurate judges of the weight of all sorts of animals, and often gain the advantage over a farmer who fattens but a few beasts a year. As for the large farmers and graziers, they are every whit as good judges as the dealers, and they do not like getting out of the beaten track. It is difficult to say what is the greatest proportion of carcase to live weight ever known, but I remember a winner of the \$500 and gold medal prizes at the Smithfield Club show being reported as yielding 72 0/10 of its fasted live weight. A really fat pig may give 85 0/10 and upwards. ARTHUR R. JENNER FUST.

### AGRICULTURE.

PARIS, AUGUST 26.

For the last twelve years, German farmers have been complaining that pig fattening is not at all remunerative, especially if the animals belong to a race not at all precocious. On the other hand, it is objected, that if the English breeds are precocious, the amount of fat they put on is so much in excess of muscle, that rapid development is still a disadvantage. The "Lincolnshire" is a breed considered to be exempt from both drawbacks, and barley, crushed maize, cooked potatoes, distillery waste, and skim milk, constitute the general feeding. Thus, pigs littered at the end of July were weaned when six weeks old, then fed till end of November on flour, meat, and milk preparations, with clover, when the fattening commenced—they at this stage weighing 70 lbs.: after five months they were slaughtered; 356 lbs. each was the live weight, and the price realized 13 sous per lb. from which must be deducted 8 sous for keep, leaving 5 sous per lb. profit, the manure being placed against the other expenses. It has been found, that of all cereals, maize is that which gives the best results for fattening pigs.

Is it a sound practice to employ substitutes for milk in the rearing of young animals? Do attempts in this direction really mean progress? In the case of calves, the matter is very questionable. The agricultural college of Grignon, has conducted, very carefully, some experiments to test the reported value of a preparation called *Lactina* in the case of lambs. The 18th March last, twenty lambs, aged 8 days, were selected: being twins, one-half were left with the mothers, and the other ten fed on lactina, by means of the artificial mammal. The animals were weighed at various periods. The lactina powder was prepared according to the printed instructions, save, that instead of ceasing to mix it with cow's milk after the fifteenth day, the milk was continued during two months—so the substitute had all in its favor. The lambs were fed four times a day on the artificial food: they belonged to the races Dishley, Dishley-merino, and Southdown, and were of both sexes. The other ten lambs were left with their mothers as usual. Each weighing revealed, that the lambs nourished by the mothers had made double the progress over those artificially fed, and in no case was the inferiority less than one-third. The result after 4½ months trial was, the average weight of the lambs reared on the lactina, was 40 lbs.; those reared by the mother 64 lbs. Sex in the present case

could not explain the difference, since the animals were under this head equally selected.

Mr Fleischer of the Agricultural College of Bromen, has been conducting for the last three years experiments on peaty soils, to test the efficacy of partly soluble phosphates and the superphosphates. The former proved the more beneficial; the phosphoric acid readily soluble, is not absorbed by the humus-earth, so consequently disappears quickly from the stratum where the roots exist; indeed, this acid exerts a deleterious effect in soils already acid. Bonedust, guano, gelatinous phosphate, phosphorite, in a word, all substances containing soluble phosphoric acid yielded the same results, even on old, as well as on new peaty soils. Hitherto it was believed, that peat soils contained a good deal of free sulphuric acid, which acted on the recalcitrant phosphates. Mr Fleischer shows that the energetic action is due to humic acid.

Potash is a fertilising element whose restoration to the soil is indispensable, as it is carried off by crops in considerable proportions. This restitution becomes the more imperative, when plants of the leguminous family, such as clover, disappear, to be replaced by moss. Unleached wood-ashes, containing 6 to 8 per cent of potash, and 3 to 4 of phosphoric acid often produce marvellous effects; the moss disappears, and the clover and similar plants take its place. (1)

Mr Rimpeau at Schlaustedt, and Prince William at Sobaumbourg, have been occupied with the influence of potash on the production of sugar in beet. After the bedding was cleaned in the morning, the boards were strewn with 1 cwt. of kainite, and ½ cwt. of gypsum, per two tons of soiled bedding: the latter on being removed was allowed to steep in putrid urine, and in time applied at the rate of 11 tons per acre, to a marly soil. The manure enriched with kainite, produced a slight augmentation in yield of roots, over the gypsum combination. The salient fact elucidated by Prince William on his estate in Bohemia is, that chloride of potassium exercises no essential action in humid years, while in dry seasons, 1½ cwt. per acre, secures an increase of 3 tons of roots per acre; that the salt of potash acts less by furnishing that element to vegetation, than by its absorbing and retaining humidity for the plant.

The Prussian Minister of agriculture appointed Messrs. König and Kranch, to study the changes which water undergoes, and the action it produces when applied in irrigation. The experiments took place at Munster, where several systems of waterings and drainage are employed. About 5 per cent of the water employed, on an average, escapes by the sub-soil; in a soil destitute of fissures &c. the loss is less than is generally imagined: heavy and persistent rains do not penetrate the soil beyond 12 inches; and humidity entered in proportion, as the surface presented cracks, or was honeycombed by moles &c.; drains flow only when the rain has ceased, and discharge waters that have arrived from distant points, due to accumulation in impermeable strata &c. The more the temperature of the water employed for irrigation is elevated, the more beneficial it is for vegetation; the water, in flowing over the meadow, cools quickly if the air be cold, while if the contrary, it augments rapidly. Even in cold seasons, the water possesses a sensibly higher temperature than the soil, thus preserving the latter warmer for a longer time. The fertilising action of irrigating water, depends less in the absorptive properties of the soil upon the matters held in solution, than on the precipitation of the matters in suspension, and the direct absorption of these nutritive elements by the roots of plants. The only nutritive element retained by the earthy particles with persistence, is potash, and the water is deprived of the mineral matters it

(1) Very old. A. R. J. F.

contains, in proportion as the temperature of the soil, of the water, and of the air, augments. It is from the water directly, then, that plants extract nutriment, save potash, which the soil seizes upon: thus, in the seasons when vegetation sleeps, the water escaping by drainage from irrigated meadows is poorer in potash, owing to absorption by the soil, than the irrigating water itself. The application of potash salts to grass lands under irrigation, produces an elimination of the lime in the soil; the equilibrium becomes re-established, when the potash ceases to be applied. Similar observations apply to phosphoric acid. The irrigating water introduces oxygen into the soil, similarly as does tilling the land: it reduces the acidity also of the soil, as the water escaping by the drains, is proverbially richer in acid combinations. (1)

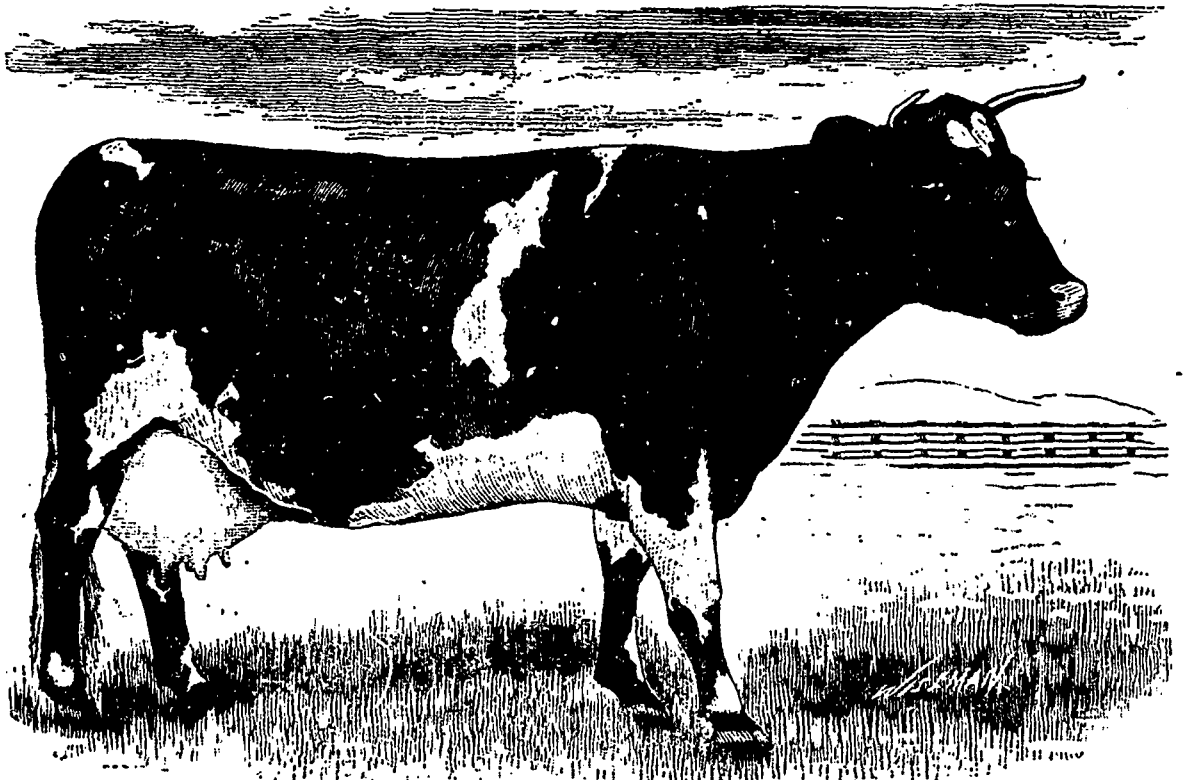
Belgium has started a new idea, that of founding an agricultural station, or technical college, exclusively devoted to the conduct of scientific and practical experiments connected with the growth and manufacturing of sugar beet.

phuret of carbon, joined to fortifying manurings. Irrigations during autumn are excellent, and Mr Jules Maistro even practises the same during summer.

