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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—**EDITORIAL MATTER.** All editorial matter should be addressed to A. R. Jenner Fust, No. 4 Lincoln Avenue, Dorchester Street West, Montreal—or to Ed. A. Barnard, Director of the *Journals of Agriculture, &c.*, Quebec.

OFFICIAL PART.

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horses, and of the different breeds of pigs and sheep, recently opened by the Council of Agriculture.

In future, all requests for registration in the different books of pedigree, as well all letters, document, &c., therewith connected, should be addressed to him.

All letters requiring an answer must contain a 3-cent stamp.

ED. A. BARNARD.

Secretary of the Council of Agriculture,
and Director of the *Journals of Agriculture*.

(From the French).

Scarcity of fodder-crops and its remedy.

Quebec, 8 July 1891.

CIRCULAR.

Monsieur le curé,—The Department of Agriculture has just received from one of the curés of the province a letter of public interest, of which the following is the substance :

“ I have to ask you for some advice, for my parishioners' sake, in the first place, and next for the sake of the whole province. Can you show us the most economical way possible of carrying our cattle through next winter? It appears that the hay-crop will be a failure, and our farmers, after having taken such pains to raise a fine herd, especially for dairy-purposes, will probably have to sacrifice their stock to save them from dying of hunger.”

The matter is of so great importance that I think it my duty to draw your attention to two articles that the department has just published in different newspapers of the province. I send you some copies of these articles, requesting you to distribute them to the best farmers of your parish who

Notice — Books of Pedigree.

Dr. J. A. Couture (49, Rue des Jardins, Quebec) is the secretary of the herd and stud-books of Canadian cattle and

do not receive the Journals of agriculture in which they appeared.

If, Sir, you think fit to advise your people to read the articles in question, in the case that they have been sufferers from the drought of the spring, you will doubtless be rendering great service to the cause of agriculture.

I have the honour to be, Monsieur le curé,
Your very obedient servant.

H. G. JOLY DE LOTBINIÈRE.

(From the French).

For the Commissioner.

FARMERS, ATTENTION.

The drought we have lately endured seems to have caused vast injury to certain parts of the province, (1) in which they say there will be a scarcity of hay and fodder for next winter, which will render necessary the slaughter of a part of the herds, in the autumn.

Farmers, you who are threatened with so great a loss, it is not too late, if you set about the work in earnest, to secure an abundant crop of excellent fodder for next winter.

Plough up one of your worst meadows, the earliest you have mown. Sow, at once, day by day immediately after the plough, so that the land shall have no time to dry, 3 bushels of oats and a bushel of pease, or of pease and vetches, to the acre: harrow thoroughly; water-furrow, &c., perfectly, roll down firmly, so that the turf may rot as soon as possible and afford plentiful nourishment to the plants. I have every reason to believe that every arpent thus treated will afford sufficient fodder to feed three cows during the winter months, if you mix with it dry straw from the grain-crop which, thank Heaven, has still time to improve by the rains we have lately received.

Your green-crop sown thus between the present date (July 16th) and the 1st August, but at once if possible, will give you a return in less than two months, for it must be out as soon as in ear and before it is laid. If the weather is fine, the fodder can be treated just like hay; but if otherwise, and you cannot dry it thoroughly, mix it in the bay with dry straw or old hay, say, 10 inches of straw and 3 inches of hay, 10 of straw, and so on. If you find you have not enough straw, you must make a silo and ensile the crop. In either case you will have secured plenty of excellent fodder for wintering your cattle.

As the remainder of the season promises to be rainy, you might profit by it by sowing down these same meadows with grass-seeds. But, if you do, you must cut the fodder-crop early and cart it off before it gets down.

At present, there are many meadows completely ruined by weeds. Any farmer who shall carefully plough these before the 1st August and sow them with good timothy and clover-seed, Alsike especially, and give them in the fall a moderate dressing of dung—if no more than 10 one-horse loads an arpent—will change these same now useless meadows into good ones for next spring.

For further information, address

(From the French.) ED. A. BARNARD.

Secretary of the Council of Agriculture
and Director of the Journals of Agriculture.

I fear that as I did not receive the above article for translation until the 15th July it will not appear till too late to be of any practical utility. I saw, on the 14th July, at Sorel,

(1) Strange to say, the hay-crop on M. Séraphin Guévremont's farm at Sorel, 38 arpents, is about as fine a one as ever I saw: certainly, there are 280 bundles an arpent all over. His potatoes, sweet-corn, carrots and barley are superb.

A. R. J. F.

a crop of mixed oats, pease, and vetches, standing so thick on the ground that the piece cut for the evening meal of 7 head of cow-stock and 3 horses was the merest trifle.

ARTHUR R. JENNER FUST.

Ensilage and Siloes.

The Dairy-business has increased so rapidly in the province during the last few years, that it has become, in many places, the principal resource of our farmers, and the little money that is now circulating in the country parts is derived almost exclusively from the sums paid by cheese- and butter-factories for our milk.

These factories increase in number so rapidly, that there are now few parishes that do not possess at least one; many possess two or three, and La Baie du Febvre has seven.

The attention of farmers is becoming daily more and more concentrated on the improvement of cattle with a view to the production of milk, and they naturally search for the best means of providing a plentiful and wholesome supply of food for this improved stock, especially during our long winters. It is thanks to ensilage that we are enabled to resolve this problem.

For some time, the government has been actively considering this question. An additional grant has been made to all the agricultural societies to enable them to offer prizes for the best silage and the best siloes, circulars have been sent about the country explaining in detail the construction of siloes, the cultivation of silage-crops, and the mode of preserving them. The department has had made small models of the silo, in wood, to serve as models in places where no siloes exist yet and where the way to build them is not understood. Any society that would like to have one has only to ask the department of agriculture to send them one. The model is made of a scale of one inch to the foot; by following it exactly no error is possible.

It is especially after a season of drought like this, when fodder is likely to be so scarce, that the real value of ensilage can be appreciated.

I have the honour to be, Sir,

Your devoted servant,

H. G. JOLY DE LOTBINIÈRE.

(From the French.)

The following article from the pen of Mr. Shaw, of the College at Guelph, expresses the same ideas I have often developed in this publication, with this exception: I prefer feeding off the crops sown on the fallow with sheep to ploughing them in green. To summer-fallow light land is, of course, an absurdity and a waste of time and labour, but on heavy clays, like those of Chambly, St. Hyacinthe, &c., a summer-fallow, well worked with plough, harrow, and grubber, ought on the average of years to be clean by the end of July, and if rape and vetches, or rape alone, are sown at once, there will be a good bite for the sheep by the middle of September, and six weeks afterwards, the crop having been fed off, the land can be laid up in proper form for the winter.

A. R. J. F.

THE SUMMER FALLOW:

PROF SHAW TELLS OF ITS ADVANTAGES AND HOW IT SHOULD BE CONDUCTED.

Mr. Thomas Shaw, of the Ontario Agricultural College at Guelph, has made public the following letter:

In these days of small margins the farmer must economize

so far as he can, not in one way, but in every way that is reasonable, if he is going to have a margin on the right side which is worthy of the name. This season, owing to the excessively dry weather in some localities, to realize a margin of profit will be impossible under any circumstances. He must not only economize in regard to labor and expenditure generally, but he must also economize in everything that relates to the modes of working his land. The greatest extravagance in which he indulges in this respect at the present time is probably the extent to which the bare fallow still forms part of his system of rotation. He still clings to it in many localities as being indispensable both to the cleanliness of the farm and the successful growing of certain crops. The farmers of Ontario will be loth to believe that they are expending needlessly in the bare fallow annually what would cost them more than \$1,000,000 by way of labor, of men and team, if all this had to be hired at current rates. It is my conviction, however, that such is the case, and that in all probability labor to the value of 2,000,000 annually is expended in this way rather than to the extent of \$1,000,000.

It is impossible to ascertain with accuracy the amount of land set aside annually as bare fallow, as no statistics are collected under this head by the bureau of industries. The amount of land devoted annually to fall wheat is about 800,000 acres. The estimate is probably a moderate one which would put one fourth of this acreage as grown upon the bare fallow. We have therefore, 200,000 acres as the quantity of land annually cultivated in this way. The further estimate is not an extravagant one, as every farmer knows very well, which puts the cost of labor expended on the bare fallow at \$8 per acre. If the assumption is correct that 900,000 acres are summer fallowed annually in this province, the cost of the operation to the farmers is, therefore, \$1,160,000 annually.

My contention is that the larger portion of this expenditure is unnecessary. It is always unwise to be extreme. I do not take the ground that summer-fallowing should never be resorted to but rather that it is seldom necessary where farming is properly carried on, and that the bare fallow pure and simple should at all times be avoided. Where summer-fallowing is a necessity some form of crop should invariably be grown upon it for ploughing under to enrich the land and to benefit it in other ways.

Summer-fallowing may be necessary in hard clay sections where hoed crops may not be grown with profit. It may also be necessary where land is both foul and poor. In the former instance rye may be sown upon the land the previous August, pastured the same autumn, and ploughed under the latter part of the following May, to the great advantage of the stiff soil, both mechanically and chemically. During the remaining portion of the season, the cultivation may be the same as is ordinarily adopted with the bare fallow. In the latter instance, rye may be sown in autumn and ploughed under in the end of May following. It may then be sown to buckwheat or rape, which will also be ploughed under when ready. Such land will then be capable of growing a crop. The amount of land requiring such treatment is not very large, especially where farming is carried on at all as it ought to be.

Where hoed crops can be grown, summer-fallowing is not a necessity. The ground can be effectually cleaned while growing these crops. When done in this way, no labor bill is incurred, as the crop grown almost invariably more than meets the cost of producing it. All forms of hoed crops are not equally well adapted to the cleaning of land. Potatoes are probably the least useful for this purpose. Corn is good and rape is excellent. To be successful, however attention should be given to weed destruction later in the season than this is generally done.

It is a prevalent idea among farmers that the bare fallow imparts fertility to the land. This idea is probably grounded upon the fact that improved crops are generally grown upon such land. This however, does not arise from any additional fertility imparted to the land by the bare fallowing process, but rather by the liberation of fertilizing substances, already in the land, through weathering agencies while the process of cultivation is going on. On the other hand, in wet seasons there is a serious loss of fertility, which to some extent arises from surface washing, but in a far greater degree from the leaching of nitrates out of the soil through the medium of the drainage water. This loss through leaching is almost entirely obviated in the season of vegetation by the growing crop upon the land, as has been demonstrated by experiments conducted upon this farm and elsewhere.

