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THE JOURNAL of AGRICULTURE. ILLUSTRATED

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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, Box 109, Lachine, Que.—or to the Director of Agriculture, Quebec.

OFFICIAL PART.

Table of Contents.

TOBACCO.

An attempt is now being made to encourage the cultivation of tobacco in England. Whether it will be successful or not, I cannot say, but, at all events, I am sure from the names of those who are foremost in the promotion of this revived industry, no pains will be spared to find out the best paying sorts to grow, and the best and most suitable-to-the-climate-methods of cultivation.

The nearest region to England in which the plant is grown on a large scale is the departments in the North-West of France—Picardy, in fact—and to this district the Royal Agricultural Society of England, always foremost in good works, sent, in 1885, their late Secretary, Mr. Jenkins, to investigate the system of culture there pursued, and to report thereon to a special committee of the Society, that measures might be taken to advise all intending English growers of the plant how to proceed in their first attempts, lest, by blundering at the first start, they might be hindered from pursuing what might ultimately turn out to be an easy as well as profitable pursuit.

Mr. Jenkins' report, which I have just received, is very full, and deeply interesting to me, though I do not believe tobacco will ever be grown in England on a large scale. I do not wonder at the English farmer catching at anything likely to help him in his present unfortunate position, but knowing, as I do, the intense abhorrence of the tenant-farmer of anything savouring of the "*petite culture*," I predict that within five years the fashion of tobacco-growing will have gone out in smoke.

One thing struck me very forcibly in the report: the extraordinary expenditure of the Belgian peasant on this crop. According to the report, the following shows the cost, per hectare of the tobacco in Belgium. The first column is taken from the English newspaper, "Agriculture," the second from a statement furnished by the Agricultural Society of East Flanders to the government:

COST OF GROWING TOBACCO IN GRAMMONT.

	"AGRICULTURE."	OFFICIAL REPORT.
	fr. $	fr. $
Manures	1,000=200.00	1,536=307 00
Labour	1,000=200 00	601=120.00
Tax	800=160.00	
Rents, rates and taxes	300= 60.00	261= 52.00
	3,100=620.00	2,398=489.00

As the *hectare* is equal in round numbers to 2½ acres, this will be something about, taking the first column, $250 an acre; and for the official report $190 an acre. The latter, it will be observed, contains no item for taxes, which in the former amount to one-third of the whole cost.

By the first column, we find that the labour and manure for an acre of ground to be devoted to the growth of tobacco costs the French peasant $160. I think we can manage to do our land well at a far less cost than this, and I should set about it in some such way as this, always presuming that an acre is sufficient for a first trial:

Choose a corner of one of the fields, near the house if you like, where the dung cart is not an absolute stranger. You wil see presently why I recommend the choice of *a corner*. If, after harvest, the land is free from root-weeds, couch-grass, &c., all the work needed in the fall will be a deep furrow of from seven to nine inches. If the land is foul, you will of course, immediately after the removal of the crop, grub up the surface, harrow, roll, and burn the weeds, or in some way get rid of them. The deep ploughing follows as before.

Manure.—Either ten bushels of bone-dust and twenty bushels of hardwood ashes, or twenty loads of farmyard dung. The dung you will turn, that it may heat—to destroy the seeds of grasses or weeds—and if your land is not subject to washing in the spring after the thaw, there is no reason why the dung should not be ploughed down in the autumn. The bones and ashes should be harrowed in in the spring after the land has become dry; then, the grubber, lengthways and across, will fit the land to receive the seed: six pounds of *rapeseed*, sown broadcast, and rolled in. So little spring-work is needed on this plan, that the whole cultivation may be finished by the tenth of May in most years. No spring ploughing!

By about the 20th July the rape should be from 2½ feet to 3 feet high, and fit for feeding off. Now, you see why I recommend the corner of a field for the crop. There will be two sides of fencing already in place, and a temporary fence on the other two sides—enough to keep sheep within bounds—will not cost much trouble to make. An acre of good rape should *fat* eight sheep, if given them by hurdling off a portion every day, but as we have no hurdles in this case, I put the produce as enough to *keep* ten sheep for a month, if additional food, say, a pint apiece of mixed oats and pease, be given them in troughs.

The rape being finished, and the land lightly ploughed, to cover in the droppings of the sheep, a couple of bushels of buckwheat sown and interred when in blossom—if it ever comes into blossom before the frost—will afford considerable vegetable matter for the succeeding crop. The cost of this preparation for tobacco will not be outrageous.

1 deep furrow	$1.75
2 grubbings, harrowing, rolling	1.50
Seed, 6 lbs. at 12½ cents	.75
Dung or bones and ashes, say	8.00 (1)
Ploughing after rape	1.20
2 bushels buckwheat, sowing, &c	2 00
Ploughing after buckwheat	1.20
	$16 40

It is very difficult to say how much of this sum should be charged to the sheep and how much to the subsequent crop of tobacco. My own opinion, from long experience of the rape-plant, is that an acre of good rape should, with the pint of pease and oats to each sheep, make at least 100 lbs. of mutton, which, at 6 cents a pound, would amount to $6.00; leaving $10 40 to be charged to the tobacco-crop, though, in truth, only part of this would be absorbed by the tobacco, as after that crop, with its thorough cultivation, a superb yield of barley or oats, sown down with grass-seeds, might be expected.

(1) If the dung is to be put on in the spring, another ploughing must of course be charged for: but then the grubbing will be unnecessary. A. R. J. F.

As to the use of sheep manure, I mentioned lately in this Journal that the price of it for use in the tobacco-fields of Connecticut was $8 to $10 a cord, at West Albany, a cord being about 2 tons, and a goodish amount of railroad freight to pay in addition. By our plan, we make mutton, improve the soil by cultivation, and save all expense of carting the sheep dung.

The cost of the tobacco-crop would stand as below:

Half the expense of the previous year	$3 20
Hotbed and seed	5 30
Grubbing, harrowing, marking out, &c.	3.00
Planting out, say, 8,000 plants	4.50
3 horse-hoeings	–75
2 hand-hoeings	1.50
Cutting	–.75
Hanging	5.00
String and rods	1.00
Stripping and packing	4.00
Freight &c	2.50
Rent, &c	4.00
	$40.20

I think I have charged at least enough for expenses of cutting, hanging, &c, though it is so long since I grew any large quantity of tobacco that I have almost forgotten what it used to cost me. For me, I should sell the crop without "sweating" it, leaving that in the hands of the manufacturer.

The return of the crop, with this culture, should be:

1200 lbs. of best leaves at 10c	$120.00
500 lbs. of second quality at 7c	35.00
300 lbs. of third quality at 4c	12 00
	$167.00

which leaves a net profit of $126.80, and the land in far better condition than it was before the crop. Are there any eight acres on the general run of Canadian farms that would pay like one acre treated in this fashion. As for tobacco being an "exhausting" crop, I do not believe a word of it. No doubt, as in the case of Virginia, if you plant successive crops of tobacco without manure on light land, it will not be long before the soil refuses to grow anything. What is it you extract from the land in this plant? It does not ripen its seed; the stems are not sold off the farm; only a few green leaves are exported, and they only occupy the soil for at most 12 weeks! Say a ton goes off: you make nothing of selling a ton and a-half of timothy, full of nearly, if not perfectly ripened seed, from an acre of land, and that must be much harder on the soil than a ton of tobacco. Indeed, I really believe, from experience as well as from theoretical reasoning, that a crop of tobacco, properly treated, is far less scourging to the land than a crop of wheat. Only, do not chuck your tobacco-stems out into the road, as things of no value, but either burn them and use the ashes for the next crop, or chop them in pieces and rot them in the dungheap.

According to the "Agriculture" report, the net profit of tobacco growing in the north-west departments of France is about seventy-five dollars an acre. Thank goodness, we can grow our crop without government interference, but the English farmer is obliged to give bonds in $500 to pay his tobacco tax before he can plant his land; and in France, the peasant is still more hampered: the cultivation of the plant is entirely under the control of the *Régie;* farmers who wish to grow

tobacco are obliged to get leave to do so from the department, and to work under the supervision of officers of the Régie, known as Controllers of cultivation One year in advance, the Régie fixes the number of *hectares* it requires,and the price the State will pay for the cured tobacco, according to its quality, and then allots the total among the several departments,partly according to the applications sent in, and partly according to the known suitability of each department to produce the quality of tobacco required. There are only 22 departments in which tobacco is allowed to be grown. In Holland and Belgium, any person may grow as much tobacco as he likes, and there the duty is charged at $6.00 per 1,000 plants,on the calculation that 7 plants should produce a pound of tobacco fit for the market.

A good broad strip of corn, sown as soon as the land is warm enough, on the side from which blows the most frequent wind, would be an efficient protection to the ripening tobacco.

