

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Continuous pagination/  
Pagination continue

Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/  
Comprend un (des) index

Title on header taken from: /  
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/  
Page de titre de la livraison

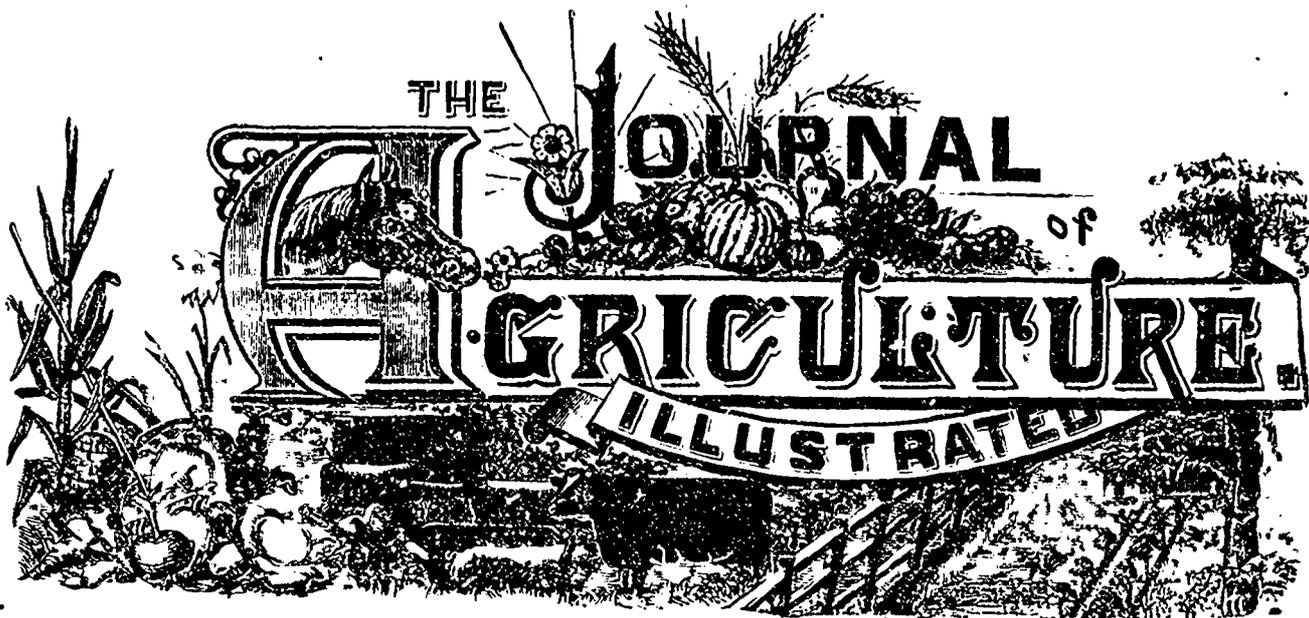
Caption of issue/  
Titre de départ de la livraison

Masthead/  
Générique (périodiques) de la livraison

Additional comments: /  
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X



Published for the Department of Agriculture for the Province of Quebec, (official part) by  
EUSEBE SENECAI & FILS, 20, St. Vincent St. Montreal.

Vol. VIII. No. 9.

MONTREAL, SEPTEMBER 1886.

\$1.00 per annum, in advance.

**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.

## OFFICIAL PART.

### Table of Contents.

De Omnibus Rebus.....	129
Our Engravings.....	131
Dominion and Provincial Exhibition 1886.....	131
Deliberations of the Council of Agriculture.....	132
Architecture.....	133
Discussion.....	134
The Hackney horse.....	134
Making and preserving permanent meadows.....	135
The French-Canadian cow.....	136
Sheep washing.....	137
The Woburn experiments.....	137
The Manurial Value of Ashes.....	138
Dairy Farming.....	138
Relative Value of Roots.....	139
Siloes and Silage in Scotland.....	140
Experiment Grounds of the Rural New-Yorker.....	141
Rotation of Crops.....	141
Alsike clover.....	141
The Oleomargarine Bill.....	141
Hay-Loader.....	142
Rearing Rabbits for profit.....	142
Cross breeding.....	143

### DE OMNIBUS REBUS.

Box 23, Sorel, P. Q., August 4th, 1886.

*Town gardens.*—Sorel is a town, though a small one. In it, are many well arranged gardens, though too many of them are, like my own, too much encumbered by trees to produce flowers in perfection. But by far the prettiest I have seen, as to form and beauty, is the property of M. Gauthier, advocate. Situated in one of the streets running at right angles to the great river, as much has been done for this piece of land as its small extent permits. No great expenditure has been

incurred, but the setting out of the flower-beds, the planting, and the general arrangement of the *jardin potager*, leave little to be desired. A little trimming of the trees in the back ground into the form of an arch, to prolong the distance, would perhaps render the thing perfect.