The prospects of the beet crop are good; the density of the juice is remarkably satisfactory: only continued moist weather can make an alteration.

#### Sherbrooke Ploughmen's Association.

The annual ploughing match of the above association was held October 18th, as advertised, on the grounds of John Shuter, Esq., of Lennoxville. Though the number of competitors was but slightly in advance of other years, yet the whole style of the work done was so vastly superior to what we have seen heretofore, that the success of the association in benefiting the country by the instruction and encouragement it has given to so important a class of yeomen, is established beyond a doubt, and, judging by the number of interested spectators and the close competition between several of the



MR JAS. DRUMMOND'S AYRSHIRE COW.

The Pasteur process of vaccinating sheep as preservative against *charbon*, after proving a success in the north of France, has turned out the same in the warm south. The point on which attention is now fixed is, for how long, six, twelve, or thirty-six months, does the efficacy of the poek endure? Time of course will settle the point. Native Barbary sheep are proverbially known to resist *charbon*, but when crossed in France, that immunity disappears.

That other scourge, the phyloxera, continues to extend its devastations; authorities are commencing to make up their minds to expect that malady as permanent, and requiring the annual employment of insecticides against it, as sulphur is required for the oidium. The best insecticide is still sul-

(1) Doubtful—more experiments wanted before generalising.

A. R. J. F.

more scientific of the contestants, we should say that the good work is spreading and widening, and we trust soon to see it influencing other counties, either to inaugurate similar associations or to strive to make it an object for this association to amalgamate with them. By half past ten the first ground was broken and the ploughing continued till half past four in the afternoon. The ploughmen were generously supplied with the necessaries of life by Mr. John Shuter, and at one o'clock his hospitable board fairly groaned beneath the sumptuous repast provided for the Judges and Directors of the association, to which more than ample justice was done. In the evening after a substantial farmers' dinner at the College House, in which over 150 partook, the prizes were distributed to the successful competitors. In the absence of the President, E. T. Brooks, Esq., and also of James Addie,

Esq., Vice-President, W. A. Hale, Esq., was called to the chair, R. H. Tylee, Esq., acting as Secretary. The following is a list of the prizes and the names of the winners :

*1st Match, for Scotch Ploughs*—1st prize, A. Anderson ; 2nd, O. Robertson, 3rd, W. McLaren ; 4th, E. Lyons ; 5th, W. Brown.

*2nd Match, for Imitation Scotch Ploughs*—1st prize, John Rowe ; 2nd, R. Mitchell ; 3rd, E. Long ; 4th, C. Bloomfield ; 5th, S. A. McFadden.

*3rd Match, for Broad Pointed Ploughs*—1st prize, Geo Mitchell ; 2nd, John Gallaher ; 3rd, A. Robinson ; 4th, Geo. McCurdy ; 5th, S. Cooney.

*Boys Match*—1st prize, W. S. Hunting ; 2nd, E. Sterling ; 3rd, J. Farwell.

*Open Match*—1st prize, Jas. McIntosh ; 2nd John Davidson.

*Fearing and Crown Ridge and Furrow*—1st prize, Jas. McIntosh ; 2nd, John Davidson ; 3rd, H. W. McLaren.

*Best Teams*—B. A. Land Co, C. Bowen, John Wilson.

Then followed a good deal of discussion about amalgamating with Compton Township, which was left open for discussion at a meeting to be held one month hence. The old officers were re-elected with one exception ; Mr. Stevens having expressed a desire to be allowed to withdraw, Mr. Burrell was appointed in his stead. Before breaking up, the association presented their Secretary, R. H. Tylee Esq., with a very handsome silver water-pitcher, accompanied by a neat and appropriate address, expressing their due appreciation of his untiring zeal and energy in promoting the welfare of the society, and helping in no small way in making it the success that it undoubtedly is. To this Mr. Tylee replied in a few well chosen remarks, in which he said he was content to think that his labor had not been in vain. The meeting then adjourned for one month from date.

(*Sherbrooke Gazette.*)

**The Horticultural Exhibition.**

*Irregularities in presenting prizes.*

On the 22nd of September last, a protest was placed in the hands of the Secretary of the Horticultural Exhibition by Mr. Beatty, of St Lambert, claiming that the awarding of the prize for grapes grown out of doors to Mr. Landers was unfair, as that individual had grown the grapes which took the prize under glass. The affair was placed before the Board of the Horticultural Society and Fruit Growers' Association, who appointed Mr. J. Doyle and the Secretary-Treasurer, Mr. H. S. Evans, to investigate the matter. They proceeded to the grounds of Mr. G. H. Ryland, where Landers is said to have grown the grapes. Landers had entered the grapes, evidently without the knowledge of his employer, under the name of the "Foster Seedling," and finally acknowledged that the grapes were grown under glasses, and were in reality, of the "Canon Hill" variety. The President of the Board, Mr. J. S. Whitney, then had the prize handed over to Mr. Beatty. Mr. Middleton, one of the judges, has written to a contemporary saying that he, as one of the judges who pronounced on the grapes in question, felt it incumbent on him to state that it was the duty of the judges merely to judge of the grapes just as they found them presented—not to look into their history. If Mr. Beatty could prove that there was anything wrong done, he had no doubt the committee would make it all right. It is said that various other frauds were perpetrated in the fruit line.

**DE OMNIBUS REBUS.**

It now appears, that the unfortunate Mrs. Jones is

the victim of a contemptible misrepresentation. Mr. Burnham, of Saugatuck, Conn. writes to the *Country Gentleman* to the following effect : "There is not the slightest intention of excluding Canadian breeders of Jersey cattle from registering in the American herdbook. To do such a thing would be a practical impossibility, many of the Canadian breeders being very prominent members of the club. In a call for a special meeting no mention was made of Canada, for the simple reason that no mention is made of that place (*Country ?*) in the printed by-laws of the club. The United-States and Canada are so bound up together by membership, breeding, and strong personal friendship, that the mention of the two places separately is seldom, if ever made."

This should set Mr. Harrison Stephens' mind at rest.

There are, it appears, 362 imported cattle in quarantine at Quebec. The different breeds and owners are as follows : Geo. Whitfield, Rougemont, P. Q. 39 Polled Angus ; 10 Shorthorn ; 10 Ayrshires ; 10 Sussex ; 9 Galloways ; 7 Jerseys ; 7 Devons ; 7 Kyloe ; 5 Shetlands. (1)

COCHRANE RANCH COMPANY, BOW RIVER, N. W. T. P., ANGUS 23." Dawes and Co., Lachine, P. Q., 5 P. Angus.

M. H. Cochrane, Compton, P. Q., 34 P. Angus. The rest are for Ontario and the Western States. Altogether they sum up thus :

Polled Angus.....	136
Galloways .....	88
Shorthorns .....	63
Herefords.....	29
Sussex .....	10
Ayrshires.....	10
Devons. ....	7
Jerseys.....	7
Kyloes.....	7
Shetlanders.....	5

I am anxious to see the Sussex, as I hear they have been wonderfully improved since I knew them in 1852. Heasman and others, I am told, have made early-maturity beasts of them ; whereas, they used to be simply working bullocks, and were seldom slaughtered till six or seven years old. They reached heavy weights, and were great favorites with the butchers, on account of the quantity of internal fat they carried. The principal defect, particularly in the bulls, was a great hollow behind the shoulder.

**Commercial Fertilizers.**

The *Norfolk Fertilizer*, made by Styron and Co, Norfolk, Virginia, is a mixture of ground oyster shells and slaked lime, with about 15 0/10 of kainit, or some other low grade potash-salts. It is equal as a fertilizer to leached ashes, barring the phosphoric acid which these always contain. Selling price \$30 a ton ; real value \$7!!!

*Saltpetre*, or nitrate of potash : one lot from Messrs M. D. Hungerford and Co., Ct., stated to be *pure saltpetre*, was worth \$35.75 a ton ; commercial value of pure nitrate of potash \$136.05 ; selling price of this rubbish \$130.00!!! Now, as according to Ville, nitrate of potash is the manure for tobacco, and as the fertilizer contains only nitrate of soda, and 65 0/10 of common salt, we may easily imagine how the tobacco-growers of the South, who have been seduced into trying it, will for the future cry out against all commercial manures. Fancy paying \$130.00 for what is only worth \$36.00!