M. Schloesing, the great Belgian authority on tobacco-culture, asserts that potash is the dominant manure for this plant: the influence of this salt is not to add to the weight of the crop or to increase the per centage of *nicotine;* but to give fineness and suppleness to the leaves. There appears to be a maximum quality of potash united with organic acids in the plant towards the 75th day from its germination: hence, the best cigars are made when the leaves are gathered before maturity, and when, in consequence, they contain the greatest quantity of potash.

I fancy we must be content to furnish *pipe-tobacco*, and perhaps a few tons of *wrappers* for cigars with Habana *fillers;* so I do not advise cutting tobacco before maturity, as the loss of potential weight must be considerable, not less, probably than 200 lbs. an acre.

In France, the rows of tobacco seem to be about 20 inches apart, and the plants about 18 inches apart in the rows. The great Connecticut I should plant, alternately with winter cabbages, in drills 24 inches apart, and the same distance between the tobacco plants—12 inches will do for the cabbages in the row: thus the tobacco would have 48 inches to spread itself in and there would be lots of room for the disbudder to work. The second week in June suits the planting of both crops.

In France, only those growers of tobacco who are specially authorized are allowed to grow seed. The crop is harvested in three ways: 1. by picking off the leaves as they ripen, beginning with the lower ones; 2. by waiting until nearly all the leaves are ripe, and then picking them off by one operation; 3. as with us, by cutting of the stem near the ground with the leaves attached. In the first case, the classification of the leaves is facilitated, for supposing the plant has ten leaves, the first harvest would consist of the lowest three or four, the second of the middle leaves, and the third of the uppermost. I wish I could see how to dry these several leaves properly, that is without their clinging together and thereby becoming mildewed. I am convinced that it is the right way to work. It seems that in the Departments *Du Nord* and the *Pas de Calais*, the tobacco passes the day out of doors, and is removed to shelter at night, it must require a great deal of practical skill to know exactly to how much sunshine and sun-heat the leaves should be exposed, as well as to how much dew, so as to obtain the requisite amount of dryness without brittleness, and the best colour possible without mildew. When dried, the Hollander and the Belgian can sell his tobacco as freely as any other farm-crops, but the French peasant has to comply with the regulations of the Régie which are very strict; for instance: "This autumn, I visited a farmer in the North of France, whose whole crop of tobacco had been rendered practically worthless by a hail-storm, which occurred in the third week of August. Nevertheless, the Régie insisted upon the crop being cured and delivered at the Magazine, although at the time of my visit it consisted of little more than the stems and the ribs of the leaves. Fortunately my friend's crop had been insured against hail-storms!" I do not know of any insurance company here that would undertake the risk, but in England and in France, all crops can be insured against hail for about sixpence an acre.

Rather harvest you. tobacco in a greenish state than run the risk of its being frozen. M. Scholesing tells us that the best tobacco is that which is harvested before it comes to maturity. Tobacco when nearly ripe will stand a fair frost without injury,but green, late-planted tobacco is destroyed by the slightest frost.

Arthur R. Jenner Fust.

Experiments.—The Rural New-Yorker, very properly, observes in a late issue that "fertile soils are not fit for trying experiments on unless, as in the case of Dr. Lawes, they be carried on for many years in the same way." But, it omits one very important fact: Sir John Lawes, as I mentioned in a previous number of the Journal, took especial pains to exhaust, agriculturally speaking, all the experimental land before he began his examination of the manurial value of fertilisers for different crops. "Hence," adds the Rural, "it is in our estimation, that most of the trials made by the Agricultural Stations with fertilisers are misleading or valueless. According to the present fertility of the land,the self same trials will have to be made for five, ten, or possibly of thirty years, before the land will answer the questions put to its." I do not think so. If the same crop is sown three or four seasons consecutively without any manure, I fancy the exhaustion of the land will be practically complete. For instance, Lawes, for the purpose of finding out what was the dominant demand of the turnip, sowed a piece of land with that root for eight consecutive seasons without manure, and the yield was as follows:

Years.	Tons.	cwt.	qas.	lbs.
1843	4	3	3	2
1844	2	4	1	0
1845	–	13	2	24

After which, as he says, "the size of the bulbs was such that they were not considered worth weighing." And so with the wheat-field: turnips, barley, pease, wheat, and oats had all been taken off it without any manure being added, and the first experimental crop of wheat on the continuously unmanured land, was about what it proved to be on the average of seasons afterwards, namely, 16 bushels an acre.

So, I think, there cannot be much doubt that continuous unmanured cropping for three or four years will reduce most soils to a fair state of exhaustion. The Rothamsted soil is of excellent quality: good clay-loam on chalk subsoil.

In a late letter to the papers, Sir John Lawes expatiates on the absurdity of spending costly artificial manures on land covered with weeds. The quantity of crop, he says, depends in great measure upon the season, but it also depends on the amount of weeds which share with the crop the artificial food applied to the soil. We all know that the farmer has no power over the season, but he can, to a great extent, diminish the quantity of weeds that infest the land It can never pay to feed weeds with nitric acid, and sooner or later it will be found necessary either to give up the use of artificial manures, or to use them on cleaner land.

To show the effect of artificial manure on land free from weeds, Sir John quotes the average of ten crops of barley grown in succession of the Duke of Bedford's experimental farm at Woburn. The unmanured plots have averaged 21 bushels an acre; mineral manures, such as potash, superphosphate,(1) &c.,alone have added nothing to the crop; 200 pounds of salts of ammonia and 275 pounds of nitrate of soda have produced very similar crops, 40 bushels apiece. As these two manures contain the one 16.5 lbs. of nitrogen and the other 21 lbs., they gave, as might be expected, about the same amount of crop. Thus, we have in the case of nitrate of soda, 7 bushels of barley as the return for the expenditure of 100 lbs. of the manure, which as barley of good malting quality is worth in England 4s. 6d. a bushel, and nitrate of soda 10s. 6d. per 100 lbs. (12s.a cwt. of 112 lbs.), leaves a net profit of 19s. on the use of this manure.

At the end of the 44th year of the experiments at Rothamsted, the yield of the continuously unmanured wheat plot was still equal to the average wheat-crop of the world, due, not to the superior fertility of the land, but to its freedom from weeds.—This average, if I remember, is about 15 bushels to the acre. A few years ago, a portion of the main wheat-crop was allowed to seed itself down; about 15 bushels, therefore, fell upon the ground; a good crop came up, no further attention was paid to it, and the wheat was allowed to fight its enemies the weeds as it best could. The first crop was too small to estimate, but certainly less than a bushel an acre, and at the end of the third year, the wheat had absolutely vanished from the scene. "The loss of crop caused by weeds, though comparatively trifling when we depend upon the native fertility of the soil, becomes a serious matter when we grow our crop with artificial manures, and when these are employed in ordinary farm practice, it will be found necessary to adopt a rotation, including some cleaning crops, such as turnips or mangels. These are, no doubt, costly crops, and of late years attempts have been made in England to supersede them by means of ensilage crops. The success of this is somewhat doubtful, and in my opinion the root-crop will always occupy an imposition when land is under arable cultivation." In this country and in the States, where Indian corn is grown, for ensilage, the horse- and hand-hoe can be used as effectively as in the cultivation of roots, but I regret to see that growers of fodder-corn do not, as a rule, trouble themselves about this cultivation of the land after the grain is sown.

Threshing machines.—The R. New-Yorker goes into ecstasies about a threshing machine, by Wheeler and Melcek, agricultural implement makers, of Albany, N. Y. "It was a curious-looking thing, the thresher being six and a-half feet wide. The grain is not fed endwise, as in ordinary threshers, but sidewise, the whole straw going in at once, and coming out the same way and unbroken." It was a new thing. Well, it was new fifty years ago in England, to feed a threshing machine with the straw sideways, but since that time all steam-machine have been made with drums five feet six inches wide, and no beaters are used, the drum working in a concave and *rubbing* out the grain. Before this improvement, maltsters would not buy machine-threshed barley, as the old machines stripped the skin off the end of the grain, and allowed the *acrospire* to protrude too early in its growth up the back.

So greedy are English machines for food, that I remember well when Clayton and Shuttleworth sent a man to start my first 8 horse-power thresher, he, fancying my feeder was afraid of supplying the wheat fast enough, threw in, one after the other, three sheaves of mown wheat, the bands still tied; and so good was the machine that neither in the sheaf nor in the bands could any grain be found. This was in Berkshire, in 1855.

(1) Of course, this means phosphate of lime reduced with sulphuric acid. A. R. J. F.