*Raised beds vs. flat-work.*—It is all very well in England to raise the beds on which small seeds, whether of flowers or of vegetables, are sown, for there, the moisture of the climate secures, in general, uninterrupted growth during the summer months. But, with our sun, I cannot see why every body persists in raising the beds, some to an immoderate height. We all know—at least all of us who have gardens—we all know what a labour watering is. And after all, except on very porous soils, watering, unless it is carried to the extent of drenching, does more harm than good. Some beds, in this good town of Sorel, are actually raised to a height of eighteen inches above the level of the surrounding soil; and, in consequence, the plants, however carefully tended, never attain anything like their proper proportions. And, besides, however earnestly the proprietor or his servants may attend to the watering at first, he or they soon grow tired of the job—coming, as it does, at the end of the day's work—and a doleful fate is the end of those plants.

In this country, beds should be made level with the surface of the ground; and where the soil is very light, a few loads of strong soil should be added to aid the natural earth in retaining moisture. Our pretty square is almost burnt up this season for want of due attention to these things. I sincerely hope that this autumn will not pass away without something being done to change the face of things. No great expense need be incurred: a small hotbed to forward the annuals, would not cost more than five or six dollars, and, in a slack time, a dozen loads of rich heavy soil could be secured.

red for, say, two dollars; a man's wages during the month of April, and an extra hand now and then to keep the grass mown, instead of letting it run up to hay, as it does now: all might be done for about forty-five dollars. The square is really one of the prettiest in the province, and merits more care than it receives.

**Rotation of crops.**—I found, during my recent inspection of the district comprising the counties of De Rouville, Bagot, and Saint-Hyacinthe, that the general rotation of crops, among the better class of farmers, was pretty much the same, namely: Corn, with beans, and potatoes; grain; grass for four years, two years in meadow and two in pasture, followed by grain. A seven years course, in fact, and a very sensible one too. But what surprised me more than anything else was, that in the generality of cases, no root crops of any kind were grown. All along the line of the South-Eastern railway, from Sorel to Saint-Césaire, I only saw one piece of mangolds, no swedes, and no carrots! I know labour is high—one dollar twenty-five cents a day, with board, at Saint-Hugues!—but there are always girls and boys to be had cheap to single after the hoe. A man who understands "chopping out" can get over five acres of roots in a week, easily, and the horse-hoe can manage, with a quick-stopping man and horse, from four to five acres a day. The hand-hoeing does not all come on at once: first the mangolds, then the carrots, and then the swedes, succeeding each other in pleasant order, no great pressure of work hinders careful cleaning, and the succeeding crop of grain will amply repay all the hand-labour expended on the root-crop—judiciously expended, of course, I mean, for I see every day a vast outlay for labour on the root-crop with very small returns.

Carrots, though the best of all roots, are decidedly the most expensive to grow. My plan is to chop them out when very young with a 2½ inch hoe, and the women single the bunches. This season, my young pupil Séraphin Guèvremont by my advice sowed an ounce of swedes to the pound of carrots seed in order to mark the rows for the horse-hoe. The swedes came away rapidly, and looked so tempting, that they were left growing, and the crop is a curious mixture of carrots and swedes. I don't quite like it, but it will pay well, as on the 12th of this month of August the swedes will go to Montreal by boat, and the carrots will profit by their departure.

The effect of one week's neglect in the cultivation of roots may be seen to perfection on Senator Guèvremont's farm! Unfortunately a fire broke out in the farm-buildings, and the trouble and bother of putting up a barn to supply the place of the one destroyed, took up so much time, that the swedes and mangolds, which were waiting for their last horse-hoeing were obliged to be passed over, and the land will be very foul. Rather a bore for me, as I had taken great pains with the preparation of the land, and both the swedes and the mangolds were the finest in the neighbourhood.

**Early Barley.**—Four-rowed Barley was cut here on the 9th of July! The land was manured, ploughed and sown with turnips on the 15th. As the barley was sown on the 23rd April, this gives only 46 days from sowing to cutting. Pretty quick work! The sample is not first-rate of course, but fairish. Senator Guèvremont's two-rowed barley, sown April 27th, was out, dead ripe, August 3rd, and the Manitoba wheat, sown April 22nd, on the same day. The wheat, a little greenish of course. Both wheat and barley were put in deep, with the grubber, and bore the long drought without scalding.

**Superphosphate.**—At Liverpool, superphosphate containing 26% of soluble phosphate of lime is fetching \$9.30 per 2,000 lbs. Here, superphosphate of the same strength sells for \$26.00 per 2,000 lbs. Something like 180% dearer, and yet the apatite from which both are made is at our door here, and in the case of the English article has the cost of a long voyage to be added to its price. Well, I suppose it will all come right some day or other, but I am sure no one can afford to use the manure at the price quoted here.