In order to prevent these robberies, the State of Connecticut has passed a law, which has just come into operation,

(1) "Queer little beggars these last, but famous good beef. A friend of mine in England used to buy a score every autumn, and slaughter them during the winter for the use of his very large family.



by which "the seller of any fertilizer which retails at \$10 or upwards per ton is held responsible for fixing a correct label on every package sold or offered for sale, as well as for the payment of an analysis fee of \$10 for each fertilizing ingredient the fertilizer contains or is claimed to contain, unless the manufacturer or importer shall have provided labels and paid the fee." Something of the sort with a little more general knowledge of the real value of nitrogen, phosphoric acid, &c., is much wanted in this province.

*Grapes*, in spite of the fine weather we have lately had, are still sour. I rashly ate half a dozen last night (Oct. 8th), and paid severely for my rashness.

General Le Duc, formerly Com. of Agriculture, U. S., writes that "for the future, foreigners should be debarred from purchasing the small remainder of our arable public lands, which are needed for our own children and grandchildren. We have no right to disregard their interests by permitting the public domain to be divided among strangers. The fact is too obvious to be ignored or passed by without action, that the enormous influx of foreigners is a menace and wrong that should meet with speedy and decisive repressive action in the same direction, if not so radical, as that insisted upon in our repression of the Chinese." If the General's silly notion is carried into the domain of "practical politics" in the States, the Irish and other emigrants need not fear for their future prospects: they will meet with a warm welcome here, where, at all events, this branch of political economy is better understood than in the States.

"The *Champion Grape* was the first to ripen at Montclair, N. J. First gathered ripe on September 9th. Moore's Early, Cottage, and Hartford Prolific, followed within a week; all of which are better to eat and worth waiting for." *Rural New Yorker*.

By the bye, the *Rural* wants to offer \$10,000 in premiums for the best varieties of grapes grown from the *Niagara* seeds to be sent out at their next seed-distribution, and asks for subscriptions to that end! Cannot people in the fruit line do anything, even for their own interest, without the childish bribe of a premium?

The mill mentioned in Mr Borland's letter (in our next) is the "Wilson Bros. no 3 Power Mill," advertised "to grind any and all kind of bones, wet or dry. Green bones with meat on as they come from the butcher; greasy bones and shells and limestone. Capacity on green bones 1200 lbs per day of 10 hours. Power required, about 2 horse power. Price, \$35." A mill that would do as much work as this one professes to be able to do would be cheap at \$350, even if it required double the power to drive it.

ONE THOUSAND GUINEAS REFUSED FOR A POLLED BULL.—At the recent Inverness Cattle Show, Sir Geo. Macpherson Grant refused an offer of 1000 guineas for his fine bull Justice. The offer was made by Lord Dunmore, whose factor wrote to Sir George some time ago wanting polled cattle for his lordship to put upon land he had bought in America. This is the first time four figures have been reached as the price of a polled animal.

SHORTHORNS AS DAIRY-CATTLE. — I imagine that the tenant-farmers of England know their own business. They have large rents to pay, and, in consequence, if they keep stock, whether for the dairy or for the production of meat, or, as generally happens, for both purposes, they may be

supposed to breed and buy what answers best for the respective uses.

My brother, whose property consists of Gloucester-cheese land, writes me word: "You ask me about the breed of the tenants' cows—all are shorthorns, but they are not much like the dittoes at Berkeley Castle, Tortworth, or Col. Kingscote's; but they are supposed to milk better than the high-bred ones, tho' the milk is not rich in cream. Some of my tenants give £30 or £40 (\$150-\$200) for a well bred yearling. Shorthorn bull, but do not keep a separate stook—they buy and introduce to the herd any cow that strikes their fancy, and hence of course there is a mixture of breeds." These country bred *Shorthorns* prevailing in an adjoining county to *Herefordshire* show plainly what the dairy-farmer finds his profit in where the land is good enough.

POTATO DISEASE.—Mr J. L. Jensen, director of the Bureau Ceres, Copenhagen, Denmark has lately published his ideas on this difficult subject; v. p. 126

PRICE OF GRAPES AT NEW YORK.—The Cavaliere Giannelli, Consul for the Kingdom of Italy, gives me the following account: Mr Pascalin, a large produce-merohant at New York, told me to-day (Oct. 10th) that he is selling grapes for two cents a pound, wholesale, and the retail price charged is three cents. A good peach year always spoils the sale of grapes until the season for the former fruit is over; and, consequently, the later grapes, if unhurt by frost, pay better than the earlier ones.

I see the judges of fruit at the Montreal Horticultural show refuse to acknowledge that the fact of their having awarded a prize to the *Foster's Seedling* as an outdoor grape proves that they did not understand their business. Surely, one of the chief duties of a judge is to dismiss from the show tables any object that is glaringly entered with a view to deceive. Where there is a doubt on the subject, the stewards should be appealed to, but in the case of the *Foster's Seedling* there could no appeal be needed, the falsehood inscribed on the ticket must have been patent to every one on the slightest inspection. There seems to be a good many lies told about grapes.

A. R. J. F.

## VETERINARY DEPARTMENT.

### Should we have an Annual Exhibition?

Having heard this question discussed freely by different parties interested in Exhibitions, and finding considerable diversity of opinion, we have thought it advisable to lay the question before our readers, so as to evoke discussion on the subject, and obtain different ideas. Considering the unfortunate weather which prevailed during the last exhibition held in this city, it must be considered a success so far as the number of visitors was concerned; but the same cannot be claimed with reference to the articles exhibited, especially in the industrial department, and even in the agricultural department, except for the grand display of imported animals: the show of Canadian bred stock was limited, and few superior animals were brought out.

How is this to be explained? Is it, as many affirm, due to the exhibition being held too often? Such seems to be the case so far as the department of arts and manufactures is concerned.

The trouble and expense incurred by the exhibitors in this department are not counterbalanced by the benefits they receive, and, as several exhibitors explained, they cannot make a display year after year without one year's exhibit



being merely a repetition of the previous one. The lack of interest on the part of manufacturers, and the trouble and time occupied by the committee of management, in endeavouring to persuade them to exhibit, are but little known to the general public. We cannot but concur with those who think that once in three years is often enough to hold an exhibition of the industrial department.

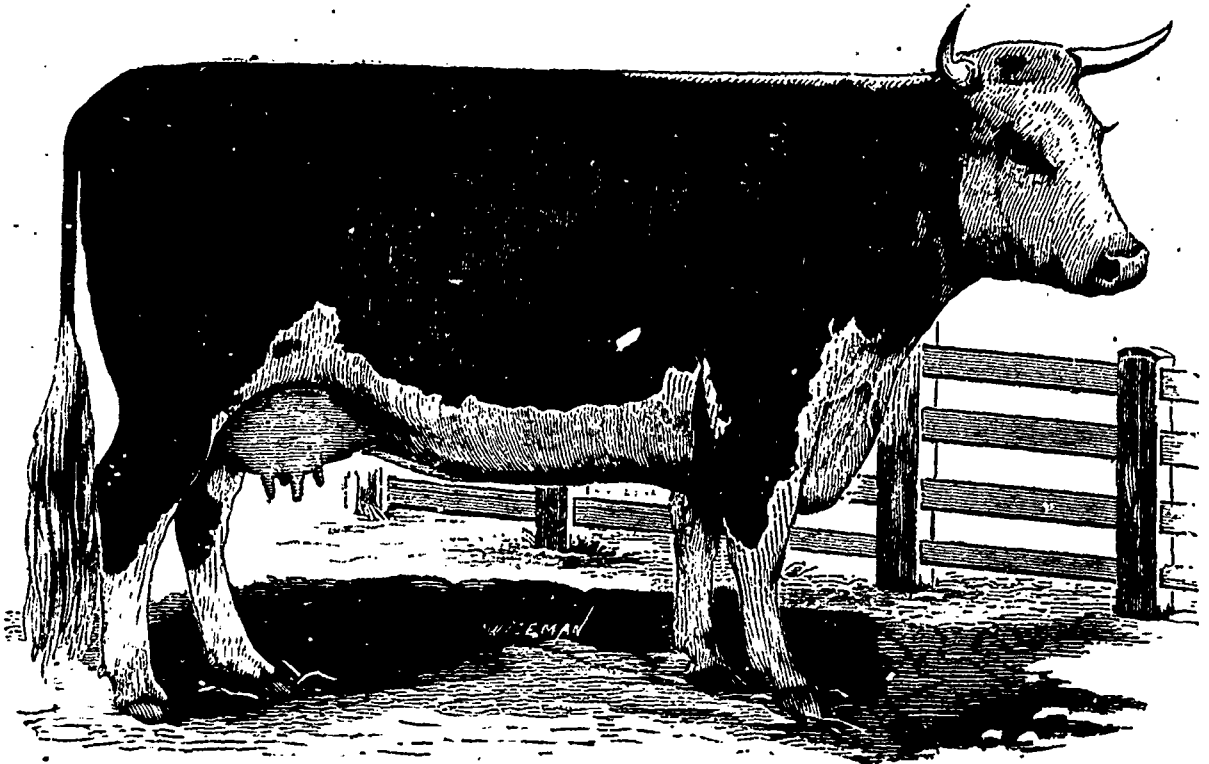
The case is entirely different with the agricultural department. The products of the farm are annual, and so many collateral circumstances influence the result of agricultural operations, that it is only by animal exhibitions and competitions that a fair estimate of progress can be made. Thus a dry season favours some farms, a wet one on the other hand is detrimental; others are the reverse; consequently, the products of the farm will vary, even under the best of farming, according to the season. So with regard to stock; which being bred for market a man may own animals of superior merit which as a matter of business he cannot refuse to sell merely for the purpose of keeping for an exhibition; to him therefore an annual exhibition is of the greatest importance,

and in no way can it be demonstrated better than by the importation of large numbers of pure-bred animals from countries where scientific and successful improvements have produced animals as near perfection as possible.