Expensive Manuring.—Mr. Stephen Powers, of Florida, recommends his readers to use one and a-half ton of cotton-seed meal for Irish potatoes. Allowing the meal to contain 7 per cent. of nitrogen, this would give 210 lbs. of nitrogen to the acre, which as the cost of the meal is given as $19 a ton, would come to $27.00! Now we all know that nitrogen is the dearest of all ingredients in manures, and most of us know that it is not the *dominant* constituent of a potato-manure. For cabbages, he recommends two tons of the meal = $38 an acre. True, the cabbage does demand nitrogen in abundance; but who on earth can afford to lay out $40 worth of manure on an acre of land?

Mr. Allen's opinion.—I presume Mr. A. B. Allen is supposed to know what he is talking about when he speaks of dairy-cattle. I like quoting the authority of those who agree with me on any disputed point, so here is what the veteran dairyman says on the subject of the "General-purpose" cow.

"Some contend that such a cow does not exist, but I know that it does, and that it is the very best and most profitable sort to keep by the farmer who is not devoted to the special purpose of making either butter or cheese, or selling his milk fresh."

That, I suppose, means that where a farmer pursues the wise plan of cultivating his farm on the "mixed-husbandry" system, an "all-round" cow is the right sort to keep; and of that sort there are plenty to be seen any day in the Townships and in many parts of Ontario; cows that will bring up a calf well, that will give an average of 9 or 10 quarts of milk a day from calving to within 6 weeks of coming fresh again; that will make a pound of butter from every 25 lbs. of milk, and will be fit for the butcher, if well fed, as soon as the yield of milk begins to slacken. If the whole province is to be given up to dairying, what are we to eat? We cannot live on butter, pork, and cheese, and if we look to the great Western prairies to supply us with beef and mutton, I fear that, sooner or later, the price will astonish us. Are we to slaughter all our bull calves as veal? It certainly will never pay to rear the male produce of the cows I see daily as steers; every pound of beef they would make would cost the feeder very much more than the price he would get for such animals. Is all the expenditure made by such men as the Cochranes, the Whitfields, the Dawes, the Popes, with their magnificent importations of Shorthorns, Herefords, and Polled Angus, to be wasted? Are no sheep to be kept, except a few miserable rats to supply the family with wool, and this on land far better, in many cases, for sheep-keeping than for cattle-grazing?

Tobacco.—I thought my tobacco-leaf that measured 41½ inches by 26 inches, was about the finest specimen of the Connecticut kind, but Mrs. Girdwood, of Ste. Anne de Bellevue, has beaten me into fits. The largest leaf grown on l'Ile aux Prunes, last year, measured forty-eight inches in length and thirty inches in breadth! I never got beyond 41½ by 26.

The New England Farmer says that the "heaviest lamb ever raised in the United States, an *Oxford*, which attained 100 pounds in nine months, was fed all the ground oats, in addition to its mother's milk, it could eat."

I do not see from this very oddly expressed article whether the 100 pounds were dead or live weight, but, at all events,

there is no great wonder in the progress of the lamb, seeing that many a pen of Hampshire-down lambs, at ten months, has averaged 210 pounds live weight, and last year, the best pen averaged 146 lbs. dead. At Weyhill fair, in September, some thirty-five years ago, I saw a lot of a hundred lambs, from Mr. Paine's flock, that would certainly go 20 pounds a quarter all round, and that without any forcing; and the race was by no means so far advanced then as it is now, neither did the Hampshire flock-masters lamb down in those days before March; so, the probability is that the lambs I speak of were not more than seven months old. They were sold to weigh ten stones, all round, = 80 lbs.

OUR ENGRAVINGS.

Cutaway Disc-harrow.—A great improvement on the old *disc-harrow;* much more penetrating, I should say, and lighter in draught.

Hampshire-down Ram.—The only objectionable feature, the coarse head, seems to be vanishing from the race. I trust the Hampshire breeders are not trying to ape the fineness of the Southdowns, but, judging from the engraving, it looks like it.

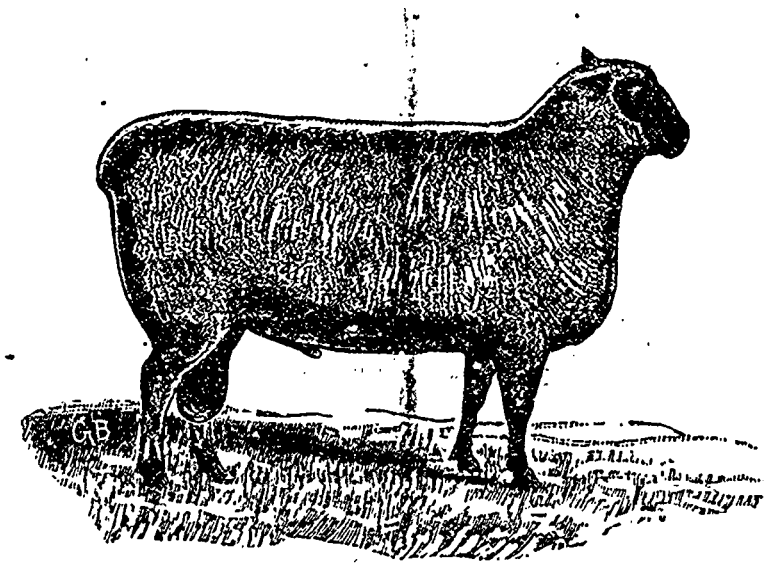
Plymouth Rock.—A hundred dollars have been refused for this bird!

ARTHUR R. JENNER FUST.

Report of the United States Consul at Bristol.

September, 1887.

A volume has just been issued at Washington containing reports from the Consuls of the United States in Europe. We make the following extracts from the report of Mr. Lathrop, the United States Consul at Bristol:—



MR. F. W. MOORE'S HAMPSHIRE RAM LAMB "MERRY HAMPTOR."

CHEESE. — The import trade of Bristol is largely made up of provisions. In this connection I wish to draw special attention to the way in which Canadian cheese has supplanted the United States product. The Canadian cheese is imported each year in increasing quantities in the Bristol district, and finds each year increasing favour, both with dealers and consumers. While the import of all foreign cheeses fell off in Liverpool in 1886 by 250,000 boxes, the import into Bristol from Montreal increased by 12,000 boxes—total for year 201,000 boxes—and the receipts from New York fell off considerably.—Great Britain manufactures each year 135,000 tons—and good cheese, too—valued at about $35,000,000. Now, the very prince of English cheese is held to be Cheddar, made in Somerset; and yet Canadian cheese made on the Cheddar principle has actually, right here in Somerset, where I write, been sold for a penny a pound more than a cheese actually made in Cheddar Valley. There is a hot controversy now raging in the English papers as to whether Cheddar cheese is the result of particular herbage and pasturage, or of a particular mode of manipulating the milk; and I think that all but Somersetshire men are pretty well agreed that this toothsome cheese is the result of superior methods rather than of special grasses. And the Canadians have gone on improving until they have surpassed their teachers; but the United States do not appear to have proportionately advanced, or, if they have, they consume their best makes at home.

HILL COURT, FALFIELD, GLOUCESTERSHIRE.

October 12th, 1887.

My dear Arthur, —For full cream Cheddar, it used to be the custom to skim the evening's milk the following morning —warm the cream and return it all with the next morning's milk into the vat—before using the rennet.

Now however it is the custom to leave the cream on the evening milk and mix it all with the morning milk; the warmth of the latter being considered sufficient.

In the early year, say May, June and July, no skimming takes place, because the cream though plentiful is poor—but in September and October, though the cream is richer, there is less of it—it is then customary and thought preferable to take off about half the cream of the evening milk (and not return it).

This cheese is then nearly, if not quite as good as the unskimmed, a better curd is thus obtained, and better flavour, in some people's opinions. The idea being that when there is too much condition there is apt to be less flavour. Most flavour to be expected when less condition. As to the effect of taking 1½ lb. of butter from 100 lbs. of milk, the men here know nothing of such weights. (1)

As to the price of the two sorts, I can't make out that there is any difference; as a rule, subject to what I have written above as to time of year, &c., both sorts seem to be equally good.

The price in this week's Chronicle at Berkeley Market is given at from 58s to 60s per cwt. This, however, applies to thin cheese, there having been no Cheddar in the market. (2) There was no great quantity there, two wheel carts vice wagons, but there were a number of Welsh factors who were there early and had the pick of the market, much to the surprise of the Glo'ster and other local dealers who did not appear till 12 o'clock.

The Welsh buyers have been conspicuous by their absence of late years, the miners were always our best customers, so I hope there is a sign of Taffy's taste and power of purchasing having returned. The enclosed report would show that *Canadian* Cheddar is not the worst in the world, but one swallow does not make a Summer. I think you may depend on the above, as my tenant at Nupdown, from whom I gathered it

(1) My brother means that his tenants are not accustomed to *weigh* but to *measure* their milk. A. R. J. F.

(2) i. e. Glo'stershire made Cheddar.

in the first instance, was very successful at the County and Royal Agricultural when he showed his *thick* cheeses.