**Ensilage.**—Though, as all my readers know, a great advocate for root-crops, I differ entirely from Professor Brown as to the value of ensilage. The consensus of opinion, both here and in England, is too unanimous to admit of a doubt as to its suitability as a winter food, for cattle at any rate. Now, though in England many landed proprietors amuse themselves by experimenting on all sorts of now-fangled dodges, in Scotland it is not so. If the Scotch farmer or landlord goes into any unusual course of farming, he does so because he believes it will prove remunerative; and as the number of silos built in Scotland last year is very great—great I mean, in proportion to the acreage—we may safely take it for granted that, if in a country where root-growing has attained its greatest perfection, ensilage is welcomed as a valuable addition to the winter provision, we should be very foolish, were we from laziness or prejudice, to neglect so great a boon.

Hence, in my recent *tournee d'inspection*—a full account of which will appear in the October and following numbers of the Journal—I was not surprised to find that most of the more advanced farmers were seriously interested in the question. Many silos are being built, notably two at Saint-Césaire, by the Hon. J. Chaffers and by M. Aries; four or five at Saint-Hyacinthe, by the College, under the direction of the energetic Messire Chartier, the *procureur* of that establishment, by M. Archambault, manager of the cheese-factory, and provincial inspector of factories, and by Messrs. Pélouquin and Casavant, Saint-Dominique; and two at Saint-Hugues by M. Timothé Brodeur. All these, I fancy, will be built of wood, lined with tarred paper, and more than one of them will contain more than a hundred tons of ensilage! M. Archambault's corn—the large Western sort—stood eleven feet high when I saw it on the 1st of August, and was very thick in the stem and full of growth. He reckons his crop at thirty tons an arpent, equal to thirty-five tons an acre, and in parts, I have no doubt about its coming up to that, but, say, he gets twenty-eight tons all over, that will give, as he has eight acres of it, 244 tons, which, cut however small, will fill up two decent silos.

**Fine oat crop.**—After all my travelling, I had to get home to see the best piece of oats in the country! Poor Sorel sand indeed! Last year, seventy bushels of oats to the acre, and this year I really can't say what there will be. The piece I refer to is on the Fosbrooke farm, now in the hands of Mr. Gylling. It has, to my certain knowledge, had no dung for eight years; when I first saw it, in 1884, it was in stubble, and had yielded 7½ bushels of oats to the acre the previous year: at least that was the average yield of the farm. I ploughed it, cross-ploughed it; Randal-disc-harrowed it, sowed it broadcast with eight pounds of rape-seed to the acre, and two hundred pounds of an inferior mixed manure, fed off the crop with lambs, eating a pint of oats and pease a head per day, and laid it up for the winter in good form. The sheep finished the rape on December 6th, and were ripe fat.

Last year, the piece was sown with onions on the 17th June, no manure, and of course too late to hope for a crop. The onions stood through the winter and were turned under

in the spring—strange to say, three-fourths of them were green, and had every appearance of growing. After this one ploughing, oats, not black Tartars I regret to say, were sown, and harrowed in with the *revolving harrow*, sown with grass-seeds, rolled across the ridges, and there they are to speak for themselves and for the benefits to be derived from a folding of sheep on light land.

*Hay.*—Thirteen thousand carloads of hay from the Western States entered the Boston market, I am told, between the 1st May and the 1st August! If this be the case, I imagine the price of that article will not be very high, in spite of the poorish crop in this province. At Saint-Césaire, I heard, from trustworthy people, that the farmers of that neighbourhood were devoting themselves entirely to the production of hay, having in the autumn of 1885 sold off the greater part of their cow-stock at ludicrously low prices. Incredible as it may seem, cows were selling at that time for from *four dollars to fifteen dollars* a piece. Not being a prophet, I cannot predict what the end of this devotion to one crop will be; but it is pretty clear that, without manure, the land, however good it may be, cannot go on producing hay for ever, and a pretty price will have to be paid for re-stocking the farm when the time of exhaustion has arrived. Moreover, this year, as sometimes happens, the hay in many places was not out until the seed of the timothy was ripe: a crop of seed-timothy scourges the land quite as much as a crop of oats of the same weight!

A curious reason was given me for not growing the large *Rawdon clover*: it produces such a bulky crop that there is great difficulty in making it! Pooh, cut it early, turn it, and put it into cock.

ARTHUR R. JENNER FUST.

OUR ENGRAVINGS.

- English Hackney Mare.*—See article, p. 134.
- Hay gatherer.*—See article, p. 142.
- Rural New Yorker's new barn.*—See article, p. 133.

Dominion and Provincial Exhibition, 1886.

I see by the papers that the above exhibition is to be held at Sherbrooke this year, from the 23rd Sept. to the 2nd Oct. both days inclusive. I have no doubt that the show will prove very attractive. If it fail, it will not be for want of variety. There are prizes offered for the drollest things: for the best Marmot or Woodchuck; for the best Flying-squirrel; for the best Lady-driver!!! However, I dare say the committee of management know how to please the public of their district.

*Roots on heavy land.*—The preparation of heavy land for roots should begin immediately after harvest. A stubble of some kind, free, if possible, from couch-grass and other root-weeds should be chosen for the purpose. First, pass the cultivator both ways across the land, and follow this operation with the harrows and roller until all the weeds are free from earth: after a day or two in the hot sun of August, they will cease to be capable of any further growth.