I hope, therefore, that our farmers will give their serious attention to the reduction of this form of outly to the lowest possible limit. Our farms can be kept clean without resorting to the bare fallow, pure and simple. Why then, should we not govern ourselves accordingly. This farm is being cleaned in three years throughout its whole extent without the bare fallow, and without missing a single crop. On the other hand, we often get two crops a year while the cleaning process is going on, and what is being done here can be done elsewhere when the conditions of soil are at all similar.

When the bread-winner of a home is constantly employed he has no serious difficulty usually in providing abundantly for the wants of his family, but let him have alternations of work and idleness and the supplies soon diminish. So it is with our lands. Let us keep them constantly at work and our returns will be continuous. By so doing it will be better for our lands and better for us, providing we manage them on the improved principles of a progressive agriculture. We cannot afford to let our lands lie idle in this time of small profits, even where the management is in other respects wise and prudent.

SAINFOIN.

Quebec, 18 June 1891.

Dear Jenner Fust,

Many thanks for your pains *in re sainfoin*. You have made an ocular demonstration of the value of *sainfoin* of great importance.

I had ordered the seed from France—but could not trust the season so far, as seed which I got in 1887 and sowed at Three Rivers was completely ruined by the drought. I shall have this fresh seed (from Vilmorin's) sown as soon as rain comes.

Mr Joly was highly pleased with the *sainfoin* of which he got very fine seed from the Pacific Coast this year.

You will no doubt publish further notes of the *sainfoin* besides what I read in the proofs for July?

Yours very truly,

ED. A. BARNARD.

In compliance with the above letter, I proceed to relate all I know about *sainfoin*, both in England and in this country.

Like Lucerne, *sainfoin* imperatively demands a soil free from stagnant water. In places like Sorel and Joliette, where the water stands within two or three feet of the top-soil; it would be waste of money, time, and labour to sow it. The seed is expensive, the preparation of the land must, if success is hoped for, be thorough, and, in every way, the only proper soil is a dry one. Chalk or limestone is the most favourable subsoil; in fact, in England and in the western part of France, *sainfoin* is rarely seen on any other formation than the chalk. Still, it will do fairly on any dry soil except heavy clay.

One passage in Mr. Barnard's letter I must presume to differ from. He says that "seed that he sowed in 1887, at Three-Rivers, was completely ruined by the drought." (1. Now, sainfoin, like lucerne, is emphatically a dry-season plant. This spring was dry enough in all conscience, and, yet, the sainfoin on the Dawes farm at Lachine beat all the clovers and timothy by its side into fits. If, however, the seed, which is as big as that of the wild vetch (*pois sauvage*), is not covered in sufficiently—say 1 inch—and a period of drought follows, the first sowing (*Scottie* "braird") will very likely perish. Sainfoin seed should be drilled, in rows 5 or 6 inches apart, or, if broadcasted, well harrowed in. at all events, it must be buried.

There are two kinds of sainfoin: the common and the giant-sainfoin. The former has been grown in England for more than 200 years, and is the one more commonly sown as it stands longer than the giant, which later is of modern introduction.

The seed is sent out by the growers in the capsule, but the seedmen "mill" it, which is a convenience, as in the former state four or five bushels are required to seed an acre, whereas, of the milled seed, $\frac{3}{4}$ of a bushel—say, 45 lbs.—are enough. I always sowed the rough seed in England, because the drill buried it sufficiently, but here, where drills are not common, the cleaned seed is more likely to be harrowed deep enough into the land, and there will be little risk of the harrow-tines pulling it up to the surface again. I should sow sainfoin after a heavily manured hood crop—potatoes, roots, or corn—and at the same time as the barley or other spring-grain, crossing the rows of grain with the sainfoin seed, and finishing with the roller.

After the barley, or oats, is cut, a fair dressing of dung will both act as a mulch, and tend to increase the crop of the following season. The plant is a shy grower, and never looks promising the first autumn, indeed, it does not come to its best till the third or fourth year, wherefore I always recommend sowing from 4 lbs. to 6 lbs. of common yellow or hop-trefoil (*trifolium procumbens*) with it, as the first cutting of sainfoin is always disappointing, but the plant standing from 6 to 10 years makes up for this defect.

Some recommend sowing sainfoin, and lucerne too, in double rows a foot apart with an interval of 30 inches between the double rows. If any one likes to try it he can, but I cannot advise it, as the hoeing, by horse and by hand, must be kept constantly going all the season and it won't pay.

Sainfoin came to England originally from France. I cannot help wanting to spell the word saint-foin—*holy-hay*—though *sain*, which signifies *wholesome* may be right. At all events, the meaning of the botanical name, *onobrychus sativa*, is clear enough—*asses' food!* I won't make a pun on the word, though I could.

If you wait to cut this crop for hay till the blossoms are expanded, you will not please your animals. It can hardly be cut too soon; in fact, "the best sainfoin hay," says old Jethro Tull, "is that cut before the blossom comes out at all. This hay has kept a team of working horses, all the year round, fat without oats. The same fattened some sheep in a pen, in winter, with only it and water, they thrived faster than other sheep at the same time fed on pease, oats, and meadow-hay."

The *Giant-sainfoin* came into notice about 1842, and when I went into Essex to live, in 1852, had become pretty well established in the eastern counties. It is said to produce three crops of hay a year, but I never saw more than two, and it certainly does not stand so long as the common sort. The seed is much cheaper. Wholesale price, as quoted me by Messrs. Raybird and Co Basingstoke, Hants., England.

Common English milled sainfoin..... 50j par 112 lbs.
Giant French " " 36j " "
Cash, less 2% Dis., on board cars at Basingstoke—sack extra.

Never having grown the *Giant* sainfoin, I cannot speak either in its favour or against it. The common seed seems costly, but as it stands so long it does not come to much per annum.

And now for facts about the crop I grew at Lachine:

The land was in pretty good heart, to begin with, the previous crop oats. On the 18th May, 1889, the seed was sown and harrowed in, after the barley was harrowed, and a rolling finished the job. The barley was a very heavy crop in patches, and, here and there, lodged and injured the plant of sainfoin. The seed was not put in thick enough, though very equally distributed over the ground. In the autumn, a fair coat of dung was applied, but the following winter—1889 90—was, as my readers will, perhaps, remember, a very changeable one, frost, rain, snow and thaw, succeeding one another with great rapidity. In fact, in the month of February, I never hoped to see any plant of sainfoin at all. But, when the first gentle breezes from the east began to blow, and the south-west rains began to rouse the life-blood of the plants into action, my hopes rose with the barometer's fall, and the sainfoin bravely vindicated its right to the confidence I had placed in it. In other words, it began to tiller out and thicken on the ground as soon as the weather gave it a chance to grow. Still, the first year's was not a satisfactory yield, in spite of the bush—or rather chain—harrowing and rolling Mr. Tuck gave the land. At all events, the sainfoin stood, and though I was half-afraid the Messrs. Dawes not being acquainted with the crop would be inclined to have it ploughed up, it was allowed to remain. This spring, the third from seeding, things were very different. The sainfoin had gathered together and looked like yielding, as the season advanced, appearances improved, and towards the end of May were all that could be expected.

Now, on either side of the sainfoin were two pieces of clover, the one being the *cow grass*, *trifolium pratense perenne*, or perennial clover, the other, the common red-clover, or *pratense*. The former was sown on the same day as the sainfoin, 1889, the other sown, with the barley, after a heavily manured crop of roots. On June 2nd of this year, 1891, the sainfoin, in spite of the hot, dry spring, was 15 inches high and just coming into bloom, the perennial red-clover 7 inches high, and the common clover 5 inches. Between the above date and the 17th of the month, a wonderful growth, aided by the rain of the 2nd and 3rd, took place, for on that day the common clover had attained a height of 15 inches, the perennial 18 inches, while the sainfoin stood 33 inches high; and whereas neither of the clovers had put out the blossom, the sainfoin was covered with its beautiful pink flowers, and should have been cut for hay a week before, i. e., on the 10th.

Need I insist on the value of such a plant in a country like this? I think not. It is good for all stock, it yields largely; it will cure the scours in calves and the green-skit in lambs, it is at least a fortnight earlier than red-clover, and it will stand from 8 to 10 years if decently attended to.

ARTHUR R. JENNER FUST.

DE OMNIBUS REBUS.

Mr. John Boyd, of Elmhurst, Ill., who is a practical dairyman, and a close and careful observer, says he has examined many cows and finds the size of the milk veins no indication of their milking capacities. The milk-vein is a subcutaneous vein and has nothing to do with the udder. It

(1) The seed never came up

E. A. BARNARD.

belongs to the respiratory system, and is the means of keeping up an equilibrium in the blood between the fore- and hind-quarters. Of course, a cow with a large milk-vein has a strongly developed vascular system, and this being favourable to secretion generally, she will, all other things being equal, probably be a good milker, but the vein itself has nothing to do with the udder, and should no longer be called the milk-vein.

Horse-hoes.—I cannot congratulate the gentlemen of the Seminary-farm, Sherbrooke Street, on their horse-hoe. I saw their man at work on potatoes, and he had to go twice between each two drills!

Pleuro-pneumonia.—I observe that the Montreal press is rather hard on the selfishness of English farmers in throwing impediments in the way of the importation of Canadian cattle into England. Do the writers of the articles I aim at know what sort of an amusement is derived from the entrance of this dire disease into a farm? My friend Mr. Carr, of Stackhouse, now with God, lost his entire stock of Booth Short-horns by it, and was ruined utterly. I, myself, introduced a milk-cow from Smithfield-market into my small herd of 12 cows - in 1851—and lost 7 cows, 5 two year-old and 4 yearling heifers, and 97 pigs. No, the English farmer is not more selfish than other people, but he has to be very cautious in his dealings. Only last month, the cost of one outbreak of pleuro pneumonia in Yorkshire came to £40,000! All cattle in contact with one diseased animal are now slaughtered, and in this case the victims were all valuable beasts.

Brandon.—At the Model-farm at Brandon, Manitoba, an experiment was tried on "rape or cole" - which, by the by, are by no means the same thing—and the following marvelous result was obtained: "Sown in rows 3 feet apart on June 3rd, it yielded in October 33 tons per acre." Now, supposing a lamb consumes 20 lbs. of rape a day, this crop would furnish a hundred lambs with food for 33 days! An extraordinary production indeed. But why grow rape at such wide intervals? In England, on well manured, good land, we considered 15 tons a very large crop of rape, but, then, we used to sow it broadcast.

Oats, tares, and pease, sown together—quantity of seed per acre not mentioned—yielded 5 tons 698 lbs., green; 3 tons 712 lbs when dry.