No encouragements can be considered too great to induce such gentlemen as Hon. J. H. Pope, Senator Cochrane, Mr George Whitfield and others to import, as they do, the best that money can procure, and we would strongly recommend large premiums to be offered for imported animals or herds, but we do not think that it is an error to expect even our improved stock to compete with these imported prize winners.

The inference therefore is, make separate classes for foreign bred and home-bred; and we feel confident that both the number and quality of live stock exhibited will be satisfactorily increased; and we think we are correct in asserting that there are sufficient of both classes to warrant the division.

The proposition of the honourable L. H. Beaubien to make, what is now called an exhibition, a fair, where animal



MESSRS. DAWES' HEREFORD COW.

to enable him to take advantage of the advertisement it affords.

We have remarked above that, except imported animals, few home-bred stock of merit were to be seen at the last exhibition. This fact however does not prove that there are not many good homebred animals; it merely leads us to ask why such is the case, and to suggest a remedy. As long as imported stock are allowed to compete with native-bred, it will continue to shut out our own raising; few of our agriculturists pretend to be able to compete with the prize winners of Britain, and they save the trouble and expense of bringing their stock to be beaten by animals fresh from the show yards in England and Scotland. Nothing shows the agricultural prosperity of a country more than the impro-

vement of the live-stock, and in no way can it be demonstrated better than by the importation of large numbers of pure-bred animals from countries where scientific and successful improvements have produced animals as near perfection as possible.

We do not mean sales by auction—but like the European fairs, where animals are brought for sale and where buyers and sellers are brought in contact. We know of nothing that is more urgently needed by our farmers than some means of establishing an open market at stated seasons, where surplus stock could be exhibited and sold. (1)

In this connection, we find that there is a growing feeling for the formation of an association or company to conduct the animal exhibitions or fairs, such as has been done so successfully at Toronto. Such an association could, we are con-

(1) I suggested this long ago. A. R. J. F.

vinced, conduct it satisfactorily and profitably, paying good premiums in all classes without drawing on the Provincial treasury for anything, provided they were given the use of the grounds and buildings free. We cannot help thinking, too, that the good intentions of Citizens Committees in organizing and carrying out so many outside attractions, are frustrated by these attractions being for the most part of such a nature as to keep visitors out of the exhibition instead of drawing them to it. We would suggest that in future the Citizens Committees should confine their efforts to such attractions as can be combined with the exhibition within the enclosure of the grounds.

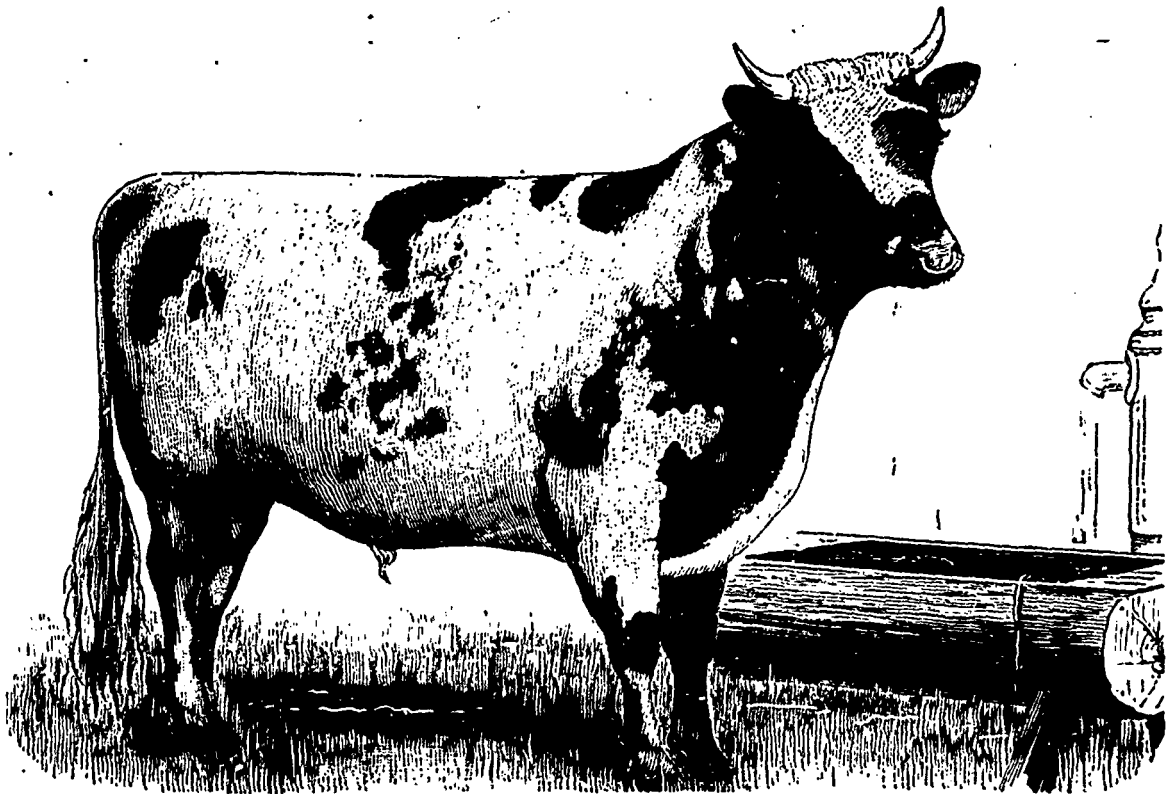
These suggestions are made as the result of opinions freely expressed by a large number of gentlemen who have the success of our exhibitions at heart; and are made with a view to lead to the discussion of the subject which we trust may culminate in much needed reforms in the present system of conducting them. D. McEACHRAN.

Point St. Charles will afford good stabling at reasonable rates, from which the buyer can ship direct. The greatest advantage, however, will be to the breeder, who can bring or send his surplus stock of horses to a certain market, knowing that they will be disposed of at a minimum of cost by himself, or, if he prefers it, by the firm to whom he may consign them.

We understand that the firm also contemplates the erection of an hotel for the accommodation of stockmen and buyers; an exchange office is also spoken of, where drafts and exchanges can be cashed; hence there is every reason to expect that a very large stock business will be conducted there.

We wish Messrs Acer and Kennedy every success; and trust that the Corporation will give them their assistance in removing off our crowded streets this horse trade, which at times, in certain localities, is at least a great inconvenience.

D. McEACHRAN.



MR. JAMES DRUMMOND'S AYRSHIRE BULL.