Having prepared sufficient dung at the rate of, say, fifteen tons to the acre, spread it and plough it in with a sound furrow of seven inches by ten. Draw out the water furrows carefully, taking care there are plenty of them, and keep all cattle out of the field during the remainder of the autumn.

When the land is dry enough to work in the spring, your main object should be to get all the seed-weeds to start into growth before seed-time. To this end, pass the grubber

along the ridges, and, two or three days afterwards, harrow in the same direction. If the autumn furrow was made in proper form, you will find the land as fine as meal at the top. Spring ploughing will give you plenty of clods on heavy land, whereas the treatment I recommend—called with us in England, sowing on the stale furrow—will produce the finest possible seed-bed.

What shall we sow in the way of roots? I say, mangolds, cabbages, and swedes. Not parsnips, for they lie too long in the ground before they come up; and though white Belgian carrots would do well, they are expensive to hoe.

*Mangolds.*—Supposing that your land is ploughed into ten foot ridges, and that the outside rows are to be kept one foot from the open furrows on each side, you will have on each ridge four rows two feet apart, and the same distance will intervene between the outside rows of each pair of ridges. As I prefer a thick crop of moderate sized roots to a thin crop of large roots, I think this space will be enough for all purposes. Having steeped and sprouted the seed, mix it with sand until dry enough to pass through the sower easily. I saw this spring the Comet junior seed drill deposit steeped carrot, parsnip and mangold-seed, beautifully. Mangolds should be sown shallow—not more than three-fourths of an inch deep, and got into the ground as early as possible. Four pounds of seed per acre will be enough.

*Cabbages.*—If cabbage seed could be bought here as cheaply as in England, I should sow the seed where it is to remain just as they do there. But, I see the price in the seedsmen's catalogue is two dollars forty cents a pound, and as at least two pounds an acre would be required, we must be content to make a seed bed, and transplant the crop as usual. A cure for the cabbage caterpillar? plant not less than a couple of thousand cabbages in a piece. (1)

*Swedes.*—May be sown in the same way as mangolds—unsteeped of course. Three to three and a half pounds of seed to the acre will not be found too much on heavy land.

Well, we will suppose the seed sown, the plants up, and nearly ready for singling. How shall we begin the cultivation. What do you say to passing a pair of harrows across the rows? We always do it, when roots are sown on the flat, and a good start it makes. Of course, if you let your plants get eight or nine inches high before beginning the cleaning, you will smother them by harrowing; but if you harrow at the proper time, when the plants are not more than three or four inches high, no damage will ensue from the operation.

The rest of the work is simple enough: horse-hoe frequently, thin and hand-hoe as usual.

But, perhaps, you don't like sowing on the flat; you prefer the drill-system. All right; it is easy enough, and less dung will be required, which is certainly a desideratum. Belgian carrots, too, can be grown on this plan: another recommendation.

After the grubbing, harrowing, &c., mentioned above, the land should be ploughed; grub and harrow until fit to drill, drill up at twenty-four to twenty-seven inches; spread the dung; split the drills; draw the water-furrows; and shut up the field till spring.

When the dust begins to fly, at the end of April or the beginning of May, send the harrows along the drills, taking care that the horses do not step on the drills; re-shape them with the double-mouldboard plough; and they are ready for sowing.

I beg to say that I have practised both these plans myself, and of the two I prefer the latter, though both answer admirably. I do not like earthing up anything, except celery, but in the case of roots on heavy land it might be as well to

(1) The Savoy cabbage, this season seems to be free from the green caterpillars, while the Saint-Denis is devoured. A. R. J. F.

pass the double-mouldboard plough between the rows as a means of facilitating the carting off in autumn. If the horse hoeing is properly carried out, there should be five or six inches of loose mould between the rows of roots, and poaching that about in a moist October would do no end of harm.

ARTHUR R. JENNER FUST.

#### Deliberations of the Council of Agriculture.

(Approved by H. E. the Lieutenant-Governor in Council, June 30th, 1886.)

COUNCIL OF AGRICULTURE OF THE PROVINCE OF QUEBEC.

Quebec, June 9th, 1886.

Present : The Hon. Commissioner of agriculture, the Hon. M. Dionne, and Messrs. Mas-tic, Benoît, Blackwood, E. Casgrain, Martin, A. Casgrain, Lus-sier, Guilbault, Casavant, Lemyre, Marsan, and M. Siméon Lesage, assistant-commissioner of agriculture.

The minutes of the last meeting having been read and approved, the President informed the council that, since the last meeting, the council had suffered a grievous loss by the death of the lamented Rev. M. Pilote, the oldest member of the council, one of the last survivors of the former chamber of agriculture ; whose wise advice and excellent counsels, supported by his devoted application to the study of agriculture, have always been appreciated, not only by this council, but also by all the farmers of the province. The late M. Pilote, by the establishment of the school at Ste-Anne, laid the foundation of agricultural teaching in this country.