Your affect. brother,

HERBERT JENNER FUST.

Ste. Anne de Bellevue, Oct. 17th 1887.

ARTHUR R. JENNER FUST, Esq.,

Dear Sir,—I notice in the last number of the Journal (Oct.) a foot-note of yours, under an article headed the "Holsteins to the front," in which you say: "I was sorry to hear a young Jersey breeder say, at Quebec, as it from his own observation" &c., &c. As I am the party of whom you speak, you will kindly allow me to correct you, as it was not "as if" but it was *from my own* observation, as I was at New York and was at the Dairy Fair when the butter was churned and gathered. I have always made it a point to have sufficient proof before I say anything about the Holstein-Jersey controversy, and when I remarked to you, at Quebec, about the trouble they had at New York to gather and form the Holstein butter, it was what I *witnessed myself* and not quoted from the Country Gentleman.

Thanks for your kind praise in reference to the St. Foy bull but it should be for Mr. Garnier, and not I, for, but for his timely assistance, I should have been severely handled by the brute.

I remain, yours truly,

GEO. W. A. REBURN.

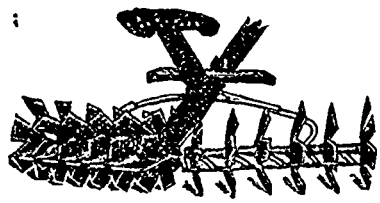
AGAINST DORSET SHEEP.—"And now," says Henry Stewart, one of our best sheep authorities, in the N. Y. Times, "with all the depression that has fallen upon the sheep-rearing industry, we are threatened with a large import of a kind of sheep which will be most useless in our climate. The horned Dorset sheep is now the favorite, and some agricultural journals are vociferously boosting them into notoriety. These sheep are reared and kept in the county of Dorset, in England, one of the southern tier bordering on the Atlantic Ocean, having a mild, moist climate where snow is rarely seen. They breed twice in the year and are kept for the production of lambs for the London market, less than 100 miles distant. The second crop of lambs appear in November and are ready for sale with the green peas and mint, (for sauce), which are fit for market in February. It is clear that while these sheep might be kept in parts of the Southern States, they would be entirely out of place in the North, where the cold would interfere with the rearing of the lambs. Whatever good may be said about them in regard to their prolificacy, they should be avoided by American farmers as being too small in size, having too small a fleece and being too delicate and tender for the rough, cold winds of our rude and inhospitable winters.

ARTHUR R. JENNER FUST, ESQ.

Dear Sir,—I am in receipt of your postal card of the 2nd. I am very much pleased with my Dorset horn sheep, and am expecting my crop of lambs to begin within a week, and most of my ewes to lamb before the new year. I have had ewes lamb twice, not within the 12 months, but in one Fall and the following Spring, but I do not practise this, as I think it is too hard on the ewes. I do not think that Mr. Stewart has had any practical experience with Dorset horn sheep, certainly I cannot bear him out in his contention as to their being too small. I know that some of our ewes weigh quite heavy, and I know that when they have been judged at fairs, the judges of other breeds of sheep have been very much surprised when they put their hands upon them to find how fat they were, and what good size they were. As to whether or no they will continue their proclivity as to lambing in the Fall and giving twins is problematical, and it seems to me it would have been a more liberal policy to have allowed those people who have gone to the expense of bringing them out here, and have shown enough enterprise to do so, to have an opportunity of demonstrating how far they will continue the habit that they now have. I am not a sheep man. If I were I should certainly take the opportunity of replying to Mr. Stewart. I hope however somebody else will who has had an experience with the Dorset horns. I will say this that so far as my experience goes I am *perfectly* satisfied with them. I have found them hearty. I have had lambs dropped early in the Fall and throughout the early part of the winter, I have never lost but one lamb out of all my lambing last Fall, and I have had some that were especially shoved forward at 5 months old, weigh 150 lbs. Not a bad showing. This is not in any heated barns whatever, but in a byre, double lined; and as a matter of fact I have found that the colder the weather is the better they do. Yours truly,

VALANCEY V. FULLER.

Mr. Fuller is right not to allow his ewes to lamb Spring and Fall, except in the last year of their lives, when the ewe is to be fatted off for the butcher. A. R. J. F.



CLARK'S CUTAWAY HARROW.

The excellent Hampshire ram lamb, Merry Hampton, whose portrait appears herewith (re-engraved for the COUNTRY GENTLEMAN from the Mark Lane Express) "was bred by and is the property of Mr. Frank R. Moore, Littlecotte, Upavon, Marlborough, Wilts. He is out of a ewe bred by Mr. Moore, by the noted Fonthill ram lamb, purchased at Mr. Morrison's sale, at the high price of 90 gs." He has taken several important prizes, young as he is, and was let for one month's service for 77 gs., say $385, to a breeder who subsequently expressed himself as perfectly satisfied with his bargain. Cyclone, a yearling half brother of this splendid ram, and also a winner at the Royal show, was imported a few weeks ago by our correspondent Mr. JAMES WOOD of Mt. Kisco, and was exhibited at the State Fair at Rochester, where he was greatly admired by critical judges, though in no fair condition for show after a terribly rough passage, being in fact a month on the way.—*Country Gentleman.*

We give this week a portrait of the Guernsey bull Jessie's Jeweler 907, in the herd of Mr. W. M. PAUL, Moorestown, N. J. This bull was born May 7, 1884; sire Jeweler 117, sweepstakes winner Pennsylvania State Fair, 1884. His sire's dam, Worthy Beauty, sold recently at 18 years for $200; milked with her last calf at this advanced age 22 quarts and made 15 lbs. of butter on every-day feed. The dam of Jessie's Jeweler is Jessie of Lester Manor, considered one of the best Guernsey cows in this country; milks 25 quarts in flush, and has tested at the rate of 18 lbs. of butter in trial tests on every-day feed; sold recently for $1.000. Sweepstakes at Massachusetts State Fair October, 1886, and at New York Dairy Show May, 1887. Color, mostly orange fawn: superb

escutcheon, and in all respects a model animal, combining the great quality of his sire, and fine milking points of his dam.

Country Gentleman.

American Sheep Husbandry—II.

FAILURES AND SUCCESSES—PAMPERING - EXPERIENCE—GRADING—THE BENEFITS.

EDS. COUNTRY GENTLEMAN—There is no doubt in my mind but that many farmers are deterred from purchasing thoroughbred sheep, by the fact that such purchases are so often failures. A sheep will stand very little excess. This lesson is so often taught that many farmers believe that if a sheep has been fat once it can never be fattened again. This notion is not true, as a rule, although it is frequently the case that sheep which have been kept in high condition for some time, if allowed to get poor, can never be brought back to this state. The reasons are to be found in the fact that the high condition has produced feverish and stimulated blood with a consequent general derangement of the whole system. Some disease is likely to set in as a resultant and natural effect, and the sheep dwindle away—"run down," as farmers say—and, in spite of all the trouble one may take, die. A number of years ago I bought out the Leicester flocks of Messrs. Wolcott and Campbell, and had high expectations of success with these then noted sheep. The flocks ran down in spite of all the care and food I gave them. I tried my best, and as a last resort sold some of those that were alive for $1.25 each, to get them out of my sight. The most of them died with consumption of the lungs, and they were a lingering lot. Some of these sheep had been show sheep. Here is the rub. An American is not fitted by education to make a healthy show sheep. He feeds too much grain (corn). This fact hits the Merino breeders as well. The British breeder knows better how to steer clear of fever, and he depends more on roots and oil meal to put his sheep in show condition. His show sheep will breed, but no American that I ever knew could improve on them, or even keep them in *statu quo*. I cannot recommend any one to buy show sheep fixed up by either British or American breeders, and much less advise the plain farmer to do so. They will surely be mistaken, or fail in the enterprise. It is far wiser to purchase the stock taken from the fields where the food has been liberal and the conditions natural. Such stock will hold their own and possibly improve. There are two kinds of improvements in stock—one of true merit by skilful breeding, and one, always deceptive, by excessive feeding, or high condition. Half of the farmers will be captivated more by the fat than by the brains. The show pen of stock ornamented with fat tells its own tale, for here the average farmer delights to linger, and imagine that these specimens are the true types of a noble breed. When transferred to other grounds how soon the picture fades! The qualities of animals which make them superior can be detected by an observing man, and can be fully appreciated when not in excessive flesh. Pampering is always destructive to any breed of animals, and a wise breeder will not do it. The man for show and for the present will push this factor for temporary success to the utmost limit. Breeds are not made in this way, but they can be destroyed. I recently made a purchase of some registered Merinos from a celebrated breeder, with an addendum of more disappointments than success. These sheep had been kept in a high condition, and their progenitors for years on grain. The British breeder cools the blood and builds up the tissues and muscles with foods which do not congest and inflame the system. So long as this is so, the best show sheep and the best breeders of the show classes will have to be drawn from the other side.