#### Horse Market for Montreal.

We notice with much satisfaction that steps are being taken by the enterprising firm, Messrs Acer and Kennedy, who have done so much to improve the stock yards for the convenience of cattle shippers at Point St. Charles, to establish a horse market on a somewhat large scale. The necessity for this has long been apparent, both for the convenience of buyers and sellers. When we consider that during the season, several thousands are bought weekly for the American market and are shipped from Point St. Charles, the trouble and expense to both buyers and sellers in collecting and finding stabling for them, and then in driving them to the railway for shipment is very great. The new establishment at

#### Important Consignment of Polled Cattle to Canada.

There leave Aberdeen early this morning two lots of polled Aberdeen or Angus cattle for Messrs Cochrane & Pope, Canada, which, in respect to personal merit, breeding, and value, form one of the best consignments of this popular breed of cattle which have ever left our shores. The great number of them were bought by Mr George Wilken, Waterside of Forbes, at the recent sales of the Fintray, Montbleton, Advie, and Cortachy herds, and in connection with these dispersions we have already had occasion to refer to them. We had, however, yesterday an opportunity of seeing the animals, not only individually but collectively, and having inspected almost all the polled cattle that have formerly gone to the

States and Canada, we have no hesitation in saying that this collection is by a long way the best of them all, containing, as it does, several "oracks" that are sure to make their mark on the other side of the Atlantic, and while the tops are good, the average of the last all over is of an exceptionally high character. For some time, at any rate, it would not be possible to collect another lot of similar value in this country, as good specimens of the breed are really getting scarce, and those who possess the best strains wisely, we think, refuse to part with any of their cattle. The importation of such a magnificent collection of polled cattle into Canada must tend to enhance the estimation in which they are held in that country, and home breeders, we are sure, will wish Messrs Cochrane & Pope, as the saying is, "great luck of their bargains." The most valuable lot goes to Hon. M. H. Cochrane, Hillbarst, for whom Mr Wilken secured ten animals at a cost of over 2000 guineas. At the Montbleton sale the following were bought.—The beautifully straight, handsome, young cow Lyra, at 295 guineas; her dam Lady Ida II.—the big, massive, deep-quartered, heavy cow which fetched the highest price at the sale, namely, 315 guineas; Lady Prudence, a very strong, three-year-old, of great substance, which cost 185 guineas; the two-year-old heifer Lettuce, which realised 100 guineas; and Primrose, another two-year-old, at 105 guineas. At the Advie sale, the following week, Mr Wilken scoured for his client the "plum" of the herd in that wonderfully thick compact, beefy five-year old cow, Mayflower IV., which, in respect to her great wealth of flesh, quality, and evenness all over, will, we should think, be ill to beat even in Canada, where so many good things have gone before. She was knocked out at 235 guineas—the highest price at the sale. At the great sale at Cortachy, where the highest average ever made in this country was obtained, other four females were bought, comprising the very nice fleshy cow Alice Hawthorn, taken out at 145 guineas, the neat, level and stylish one-year-old Erica heifer, Erinna, which fetched 380 guineas, and the one-year-old twin heifers Delia III. and Delia IV. Mr Wilken has also made a capital selection for the Hon. J. H. Pope, Minister of Agriculture, Canada. The average of this lot is not quite so high as Mr Cochrane's, but the "tops," we should say, are almost equally as good. Fifteen animals for Mr Pope were purchased at a cost of about 1700 guineas. At the last moment, Mr Wilken received a cablegram from Mr Pope to send along with the other cattle he had purchased for him one of the best young cows he could pick up. The order was more easily given than complied with, but, not to disappoint his client, Mr Wilken agreed to send one of his own young cows, although it is with great reluctance he has done so. He selected for Mr Pope, from the Waterside herd, Waterside Queen III, a four-year-old after Carlos and out of Fairy Queen of Portlethen, which, with May Flower IV. of Advie, in our opinion shares the credit of being one of the two best animals in this grand collection. She might be a little improved at the rump, but, taken all over, she is indeed a striking specimen of the breed, with a straight, lengthy, finely balanced frame, beautiful underline and fore-end, and characteristic head and ears, while she shows herself to great advantage, and what is more necessary, has proved a true and valuable breeder. It is not surprising that Mr Wilken was loath to part with her. A very thick, compact three-year-old, with wonderful rib and loin, name Regina, bought at Morlich, will also form a valuable acquisition to Mr Pope's herd. The other animals include the 100 guineas two-year-old heifer Flower of the Nile, purchased at the Fintray dispersion, the massive seven-year-old cow Florence of Advie, taken out at 100 guineas, the two-year-old heifers Fanny, Laura, and Amy, all purchased at Advie, the four-year-old cow Josopha, the three-year-old cow

Dakka, and the two-year-old heifer Nerissa, bought at the Cortachy dispersion; two cows named Rosebud II., and Phoebe, from Aberlour Mains; and three very good two-year old heifers full of flesh and vigour—Noomi, Bessie Lee, and Dolly Varden—from Strocherie. At the same time Mr Pope will receive six Hereford cattle, several prize Cheviots from Messrs Mundell, Gollanfield, and prize shearling Shropshire tups from Herefordshire.

*Daily Free Press, Aberdeen.*

From the above article it will be seen that Canada is holding her own in the march of improvement in stock breeding. These fine animals are all in quarantine at Point Lewis, and are all intended to be added to the breeding stocks of Hon. Mr. Pope's farm at Cookshire, and Senator Cochrane's herd at Hillhurst.

The large number of polled cattle imported into this province during the past season place Canada first in the possession of choice animals of this justly prized breed. The herds of Messrs Cochrane, Whitfield, Pope, Alloway, and Dawes, have all been enriched by importations of choice animals this season. D. McEACHRAN.

#### EDITOR OF JOURNAL OF AGRICULTURE.

*Dear Sir,*—As the season is now drawing to a close, and dairy farmers are comparing their profits with former years, it seems proper at this time to stop a moment and consider the situation.

I shall write especially concerning the state of affairs in this county, but much may apply to other localities.

The yield of milk for the past season has been very light indeed, scarcely averaging ten pounds per day per cow for the season.

The cause of this is, first, the very backward spring kept the cows in the stable two weeks later than usual, and at that time being new milch and having no grain, and being very thin in flesh at time of calving, it was impossible for them to come to a full flow of milk, for the reason that they had neither flesh nor feed to produce it; and, secondly, when they were at last turned out, the pasture was so poor that they could not fill themselves, and this is to a great extent the fault of the farmers in not sowing grass seed on the land designed for pasture.

It is the general custom here to pasture the land after it becomes so foul with weeds that it does not pay to crop it.

Thus the poor half-starved cows are turned on this land in the spring and the cute, longheaded farmer reasons thus:

"I am not foolish enough to pay out money for grass seed to sow on that land for pasture; for if I did, the cows would eat the grass and leave the weeds to go to seed, and my land would not get cleared of them at all; but now they are obliged to eat the weeds, and in two years, if I keep on stock enough to prevent the weeds from going to seed, the land will be passably clean of them and I can crop it again.

Thus I have a great deal of food for my stock from the very same kinds of weeds that less advanced farmers call an intolerable nuisance. Besides all this, those weeds make milk, which produces the best of butter or cheese, for we are able to sell our dairy produce for the highest price, and what is the use of throwing away money for grass seed to sow on the land when the weeds will come themselves and are just as good?"

Now the above is a fair sample of the method of reasoning which seems to govern the manner in which the farmer conducts his business from year to year; and what is the consequence? First, they do not obtain one half the milk that they would obtain by proper feeding; second, the flavor is inferior, and will very soon place the products, from sections where this false economy is practised, in bad repute; third,

it deteriorates the stock in such localities, much more than it is benefited by the importation of improved breeds; fourth, it runs down the farms. Now these four consequences are so connected, that what will remedy the first will cause the other evils to disappear, as a natural effect. If the lands were well seeded to the different kinds of grasses suitable for pasture or meadow, after the crops of grain, one third of the land now used as pasture would produce an abundance of food for the animals that are now half starved on the three thirds; and the farmer would have the other two thirds for meadow, which would give him plenty of hay for his cows; thus enabling him to keep them in good flesh, and consequently they would produce more and better manure, which would enable him to raise more grain, and then he would have grain to feed his cows after calving, thus bringing them up to a full flow of milk and keeping them there until the pastures were good, let the spring be never so backward. By this means his yield of milk would be more than doubled in quantity. And now as to the quality. I wish to impress upon all concerned the importance of this point.

If we expect to gain and maintain a good reputation for our dairy products, we must look more closely into this matter of flavour.

Many years ago, Orange County, N. Y., produced butter that brought from five to ten cents per pound more than could be procured for butter from the New Western counties of the same State, although the water was just as good, and the makers just as skilful.

The reason was, that in Orange County, the cows fed on old land that was well seeded to the best of grasses for the production of good milk, while in the new country the land was not reclaimed, and the cows fed largely on wild feed, which gave the milk a bad flavor; but those Western farmers awoke to this fact, and remedied the evil by throwing on the grass seed with unsparing hands, and to-day, though Orange County butter is just as good as it ever was, it is no better than that produced in a hundred other counties, and a dozen different states. I have hesitated about calling attention to this point, for fear of injuring the sale of our products, but it is better that the farmers should be forewarned. If the custom was to continue of sending brokers and buyers through the country to buy butter and cheese who were not competent to distinguish first class goods from those which were really inferior, this matter of quality would not affect the farmer quite so much; but the large dealers cannot connive in this way; for they get so many lots of inferior goods on their hands that they must discriminate between good and bad more closely, and in the future, inferiority will be detected and superiority will be appreciated; and now it rests with the producer to correct the errors and make a good reputation for his product, before a bad one is established. It would take many years to recover from the effect, if once the goods from a locality become in bad repute. As to the third consequence of the false economy mentioned above, the deterioration of the stock, a great deal of money has been expended to purchase improved stock, and I do not wish to be understood to condemn the plan but all this avails nothing if the progeny of this imported stock is to be conceived in poverty, and reared in starvation. There may be a few exceptions, but, as a rule, from the day of the birth of the heifer until it becomes a cow, it is a stranger to Plenty and a constant companion of Hunger, an object of pity and a rebuke and disgrace to its owner, who, if he has a heart of a man cannot look upon the hungry dumb brute without a feeling of shame. And then, when it becomes a mother, it cannot, after being helped on its feet by its kind hearted master, furnish sufficient nutriment to satisfy the hunger of its offspring; and thus the work of

starvation and deterioration goes on, and all the efforts to improve the stock by importation of thoroughbreds go for nothing.