M. P. B. Benoît, seconded by Mr. S. N. Blackwood moved :

That the council deeply regrets the death of the Rev. F. Pilote, which has taken place since its last meeting.

That this council deploras the irreparable loss of one of its most distinguished members, a man of marked zeal, an earnest and indefatigable promoter of agricultural instruction, a devoted encourager of all reforms and improvements in agriculture, and an energetic worker in favour of all things tending to the benefit of the agricultural classes in general. (carried.)

The programme of the operations of the agricultural society of Beauce, Div. B., having been read, and found in conformity with the law, was approved.

Was read, the programme of the operations of the society of agriculture of Charlevoix, No. 2, asking leave to hold an agricultural exhibition, and to retain the whole value of the members' subscriptions in seed.

Resolved : That the council approves the former part of the programme, but the society in question must conform to the law which does not permit more than one-half of the members' subscription to be spent in the purchase of seed.

The programme of the society of agriculture of Gaspé, Div. A, No. 1, was read, requesting permission to hold an agricultural exhibition, and to purchase thoroughbred breeding stock.

Resolved . That this permission be given, provided that all the breeding stock bought by this society be proved by pedigrees to be of pure race.

Was read, the programme of operations of the Rimouki agricultural society, asking leave to hold an exhibition of stock. The first regulation of this programme is thus worded : " The maximum of the additional subscriptions, for the purchase of animals and grass-seeds, has been fixed at eight dollars.

After a discussion, M. Benoît, seconded by Mr. Blackwood, moved :

That the president and the secretary of this council be requested to visit and inspect the books of this society, and

to report thereon to the council : and, moreover, the council, with respect to the first regulation of the society, declares that, according to law, it has no right to exact more than one dollar as members' subscription, and no power to expend more than the half of such subscription in the purchase of breeding stock and grass-seed. (Carried.)

A petition was read from the agricultural society No. 2, of Chicoutimi, stating that on the 22nd Feb. last the society had a reserve fund of \$600, and that, in consideration of the exceptional position of the said society, it be allowed to expend the whole of this sum in the purchase of breeding stock and grass-seeds.

Resolved : That this council, taking into consideration the exceptional position of the members of the said society, and the great extent of newly cleared land, grants the prayer of the society, but for this year only, and on the express condition that, for the future, the said society pass no such resolutions as the above without having first obtained permission from this council.

A petition, from the Stanstead agricultural society, was read, praying to be allowed to hold an agricultural exhibition, and also praying that the permanent place for holding exhibitions be fixed at Ayer's Flat, provided that the said society succeed in obtaining an extent of land sufficient for the purpose.

Resolved : That leave be granted to this society to hold an agricultural exhibition ; but as to the fixing upon Ayer's-Flat as the permanent place for its exhibitions, the society must come to an understanding with the municipal council of the county, and make a report of its success to this council in order to obtain its final approbation.

Was read, the programme of the operations of the agricultural society of Témiscouata, requesting, in the 3rd section, permission, beyond its legal obligations, to " purchase seed, Five wheat, white oats, &c., to the amount of double the subscription of \$1 00, for the competition (concours), provided that the supplementary subscription " do not exceed \$4.00.

Resolved . That the council approves the programme of the Témiscouata agricultural society, except the 3rd clause, which is illegal, the law and the council of agriculture neither recognizing nor accepting what the society calls " a supplementary subscription." The secretary cannot in any case deal with more than half of the subscriptions, be they what they may, for the purpose of buying animals or grass-seeds.

And the council adjourned until 2.30 P. M.

SESSION OF 2.30 P. M.

The same being present, the Hon. the Commissioner of agriculture submitted for the approbation of the council a bill relating to the agricultural societies of this province.

M. S. Lesage submitted to the council the rules and forms prepared by the Association Laitière for the establishment of a " Herd-book," for the registration of Canadian cattle and the entry of certain milch-cows in the " Livre d'or ; " the whole in conformity with the resolutions passed and adopted by the council at its last meeting.

M. Marsan, seconded by M. Benoît, moved :

That the rules and forms prepared by the Association Laitière, as to a herd-book for the registration of Canadian cattle be approved. (Carried.)

M. Benoît, seconded by M. A. Casgrain, moved :

That, in conformity with article 3 of the rules of the Association Laitière, Messrs. McEachran, Couture, and Casavant, form a committee for managing the herd book, and for deciding if the qualifications of the cattle presented for registration therein merit that distinction. (Carried.)

M. E. Casgrain, seconded by Dr. Martin, moved :

That, after having considered the conclusion of the report of the committee on agriculture of the Legislative assembly, relative to the establishment of a Provincial breeding stud (Haras), and in conformity with the opinion of the committee as expressed at its last meeting, this council hopes that the government will take means to forward this enterprise as soon as possible. (Carried.)

Mr. Blackwood, seconded by M. Lussier, moved :

That M. E. Casgrain be named a member of the committee charged with the duty of visiting the schools, in place of the late Rev. M. F. Pilote, and that, until the return of the Hon. Gédéon Ouimet, M. A. Casavant be appointed president of the said committee. (Carried.)