As the superintendent of the farm justly observes: The weight of each variety as given is accurate, but it must be borne in mind that it is seldom that a large plot or field will give returns per acre equal to a small plot, where special care is given to the growth of the plants.

Crushing oats for horses.—Mrs. Mary Wedlake, whose reiterated inquiry: "Do you crush your oats?" gave so much amusement to the readers of *Punch*, about 1848, probably did not know who was the first person to economise in this fashion:

"Eumenes, being besieged by Antigonus at Nora, gave his horses their corn already coarsely ground, that they might sooner despatch, and better digest it." Eumenes was a contemporary of Alexander the Great—about 2000 years ago!

Wheat.—Wheat was in ear in England on the 25th June, about a fortnight later than usual, so that harvest will not begin in that country much before the 10th August, unless hot weather occurs, which is not desirable. Mr. J. A. Drummond, of Petite Côte, cuts his fall-wheat this week! July 14th.

A. R. J. F.

Good News for Farmers.

A trial made last week at L'Islet, on the farm of Judge Caron, of a new potato-planter, called *the Aspinwall*, was successful beyond expectation. M. Caron had prepared a suitable piece of land, furnished the horses, and supplied fertilisers, seed, in fact, everything required for the essay.

This first trial proves that a man with two horses can plant, on a suitably prepared piece of land, at least 5 acres of potatoes a day. But besides this immense saving of labour, in potato-planting, the economy is still greater when fertilisers are used, for instead of carting 50 loads or so of dung on to the land, for each acre, an operation which, as every one knows, requires a great deal of manual labour, this machine, while dropping the sets, spreads at the same time the artificial manures necessary to perfect the crop, thus doing away with the necessity of employing men to cart out and spread the dung.

The cost of these machines is \$60 a piece. This is rather large for a single farmer, unless he grows a great many acres, but several could join together to buy one; even, each municipality might get one and let it out by the day. The mechanism is very simple, and as it necessarily works slowly, it is much less likely to get out of order than a mower or a reaper. For about \$15 more, an apparatus for planting maize, beans, &c., can be added to the planter. We are happy to say that Judge Caron, whose love for agriculture is so well known, has bought one of these machines, which will be kept at L'Islet. His son Edouard, who manages the farm, understands the working of the planters, and will be happy to explain it to any one.

Thanks to the example set by the Curé of L'Islet, who has just ordered 2½ tons of superphosphate, the attention of his parishioners has been forcibly drawn to advantages offered by the employment of artificial manures, and we venture to predict that the happiest results will follow from the experiments tried on Friday last.

But, if we take great pleasure in showing the great economy that this machine introduces into the culture of the potato, and, in consequence, the great additional profits to be derived from its employment, there is a trait characteristic of this meeting at L'Islet which gives us more delight even than the success of this trial: it is the zeal which the farmers of all parts of the district of Quebec showed by the numbers who were present. There were more than 300 on the ground, not only from the neighbourhood, but from the St. Joachim, on the north shore, Beauce, Lotbinière, &c. When we contrast this zeal of our farmers to win instruction and to follow up the progress of modern agricultural science, with the complete indifference and even disgust with which they used formerly to receive everything novel and any change in their ancient practice, we are happy to be able to say that there is really and indeed an agricultural awakening in our province, and we seem to see the dawn of better times of our impoverished farmers.

After the planter had worked for several hours to the satisfaction of all beholders, Mr. Barnard gave an excellent address on different subjects which interested the farmers present. Judge Caron, and M. Joly de Lotbinière added a few words of encouragement.

We have only a few words to add to the above report, taken from *l'Electeur*. The land on which the planter worked is full of stones which come to the surface, here and there, all over the field, and yet in spite of these impediments, so dangerous to any implements of even trifling delicate construction, there was no hitch in its working. Indeed, we never

saw an implement that worked so well, and with less danger of breaking down. We recommend this planter without any fear of its falsifying what we have said about it.

ED. A. BARNARD.

(From the French.)

Raynbird, Caldecott, Bawtree, Dowling & Co. Limited
Agricultural seed Establishment and Mills.

Basingstoke, June 25th 1891.

MR. A. R. JENNER FOST, Montreal.

Dear Sir,—In reply to your favour of to-day, we have the pleasure to hand you samples of sainfoin with prices and place of delivery stated at foot and to offer you same subject to being unsold on receipt of your reply.

Waiting your commands, which shall at all times receive our careful attention We are, respectfully yours,

RAYNBIRD, CALDECOTT, BAWTREE,
DOWLING & CO. LIMITED.

per cwt.
7840. 6 cwt. Common English Milled Sainfoin @ 50j.
7694. 10 cwt. Giant French Milled Sainfoin @ 35j.
On Rail. Basingstoke. Sacks extra. Cash, less 2% ¹⁰ ds.
We enclose our wholesale list of tested seeds and await your orders.

The Arab Horse.

EDS. COUNTRY GENTLEMAN—From the earliest history to this present time, the Arab horse has had no equal for beauty of form, grace with agility, strength with game resolution and endurance, while his intelligence, with docility and adaptability, has ever made him an idol with his owner.

The difficulty in obtaining him in purity of blood is the one great reason why so very little is known of him.

To nothing does the fable of "sour grapes" apply so appropriately as to such as decry the Arabian horse. Such persons talk of the Arabian, the Barb, the Turk and the Persian, all in the same breath in condemnation, but cannot explain the difference between them, or tell you what either one is like; the information of such is condensed in the words: "He is a little thing, too small for anything."

Great Britain is the mightiest of nations. But what does she represent upon the world's map as regards size in territory; is she too small? England could be put down in New-York, and still the State would have grass lands enough outside to breed and grow all the horses, cattle and sheep contained in England; and the United States have territory sufficient for a thousand more such States as New-York. But little England rules the world. The English are great in all they attempt to do. As breeders, whether of horses, hogs, cattle, sheep or poultry, they beat the world. All their breedings are reproducing fixed types of great value to all other civilized nations; and this great American nation cannot make a reputable showing of horses, except exhibitors have horses of English breeding, to which we invariably award first premiums—to the just credit of little England!

How did England attain such prestige in horse breeding? Simply through a liberal importation and use of Arabian blood—the little worthless Arab!

There are those who ridicule the Arab horse, who also delight in calling the Arabs—from whom we got our alphabet, with many leading arts and sciences—"barbarians," "thieves," "robbers," and "murderers." Read Dickens' Child's History of England; what were the Britons?

Except a people be freed from internal strife, they cannot

thrive in husbandry, except a people thrive in husbandry, they cannot make rapid strides in the cultivation of either animal or vegetable life.

The same class of talkers and writers will tell you that old England was "hundreds of years" in creating her types of horses. It is a mistake. Can those talkers tell when the English began to use knives and forks—was it hundreds of years ago? How many years was it since the ladies and gentlemen of England, at the table, all put their hands into the same dish of boiled, stewed or roast meats, pulling out upon their plates such pieces as they wanted? Were they barbarians?

One thing is certain of that recent period in the advance in civilization—they had at that time only common mongrel horses; and the Arab horse was unknown to them until a more enlightened and progressive age, which was not hundreds of years ago. The improved breeds of horses in England date from 1750, after they had begun to know of the Eastern primitive horse, and its superiority over all others. It is now 1891, and the most enlightened and educated men in England, France and Germany, who are interested in horse-breeding, say that it is impossible to sustain fixed types of man's creation except through periodical introduction of the blood of the pure Arab. Within the past ten years, Prof. Chas du Hays, master of horse for France under Napoleon, III and to within a quite recent period, wrote me that it was absolutely necessary for their government to keep always pure Arab mares and stallions, with which blood to sustain their fixed types to a quality above their exports. He also wrote me within three years that there was not a pure Arabian horse or mare in all France outside the government stud, that many mongrel horses were brought into France from the East and sold out of France as Arabs; but all such were mongrels of little or no value.

Within two years, Lord Bradford, master of the horse for England under Gladstone, and long a successful breeder of thoroughbreds, wrote to me that Arabian blood was so very important a factor in that of superior horses, that he not only advocated it, but owned it in purity, and used it very successfully in his thoroughbred breeding.

Again, the Hon. Henry Chaplin, M. P. (whom all race-horse men will know as the owner of Hermit), always a thoroughbred breeder, also secretary for agriculture, has owned Arabian blood in purity for many years, and has it so to-day in stallions and mares. He has written to me within six months that he had the highest opinion of Arab blood, and was anxious to see a fresh infusion of it into the English horses.

I could add quotations from letters to me by many of the very best breeders of horses in England, Scotland, Austria, Germany and France; all strong in their advocacy of Arab blood, encouraging me in my use of it.

I will say to such of the readers of the COUNTRY GENTLEMAN as are led to believe that the United States is exporting horses to England, Germany and France in any numbers, that it is a mistake. We of the East receive hundreds of very cheap mongrel-bred horses from the prairies of the West. Just as we estimate the value of these horses, so the American much advertised trotting horse is valued in England, Germany and France.

The name of a horse may through rich ownership be made fashionable. Such horse may be a veritable mongrel, taking on great size with proportionate coarseness, and as a sire restamp all such coarseness. The dams may run straight back to the best of Arabian blood, each one from the direct dam being very strong in such blood; but in place of showing the real blood cause to the young, it is hidden, either ignorantly, or purposely, in order to make the individual horse of special value. Men then breed to this horse, mares of all

kinds of mixtures of blood, thus diluting and running to nothing, the one real blood cause for excellence. Where the blood in the sire and in the dam are equally wrong, it is more difficult to destroy a foundation blood. Thus in the Morgan and the Clay, both were strong in the primitive Arabian; hence the blood of Clay and Morgan has continued to stand at the front for highest rates of speed at trot, and also as coach and saddle horses.

As a strong blood is condensed through both parents, to the offspring, the size of such offspring approaches the size of its primitive blood cause, illustrated in the better bred Clay and Morgan horses. Where you find very large coarse horses, you will find either a very mongrel-bred animal, or a created and fixed type for certain heavy purposes.

A very fleet and enduring horse seldom is a large or heavy horse. The colder and coarser the blood, the more quickly the true type dies out, although men will continue to deceive themselves as to blood influences, by retaining a name of some long extinct animal, not seen in descendants.

So too, men deceive themselves as to breeding by selections, ignoring blood influences entirely.

Some of the most beautifully formed men and women I have ever seen in my life, were octoroons in the French portion of New-Orleans during the days of slavery, forty or more years ago. If Venus ever lived in woman, many of the octoroons of the old slave days were such; and so with many of the "boys." These questions of blood influences and breeding by selections, I used to study and question in those days with intelligent slave dealers and traders. Their statements to me then, are true to-day. Except the blood be pure to one type, selection-breeding amounts to great disappointment. Selection in families of same blood, means advance.