When a farmer makes a failure in his purchase and after attempts at breeding, it hurts the reputation of thoroughbred stock for miles around. With some farmers, who are careless and unfitted to own any animals, the breeding of fine ones would always be a burlesque on success; but there are many who long for better stock, and expect the exhibitions of them with danger of forgetting one commandment. Such progressive farmers can hardly go amiss in the purchase of a ram of any of the Down breeds for the purpose of improving their flocks. The advance will be rapid, and the results cannot be otherwise than satisfactory. The offspring will always be strong, as this is the result of cross breeding, unless the sire is weak and impotent from being out of condition or to closely in-bred. A sire of vigorous ancestors and in good condition will be sure to beget strong offspring, which will grow more rapidly than those of the old stock. The propensity for rapid growth is one of the chief—in fact the chief quality of the thoroughbred sheep. When crossing with the Downs there is added to this an increase in size over most of the natives and mixed blood, as well as a decided improvement in the quality of the flesh. The first cost of a ram is of small consequence when it is capable of adding all of these desirable characteristics. They will be stamped upon the offspring, so that when the future flock is selected from the lambs the benefits of the cross are continued and intensified. I would urge upon every farmer who is breeding sheep for mutton, to begin as soon as possible to grade up his sheep. There are a number of superior flocks in this country which have been bred on our soil and have become adapted to our climate and home conditions. These sheep, worth in reality twice as much as those imported, or any which may be seen at any fair this season, could be bought at half the price, so foolish is fashion, and so senseless is prejudice. They will not look so well, but the blood is the same, save the pampering, and this absence is a blessing.

F. D. CURTIS.

Kirby Homestead, N. Y.

Observations in Great Britain.

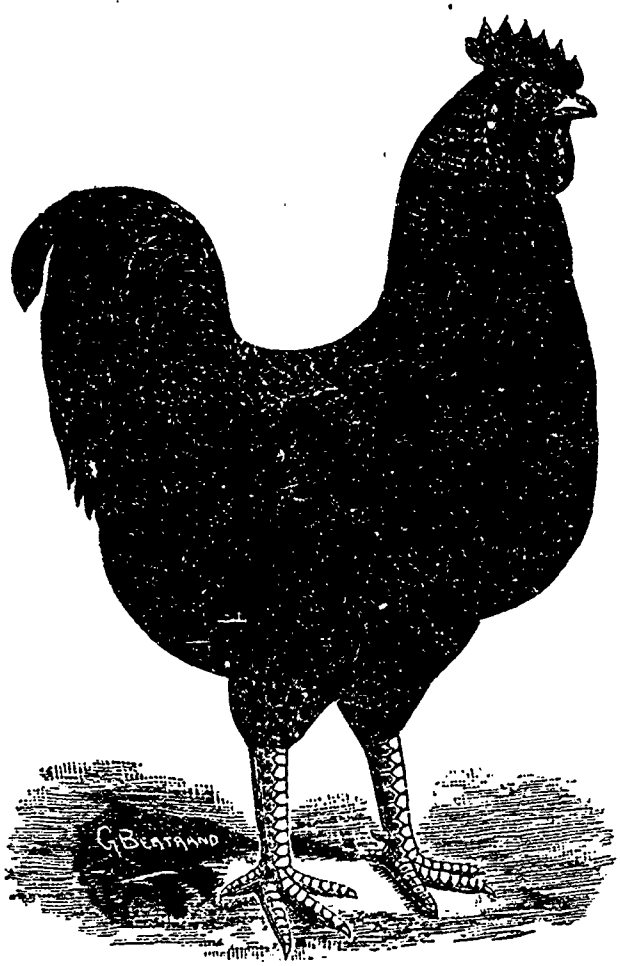
The only address of Wednesday forenoon was that of Prof. Arnold. This association had joined with other associations and individuals throughout the State to send the professor to the meeting of the British Dairy Farmers' Association last June, and he felt it a privilege to take this occasion of relating for their benefit the results of his experience abroad. At the meetings which he attended there were about 300 members present, most of whom were dairy farmers and milk producers and the papers read related chiefly to the production of milk. They find their greatest profit in reducing the cost of milk, and they pay more attention to this than to improved method, of manufacturing butter and cheese. He mentioned a Mr. Robert E. Turnbull, who spoke from his own experience, and said that with him the annual income of a Short-Horn cow was about $150, but if it were not for her manure and her calf, she would run him into debt. The average dairyman in England goes in for beef, and selects his cows for that purpose. But for dairy cattle, they run more to milk and less to beef than our American Short-Horns, although in his opinion they are too beefy still. With a cow weighing 1400 pounds, it costs them $91 to get $125 worth of milk. The English feed more evenly than our dairymem, giving a good ration every day, and they lose nothing by scanty feed in the middle of the season, when drouth is liable to affect us. Their climate is moist, and dry seasons seldom come upon them. They pay great attention to the economy of manure, and select their feed with this end in view. Labor being worth only 50c. a day, or half what it is with us, they employ more of it in tilling the soil, and get nearly double the amount of our crops.

Wheat, on an average, yields about 29 bushels per acre,(1) while it is only 13 bushels here. Hay also averages twice as heavy a crop as ours, although that is to be expected on account of the climate, which favors a continuous growth of succulent grass.

He entered into a minute description of Lord Vernon's dairy, having been the guest of that nobleman. The yield of all his dairies is about 40,000 lbs. of milk a day. Thirty cows in the home dairy, weighing on an average 1,150 lbs., were tested during a specified period of time. At the beginning their yield was 27 lbs. of milk a day, and at the close only 24 lbs. Their milk took 27lbs. to make a pound of butter, and 10 1-5 lbs. for a pound of cheese. The feed cost $1 per 100 lbs. This is a moderate yield in comparison with many American dairies. These cows were also divided into three lots of ten each, and after feeding all of them for a time on exactly the same rations, one-quarter of the rations of lot No. 1 was taken away and given to lot No. 3, the rations of No. 2 remaining the same. This was continued for ten days, and strange to say at the end of that time there was no perceptible difference in the milk yield of either lot.

The advantages for marketing dairy products in England are great. They always go into market fresh, and are consumed fresh. It costs about $35 to raise on their best land a ton of wheat, but as the same land will produce milk cheaper, there is a general tendency toward dairy production. Their butter is not so good as ours, but it is salted less, and eaten soon after being made. In Ireland, however, the butter is of better quality than in England, although both the soil and the water are inferior. But the Kerry cows give better and richer milk than Short-Horns, and the butter made from it is also richer. Lord Vernon had a little Kerry cow, weighing only 450 lbs., that gave over 30 lbs. of milk a day. (Can this be correct?) The professor said it would be a difficult thing to make him believe that a herd of Kerrys or of Guernseys would not give more milk than the same number of Short-Horns

In Liverpool he visited some of the leading wholesale houses where cheese was handled, and found the warehouses nearly empty in June. The same fact was observed in London. Where it was formely the custom to buy largely in advance, they now buy only as they need the goods. This compels the producers and small dealers to carry the stocks. The case may be different, however, in the fall months. Canadian cheese was preferred over that of the States. He saw it sell at 59s. when lower grade English Cheddar was only 44s., and State cheese only 40s. (We suspect that the Canadian was old cheese, and that of the States was new. The difference in that case would be about right in the month of June.) The objection made to State cheese was that when it began to get off-flavored it went from bad to worse very rapidly, whereas the Canadian held its quality longer and better. It requires less skill to make cheese in England than in this country. The temperature of the air is more even, and the grass is much better. We are obliged to cook our curds too high to make fine cheese, on account of our high temperature in summer. The lower temperature in England helps the cheese maker wonderfully. But the greater part of the cheese is made in private dairies, and is therefore very uneven in quality, while our factory cheese has the great advantage of uniformity.



PLYMOUTH ROCK, "SWEEPSTAKES."