M. S. Lesage, on the part of the government, made a statement of the present condition of the *Journal d'agriculture*, and requested the council to take steps to assist that publication.

As regards the present state of the *Journal d'agriculture*, the failure of which would be disgraceful to the province, it was resolved :

That the council of agriculture recommend the Hon. Commissioner of agriculture to procure the amendment of the act of Vict., chap. 8, sect. 5, so as to find means, even by having recourse to the funds not appropriated by the agricultural associations, to prolong the existence of this Journal, and to keep it up until the council shall have found definite means to sustain it permanently.

A letter was read, from Dr. Martel, member for Chambly, requesting the council to recommend in the proper quarter, a grant

in favour of M. Ant. Deslauriers, as an acknowledgment of the efforts made by that gentleman in favour of the cultivation of the vine in the said county

Resolved : That the request of the member for Chambly, in favour of M. Ant. Deslauriers, be submitted to the Hon. the Commissioner of agriculture, who will judge of the reasons which shall be brought forward by M. Deslauriers, and the Hon. Commissioner will decide as to the propriety of granting the request.

M. Le Dr. La Rue, having been introduced by M. Benoit, asked leave to address a few words to the council. Permission having been granted, M. La Rue, after having stated the advantages which, in this judgment, were to be found in the action of the agricultural clubs, requested the council to advise the Hon. Commissioner of agriculture, as an encouragement to these clubs, to devote a part of the annual grant to the county agricultural societies towards the encouragement of the agricultural clubs of this province.

Resolved : That, while admitting that the agricultural clubs may have a certain local influence in each parish, the

council would not think itself justified in diverting part of the grant from the agricultural associations to the agricultural clubs, whose combined action should rather aid the agricultural societies in their praiseworthy efforts to favour progress in agriculture, than paralyse them by separate and sectional action : that, besides, the grants to the societies of agriculture are hardly sufficient to enable them to do all the good expected from them, and that to diminish their grant would be to deprive them of the only source when they can hope to draw the means of discharging their legitimate obligations. And the council then adjourned.

(Signed) GEO. DEBÈS LÉVELLE, Secretary.

Certified true copy.

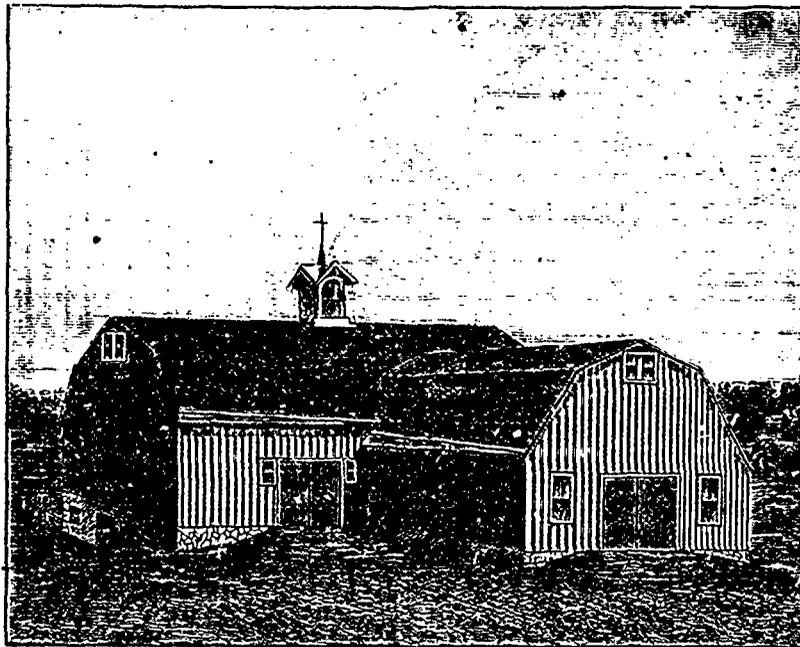
(From the French.)

ARCHITECTURE.

THE NEW BARN ON THE RURAL'S WESTERN N. Y. FARM.

Well, the new barn on the Western New-York Farm is

finished, and like all other farmers, we feel a little justifiable pride in it, and take pleasure in showing it to our friends, and as all our RURAL readers cannot come to see it (how we wish they could ! What a grand old picnic we would have !), we have done the next best thing, by having cuts made, and will show it in the RURAL, and here it is. Fig. 362 shows it in perspective, looking at it from the southeast. The main barn standing north and south on the west side, is 50x90 feet, 20 foot posts. The L, an old barn 30x42, with 16 feet posts,



NEW BARN. Fig. 362.