The lowest type of the African is the Congo. Breed him up with white blood until, as a woman, she is a Venus in perfection of form, and in the man he is a model; then as was done in the old slave days, let the owner breed them by selection, and the flat nose, thick lip, long heel, sprawling toes and angular form were as likely to appear in the offspring as was an approach to the beauty of form in the parents.

Rochester, N. Y.

RANDOLPHE HUNTINGTON.

Breeds of Dairy Cattle.

BY PROFESSOR SHELDON.

Of the many breeds of cattle for which the British Islands have long been distinguished, it is to be considered somewhat remarkable that the smaller ones are, as a rule, essentially dairy cattle, while the larger breeds are more famous for beef than for milk. Each of these breeds is excellent in its way, and the whole world beside cannot produce so many that are very good. To say that our breeds are the conventional "envy and admiration" of all other cattle-owning countries, is to speak sober truth, quite apart from the feeling of pride which we may not unreasonably entertain in this department of our national possessions. In no case, we believe, are our beef cattle approachable in excellence by the breeds of any other country, and the same may almost, if indeed not quite, be said of our dairy breeds—though we freely admit that a few of the foreign dairy breeds possess high merit for quantity of milk. In proof in what we say of our own breeds, it is only necessary to point to the extensive importation of those breeds by every foreign country which is seeking to improve the quality of its cattle: we, on the contrary, constantly searching as we are for anything that is an improvement on what we possess, in all departments of wealth and industry, do not find it expedient to import for breeding

purposes, save for curiosity's sake, the cattle of any other land. Were there to be found on this mundane sphere any breed or breeds of cattle superior or even equal to our own, not much grass would grow under our feet before we imported some of those cattle to eat it.

It does not concern us now to inquire whether our breeds were originally superior to those of other countries; we are content to know and believe that they are superior to-day, and the demand there is for exportation all the time sufficiently confirms our knowledge and belief in these matters bucolic. To what extent we have improved them is a matter whose chief importance lies in the fact that they have been, and still, are capable of receiving such improvement, however great it may have been. For, after all, the capacity for development towards perfection, which some breeds possess in a remarkable degree, is a matter of the greatest importance in the animal world. There is encouragement in it, and stimulus, and reward; and the farmers in England have the unique consolation of knowing that the bovine stock they have in hand are unequalled on the face of the wide earth, and are constantly wanted not only to improve the stock of the vast countries to the west of us, but to maintain that improvement by re-invigoration—re-infusion of the blood which has been so potent, so prepotent, so telling. The writer of this article has seen the vast herds of cattle which roam over the vast prairies and mountain foot-hills of North America, away from Alberta and British Columbia to Texas and Mexico, and can bear testimony to the efficacy of British bovine blood as transfused through the native stock of the great far west. It is such as he, therefore, who, lovers of our insular breeds of cattle, may venture to speak of the cosmopolitan influence which the cattle of our little islands have exercised in new homes under brighter suns than ours.

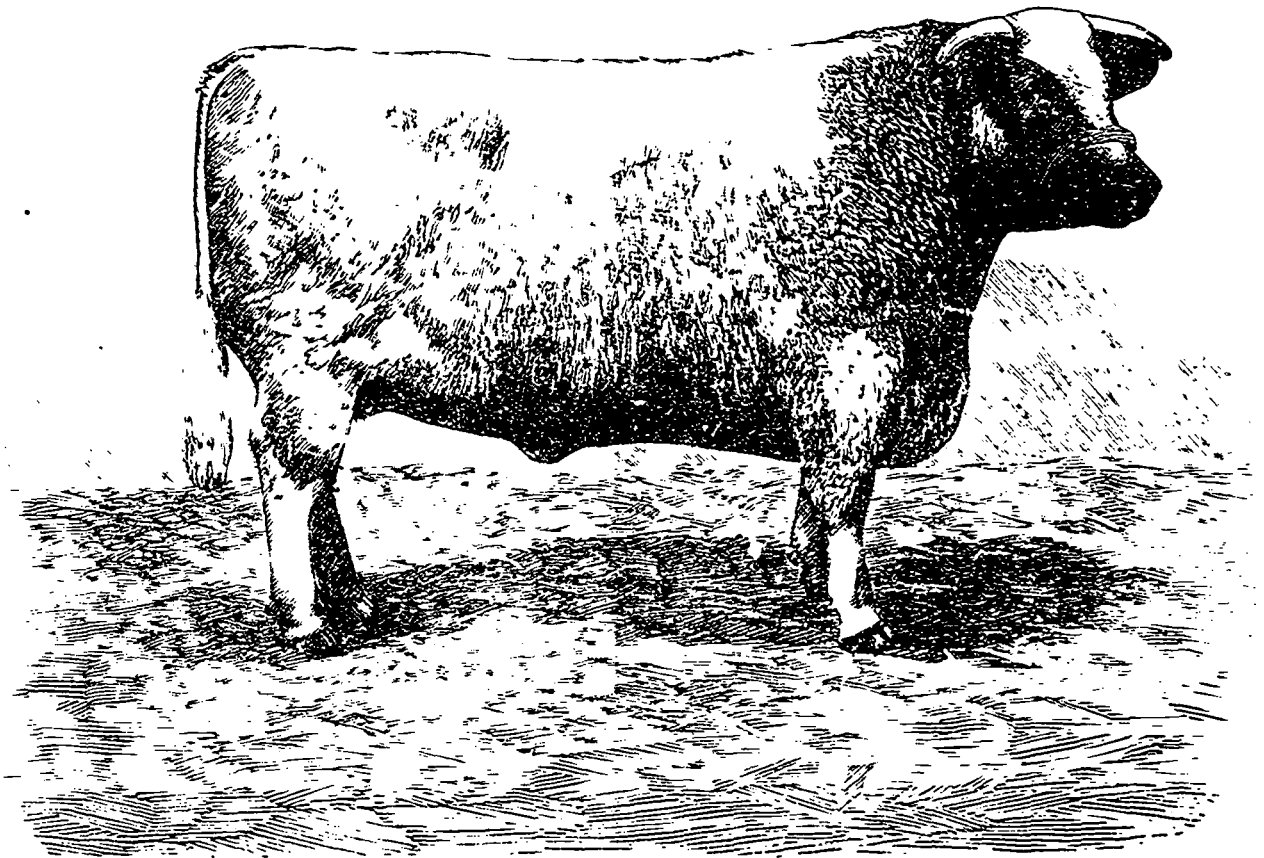
Let us take a glance, therefore, at our breeds—a glance the more loving because it has had a somewhat wide exercise—and recapitulate, however briefly some of the merits which have so often claimed its notice in the shires which are the homes of our bovine quadrupeds. It is never tiring to us, and should be interesting to others, to review time after time, as a lesson of perennial value, the merits which our breeds of cattle possess—an object lesson, indeed, which is annually presented at the Dairy Show in the Agricultural Hall. In this, as it seems to us, there is nothing to take exception to, for it is a judicious course to follow time after time, repeatedly and even frequently. Was it not a former Lord Ducie who said he did not think much of the admiration of any man who could not sit for an hour on a hurdle and look at a sheep? He thought, indeed, if our memory does not play us false, that no man who could not do this would ever become a successful breeder of sheep. We are inclined to agree with his lordship, and therefore we think it wise to review at times the qualities of our breeds of cattle.

The Dairy Show is understood to exist, in part, for the development and improvement of dairy cattle of any and every breed worth the name, and everyone must confess that the established "milking tests" have done a good deal already in this direction. The whole question has been systematised to an extent few dreamed of twenty years ago, and is now pretty well understood in quarters where ertswhile it was a more or less nebulous problem. What is aimed to promote is quantity and quality of milk, and it is known that in different animals the one varies about as much as the other. In the olden times, ten or fifteen years ago or so, quantity of milk was about all that many farmers looked to in their cows, quality being a point on which they held rather hazy notions. Now, however, quality rather than quantity is the merit which claims the first and greatest attention. The requirements of the law in the milk trade have done a good deal

toward opening people's eyes as to quality of milk, and the comparative tests at the Dairy Shows have demonstrated the astonishing difference which exists in the quality of the milk of cows, all of which have been well fed and cured for in preparation for the milking trials. The difference, to a great extent, is a question of breed, though at the same time it is a district and even pronounced individuality in given cows.

As we have already said, it is the smaller breeds—the Jerseys, the Guernseys, the Kerries, the Ayrshires—which are the milking breeds, *par excellence*, of the British Islands. Size of animals taken into consideration, they are far ahead of the large breeds as milkers. As breeds, the Jerseys, and Guernseys are, we believe, unequalled for quantity

and all excellent dairy cattle; and while the Jerseys and Guernseys are adapted to genial climates, good land, and kindly treatment in all respects, the Kerries and Ayrshires are not so fastidious, but will do well in almost any reasonable climate, and on land of almost every quality. But the Jerseys are surely hardier than they are popularly supposed to be, for we have seen them flourishing in the Province of New Brunswick, and the rigorous climate of Canada is a test beyond which we have no need to go. The Welsh breed known as the Anglesey is also one of our smallest breeds, hardy and useful in its way, suitable for a mountainous country and inferior land, but it is not the fortunate owner of a reputation for milk like that of the four famous breeds of



SHORTHORN STEER.

and quality of milk combined—unequalled as butter producers, in respect of quantity, quality, and colour of the butter they yield, unless, indeed, some of the Kerries come up to them. These three breeds, in fact, may be said to "take the cake" of the world for butter-making, and our American friends would say that the Jerseys take the first and highest slice of it. Well known for a long period, and celebrated beyond measure, the Jerseys and Guernseys, have been in their own island homes and in England; and now the hardy little Kerries are taking rank with them in many places. For cheese-making purposes and for butter-making too, the Ayrshires have long possessed a high character, not in Scotland only, but also in various parts of England. Some of them yield extraordinary quantities of milk; and while some tribes are celebrated for the excellent cheese they yield, others are equally famous for butter. These four breeds, then, are each

which we have spoken in this paragraph. It is a prolific breed, however, and is much more commonly seen in England than it formerly was.