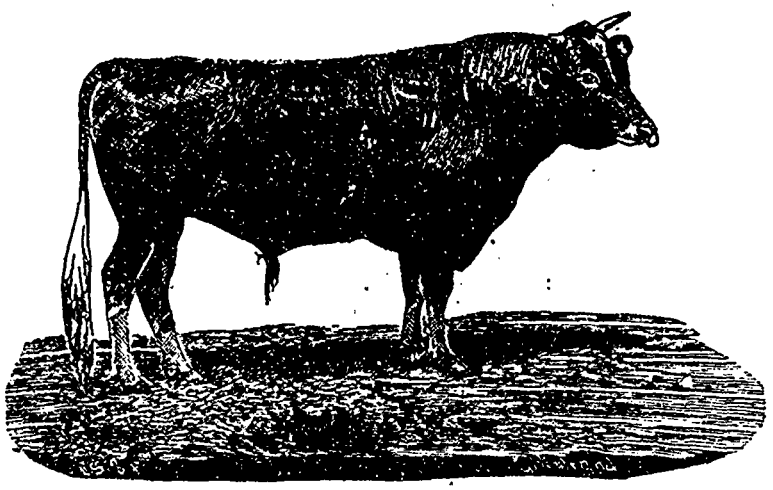
He described minutely the condition of some American butter he saw in London. It was packed in tubs weighing about 65 lbs. to the package. The butter was clean but highly colored, which injures it for the English market. It has been packed in an atmosphere warmer than that to which it was subsequently exposed, and in consequence it shrank away from the wood all round, and thus became exposed to the air. The tub had not been properly deodorized, and the scent of the wood had penetrated into the butter from one-third to one-half inch deep. Below this the butter was as sweet and aromatic as a rose. But it had one great fault: it was salted an ounce to the pound, which is twice as much as the English like it. It sold for only 16c., and as it was evidently the product of grain fed cows, it must have cost the producer every cent of that amount. If it had been seasoned rightly, and packed properly, it would have sold 10c. higher easily, and this instance shows how necessary it is to understand one's market, and to make no mistake in putting up one's goods. This butter was originally a good article, but was spoiled by not knowing how to treat the tubs. When asked how he would prepare the tubs the speaker said that if brine is used it should be poured in scalding hot, and this should be repeated three or four times during the ten days the tubs

(1) This year, there is very little doubt about wheat yielding an average of 4 quarters=32 bushels an acre! A. R. J. F.

are soaking. The cover also should be deodorized. Another plan and a good one is to bore a hole in the tub, have the cover on, and insert in the hole a rubber tube leading from a steam generator. Then turn on the steam, and in a short time it will cleanse the wood thoroughly. In such packages butter will keep sound for any length of time, provided it is made properly.

The professor took three days for a trip to the island of Jersey, which was the most interesting spot of earth he ever visited. He drove over the island and examined the cattle in their native home. There are about 6,200 head on the island, valued on an average at $200 each, and the land is valued at $1,500 an acre! But the cattle are much smaller than American-bred Jerseys, and no other breed is allowed to be imported into the island. There are two reasons for the smallness of the cattle: *No lime whatever exists in the soil;* and (1) land is so scarce that every animal is tethered in the field with only a space of sixteen feet to graze in. It is kept there until the grass is eaten close to the ground, and then the stake is moved on to the rim of the grazed circle, and so on. Such slim fare does not give the animals a chance to grow and and develop. The best butter-makers among them are the rougher kind of cows, but their butter is not a favorite in London, and sells lower than either Irish or Danish butter. (2)

In regard to Irish butter, he said that a good deal of it was really choice, but much of it is overworked and over-watered, although it is never washed. Both cheese and butter sell at retail in England for about the same prices as here. Danish butter sold all the way from 5d. to 12d. per pound, while butterine sold at 6d.



GUERNSEY BULL JESSIE'S JEWELER 907, PROPERTY OF W. M. PAUL, MOORESTOWN, N. J.

Southdown sheep.—The opinion of the judges at the Exhibition at Norwich of the R. A. S. of England seems to have been that Southdowns, though increasing in size, are deteriorating in quality. "The first-price old ram, had style and character, he handled well, and his wool was good, but he was so bare underneath, and his wool showed such signs of freeling, that &c.,"—in fact he ought to have been kept at home by my old friend Mr. Gorringe. The same gentleman also took first-prize for shearling rams, with a *beast* apparently, for it is said to be "mean in its hind quarters, nor did it stand well on its hocks," two terrible faults in a Southdown.

Suffolks.—I fancy no sheep of this breed have, as yet, been imported into America, and I sincerely trust that they will never become the subject of a "boom." They belong, in some sort, to the tribe of Dowds, and have been long wandering in an unimproved state over the heaths and the large sandy farms of Northern Suffolk and the borders of Norfolk, farms of a soil so light, that the old joke of the farmers, who, upon being asked whether his land lay in Suffolk or in Norfolk, replied that he did not know; it depended upon the direction from which the wind blew, is hardly an exaggeration.

The old Suffolks were a horned breed, very long in the leg, narrow in the brisket, no *scrag* to speak of, and with intensely black faces. They, in their improved form, have had the horns bred out, and the general form much rotundified, but their fine-flavoured mutton is still in request at the West-end of London, where, at the corner of Mount Street and South Audley Street, there used to be a butcher, named Allen, who was supposed to kill nothing but Suffolks, and uncommonly good meat it was, though—I am speaking of forty years ago—not so thick in the saddle as the other Downs. In Allen's shop one could always see a dozen or so of these sheep, distinguishable by their dark faces and legs from any other breed, and therefore always hung up with those members exposed to view. The Marquis of Bristol seems to be the chief exhibitor now, and though the R. A. S. has assigned them a separate class at its exhibitions, I do not think the breed will ever be found far from its present habitat.

Farnworth Pigs.—I see that Mr. Allender has sold his herd of red pigs to the Aylesbury Dairy Company, which took all three first-prizes in this class at the Norwich show of the R. A. S. Are not these the same as the Duroc or Jersey Reds? At all events, they seem to carry a good deal of lean meat, and will therefore please the bacon-curers who, as I said a couple of months ago, are complaining loudly of the entire absence of lean meat in the Berkshires and other modern breeds. I class the Berkshires under the head of "modern breeds," because the Berkshires, such as I see every day in the sties at the Messrs. Dawes' farms, are no more like the Berkshires of forty years ago than I to Hercules. The Berkshire of that day was a spotted pig—black and white—and gave a lot of good streaky meat: confound, say I, those who converted him into a bladder of lard.

Sheep-manure.—I observe that, at the Provincial Exhibition to be held at Quebec next month, an attempt will be made to encourage the cultivation of tobacco among the *habitans*. It will take some time and pains to get them out of the groove in which they have been so long running their wheels, but with care and constant iteration I think it is not impossible to convince them that tobacco, to be good, must be allowed to ripen, and that it cannot ripen in this climate unless the seed be sown, at the latest, by the 20th of April. Heavy dressings of manure have always been given to this crop, but it is only lately that I have learnt that sheep-dung has an important effect upon it. (Crowded out till now.)

(1) A strong assertion! Do the animals, then, get their *bones* from the air? A. R. J. F.

(2) Because it is made with "lappered" milk, and is too high-coloured. A. R. J. F.

"The cause for feeding so many sheep for their mutton in in the Connecticut valley," says a writer in the recently published Statistics of Agriculture, 1880, is the high value of sheep-manure for tobacco-growing, it having the effect on our light soils of producing a dark-coloured silky leaf, of good burning quality, suitable for wrapping fine cigars. This tobacco burns white, and has a good sweet flavour, perhaps owing to the potash it derives from the manure. So valuable do we consider this sheep manure, that we have shipped, since 1870, from West Albany, from 50 to 60 cords, costing from $8.00 to $10.00 a cord, every spring On our light soils, called pine-lands, after raising crops of tobacco, 2,000 lbs. to the acre, we have grown 30 bushels of wheat to the acre, plump berry and heavy weight of straw, on land which, without this dressing of manure, is fit only for white beans. We of late years feed with our sweetest hay, and mix our corn with one third cotton seed meal. By so feeding, our sheep fatten more easily, being more hardy, and better conditioned, besides increasing the value of the manure, and rendering (it) more full of plant-food."

Now, any farmer who may desire to manure his tobacco land with sheep dung, can do it without going to the absurd expense of $4.00 to $5.00 a ton for it, by this simple plan:

Plough a piece of clean stubble, of such size as you mean to plant in tobacco, in the autumn; in the spring pass the grubber and harrows over it until the soil is finely pulverised; before the last harrowing sow, broadcast, per acre a mixture of 4 cwts. of bone-dust and 20 or 30 bushels of ashes, and scatter 6 lbs. of rape seed to the same superficies, which roll in. If this is done by the 20th of May, the rape will be fit to feed off by the first week in August. You need not hurdle off the land day by day on such a small piece as you intend to plant, but turn your sheep in at once, giving them daily a pint to a quart each of oats and pease, mixed, in troughs. There you have the whole thing in a nutshell: no carriage of dung, no expense of hoeing, and the mutton will pay for the cost of cultivation and seed. If you like, you can charge the ashes and bone-dust to the tobacco crop, and it will be easily able to afford it if you grow, as you can without trouble, 1,500 lbs. to 2,000 lbs. of seedleaf and sell it for 8 cents a pound. And recollect that it is hard cash that is paid for tobacco, not store-goods: I do not know any way so easy as this to get a hundred and twenty or a hundred and sixty dollars off an acre of land. And tobacco-growing is so interesting too; I have heard a hop-grower of large means, and a clergyman to boot, say that if he could not grow hops on his account he would hire himself out to work in another's own hop-garden rather than not be engaged in the cultivation of that plant; and I think the same thing almost would be said by any one who has ever gone into tobacco-growing to any extent. But there are two or three things that must be attended to if we intend to grow good tobacco in this climate: 1, the seed *must*, absolutely *must* be sown in a hotbed; 2, the plants must be all set out by the 20th of June; 3, the green tobacco must *not* be allowed to heat before being hung, and, 4, it *must* heat when, after drying, it goes through the last process of curing, that is, being piled in a mass for fermentation. The temperature in this fermentation should rise to from 100° F. to 115° F., but if it rises above 120° F., the mass of tobacco must be pulled apart, the bunches separately shaken, and the heap remade in a fresh place. However, in my opinion, the fermentation should be entrusted to the hands of the manufacturer, and the grower's duty should end when the "hands," or bunches of leaves, are packed for transportation.