It seems almost incredible that this state of affairs should exist, but it is the plain truth, and not overdrawn in the least, but, rather, the half is not told.

As to the fourth consequence of the above named custom, namely the running down of the farms, I wish to call attention to a few facts before closing this letter.

The farmer can starve his cows down to eating a great many different kinds of weeds, but there are some kinds that are so poisonous or offensive, that they prefer to starve rather than eat them; and those kind grow unmolested and go to seed, so that the less objectionable ones are destroyed to give room to the very worst ones, and thus it is we see hundreds of farm covered with those poisonous weeds to such an extent, that they are in all the crops, and remaining in the fodder, the cows are obliged to eat them in the winter, with very bad results; often nearly all the hair dropping off the animal, and not unfrequently causing abortion. If plenty of grass seed were sown on the pasture, and meadows seeded heavily, the grass would run out the weeds to a great extent, and the farmer could keep much more stock, and keep it properly; thus, producing a great deal more manure, consequently enriching his farm year after year, and this present deplorable state of affairs would be changed to one of prosperity and progress.

I have written this for the farmers to read, and in a manner and spirit that I deem most convincing.

I have no object but their welfare, and pity for the dumb brutes that suffer from the wrong management of their masters.

J. M. JOEELYN.

St. Denis, (en bas) P. Q., 19th October, 1882.

#### Beet-Sugar and Sugar-Beets.

The following is from a valued Canadian friend, who, for the last two years, has been making a thorough study of the beet-sugar question in Europe. On Mr Skaife's return, in the spring, we may hope to see him at work, in order to test, in a practical manner, the problem of beet sugar making in Canada.

#### From Germany.

Dear Sir: The culture of the beet in Bohemia differs from that in Germany in several particulars, but the same main principles are adhered to. Here, far less artificial manure is employed, and rather less trouble taken in hoeing. The results, however, achieved by first-class agriculturists in both countries don't seem to differ much, but whatever difference there is, is on the side of the Germans, who raise, perhaps, slightly richer beets.

First, as regards the breaking up of the ground. It is the aim of every farmer to get his ploughing over in the fall. Whether it is advisable to first turn over the stubble and then proceed with the deep ploughing, is a question which each must settle for himself as no rule can be given. Certain it is that the best results have been obtained by many who leave out this preliminary ploughing altogether, but it has also many strong advocates. The deep ploughing is accomplished, as a rule, by a single plough drawn by four oxen, and which reaches a depth of 12"-15". Of late, however, the steam plough has come greatly into use, especially where the ground is tolerably free from stones. Under favorable circumstances, a steam plough will perform more in one hour than four oxen in a day; and in spite of the absurdly low price of labor here, it undoubtedly pays to use those machines made on the plans of Savage & Co.

Thorough harrowing and working with the cultivator,

and once rolling with a heavy roller of small diameter, complete the work before the sowing. This latter is accomplished in this region, to a very large extent, by dibble-machines, which let fall eight to ten seeds every eight inches. In Germany, however, drills are for the most part employed, and the balance of the argument seems to be in favor of the latter method. In the first place, a drill can be run much faster than a dibble-machine, for if one attempts to run the latter at all quickly, it loses its function of dibbling, and becomes a bad drill. Then plants which are drilled allow of the running of a machine across the field, and the facilitation thereby of the thinning out. When the seeds are sown in clumps, the workman is very apt to injure the plant selected to remain, when pulling out the superfluous ones, they being all so close together; but this is not the case to the same extent when the seeds are drilled. However, when many plants are lost, through insects or other causes, the spacing under the dibble system can be far better performed, and the field looks better, and yields a better crop than if the seeds had been drilled.

In each of the above methods the amount of seed sown is about the same, 14 to 15 pounds per acre.

The distance between the rows must vary with the quality of the ground—the limits being 14 to 17 inches. (1)

In view of after cultivation with the horse hoe, it is of the greatest importance that the rows be as straight as possible. A very light machine is not desirable, as it is apt to be knocked this way and that by inequalities of the ground. I would strongly advise every farmer who intends growing a large number of beets, to do the work with a twelve-foot machine, which needs no more power to draw it than the smaller ones, while it does double the quantity of work in the same time, and insures fine, straight rows.

On most Bohemian and German farms the beets are hoed at least twice by hand, and if, possible, three or more times. That frequent hand hoeing is to the highest degree beneficial there can be no doubt, but I am convinced, from what I have seen, that a large part of this hand labor can be very satisfactorily performed by the horse-hoe. I have seen the very highest results obtained, by working once by hand, and three or four times with the said implement.

Children are always, when possible, employed to thin the beets, their hands being far better fitted for the work. If the ground be hard, it is well to provide each one with some sort of an instrument for loosening it, such as an old spoon with a bent handle; but if the ground is soft, all such articles should be banished from the field, as they are extremely apt to cause damage to the plants selected to remain. The greatest trouble is to get the children into the way of spacing properly, and to keep them from leaving the plants standing together. Indeed, this latter is so hard to prevent, that "looking for double beets" after the plants have grown considerably is a regular practice, and calculated as an item of expense by careful farmers. Early thinning is of the utmost importance. The plants should stand alone as soon as possible, and it is much more easily and quickly performed at an early than at a later period. In America, where beets, of course, grow far more rapidly than in this country, this is a very critical period; and the wise farmer will secure all the hands he can, and as soon as the proper moment arrives rush things through as fast as possible. This applies to drilled as well as dibbled beets, but especially to the latter.

As soon as the leaves entirely cover the ground, all walking on the fields should be prohibited. When one injures the leaves, one injures the quality of the root. Some

(1) How, then, can our Canadians, who sow at 30 and even 36 inches between the drills expect a crops? A. R. J. F.

farmers on a small scale are addicted to breaking off the lower leaves and feeding them to cattle. This practice cannot be too strongly condemned.

I hope shortly to be able to send you something on artificial manures; and till then, believe me,

Yours very truly,  
WILFRED T. SKAIFE.

I have just been present at the closing of H. P.'s books. He has cleared this year on 430 acres (600 *strich*) just 29,307 guildens or 12,000 dollars, (equal to \$27.90 net profit per acre). The value of the land alone is 300,000 guildens (about \$280 per acre). He gave out on the administration of the farm 17,184.38 guld., and had a loss of 2967.52 guld. on his cattle, viz. on cows, working oxen, and fat oxen, together. However H. P. hopes to reverse this result next year, and I expect he will be able to, as regards his cows. On various sorts of grain he made 18,484.08 guildens and on beets 27,541.38 guildens. Some 3083.59 guildens were gained indirectly and in small accets, making the total earnings 49,469.05 guildens against an expenditure of 20,151.95 leaving a net gain of 29,317.10 guildens or nearly \$12,000.

He grows one third of the whole area, or about 143 acres, annually in beets, which is as much as he dares do. Of course everybody grows as much beets as he can, and every spare spot and corner is planted with them. I must say that the above result is a very wonderful one. Of course the larger the area of land worked in beets the larger will be the gain relatively. Without beets, H. P. would probably have made 5 or 6 0/10. The W. O., on whose farm I was near Gotha, viz. 11 0/10; but they don't own the land—Now the above named gentlemen are not agriculturists but sugar manufacturers, who only think of how much beets they can grow without ruining the land, although they try at the same time to produce as much wheat, barley, &c., &c., as possible.

WILFRED T. SKAIFE.

Leitmeritz, July 24 1882.