The grand breeds of England, the massive stately, handsome ones, are, first—as all the world knows—the Shorthorn, followed by the Herefords, the Sussex, the Red Polled cattle of Norfolk and Suffolk, the fugitive Longhorns, the South Devons, and the "South-hammers" which are an offshoot of the Devons. The North Devons are the "cobs" of our bovine breeds—plump, lively, enduring, active, and decidedly pretty. Then we have the larger Welsh breeds, the Polled breeds of Scotland and the handsome, shaggy, rugged West Highlanders, so suggestive of mountains and forests, and heather-clad moors. To our fancy, however, the Herefords, as ornaments to the landscape, are the most strikingly pleasing of all the British breeds, the snowy white faces forming so

bright a contrast with the despised of the adjoining skin. Of these many excellent breeds the Shorthorns, Longhorns, Devons and Red Polls are at all events good milkers as a general thing; and, if the others are not so, it is their misfortune rather than their fault, for they are certainly susceptible of becoming so under management designed to develop the lacteal potentialities of cattle. Even the Herefords, which are understood to be inferior, as a breed for milk, are known to be good milkers where used as other breeds are to hand-milking, and not expected merely to raise their own offspring. The milking function indeed, may be developed by training, or dwarfed by neglect and although it is, in the Jerseys for example, a natural function artificially developed to a high degree, we are free to admit a superior natural tendency and aptitude in the breeds which to-day possess it more lavishly

inferior character for milk. Like the Shorthorns, they flourish in every country to which they have been exported beyond the seas, and we have seen excellent specimens of them in many distant lands. The sires of these two breeds have an established fame for extraordinary propensity when crossed with the native cattle of the United States of America and of Mexico, not to mention those of countries nearer home. The Devons and Red Polls have been less extensively exported to America, but they are both popular there, as also are the two breeds of Polled Scotch cattle. The Red Polls, indeed, have risen greatly in favour of late in England, and as good milkers and graziers, are inferior only to the Shorthorns, and their popularity will increase as the years roll on. The Polled breeds generally, the two Scotch and the one English, have a future full of promise, we may well assume.



JERSEY COWS—WINNERS OF GOLD MEDALS.

than others. It may be said that no breed of cattle has won, as the Shorthorn has, its right to the term "cosmopolitan"; and though some Americans term it a beef breed, saying its claim to be regarded a dairy breed, we in England know better—we know, in fact, that many Shorthorns are capital milkers; and we feel that, if American Shorthorns are poor milkers, it is because the Shorthorn bulls imported from England have been selected from families in which milk yielding has become a lost art. (1)

The chief merit of the Shorthorns is that they are, on the whole, better all round cattle than any other breed, and the secret of their abounding popularity lies in the fact that they mature early, milk fairly well on the average, and fatten off for the butcher as well as, if not better than, any other breed, when they are no longer wanted for milk. The Herefords have the reputation of being better beef, when fat, than any other English breed, and this may be said to balance their

for their very hornlessness is a valuable feature in this age of wonderful migration and fro across the ocean. The old Longhorns are the only breed of the British Islands which the world will at all willingly let die, and if this extinction takes place, the awkward, ungainly horns with which the breed is unfortunately misdecorated will be the chief cause of it. We may hope, however, that it will not occur, for it would be a distinct loss to be deprived of this quaint, antique, old-world breed of cattle; and the lively interest which men take, in this period, in the different races of domesticated animals is too active to let such a once important breed of cattle slip out of their ken.

OUR ENGRAVINGS

Jersey cows.—We have had so much said about Jerseys that there remains little else to say. The old cow, on the right seems to be done for—*James G. Thompson*

(1) This I have animadverted upon many a time. A. R. J. P.

Shorthorn steer.—A nice young one all over. Rounds of beef like a Hereford and neck-vein like a —well, like a short-horn.

Selecting Stock Turkeys.

To those just beginning the business of turkey raising, I should like to offer a few suggestions in regard to the selection of their stock. First class birds I would have by all means, for when the parent stock is strong, healthy and vigorous, these qualities will be transmitted to the offspring. Pure-bred, they should be too, as in that case we will be much more apt to bestow upon them that amount of judicious care and attention which is necessary to insure success.

Of the various breeds the dark Bronze is now the most popular, and this favoritism seems well merited, as the Bronze possesses the handsomest plumage, attains the largest size, takes on fat readily, and being domestic in its habits can be controlled without difficulty; while the young poult are healthy, hardy, grow rapidly, and are as easily reared as turkeys can well be.

In buying your stock it is a good plan to do so early in the season, so as to get them home long enough before nesting time to allow them to become familiar with their surroundings and to lose all fear of the attendant. In fact, unless I am satisfied that the turkeys are in the hands of an intelligent and conscientious poultry-keeper, I should prefer to bring them home in the fall and winter them myself, as their usefulness in the spring will depend to a great extent upon the way they are brought through the winter. If possible, procure hens that are two or three years old; their eggs are larger, better shaped, and more likely to prove fertile; while the young poult are larger, stronger, and make more robust and finer adults. The habits of old hens may also be relied upon with much greater certainty, and as mothers they are more prudent and sensible.

The marks of a turkey's age are unmistakable. The plumage of a young hen is darker and more glossy, her legs are of dead black, and her movements are quick and lively. She has no beard, and her head is covered with short black hair growing among the red wattles. After the first year her legs grow somewhat scaly, and gradually become lighter in color, until when four or five years old they show a light pink. The weight of a Bronze hen when from seven to eight months old should be not less than sixteen pounds, and at the beginning of the laying season she ought to weigh eighteen to twenty, while the males of the first hatches should go up to thirty pounds the first year.

Even in the same brood and in the same weight, there is sometimes considerable difference in the appearance of the birds, and in making a selection one should endeavor to choose those possessing in an eminent degree the essential characteristics of the Bronze. This variety is noted first of all for its beautiful plumage, which on certain portions of the body reflects brilliant bronzy hues, glistening in the sunlight like burnished gold. This iridescent coloring is especially rich on the breast, the wing coverts, and the graceful curve of the neck as it expands into the body. The prevailing color elsewhere is bark brown—almost black. Their principal beauty lies in the wing coverts, which are a solid rich bronze, forming a broad curving band across the wings when folded, and ending in glistening black.

Until the bird is a year old these feathers are short, showing only one or two inches and being of irregular lengths, but with age they increase in brilliancy of coloring and in length, until they frequently become five or six inches long, forming the bird's chief ornament.

Bronze turkeys do not reach maturity until two or three years of age, when the hens sometimes weigh twenty-five pounds, and the males from thirty-five to forty pounds. These weights are not exaggerated, for many breeders of Bronze turkeys affirm that their best birds go far above them.

The plumage of the hen is not so brilliant or so dark as that of the male, and as she grows old a larger proportion of her feathers terminate in white or light gray. She is more graceful in her movements, however, and more symmetrical in shape, having a long, trim, compact body, broad breast, slender neck and pretty, well-shaped head. Her eyes are dark brown, very bright and watchful, and her movements alert, active and animated. In disposition Bronze turkeys are gentle, docile and easily controlled; and although some persons complain of their wandering from home, yet I have found them remarkably domestic. If mine leave the yard at all during the greater part of the year it is because they are driven out.

Upon getting your turkeys home, do not permit them to associate with the chickens—they impose upon them dreadfully; besides, turkeys are not apt to be so healthy as when kept separate. Turkeys do not require as rich food as most other fowls, and stock turkeys especially should be lightly fed on all foods that are at all fattening in their nature, as Indian corn in its various preparations; they should be given instead a generous allowance of those grains said to contain a larger proportion of egg-producing ingredients, as oats, wheat, and the like. *Country Gentleman*.

What to Feed with Ensilage for Milk.

EDS COUNTRY GENTLEMAN—Will Prof. Stewart kindly give his opinion of the following ration for cows of 1,000 pounds weight, for best results as to milk in respect to quality as well as quantity: 40 lbs. ensilage (corn), 3 lbs. malt sprouts, 10 lbs. corn fodder, 5 lbs. clover hay, 3 lbs. bran, 2 lbs. cottonseed meal. The corn ensilage is from well matured stalks, each with a fine large ear of corn, cut to half inch lengths. Hay and fodder cut to one-quarter inch lengths. Grain portion of ration is first thoroughly mixed, then carefully mixed with the ensilage, hay and fodder, which is first mixed and moistened. Ration is fed in three feeds, largest feed at night. *H. G. O. Clifton, Va*

The ration proposed by H. G. O. would do very well as to quantity of milk, but it is a little short in albuminoids, with too large a proportion of carbohydrates. We would propose the following modification 40 lbs. ensilage, 8 lbs. corn fodder, 5 lbs. clover hay 4 lbs. malt sprouts, 3 lbs. bran, 2 lbs. cottonseed meal. The digestible nutrients in this ration are shown in the following analysed formula in pounds.

	Albumi- noids.	Carbohy- drates.	Fat.
40 lbs. ensilage.....	0.48	4.80	0.29
8 lbs. corn fodder	0.19	2.80	0.04
5 lbs. clover hay.....	0.33	2.10	0.07
4 lbs. malt sprouts.....	0.76	2.08	0.04
3 lbs. bran.....	0.35	1.35	0.08
2 lbs. cottonseed meal.....	0.71	0.56	0.12
Total.....	2.82	13.69	0.53

Nutritive ratio 1 to 5.3.

It is presumed that the malt sprouts and the cottonseed meal are of first quality. This ration should produce the same result as one with hay and corn meal combined with the other articles of grain, as the ensilage may be considered as

standing in the place of the corn meal; besides, the ensilage, if of good quality will assist materially in the digestion of the other food. This should be a full ration for 1,000 lb cows; but if O.'s cows are all Holsteins they will be likely to exceed that weight by 20 per cent. But if this proves insufficient in quantity, the feeder only requires to increase the amount fed of this combination.

O.'s method of mixing would be improved by adding the malt sprouts to the ensilage first, as the malt sprouts require more moistening than the other grain. If the sprouts are first worked into the ensilage and then the corn fodder and hay be added and a little more moistening with water, then the bran and cottonseed meal spread evenly over the top and all forked in together, the whole mass becomes evenly mixed and the quality will be found to be uniform throughout the mass. This is important so that each cow will get the same quality of food.

E. W. S.

SEASONABLE NOTES.

FIELD EXPERIMENTS.

Mr. Cooke, of Flitoham, is hurt at certain remarks which appeared in this column (1) on November 10th, in which the trustworthiness of the ordinary field experiment was impugned. We beg to assure him that we never intended to throw any doubt upon the value of experimental processes as applied to the theory of agriculture.

It is nearly thirty years since the writer was a student of the late Dr. Vöelcker, and it was from that excellent authority that he derived his first doubts as to the value of experiments upon the action of fertilisers as indicated by ordinary field plots. As one of the comparatively few who have conducted a large number of these experiments he feels that he has a right to have formed an opinion, which, however, he would be sorry to sum up in a sentence, or formulate as an epigram. The subject is too large and important to be dismissed in the rapid manner attributed to the correspondent in question.