At present, the flavour of nine-tenths of the *tabac canadien* is so infamously bad that no sensitive palate can endure it; but I do not despair of improvement, for, as I have mentioned in this Journal before, the best flavoured, softest, and richest tobacco I ever smoked, I grow in 1870 on the vile soil of Joliette. I hope the managers of the exposition will send me samples of all the prize tobaccoes, were it only a pipeful of each, and I will give my decision on the different qualities in a subsequent number of the Journal.

By the bye, Connecticut pays to grow, for sale, as wrappers, but nothing will smoke like the little pointed-leaf, crooked-stemmed Canadian.

The Ranches.—According to Dr. McEachran's account, the cattle at the Alberta ranches have done remarkably well this past winter, though it was the hardest known for twenty years. The losses of unacclimatised stock have only been 25 per cent., and of acclimatised, 15 %, an average loss of 20 per cent. The Dominion Inspector of cattle seems easily satisfied, and the ranching business must be a pretty profitable one, if it can afford to lose one head of stock out of five every year. (1)

Milk.—It seems pretty well ascertained that a great proportion of the really frightful number of deaths owing to *cholera infantum* in Montreal, is due to impure milk. I have been very much surprised lately by seeing cows fed in what I conceive to be a manner dangerous to the cow herself, to her calf, if sucking, and certainly to any young children who may drink the milk she gives. Passing through a pasture close by, I saw a dozen cows eating grains from a brewery, which grains had left the mash-tub at least a week before: they are always sour twelve hours after mashing, but these were putrid, mouldy, and full of maggots. It seems to be the constant practice on the farm in question to throw out the unsaleable grains, of which in summer there are plenty, on to the pastures, and to leave the cows to pick out the best of them. After seeing this, I asked Mr. James Dawes, the proprietor of the cows, if he thought this mode of feeding was not likely to be injurious to the cows, and he told me in reply, that "he thought not: they had always done it"! I do not believe in a moderate quantity of *fresh* grains doing any harm to cows, or injuring their milk, but I know that in our London dairies, the cowkeepers are very cautious in not giving more than at most ¾ of a bushel of grains a day to each cow. One well-known man, who milked 120 cows, told me that a bushel of grains a day was more than any cow could stand for a year, even with unlimited hay, and in the case I am speaking of, the quantity of grains it is that is unlimited. Grass and grains as the sole food of an animal *cannot* be right. If the Messrs Dawes find a difficulty in disposing of the grains in the summer, I should recommend them to do as the farmers in the neighbourhood of Burton on Trent do: ensile the grains and keep them for the winter.

ARTHUR R. JENNER FUST.

Experiments on Ensilage,

Extensive experiments on ensilage, as a cattle food, have been carried on for two years at the Crawley Mill Farm, near the Duke of Bedford's place, Woburn Abbey. The Duke has contributed largely to this deeply interesting work, and the whole has been under the management of Dr. J. Augustus Voelcker, the son of the late chemist to the R. A. S., to whose place the son succeeded at his father's death

The question which the experiments were intended to aim at answering was: "Will bullocks fatten as well on silage as

(1) So said the Star! But at Quebec Dr. McEachran told me the losses of calves on his ranche had been 25 %, besides, I presume, the losses of mature cattle as in the text! A. R. J. F.

on a mixture of roots and chaff?" The silage was in three forms: grass, clover, and oats, of which the grass seems to have been of only moderate quality—rather overripe in fact—the clover very good, and the oat-silage was not used till the second year.

The animals selected for the experiment were eight two-year-old Shorthorn bullocks, divided into two lots of four each, all eight having for some time previous been kept on the same food. The practical question was this: "As cattle in winter require succulent food, and as in certain localities, heavy land for instance, roots are difficult and expensive to grow, and as haymaking is uncertain work in this climate, will the farmer who is unable to grow roots, to mix with hay-chaff, profitably, find an equally good or a better substitute for them both in silage?" Or, again, "Will the farmer who, on account of bad weather unsuitable climate, is unable to make good hay, find that by the system of ensilage he is yet able to save his crop of grass or clover and, independently of the weather, ensure a valuable supply of succulent food for winter keep?"

The foods decided on for the two sets of bullocks were:

1	2
Decorticated cotton-cake.	Decorticated cotton-cake.
Maize meal.	Maize meal.
Hay-chaff.	Grass silage.
Swedes.	

I need hardly say, that as the Committee of the R. A. S. which conducted these experiments was aided by Sir John Lawes, the whole of the conditions of the trials were carried out in the most perfect manner. Each lot of food agreed with the other as nearly as might be, particularly as regards its important constituents, dry matter, woody fibre, and nitrogen. The quantity of purchased food—3 lbs. each of cotton-seed cake and maize meal a head, a day—was not so large in quantity as to exert too great influence on the increase of the beasts; and when one lot got grass silage the other got grass-hay chaff, and if clover silage, the other got clover-hay chaff.

I will not bother my readers with the tables, but condense the results, which are worth considering.

SILO No. 1.

First lot ate per head daily.	3 lbs. cake. 3 " meal 50 " swedes. 9 " hay-chaff.	Second lot ate per head daily.	3 lbs. cake. 3 " meal. 35 " ensilage.

The bullocks cleaned up their troughs, those receiving silage drinking a large quantity of water.

In three weeks, the gain per head was—on roots, $2\frac{3}{4}$ lbs; on silage $1\frac{1}{2}$ lb. This finished silo No. 1., the bullocks on swedes ate 50 lbs a day of that root, and the others $41\frac{1}{2}$ lbs of silage.

SILO No. 2. GRASS.

The bullocks recommenced feeding well, but, after a week, the silage lot began to tire of their food, but this did not last long. One of the root-fed bullocks scoured a little, but, his water being retrenched, did well.

Root-bullocks drank 18 lbs. of water a day.
Silage, do " 55 " " "

In this part of the experiment, mangels took the place of swedes, and the whole gain per head daily, from January 29 to March 30 was:

Bullocks with roots and chaff..... .....$2\frac{1}{3}$ lbs
do with silage .. ..$\frac{11}{12}$ "

SILO No. 3. CLOVER.

Here, as it was found that the bullocks would not eat more than 8 lbs of clover-hay chaff clean, the limits of foods was fixed thus:

	lbs	Dry matter. lbs	Woody fibre lbs.	Nitrogen. lbs.
Mangolds	50	4.92	34	.12
Clover-hay chaff.....	8	6.68	1.82	.21
		11.60	2.16	.33
Clover-silage	57	11 53	3 74	2 05

The bullocks in this experiment that had been receiving roots and hay chaff, got silage, and the reverse.

On April 2nd, the beasts were reweighed, and very shortly the silage-lot took 50 lbs. of silage apiece, and the quantity was increased to 56 lbs., but they did not eat this for long. The silage-bullocks drank about twice as much water as the others. The experiment was continued from the above date up to the first day of June—60 days—when the gain per head daily was found to be:

Roots and clover-hay..... $2\frac{1}{3}$ lbs.
Clover-silage .... $\frac{1}{2}$ lb.

And this ended the trial of four months duration. Not by any means a conclusive trial, as the grass-silage was not of first-class character. But still, the evidence is very strong in favour of roots vs. silage. From the very beginning, the beasts on roots and hay-chaff continued, with one, and that a very temporary exception, to put on fat fast and steadily, showing a daily increase of $2\frac{3}{4}$ lbs., $1\frac{1}{11}$ lbs., $3\frac{1}{2}$ lbs., $1\frac{9}{11}$ lb.; while the silage beasts showed in the same periods: gain $1\frac{1}{4}$ lb.; loss $\frac{5}{11}$ lb.; gain $1\frac{5}{7}$ lb.; gain $\frac{3}{7}$ lb.; or, for the whole of the first two months, a daily grain per head of $2\frac{1}{3}$ lbs. on roots and hay-chaff, against $\frac{1}{2}$ lb. on silage. Then, the experiment being reversed, those bullocks which had been on silage gained $1\frac{1}{3}$ lb., $2\frac{1}{2}$ lbs., 2 lbs., and $3\frac{2}{11}$ lbs. per head daily, when their food was changed to roots and hay; but those which had before done so well on roots being put on silage instead, at first lost $1\frac{1}{4}$ lb., then lost $\frac{1}{6}$ lb.; then gained $1\frac{7}{11}$, and $2\frac{1}{3}$ lbs., per head daily; or for the two months, the daily gain per head on roots and hay-chaff was $2\frac{1}{3}$ lbs.; on silage $\frac{1}{2}$ lb.