#### Sheep and Wool.

From the late great exhibitions and various sales, including the annual auction at the Model Farm, at Guelph, we deduce some lessons which it may be well to lay before our agricultural readers. For at least two years we have been urging our farmers to improve their sheep, and the course of events fully endorses our opinions. That the days of coarse wool and tallowy mutton are gone by, only those who are wilfully blind can fail to see. We would not banish the Leicester and Cotswolds if we could, for there are situations and circumstances where they are best, and a variety is desirable also—but that the Downs must predominate is most plainly for our interest and advantages, if we wish to profit either by the British or the home market. The appreciation of quality in mutton is steadily advancing among us, our factories and buyers are alike demanding good clothing wools, and in Britain the people have long acknowledged and been willing to pay for, fine in preference to coarse mutton. At the exhibitions the transactions in coarse woolled sheep were few and caused principally by owners of such flocks feeling the necessity of maintaining their quality as long as they had them, but the lively demand for Downs was produced by a sense of their necessity. At Guelph sale, the people would have bought as many more Downs as were offered, and small Southdown ewe lambs sold at as high as \$38 a pair. A Liverpool letter in the *Farmer's Advocate* says,—“The dreaded fluke is again anticipated. The sheep arriving from Canada are eagerly purchased. If Canadian breeders do their duty, they need fear no competitors.” The last British Agricultural returns-report for this year gives an increase of 309,

000 head of lambs, and a decrease of 571,000 in sheep, and notes the fact that while in 1874 there were thirty millions of sheep in Great Britain, now there are but twenty-four millions. In supplying this deficiency Canada enjoys advantages possessed by no other country, and it behoves us to embrace the opportunity. Some will find it most profitable to cross, others will keep the breed pure; but even those who object to dark faces will be forced by self interest to procure them, and we have reason to believe that the increased demand will considerably raise prices. According to government statistics, the County of Simcoe last year had 35,000 coarse woolled and 5,000 fine woolled sheep. These proportions should be exactly reversed. Therefore, as the moribund English farmer in the story said to his son, "get money, honestly if you can, but at all events get money,"—so would we say to our farmer friends:—Get Downs; of what variety and at what price you please; but at all events get Down sheep.

ORILLIA PACKET.

#### A sure preventive of Chicken Cholera.

Several experiments have been made during the last five years by different parties for the purpose of preventing the spread of chicken cholera by inoculation. We have during the last two years inoculated the fowls in 19 different yards where the cholera was prevailing badly, and in each yard we left some common fowls uninoculated, and they all died. But of the 2000 treated only eleven died, although they were in the same yard with those that were dying daily by the score. We have every reason to believe that this chicken inoculation is as effective in preventing cholera among fowls, as vaccination is in preventing small pox among the human family. Inoculate a hen, and in 8 days its system will be thoroughly inoculated, then cut off her head, and catch all the blood in some vessel, then pour the blood out on paper to dry, a half drop of this blood is sufficient to inoculate a fowl and the blood of one hen will serve for your whole flock.



MR. THOS. IRVING'S AYRSHIRE COW.

#### OUR ENGRAVINGS.

*Ayrshire Cow.*—The property of Mr Jas Drummond, Petite Côte, Montreal. This wonderful creature has for the last two years given the enormous quantity of 18½ pounds of butter a week, in the flush of the grass, without any additional food!!!

*Hereford Cow.*—Imported by the Messrs Dawes, of Lachine. First prize in her class at Mile End, 1882.

*Ayrshire Bull,* Promotion:—This noble yearling is from Mr Drummond's herd; imported from Scotland. First prize at the Provincial Exhibition of 1882.

*Ayrshire Cow,* Bonnie Jean.—Bred by Mr Thos. Irving, Logan's Farm, Montreal.—Winner of first prize as a two year old at Montreal, 1880; first do three year old, 1881; first do cow, 1882. And made one of the herd-winning lot in 1880 and 1882.

Catch the fowl you wish to treat, and with a pin or knife, make a little scratch on the thigh (just enough to draw blood), then moisten a little piece of paper with the dried blood on, and stick it on the chicken's leg where you scratch it, then let the fowl run, and you need have no fear of chicken cholera. As the result of my many experiments I have now dried blood enough to treat ten thousand fowls for which I have no use, as I do not sell patent medicines. All I ask is that those who want any send immediately, before the blood loses its strength. If any of your readers are enough interested in poultry to try this preventive, on writing to me I will send them free of any charge enough dried blood to start with. Then they should report the result of their experiment to your many readers.

H. H. GRIFFITH, Zanesville, Ohio.



### The Potato Disease.

The whole protective system may be briefly expressed in the following proposition:—

1. The soil must be well worked through, so that the potatoes may be planted in a well disintegrated soil, which will afford a better protection than a lumpy one.

2. The potato rows are given a distance apart of 30 inches; a smaller distance renders the protective moulding difficult. In order to obtain the largest possible yield, the potato sets must be large, or be placed close in the rows (For particulars on this subject see the above-named pamphlet.) (1)

3. The first moulding must be flat, so that the formed ridge be broad on top and only about 4 inches high. This moulding may be repeated if thought serviceable.

4. The protective moulding must be applied as soon as the disease blotches make their appearance on the leaves of the potato plants. If this has not occurred before wheat harvest time, the moulding ought to be executed then, without awaiting the appearance of the disease blotches.

5. The protective moulding is performed by throwing up from one side of the row of plants a high ridge with a broad base, and running to as sharp a point at the top as possible. The covering of earth thereby produced over the upper surface of the uppermost tubers must be about 5 inches to begin with; later, by the settling of the earth and by sliding down, it will, as a rule, preserve a thickness of about 4 inches. Contemporarily with this moulding the potato tops are gently bent over towards the opposite side of the row, so as to give the top, at least, a half-erect position.

6. The flat and the protective moulding, where potatoes are only grown on a small scale, may be done with a hand-hoe; on a larger scale these operations ought to be performed with the moulding plough—the Protector—which is constructed to meet the necessities of the described system.

7. In order to prevent after-disease, which may often be exceedingly great, the potatoes must not be lifted ere about three weeks after the last leaves in the potato field are withered.

8. If the potato tops are cut off and carried away, which, for the sake of the quantity and quality of the crop, ought not to be done before the leaves in the main are withered, the lifting may, as it seems, without danger of after-disease, take place about six days after such removal.

The vital point in the system, as it will be noticed, is the protective moulding. In order to understand the effect of this, it will be necessary here to add a few words about the cause of the disease.

The disease is solely due to the attack of a parasitic fungus, *Peronospora* (*Phytophthora*) *infestans*. When the summer has somewhat advanced, this fungus produces the well known dark brown spots on the foliage of the potato, where it develops its "seeds," the so-called spores. The fungus seeds are often so numerous that a single plant, according to countings and computations, successively can bear 20,000,000 to 30,000,000 spores. Falling to the ground, these spores are carried down with the rainwater to the tubers, upon the surface of which they germinate. The sprout fibres penetrate the skin of the potato tubers, and develop under the skin a dense tissue, the so-called mycelium. As a consequence of this, the potato is "sick"—i. e. covered with brown spots—and at last becomes smuttyish brown upon the entire surface, has a bad taste, and is in process of rotting.

Luckily, the soil has the property of impeding to a great extent the progress of the spores, operating as a filter. The object to be sought, then, is to throw up upon the tubers a covering of earth of sufficient thickness to prevent the spores from filtering, or only allowing an insignificant minority

(1) Jensen, on the potato disease.

to filter through to reach the tubers. By means of systematic experiments in open field and several series of corresponding investigations in the laboratory, I have shown that when a 5-inch layer of earth is hoed up upon the uppermost tubers, only very few will become diseased, be the attack never so violent. Such a layer of earth is therefore the principal thing in the protective moulding. The drawing over the potato tops to one side of the drills, the second point in the perfect protective moulding, is, in comparison with the thick covering of earth, of subordinate, but nevertheless by no means unessential, importance. The object of the bending over of the tops is to prevent the rainwater from trickling down the vines into the ground, whereby they would find a less obstructed way to the tubers. When, furthermore, the top hangs out over the adjoining furrow, fewer spores will fall upon the ground directly above the tubers than if the stalks stood erect. This latter applies especially to a high degree in rainy weather, as the rain-drops catch the spores; but a spore caught by a drop of water cannot again escape, but must follow the movements of the drop. The consequence of this is that, in rainy weather, the spores fall vertically down together with the drops of rain, if the latter do not trickle down the vines, which is provided against by the slanting position of the latter. In dry weather, on the other hand, the spores swarm about more at large, and are more evenly distributed upon the entire surface of the field, without regard to the position of the stems. But when we consider that the tearing loose of the spores takes place to a much greater extent in rainy than in dry weather, and that the spores only in rainy weather can be carried down to the tubers, it will be seen that the inclined position of the tops, by which they hang out over the adjoining furrows, is of essential importance, although, as stated, the depth of the earth-covering is the main point.

For comparison, I shall mention that, by the usual moulding, the uppermost tubers are only covered with half an-inch to 2 inches of soil. This covering is much too thin for keeping out the spores, and consequently the disease occasions exceedingly great damage on all kinds of soil, except on very decided sandy soils, upon which the damage, in most cases, is moderate, even if the tops be severely attacked, because such soils retain the spores in a much higher degree than do the better ones, a circumstance which I have demonstrated by microscopical investigations. The protective moulding, on the other hand, requires, as stated, a covering of 5 inches of earth upon the uppermost tubers, a covering which, as a rule, gradually settles to about 4 inches. If we take it for granted that this covering is 3 inches higher than is the case by usual moulding, then the protection thereby afforded is about 5 by 5 to 10 by 10 by 10, or about 100 to 1000 times as great as by usual moulding. The difference depends upon the filtering power of the soil, and the boundaries may therefore, perhaps, extend somewhat further; but the protection of such an earth-covering is, at all events, always exceedingly great. When the protective moulding is properly carried out, therefore, very few potatoes, as stated, will be touched by the disease—viz., upon the whole, only such as accidentally lie too near the surface, or to which access has been opened by a worm channel, or by some accidental opening in the soil.