AN "EXPERIMENT,"

to be worthy of the name, must be a plain and straightforward question put to Nature. In order that an experiment should give a result which may be considered as conclusive, it is essential that the question experimentally put to nature should be simple. Secondly, as it is asked of a silent oracle, it should be repeated many times, or in other words, abundantly confirmed. But in asking the first and the subsequent questions it is of the utmost importance that the conditions should be the same. All scientific experiments teach us the necessity of a thorough knowledge of the conditions under which they are tried, and the reduction of the issue to a single point.

As an example of the care necessary to cut off all sources of error in conducting an experiment, let us take the usual practice in a chemical laboratory. The apparatus employed must be free from the least suspicion of contamination. It must be washed with distilled water, and dried with perfectly clean material. The very cork tubing, glass, or glazing are examined. The water employed as a means of dissolving the substance to be examined must be proved to be absolutely pure: the chemicals (reagents) used are tested for impurities. In every step of the experiment the same care is noticeable, and the result requires to be checked and controlled by a

number of confirmatory trials, until the matter is settled or placed beyond all reasonable doubt. Some training in the methods employed in a good laboratory seems to be essential before a man is capable of conducting a satisfactory experiment, and it is the impossibility of taking precautions of the kind above indicated which constitutes the weakness of field experiments. All field experiments labour under these serious disabilities, but if we examine the Rothamsted and Woburn results we notice a sustained attempt to secure uniform conditions so far as the nature of the circumstances will admit of. The difficulties are very great, but are not insurmountable in particular cases; but the fallacy of generalising, even from Rothamsted is, to say the least, dangerous.

We will take as an example the Rothamsted unmanured plots. These plots have been gradually brought into a condition of depletion by a long series of crops removed *in toto*, and thus a standard has been arrived at by which the action of a manure may be gauged. Similarly these plots are compared with others which, for an equally long period, have been uniformly treated with certain special manures, sometimes simple, and in other cases combined, but always maintained under similar treatment. The value of these experiments gains strength like that of a pedigree in the case of highly-bred animals. The successive results from season to season confirm each other. The chain of evidence increases in strength from year to year until at length a conclusion is arrived at which is to be depended upon, and which may be relied on to give similar results in succeeding years.

The value of such field experiments as these is, however, by no means easy to apply. They are true of a particular field, or possibly of a restricted area; but to urge that they may be used as a basis for practice in remote districts, on a different class of soils, and under different conditions of climate, would be rash in the extreme. The value of the Rothamsted experiments is not confined to their application to the direct practice of farmers. It would not be difficult to show that they have important bearings upon questions relating to the theory of plant nutrition, waste of fertilising matter through drainage, ultimate exhaustion of the soil, the functions of the atmosphere, and many other scientific problems. Their value depends to a great extent upon the patient manner in which they have been continued, and the rigour used in order to force a distinct answer to one question only, from each plot, year after year.

This is the nearest approach which we have seen in this country to a thoroughly controlled series of experiments. The results have been welcomed both by practical and scientific men, but it would be putting a low value upon them indeed if they were only to be regarded as furnishing so many out and dried recipes for manuring land in all parts of England.

The very strength of the Rothamsted plots is from this point of view a practical weakness. Here for example, is a plot unmanured for forty years—but we are not, as practical men, going to treat land in a similar manner. Here is another plot manured with one particular substance, and cropped with one particular plant for forty years—but this is a condition which almost renders it incomparable with a heavily-dunged, cake-fed, and variously cropped field. The fact is, that a special education is wanted to read aright and to accord due perspective to the Rothamsted results. We give place to no one in the high value we place upon them. It is possible we may see values in them which are not apparent to others, but we doubt their applicability straight to the practice of distant farmers. Were a new fertilising element to be discovered, it is at Rothamsted that its fertilising effects, could almost alone be tested. Such a substance might be tried by many farmers on their variously cropped and manured fields, and but little dependence could be placed on the

(1) Of the English Agricultural Gazette.

results, which would be certain to be discordant, but the value of the fertiliser at Rothamsted would be proved beyond doubt.

Probably most practical men glance over tables of experimental yields, in order to see the commercial result, rather than the scientific bearings of the experiment. As already stated, the very strictness of the conditions of the Rothamsted experiments renders them unreliable for this purpose. Farmers ought not to expect the same result so far as quantities are concerned, although there may be *tendencies* in the same direction. As we have often pointed out, the effect of manures is, in many cases, in inverse ratio to the "condition" of the land. The higher the level of fertility the less distinct will be the effect produced. The larger the cake bill—the greater the amounts of dung produced—the richer the land—the less will be increase over what most field experimenters choose to call their "unmanured plots." These plots are often so rich in accumulated fertility, owing to good farming, that they are already replete with plant food, and yet they are used to test the comparative value of fertilisers. They are full of nitrate and phosphates, and therefore their yields compare favourably with those of the manured plots, and they not seldom produce a better crop. A neighbour trying the same series of experiments probably obtains a disproportionately larger yield from the use of the same manure, which gives a minor quantity on the first-named soil, and the consequence is a difference of opinion which is only the result of different conditions of soil. This is why we said on November 10th, "were field experiments not so entirely untrustworthy, we would say, try it on a small scale." The result would not carry conviction. It is quite possible that the best accredited fertiliser tried for one year on one field—the entire history of which was unknown—might produce no result, and the judgment would either not be materially affected, or would be misled.

THE PRACTICE OF GOOD FARMERS.

Mr. Cooke labours apparently under a misapprehension as to the real strength of the judgment of practical farmers. He is carried away with his own debating powers when he talks disparagingly about "the unerring brains of the most accomplished farmers." The practice of the best farmers is the result of a process of slow evolution which has been in progress for an indefinitely long period. They have not discovered anew that seed germinates, that tillage is important, or that rotations are necessary. The Norfolk rotation is an extraordinary fact, but we are not aware that it boasts a scientific source. The practice of good farmers has come to them by a process of natural selection and development, and should be treated with the utmost respect. There is a strong presumption in favour of the practice of every locality. Some years ago the Cirencester Chamber honoured the writer by giving him the management of their field experiments. It had for many years been the practice of the good farmers of the surrounding district to manure swedes with 3 cwt. of superphosphate per acre. After several years of careful experiment the conclusion was arrived at that this was the best dressing for swedes which could be used. Here experiments verified practice, and we do not wish to deprecate the value of this result. But what we now ask is how the Cotteswold farmers had arrived at this fact? Solely by the experience of many men extended over many years. There was no case of an "unerring brain," but simply a practice based upon long usage, pruned between satisfactory results on the one side, and a wish to economise outlay on the other. The fairly best procedure, with all its risks and possible disappointments, has been arrived at, and constitutes the usual practice of the

best farmers. That "farming is never learnt" we are well aware, but when practical men speak in this fashion there is but little inference in favour of promiscuous field experiments. Their best lesson has been to confirm and register good practice. What is meant by the expression that "farming was never learnt" is, we believe, that the variations of seasons and of markets puzzle all of us. What is true one season is false the next, and the most desirable course fluctuates with the rise and fall of sheep, cattle, and corn in the market. It is not so much a question as to how to grow a good crop of wheat or potatoes, as how large an acreage ought to be devoted to these and other crops. The practical farmer is constantly correcting his own judgment, and hence he very properly exclaims that farming is never learnt.

THE LIMITS OF AGRICULTURAL EXPERIMENTS

are undoubtedly wide but those under criticism are chiefly directed to two objects—fertilisers and feeding stuffs. And yet the number of fertilisers and even of feeding materials (although these are more numerous) is comparatively small. Of fertilisers we have nitrogenous and phosphatic manures principally, and most field experiments ring the changes upon superphosphate with and without nitrate of soda, sometimes applied alone, and sometimes with dung. But the worst feature in these experiments is that they are conducted upon land the absolute condition of which is unknown, and compared with what are erroneously called "unmanured" plots. There is really no standard. The effect of a fertiliser in the case of poor land may be compared to adding two and two which makes four, or doubles the yield. The effect of the same fertiliser applied to a good and enriched soil is like adding two to 100, making 102, or increasing the yield 2 per cent, while in a third case "unmanured" land is so good that no result, or a *minus* result, is obtained. Is there the least prospect that the system in vogue, in widely separated districts with relation to these substances is likely to be altered by such experiments?

As to feeding stuffs, the art of feeding as illustrated in our fat and stock shows has reached a point which it will be difficult to excel; and the curious point is that the new doctrine of nutrient or albuminoid of ratios has been practised by feeders without their being aware of it. This is surely another case of the "unerring brain" which Mr. Cooke laughs at. Now the secret of the evident correspondence between theory and practice is simply this. Nature has already in grass, in turnips, in hay, and in the meals and seeds of plants given us the most suitable nutrient ratios. The chemist is merely the exponent of this. Just as he finds that bread is one of the most suitable foods for man—and yet man relied upon bread long before there were chemists. Also, just as he finds that grass is a perfect food for cattle—and yet cattle ate grass long before there were chemists. Graziers have by long practice learnt to mingle their foods for stock to the best purpose, and it is doubtful if experiment will be able to improve upon practice very far in this particular. Men butter their bread, and eat cheese and bacon with it, and the chemist explains the wisdom of this combination. Farmers give oilcakes and other concentrated foods with their hay and turnips, and the chemist demonstrates why this is right. Now, we want to know in what respect experiments upon various feeding stuffs can alter practice? Take barley meal at £6 per ton, and linseed cake at £8 per ton. Again take barley meal at £7 per ton, and linseed cake at £12 per ton. Is the farmer likely to rely on experiments upon the comparative feeding properties of barley meal and linseed cake, or is he likely to regulate his practice by market price? The differences in results obtained by comparative trials of really

accredited diets for cattle and sheep are somewhat narrow in their limits, while the prices which these same substances bring on the market are very wide. Probably most of us would control our purchases as much by the market price as by experimental results.

Experiments upon feeding materials require as much care as experiments upon fertilisers, and their value is not by any means confined to teaching farmers how to feed cattle. Readers will call to mind the great importance of the Rothamsted feeding experiments upon the science of physiology, especially with regard to the storage of fat in the animal body, and the comparative value of starch, sugar, and the albuminoids in the production of fat and of flesh. Probably the fixing of diets for farm stock was a secondary consideration to larger questions connected with animal nutrition generally. And yet any facts bearing upon animal nutrition or plant nutrition must be of vast importance to agriculturists in the long run. We therefore conclude that with reference to properly concluded agricultural experiments we must be content to wait, feeling assured that, when properly conducted, they will assist to build up a rational theory of agriculture which in due time, will insensibly react upon practice.