The remaining experiments of the series—on sweet and sour silage, and on green-oats silage,—I must defer till next month.

ARTHUR R. JENNER FUST.

Soil-temperature.—Mr. Milton Whitney, of the North Carolina Experiment Station, gives as the result of his observations on "Soil-Temperature," that, contrary to common opinion, he has found that wet soils are not necessarily the coldest. I cannot believe that this is what Mr. Whitney stated before a meeting such as that of the Society of the promotion of Agricultural Science, because every schoolboy knows that evaporation produces cold, and the amount of cold is in proportion to the quantity of moisture. I suspect the paragraph has been condensed into to compact a form. The reason why wet soils are cold is simple enough, as far as it concerns us: the sun, in spring, instead of warming the land, exerts its power in exhausting the humidity, which action produces evaporation and, consequently, cold. If this were not the case, why should the wonderful advance of maturity on drained clay-soils when they are contrasted with

the undrained clays on each side of them be so evident? I dare say that if the temperature of two soils were tested in, say, November, the difference between the wet and the dry soil would not be great; but, try again towards the middle of May, and, if there is any truth in our English experiments in drainage, the difference would be very perceptible.

Again, if land is *surcharged* with water, it is clear the rain that falls must make its way off the surface into the ditches; now, every one will admit that rain brings with it the warmth of the lower strata of air through which it passes; thus, the wet soil does not receive the benefit of the warm showers of spring and summer, and the dry soil does; therefore, wet soils *are* colder, as regards all essential points, than dry soils.

Ewe-milk cheese.—Mercy on us! I see in an article, by M. Chapais, in the French edition of the Journal an allusion to the Roquefort cheese of France. I am glad to see M. Chapais does not recommend this to be made here. Our ewes are an awful sight after the lambs are weaned, and were we to milk them, I do not think 10 per cent. would survive the winter.

M. Chapais, I am glad to observe, speaks very frankly of the demerits of the *quasi*-native sheep. He does not propose to inform this effete race by selection, which he has the good sense to see would take a century or two, but by careful crossing with the Downs. If I had my way, I would send out messengers, with sharp knives, and massacre every Leicester, Lincoln, and Cotswold in this province.

The Veterinary department of Laval University, Quebec.

At the request and with the assistance of the provincial government, the University of Laval has opened a veterinary department at Quebec.

Though the instruction is given in the French language, pupils of all nationalities are freely admitted.

The instruction in veterinary science extends over three years, comprising two terms a year, Christmas and Easter.

The course of lectures begins in the first week in October, at the same time as the course of Law and Medicine, and closes at the beginning of April.

The lectures are on the following subjects, some of which are delivered in the courses of Arts and Medicine, and the others are special, that is to say:

Botany, chemistry, comparative anatomy, special regard being had to the anatomy of domestic animals, practical anatomy, entozoa, physiology, histology, general pathology, veterinary materia medica, veterinary medical and surgical pathology, farriery, and veterinary clinics.

The pupils must have attained at least to their 17th year, and have enjoyed the equivalent of a good, complete course of commercial or industrial education, and consequently, besides their baptismal certificate and a testimonial of good conduct, they must be prepared with a certificate of the Superior or Principal of a commercial or industrial college, showing that they have gone through the above named course with success.

The terms will be $150 for the whole course, or $50 a year, paid at the rate of $25 a term, in advance, at the beginning of each term.

The government has placed at the disposition of the pupils, specially of those of French extraction, (de la langue française), fifteen scholarships, whose occupants may attend all the courses gratuitously.

It is to be hoped that our young fellow countrymen who feel a taste for this study will profit by such an advantage, and, being qualified, will hasten to claim one of these scholarships either by applying to the Rector of the University, to the commissioner of Agriculture of the province of Quebec, or to M. J. A. Couture, the professor.

A hospital is annexed to the veterinary department. The pupils themselves attend the patients brought thither.

There is also a dispensary where poor people's animals are attended gratuitously.

The dispensary is opened every Tuesday and Wednesday from 8 to 9 o'clock a. m., and the pupils under the direction of professor Couture have charge of it.

The pupils attend the veterinary professors in their visits to the stock of their clients, who are numerous. It is in this attendance that they learn the practical part of their business: diagnostics, the preparation of medicines, &c.

For admission, apply to the Rector and the Secretary of the University, or to M. J. A. Couture, director of the veterinary Department of Laval University, Quebec.

(*From the French.*)

Price of meat.—The price of meat in England seems to vary as much as the way of calculating the weight varies there; that is, if any confidence is to be placed in the reports published in newspaper paragraphs. For instance: "The prices of beef and mutton have never been so low in Yorkshire for twenty years as they are at present. Best beef is barely making 7s a stone of 14 lbs. and mutton, 5½d a pound." At the very same date, beef was fetching at Carlisle, not 80 miles off, and in a cheaper district, 7s. 6d. a stone and mutton 8½d a pound. The former scale of prices is more likely to be correct than the latter..

Ontario.—The Ontario Bureau of Industries has just published a digest of the reports made on the 12th of August, by upwards of 600 correspondents, on the probable yield of the principal crops this season.

The *fall-wheat* is not expected to exceed an average of 16 bushels to the acre; five bushels an acre less than the average of the past five years: six million and a-half bushels deficit, equal at present rates to $5,330,000.

Barley is, owing to the draught causing too rapid ripening, very thin in the berry, and will probably prove two or three pounds lighter in the bushel than usual. The total yield is estimated at 2,136,000 bushels less than an average, equal to a deficit of $1,018,000.

Oats are reckoned to be 8,000,000 bushels short of last year, that is to say, 5,000,000 less than an average crop: a deficit of $1,750,000, making in the whole three crops a short return of upwards of eight million dollars.

Peas are about an average crop, but, still, three million bushels below the yield of last year. *Indian corn* is a failure, fodder-corn, &c., are very short, and, unless they have had more rain in Ontario than we have been favoured with, potatoes, turnips and other root-crops will be a total failure. Hay seems to have been an average crop, on account of the increased area

laid down to grass; but the clover-seed is hardly worth threshing and much of this year's seeding will fail of being a plant. A lamentable state of things, but worse in the telling, I doubt not, than the reality warrants. I think if we diminish the reported yield of Manitoba grain by 25 %, and add the same percentage to the yield of Ontario, we shall arrive at a pretty fair statement of facts.

Ottawa Experimental Farm—I see by the papers, that Mr. Shutt, a fellow of the University of Toronto, is appointed to the chair of chemistry at the Central Experimental Farm.

Bridge House Twyford, Hampshire, 27th July, 1887.

My dear Jenner Fust,—I dare say you will be rather surprised, and may I hope, not displeased, at receiving this epistle from me. Knowing from past experience what an interest you take in agriculture, especially when in any way connected with your *friends* the "Hampshire Downs", and as you will see by the address of this that I am now living in the "château fort" of your favourites, I can tell you something about them, and with this intention I now send you a cutting from the County paper, giving a description of one of the famous flocks, now, owing to "hard times", about to be dispersed. What is to become of the poor farmers goodness knows, and this dry summer will, I fear, greatly add to what they have to fight against, for we have had no rain for the last two months, consequently the root crops will be "Nil", and though hay was got in capital order, it is not much of a crop. I actually saw a field of hay cut one day and carried the next, which, though as you know a common event in Canada, does not often happen here!

I am sending this letter to one of my brothers to forward to you, as I don't know where you are at present, or whether you still have the "Agricultural Journal" under your wing.

I don't know whether you would care about hearing from me every now and then should I come across anything that I fancy would interest you (*should n't I?*), but if you like I shall be very glad to write to you, hoping that when you have a spare moment you will drop me a line and tell me how you are getting on and what is going on in Canada, for although I am now settled here, I still take great interest in Canada and in Canadian affairs, and shall always be glad to hear from you.

I do a little in the hunting line in winter and find this a capital place for a poor "*one horse*" man.

With kindest regards and hoping you and yours are flourishing, believe me, yours sincerely,

E. A. CAMPBELL.

TABLE OF CONTENTS

ENGRAVINGS.

CORRESPONDENTS.