I beg the reader distinctly to notice that nothing of what has here been stated depends on mere theories, but is based upon a considerable number of practical experiments in the field and examinations in the laboratory. I therefore find myself in a position to speak with perfect certainty. When farmers will follow the directions given, then I can assure them of a good result. But a mistake may be made, especially on two points, whereby the experimenter may disappoint himself and confuse the question for others.

1. He may, judging by estimate of the eye, suppose that

he has given a moulding 5 inches high, while in reality the covering is only about 3 inches high; but this difference may entirely decide the result, for every inch of soil added makes, as stated, the protection several times as great. The earth-covering, therefore, must, under the very process of moulding, be measured by an inch scale at a number of plants, and it will by no means do to content oneself with guess-work.

2. The other fatal error which may be committed is that the moulding may be done too late—viz., not until after the disease spots have made a considerable progress upon the foliage of the plants. If this mistake has been committed, many tubers may have become infected before the moulding has been given, even if, at this point, they look quite sound, for it lasts about a week before attacked tubers show the brown disease spots. It is a matter of course that the damage already done cannot afterwards be remedied by the protective moulding.

It is especially from these two mistakes that contradiction may be expected from the side of inaccurate experimenters; but it is of great importance to agriculture that the clear light in which the question has been put be not confused by unreliable and mistaken observations. I have, therefore, thought it best here to call attention to the sources whence such moulding of the question may principally arise.

A special attention is due to point seven in the system. Quite extraordinary losses may result from a too early lifting of the potatoes, proofs of which will be found in the experiments cited in the above-named pamphlet. An error on this point might also, by misunderstanding, throw discredit upon the method. If the protective moulding has been properly applied, only very few diseased tubers will be found at the time of lifting; but if they be lifted while a great quantity of fungus seeds are still hanging in the foliage, it cannot be helped that the potatoes, on being taken out of the ground, are sown with the millions of spores showered down from the potato tops; and in the course of five or ten days (the time depends precisely on the temperature) it will generally be found that a greater part of the harvested tubers quite on a sudden prove diseased. This is not, however, due to a defect of the system but to the committed fault.

If it is desired, by personal experience, to convince oneself of the extraordinary and always certain effect of the protective moulding, it is of course requisite to follow the plain directions which have been given with regard thereto. But also, without having made preparations for special experiments, it is possible, by means of some simple investigations, even this year, to convince oneself of the great importance of the protective moulding. I beg leave to propose the following investigations:

**FIRST EXAMINATION.**—In a potato field or garden where there are many diseased potatoes, the tubers under, say twenty plants, are to be examined in the following way. The soil is removed by a small trowel or small similar suitable device, until the uppermost tubers are reached; these are picked up and put in a pail or basket. Next, the second layer is taken up and put by itself, and finally the remaining tubers are dug and put in a third vessel. Consequently we have, separate, the uppermost, intermediate, and lowermost tubers from each potato plant dug. Then all the tubers in each pail or vessel are counted, and the diseased ones separated. The result will show that the upper tubers are considerably more diseased than the middle, and these again considerably more than the lower tubers; in other words, the deeper the potatoes have been covered, the fewer diseased tubers will be found amongst them. At three examinations made by myself, of which Nos. 1 and 2 were made at Copenhagen, and No. 3 at Paris, the results stood as follows:—Of the uppermost tubers were di-

seased: No. 1, 82 per cent.; No. 2, 49; No. 3, 49. Of the intermediate: No. 1, 30 per cent.; No. 2, 30; No. 3, 17. Of the lowermost: No. 1, 3 per cent.; No. 2, 8; No. 3, 12. By examination of No. 3, the soil was very clayey, and the tubers had set very high, so that the lower layer of tubers was only covered with about 3 inches of soil. The difference was therefore, in this case, although very great, not so decided as by Nos 1 and 2. By a systematically executed protective moulding, even the most violent attack of disease may be so far checked that, as a rule, there will be only 1 or 2 per cent diseased tubers.

**SECOND EXAMINATION.**—A wooden peg about 8 inches long pointed at one end, and from the other end marked with an inch scale, is first provided. Ten plants, about which the soil at the moulding has fallen so high that the upper surface of the uppermost tubers are covered with  $3\frac{1}{2}$  inches or more of soil, are then examined. How far such a covering exists is ascertained by sticking the peg into the ground in the centre of the plants to be examined, to such a depth that the starting point of the scale be on a line with the surface of the ground. If, next, the soil is scraped aside from above until the uppermost tubers are exposed, the thickness of the earth covering may be read off from the scale. The tubers from the ten plants thus examined are dug and put in a basket or the like by themselves. Ten other plants, at which the covering of the uppermost tubers is between half an inch and 2 inches thick, are next examined in like manner, dug and put in another basket. After this the percentage of disease is ascertained. To find plants with a covering of the last-named depth is always easy, for it is just such covering that is the rule by usual moulding. On the other hand, it may often be difficult to find plants with a  $3\frac{1}{2}$  or 4-inch covering. If, however, the potatoes are moderately high moulded, there will always be found a few plants with an earth covering of the said thickness.

It will, by such examination, be seen that the high-moulded plants have essentially fewer diseased tubers than the lower moulded; but a systematic carrying out of the protective moulding will, of course, give more marked results. By regular experiments in five different localities in Denmark, where the different potato rows were cultivated side by side, without any other difference whatever than the method of moulding, the results were, on an average, as follows:—Usual moulding; No. 1, 27 per cent. diseased; No. 2, 6; No. 3, 39; No. 4, 48; No. 5, 5; No. 6, 20; No. 7, 18; No. 8, 4. Protective moulding, No. 1, 1.4 per cent. diseased; No. 2, 2.0; No. 3, 0.0; No. 4, 0.3; No. 5, 1.1; No. 6, 4.8; No. 7, 0.3; No. 8, 1.6. The experiments Nos. 3 and 4 were carried out at Slagelse, the first-named with an early, the latter with a late potato. Eight rows were cultivated in the usual manner, with a small difference in the earth-covering (one of the rows, however, was left unmoulded), and with eight rows the protective moulding was applied.

The results were as follows:—The early variety: usual moulding,—29, 22, 45, 38 per cent. diseased; protective moulding,—0.5, 0.0, 0.0, 0.0 per cent. diseased; the late variety—25, 64, 45, 58; 0.0, 0.3, 0.0, 0.0 per cent. diseased.

It will be seen by the figures that very violent attacks of disease, which resulted in considerable devastation by usual moulding, have been reduced to almost nothing, solely by a well executed protective moulding. As to more particular information, I beg leave to refer to the repeatedly-mentioned little book.—J. L. JENSEN; Paris. (1)

(1) A most important discovery, if quite correct. A. R. J. F.

Messrs Gibb and Fisk, of Abbotstford, recommend the following sorts of apples as most suitable for general planting in the province of Quebec: v. Jour. p. 11, vol. 1: Duchess of Oldenburg; Montreal Peach; Red Astrachan; Alexander; St Lawrence; Fameuse; for earlies. Of late winter apples they say: we wish a more

encouraging word could be spoken. We have Jonathan; Wealthy; Yellow Belle Fleur; Blue Pearmain; Bourassa; Pomme Grise; but like the Early Joe, and Irish Peach, of early maturity, they are dessert luxuries, and even the Golden Russet, though it should be in every orchard, rarely makes the monied return of a Fameuse or Duchess. A. R. J. F.

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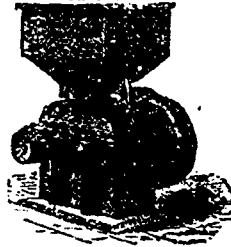
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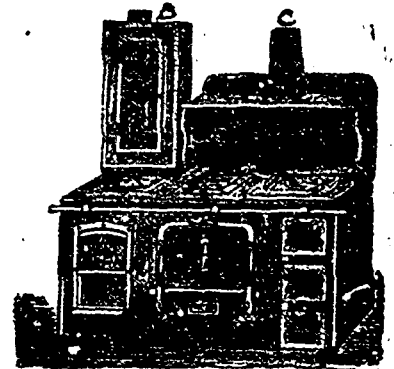
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 For several years we have furnished the Dairy-men of America with an excellent artificial color for butter, so meritorious that it met with great success everywhere receiving the highest and only prizes at both International Dairy Fairs.  
 But by patient and scientific chemical research we have improved in several points, and now offer this new color as the best in the world. It Will Not Color the Buttermilk. It Will Not Turn Rancid. It is the Strongest, Brightest and Cheapest Color Made.  
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