GREEN MANURING. Whether the practice of turning under a green crop of Clover or Black Peas for manure results in "temporary killing the land by acetous fermentation, so that nothing will thrive on it," as alleged by a southern writer to be the case anywhere south of the 33d parallel north latitude, is a question which we would like to see ventilated. There are many cases reported also by northern cultivators, where the plowing under heavy crops of green manure such as Clover, have resulted in "souring" the land, and ruining succeeding crops, but this is not a usual occurrence, and it may not be so even at the south. Let our southern readers speak out. We believe it to be a good plan for all sections to let the green crop die down naturally, leaving it thus until time for plowing in spring, and then turn it under. What say the stations?—*Country Gent.*

THE EXPERIMENT STATIONS Unquestionably many of the state experiment stations have not yet given promise of returning to the people an equivalent of their cost. It is true, that we care little about mere literature—bulletins with little practical information—and that it takes time to evolve new facts of value. Still the contrast between the work done by a few of these stations with that of the great majority is remarkable. In consideration of the newsy, valuable bulletins, so full of interesting and instructive matter, we have been continuously receiving from the stations connected with the agricultural colleges of Massachusetts, Michigan, New Jersey, New York, (Cornell), Ohio, Minnesota, Wisconsin, Iowa, Vermont, Connecticut, etc., and from the Geneva, N. Y., station under Dr. Sturtevant's management we can only be sorry to see that the same results have not yet been forthcoming from many of the other stations.—*Do.*

Annual Records of Butter Cows.

Referring to recent auction sales of Holstein cows in the States, in which the prices obtained for stock purchased at great cost were comparatively very low, our excellent and highly esteemed friend, Dr. Hoskins of the Vermont Watchman, says: "Mr. Ullery refers to the phenomenal yields of milk and butter recorded of some cows of the breed he represents, and compares them with the yield of brag Jersey cows. As for ourself, and so far as the real interests of the ordinary dairyman is concerned, we care nothing,

"and less than nothing, for these laboriously worked up yields of special cows of any breed. They are utterly delusive, and of no value except for advertising purposes—for which alone they are got up and published. By their effect upon uninstructed farmers and beginners they temporarily boom prices, and are often the prime cause of slaughter sales, like those of Judge Bond and Mr. Cheney. Experienced dairymen, who are not also breeders and boomers, take no stock and very little interest in them. When only one dairyman in many hundreds can get a herd of even the best cows up to an annual average of 250 pounds of butter per cow, of what interest can it be to the many hundreds who cannot attain that point, to hear of yields like this given by Mr. Ullery of a cow which has a boom record of 1,153 pounds and 15 ounces of butter in a year—or similar great yields of cows of other breeds? These are quite like the publication of large prizes drawn by some who speculate in lottery tickets, and they are put in print for exactly the same purpose—only the lottery men pay big prices for their advertisements, while the cow-men try to work them into the papers gratis."

Now as far as booming, which means raising the value of property or stock under false pretences, we entirely agree with Dr. Hoskins and sincerely hope that such robbers or boomers may get their deserves quickly and surely, as should robbers of every description. But on the other hand, it strikes us very forcibly that all progressive farmers are greatly interested in the knowledge of what their own farm stock can do under the best, that is the most profitable circumstances. And to obtain such information, which when obtained becomes extremely valuable to the farming community at large, it is necessary that careful honest record be kept of the doings of our animals, counting first: the cost of food and care, and secondly, the gross returns obtained in lbs of butter.

Some years ago, before daily records, both of feed and of milk returns were kept under our immediate direction, we had doubts that even 250 lbs. of butter per cow could be obtained with profit from ordinary good cows. Now, after several years of experience with ordinary good cows purchased at low prices in the open market, in this province, we have come to the conclusion that every farmer in the land can, if he so wishes, produce 75 lbs. or 250 lbs. or even 350 lbs. of butter from the same herd, in the year. To obtain the best results it is simply a question of proper selection of good ordinary milch cows, of proper care, of well balanced and prepared food regularly, every day and several times a day through the year. Now, every farmer can do that, but unfortunately most farmers do not think it worth their while to look after the caring for their cows in the regular intelligent manner which alone secures success the year through, and therefore the extraordinary difference in the results obtained. There are all over the country, at the present moment, thousands of cows giving with an abundance of grass, of course, an average of from 35 to 40 lbs. of milk daily—or from 1 to 2 lbs. of butter. Unfortunately, as a rule, such yields only last a few days, or weeks, at most, and as the grass decreases, down goes the yield from day to day until the cold rains and the short dry feed of November will dry such cows completely. Now, had the same cows received intelligent, constant, economic care from their first calving with a sufficiency of food from meal to meal, we are sure that most, if not all of them, would have become standard butter cows giving an average of even 350 lbs. annually. Therefore where Mr. Hoskins says: "When only one 'dairyman in many hundreds can get a herd of even the best cows up to an annual average of 250 lbs. of butter per cow"—we would have said 'does' instead of 'can.'—We state positively that all farmers could obtain even the larger yield had they taken the necessary

means to obtain their purpose,—and we add that when so intent they could do so easily, and with great profit, even when prices obtained for really first class butter are at the lowest.

Our advice to all intelligent dairymen therefore is as follows: 1. Learn how butter cows should be cared for and fed 2. Select the right kind of animals 3 Do them full justice, using your brains to obtain the required result at the lowest possible cost 4. Keep strict, honest record, both as to quantity and cost of feed and as to quantity of butter made and price obtained. 5. Only publish such record as you can abundantly prove to be true, and we have no doubt that Dr. Hoskins and many honest editors of farm journals will be thankful for the information thus obtained by which much good must follow.

ED. A. BARNARD.

REMARKS BY AGRICULTURAL EDITOR.—We are obliged to our good friend, Mr. Barnard, for his excellent criticism. We did not intend to convey the idea that it is absolutely impossible for any farmer, or all the farmers, to bring up the average yield of their cows in time, and by care, to 250 pounds in a year. We should have better expressed our thought if we had used the word "do" instead of "can." But practically it amounts to about the same thing. While not impossible in the abstract sense, it is concretely impossible—men being what they are without the necessary ambition, knowledge, or practical skill requisite in the case. Even now, we frequently hear farmers doubting these 250-pound-average yields for whole herds of twenty cows or more, and it is not long since we heard an old "hard-head" assert his belief that no one ever got more than 100 pounds of butter from one cow in one year. But we hope for better things in the near future.

DR. HOSKINS in *Vermont Watchman*.

Montreal Exhibition Company.

In compliance with a widely expressed desire on the part of many prominent Agriculturists and Manufacturers, the "Montreal Exhibition Company" has been formed with a view of establishing Annual Exhibitions in Montreal.

The Government of the Province of Quebec having made a grant for the purpose, the PROVINCIAL EXHIBITION will be held this year in the city of Montreal, opening on the 17th and closing on the 25th September.

The commodious and conveniently situated Exhibition Grounds on Mount Royal Avenue, which are so well known and so easy of access, have been secured for the use of the Company.

Extensive alterations and improvements have been made to the Buildings and Grounds; a new speeding track has been provided and every facility will be afforded to both exhibitors and visitors.

Many features of more than ordinary interest will be presented in connection with the Exhibition, and in addition to large displays from different parts of the Dominion, exhibits are promised from the United States. REDUCED FARES WILL BE GIVEN BY ALL RAILWAY AND STEAMBOAT LINES DURING THE EXHIBITION.

Exhibitors' Tickets will be issued at ONE FARE to Montreal and return.

Freight and Live Stock on Exhibition will be returned free of charge, as per arrangement with the Railway Companies. *Freight for Exhibition will be delivered on the Grounds by the Railway Companies without extra charge.*

Steam power and Shafting is provided in the Machinery Hall and Agricultural Implement Buildings, FREE OF CHARGE.

A SILO will be constructed on the Grounds, and the pro-

cess of preparing the ensilage will be shown by several of the latest and most improved machines.

An important feature of the Exhibition will be the WORKING DAIRY, in which the most recent and improved dairy utensils will be shown, and their various uses properly explained and illustrated.

An interesting feature of the Exhibition will be the INTERNATIONAL BENCH SHOW OF DOGS.

An excellent programme of SPECIAL ATTRACTIONS, has been prepared under the most capable direction.

Entrance and applications for space should be forwarded as soon as possible.

For Prize Lists and all information, address the undersigned.

S. C. STEVENSON,

Manager and Secretary,

76 St. Gabriel street, Montreal.

Royal Agricultural Show.

Fine weather favoured the opening of the fifty-second annual show of the Royal Agricultural Society at Doncaster on Saturday. The only portion of the show then opened was that devoted to the implements and machinery. This was above the average in size, and quite up to average merit. In all, there were 421 stands, on which 5347 articles were exhibited.

The chief events were the several competitions for the prizes offered by the society for various implements, only one of which was concluded.

The novelty of the year was a new mechanical milking machine by Nicholson and Gray, the only one entered for the society's prize of £60. This was tried on Saturday, and again during the week. The apparatus is extremely simple. An air-pump, worked by a small engine exhausts the air from a cistern, from which pipes are conveyed to different parts of the cowhouse, and connected with air-tight receptacles for the milk by moveable indiarubber tubes. From the milk receptacle another piece of indiarubber tube proceeds, divided into four branches, which are tipped with horns having indiarubber "lips." The "lips" fit on to the cow's udder, the exhaustion of air from the tubes causing close adherence first, and then the suction which makes the milk flow. There are some important details which it would take too much space to describe; but one must be mentioned, as it is regarded as essential to the successful working of a milking machine. The air-pumping is so managed that what may be described as a pulsating vacuum, instead of a dead vacuum, is produced, and the pulsation is communicated through the tubes, thus causing an intermittent suction upon the cow, similar to that which is applied by the sucking of the calf or by hand milking. On Saturday two cows were milked by the machine in eight minutes; but, with the necessary fittings, any number of animals could have been operated upon simultaneously.