was turned around against the other barn and recovered. The whole is on a basement wall of stone, two feet thick and nine feet high. The manner of framing the ends of the large barn and side of the L is shown in Fig. 363. The inner bents of the main barn are the invention of the very ingenious builder, Mr. R. L. Cushing, of Maple Street P. O., New York, and show the result of much thought, and are more perfectly adapted to the construction of a large barn than any we have ever before seen. The peculiarity of construction is seen in Fig. 364, which shows one of the centre bents. The main posts are 20 feet high; the purlin posts are 40 feet. By placing the purlin post as shown, the purlin plate comes directly under the center of the upper set of rafters, the foot being supported by a plate on the end of a short beam supported by a long brace. The whole system of upper rafters and roof, being thus carried on the purlin posts, all spreading of rafters or settling of roof is prevented, two things it is almost impossible to avoid in gambrel-roofed barns. This plan also dispenses with all beams and ties across the centre of barn, leaving it entirely unobstructed from end

to end for the use of the hay fork, a very important advantage. This is a new feature in barn building, this being the second one constructed on this plan by Mr. Cushing. We regard it as perfect. Fig. 365 (p. 528) represents the main floor, showing the drive-ways, the granaries in the center; the chutes, down which hay and other fodder are thrown, are shaded, and the dotted lines by one represent the stairs for passing down into the alley between the sheep pens; also the winding stairs for passing down to the feeding alley between the cows; the square about these stairs is a large bin for holding grain for feeding the cows. The bin in the east granary, having the shaded chute by its corner, is also to be used for the same purpose. Fig. 366 represents the basement plan, showing the south part of the main basement, finished for lamb raising and sheep feeding, with racks and water troughs. It also shows the north, 24 feet finished for cow feeding or steer feeding, as desired, with water trough in yard for accommodation of the stock. The basement under the L is to be all used for the storage of roots, or, if desired, a part can be used for storing potatoes; four doors in the floor above will admit them, and one of these is large enough so that barrels can be put in or taken out. The water for the stock in this barn is supplied from the tank shown on page 199 in the illustrations of the other set of barns, and it is brought over in an inch galvanized iron pipe, somewhat over 300 feet long.

This bran will afford room for feeding 30 head of cattle and for raising about 150 winter lambs. The timber of the frame is of first-class hemlock, the finishing lumber of pine, with pine shingles, and the whole thing complete will cost something under \$3,000.

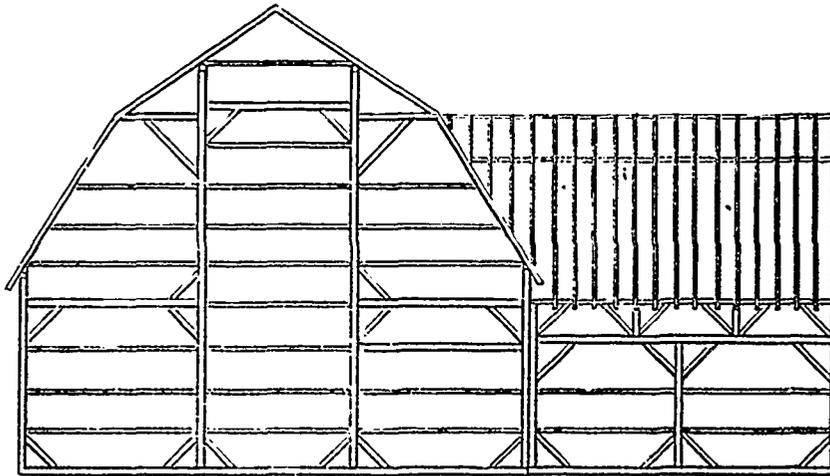


Fig. 363.

DISCUSSION.

S. E. PETTIMAN, DETROIT LINSEED OIL WORKS, DETROIT, MICH.—In the Farmers' Club, page 410, RURAL of June 20, J. T. asks, "Which is the better, all things considered, prices being equal, cotton seed meal or New Process linseed meal?" and the RURAL answers "Cotton Seed Meal." Now we claim that, "all things considered," new-process linseed meal is far superior in results, and in order to have the matter tested and accurately settled, we will supply for test feeding by some fairminded, disinterested party, any required quantity without charge, the RURAL or any manufacturer of cotton-seed meal to furnish a like quantity of that also without charge: the report to be full, and the decision to be based on actual results, "all things considered."

R. N.-Y.—Our answer quoted above, and to which Mr. P. takes exception, was based almost wholly on the composition of the two feeds as shown by the average analyses, which are as follows:

	Cotton seed meal.	New Process linseed meal.
Water.....	8.33	10.12
Ash.....	7.25	5.93
Protein.....	42.06	32.94
Fiber.....	5.69	9.08
Carbo hydrates .....	23.43	38.35
Fat .....	13.24	3.57