Quite a new thing in this country is the compressed-air sheep shearer, exhibited by the Australian Shearer Company of Sydney. The threshing-machine competitions were brought to a conclusion on Saturday, and the judges awarded the first prize to Messrs. Foden and Son, of Sandbach; the second and third prizes being divided between Messrs. Gibbons and Robinson, of Wantage, and Messrs. Tasker and Sons, of Andover.—*Eng. Ex.*

At Doncaster there was quite as much as usual in the implement department to interest the visitors. DARBY'S steam digger has been so completely transformed that it deserved to rank as a new machine, and as one of the most important novelties in the show. But the sensational novelty was NICHOLS and GRAY'S mechanical milking machine which draws the milk from any number of cows simulta-

neously by producing a vacuum in the milk receiving vessels and in the tubing affixed to the cows' udders. There is a good deal of difference of opinion about this machine. Some dairy authorities believe in it, while others raise various objections. One man believes that the suction must injure cows if continued after all the milk has been drawn from the animals—a complaint which the inventors declare to be absolutely devoid of foundation, as the machine is in regular use on eight Scotch dairy farms, and no case of injury has been reported. Another critic contends that the saving of labour is not sufficient to make it worth while to use the machine, and a third declares that the indiarubber tubing will flavour the milk, and that the more it is used the worse it will become. Upon these points experience alone will give authoritative verdicts. At any rate, the machine is a very ingenious one, and does its work well. It was a particularly happy thought which led the inventor to construct his air pump in such a way as to produce a pulsating vacuum, instead of a constant one, thus imitating the sucking action of the calf and the intermittent work of hand-milking. The machine was entered for the prize offered by the Society for the best milking machine, and not for a medal, yet we were given to understand that the judges awarded it a medal, and not a prize. This arrangement needs explanation. It is true that there was no competition; but if the judges deemed the machine good enough for a medal, we fail to see on what grounds they could refuse to give it the prize for which it was entered. A medal stamps an invention as deserving, in the opinion of the judges, and a prize does no more.—*En. Ag. Gazette.*

Professor Huxley on Agricultural Education.

In the course of a paper on Technical Education before the Easingwold Chamber of Agriculture on Friday Mr. J. Harrison, read the following letter which he had received from Professor Huxley:—

I am afraid that my opinion upon the subject of your inquiry is worth very little, my ignorance of practical agriculture being profound. However, there are some general principles which apply to all technical training. The first of these, I think, is that practice is to be learned only by practice. The farmer must be made by thorough farm work. I believe I might be able to give you a fair account of a bean plant and of the manner and condition of its growth, but if I were to try to raise a crop of beans your club would probably laugh consumedly at the result. Nevertheless, I believe that you practical people would be all the better for the scientific knowledge which does not enable me to grow beans. It would keep you from attempting hopeless experiments, and would enable you to take advantage of the innumerable hints which Dame Nature gives to people who live in direct contact with things. And this leads me to the general principle which I think applies to all technical teaching of school boys and school girls, and that is that they should be led from the observation of the commonest facts to general scientific truths. If I were called upon to frame a course of elementary instruction preparatory to agriculture, I am not sure that I should attempt chemistry, or botany, or physiology, or geology, as such. It is a method fraught with danger of spending too much time and attention on abstraction and theories, on words and notions, instead of things. The history of a bean, of a grain of wheat, of a turnip, of a sheep, of a pig, or of a cow, properly treated—with the introduction of the elements of chemistry, physiology, and so on as they come in—would give all the elementary science which is needed for the comprehension of the processes of agriculture in a form easily assimilated by the youthful mind, which loathes anything in the shape of long words and abstract notions; and small

blame to it! I am afraid I shall not have helped you very much, but I believe that my suggestions, rough as they are, are in the right direction—Yours &c., T. H. HUXLEY.

The English Dairy Cow.

Speaking of the recent London Dairy Show, J. McLean Smith, says: "We have not as yet the official report of the last show, and the stock papers give only the yields of the three premium cows in each breed. Taking these as a basis for comparison, the three prize Shorthorns made an average score of 122.1 points; the three prize Jersey, 88.5; the three prize Guernseys, 90.76. Taking total solids as the basis of comparison, which determines the value of milk for cheese or for food, we find the Shorthorns average 6.85 pounds; Jerseys, 5.14 pounds; Guernseys, 4.99 pounds. For fat alone, the Shorthorns average 1.983 pounds; Jerseys, 1.523 pounds; Guernseys, 1.688 pounds. And yet, in the face of facts like these, there are men in the country who presume to say that, for dairy purposes, you should by all means choose one of these, "specifically-bred dairy breeds" and avoid the beefy cow. Was ever such "rot" uttered. The "beefy" cow, in this instance, is the cow that gives the most milk, and makes the most cheese and the most butter, and produces a bull-calf that will make a steer worth raising. And she does all this, according to Professor Whitcher, of the Vermont Experiment Station, at an annual expenditure for food of about \$3.50 more than for a Jersey. It is true a cow should be strongly bred for the qualities desired—the more strongly bred the better. That is, she should be able to show a long line of ancestors, all having superior excellence in the lines desired. But it does not follow and, judging from the facts brought on in milking tests, it is not true that a cow, claiming excellence in one thing only, is necessarily superior, in that particular, to a cow claiming excellence in two or more qualities.

Farmers' Advocate.

Visit of English-Farmers to the Channel-island.

Guernsey, Friday night.

This has been another day of charming weather. In the morning Mr. T. De Moulpied read a very long paper on "The Guernsey Cow," from which the following extract is taken:—

We saw some grand specimens at yesterday's show, splendid bulls, and grand, promising cows and heifers. How well they looked with their milk veins extended, and their soft, sleek coats shining in the sun, the picture of placid contentment. The Guernsey cow is no mean animal; she weighs from 900 to 1200 lb.; she is an unpretentious, useful animal, with a form to delight the eye of the practical dairyman, because it means milk. She is of the wedge form, high and broad in the hindquarters, narrowing towards the front; yet she is not thin in the chest, like many milch cows, but has a slickness through the heart which indicates constitution. A deep, full brisket, a fair fulness in the crop, her skin is of a rich yellow, and her milk and butter are more highly coloured than those of the Jersey. In size she is nearly a third larger and apparently also to about the same extent more robust. An unprejudiced person passing judgment on the two breeds from their appearance only, would say "the Jersey" belonged to the labour, and gentleman's park, while the Guernseys' place was in the rank-and-file of the hard workers, where butter-making meant business. The head, horns, and neck of many are too heavy to look well, the udder and teats are often deficient, particularly the fore udder and front teats. The udder often appears to be cut away in front, which gives the teats a backward slant which is not elegant. When we come across a Shorthorn or a Hereford, the first impression on our mind

is, what a fine beef animal, when we see a Jersey, our first thought is, what a pretty little beast; but when we meet a Guernsey, the first and lasting impression on our mind is, what a splendid milch cow! You see it in the broad, golden rim encircling her eyes, in her green and glossy, horns and hoofs; you see it in the orange colour of her skin, sometimes so full of yellow dandruff, as to appear as if the animal had been powdered with gold dust; you see it in a skin as soft as velvet, in her long head and neck, deep, wedge shape shoulders, in her long, prominent milk veins, and, finally, you see it in that large, deep, well-filled silken bag, so yellow, and enveloped by a skin so fine, so soft, and so thin as to almost appear transparent; and lastly, if you are still incredulous, a look inside the ear will be sufficient to convince you of the excellence of the animal before you. But add to these points, so essential to a dairy cow, her benevolent looking head, with its large dreamy eyes and clear buff nose, and the beautiful coat of red or lemon fawn and white, and you are justified in adding the word beautiful to the quality of good. In appearance she is rich-looking, long-bodied, with a mild and contented expression, always free from nervousness, has a gentle face, quiet temper, and is full of affection. Her head is not delicate, on the average not beautiful, but it is handsome, of good form, long, with a broad muzzle, enabling her to take large mouthfuls. The Guernseys are a long-bodied race, with round barrel and capacious paunch.

The late Mr. Joshua Watson is the only one who, to our recollection, bred for colour. He went in for the solid lemon fawn and brought out the noted and famous strain of Cloth of Gold. But the general colour, and that which becomes the Guernsey well, is the light red and white.

Mr. TITUS BARHAM, in moving a vote of thanks, said that, out of five breeds of cows kept by the firm with which he was connected, the Guernsey was the best for rich cream and butter. But she must be well cared for and gently treated, or she would not do well, as she was a highly nervous creature, and not used to rough treatment. Of Guernsey as meat-producers he had nothing to say, and he thought that any attempt to make them such would be to the detriment of their milking characteristics.

Mr. C. SIMMONS, as a breeder of Guernseys in England, in seconding the motion, said that fifteen years ago the Royal Counties' Society had no classes for Guernseys, and, when they started them about ten years ago, there were only three or four in a class, whereas now they had thirty to forty.

Mr. G. BARHAM described the Guernsey as the most perfect butter-cow in the world, while he said that the butter of Guernsey was a libel on the beautiful animal. He offered to pay the expenses of a Guernsey dairymaid at the British Dairy Institute, in order that she might acquaint herself with the best English system, and return to teach it to others.

Canon BAGOT, replying to a question suggested by the reader of the paper as to whether the churning of whole milk was profitable, alluded to extensive experiments carried out in Denmark, which proved that more butter was got by churning whole milk than by churning the cream from an equal quantity of milk, but that the extra butter was not worth the extra labour.

After some further discussion, the party drove to General de Vic Carey's farm, Le Valen, to inspect the cattle, dairy, and grounds. The farm consists of 40 acres, and six milch-cows and fifteen young stock are kept upon it. The dairy is the best in the Island, the English system of setting the milk in shallow pans and churning the cream being pursued.

After visiting Girffe, a lovely place on the coast, the next stop was at the farm of Mr. T. Prevost, a breeder and exporter of Guernsey cows. Here were seen some of the best Guernseys in the Island. A very high system of feeding is

pursued, the cows getting no less than 36 lb. of dry food per day in three meals—one third each of bran, maize, and oats, the grain being ground. Milking is done four times a day for five or six months after calving.

On the way back to St. Peter Port the splendid grounds and conservatories of Mrs. General Huyshe were visited.

After the return, a conference was held in St. Julien's Hall, when a desultory discussion on various topics took place.

The proceedings were concluded with a banquet given by the Royal Agricultural and Horticultural Society of Guernsey.

NON-OFFICIAL PART.

A Canadian Favorite.

The season of green fruits and summer drinks is the time when the worst forms of cholera morbus, diarrhoea, and bowel complaints prevail. As a safeguard Dr. Fowler's Extract of Wild Strawberry should be kept in the house. For 35 years it has been the most reliable remedy.

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Make an exception in favour of Dr. Fowler's Extract of Wild Strawberry. Its known virtues as a cure for diarrhoea, dysentery, cholera morbus and all bowel complaints cause all who use it to regard it as the most reliable and effectual remedy obtainable.

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An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple, vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma and all Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe in German, French or English, with full directions for preparing and using. Sent by mail, by addressing, with stamp, naming this paper, W. A. NOYES, 820 Powers' Block Rochester, N. Y.

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