It will be seen that cotton-seed meal contains 9.12 per cent. more protein or fleshforming elements, and 9.67 per cent. more fat, but 14.92 per cent. less carbohydrates; but the latter is much more than balanced by the greater value of the fat percent, so that looking at the two feeds from a chemical stand-point only, our answer was correct. We must say however, that in our own experience we greatly prefer the new-process linseed meal of which we feed from 25 to 30 tons each year. We regard either as a very cheap food at the prices for which they are sold, and we desire to feed them largely, but so far, we have been able to feed the cotton-seed

meal in only very moderate quantities without producing ill effects upon the animals to which it is fed. We think this is greatly owing to the very large quantity of fat or free oil which it contains. In this respect it is much like the old-process linseed meal which with us has produced similar results, where fed in large quantities, viz. an injurious looseness of the bowels, and when fed to milch

cows it has given a disagreeable, oily taste to the milk and also to the butter made therefrom. We think the offer made by Mr. Pettiman extremely fair, and we hope the manufacturers of cotton-seed meal will meet it, and that the two will be carefully and fully tested. We suggest that two or three of the Experiment Stations be selected, say Kansas, Missouri and New York, and that similar experiments be made at each, and that the results of each be published with all the data incident to the test. The trouble with us, or with any others of limited facilities, is that we have not the time or the appliances to give accurate results. We vote most emphatically for the trials. (1)

THE HACKNEY HORSE.

The hackney is the general-purpose roadster in England, either under the saddle or in harness. He usually has a considerable proportion of thoroughbred blood, being often the produce of a mare designed to breed an animal more valuable in the market, but the offspring turning out unsuitable for the purpose intended, the breeder is obliged to sell him as a hackney. The characteristics of a good hackney are as follows:

(1) Stuff! If pease be given with old process cake, the more oil there is in it the better. A. R. J. F.

He must be about 15 hands high, compact, and strongly built, with fore and hind parts well muscled. He should be short in the back and well coupled. He should have a deep, wide chest, so that the lungs may have full play. His head should be light and his neck carried well up. His limbs should be clean and bony, with somewhat oblique pasterns. Excellent feet and legs are indispensable to stand the battering on hard roads on which he often travels at the rate of 10 to 12 miles an hour. His movements should be quick and springy. He should be good-tempered and easily controlled, so as to be safe under the saddle or in harness. An excellent specimen of the race is seen, at Fig. —, in the mare Wild Rose, which has won several prizes at English horse shows; for at all such shows in Great Britain there is a special class for hackneys. (1)

**Making and preserving permanent meadows.**

HENRY STEWART.

Condition of meadow essential before seeding; general method of sowing grass seed; quantity of seed; Orchard Grass; Red Top; Blue Grass; seed for moist ground; seed for damp, rich land; seed for dry, sandy and gravelly soil.

When the land intended for a permanent meadow, or indeed, for any meadow at all, is ready for the seed, it should present a level, smooth surface free from furrows or marks of any kind. When harrow marks are left on the surface, the seed will gather in these and the grass will come up in the lines of them, leaving these too thickly sown, and bare lines between them. This is especially objectionable when Orchard Grass is sown, for the habit of this grass being to grow in bunches, anything tending to increase the effect of this habit is to be avoided.

The sowing is to be done with the object of getting a perfectly even and regular distribution of the seed. This is effected by double-sowing as well as by careful scattering of the seed. It is better to take narrow strips and to be sure to leave no vacant lines between them. It is best to sow heavy and light seed separately, as the heavier seed will be cast further than the light. Moreover, the direction of the wind must be consi-

dored. It is best to sow across the wind. A broadcast seeder is very useful for sowing grass seed; but whether the seed is sowed with a machine or by hand, I would sow it double—one sowing across the other—and the clover seed should be sown alone.

My method is to use the first two fingers and thumb, and take up as much seed as can be held in that way for one cast, and to make a cast at every stop. The steps are made by first advancing the left foot an ordinary pace, then bringing up the right foot on the line of the left, and as the right foot is moved to make the cast, throwing the seed up high and with a circular motion of the arm and a twist of the wrist, by which at the end of the cast and just as the seed is let go, the back of the hand is brought uppermost. This throws the seed in a level, broad sheet, which falls evenly from three to four feet on each side of the sower. A cast six feet wide is quite enough to make, and with the quantity of seed taken will use up a peck, or 15 pounds of clover seed and 12 pounds of timothy, to the acre, which is the quantity I prefer to use, thinking some seed in excess is better than having too little. If less is sown, the pinch of seed may be made smaller and less taken at each cast. A very short experience will teach this part of the business to any man who can figure a little.

A cast six feet wide will cover one acre in 2,420 yards, and exactly 11 casts across a 10-acre square field; or 22 casts across a square five-acre field 20 rods wide and long. Each pinch having one-fifteenth part of an ounce, or half a teaspoonfull, will make up precisely 15 pounds of clover seed, (1) and the same bulk at each pinch will expend 12 pounds of timothy.

In sowing Orchard Grass seed, the quantity used is much larger, as two bushels per acre is the least quantity that should be sown. This will give as much as can be taken in a handful with the third and fourth fingers

kept always closed, and the seed grasped between the two first fingers and thumb and the palm of the hand. This will make a full tablespoonful to a cast. Red Top and Blue Grass are sown at the same rate, unless in a mixture with other kinds.

The choice of seed depends upon the kind of soil. Low, moist ground, that is overflowed at any time for a short period,

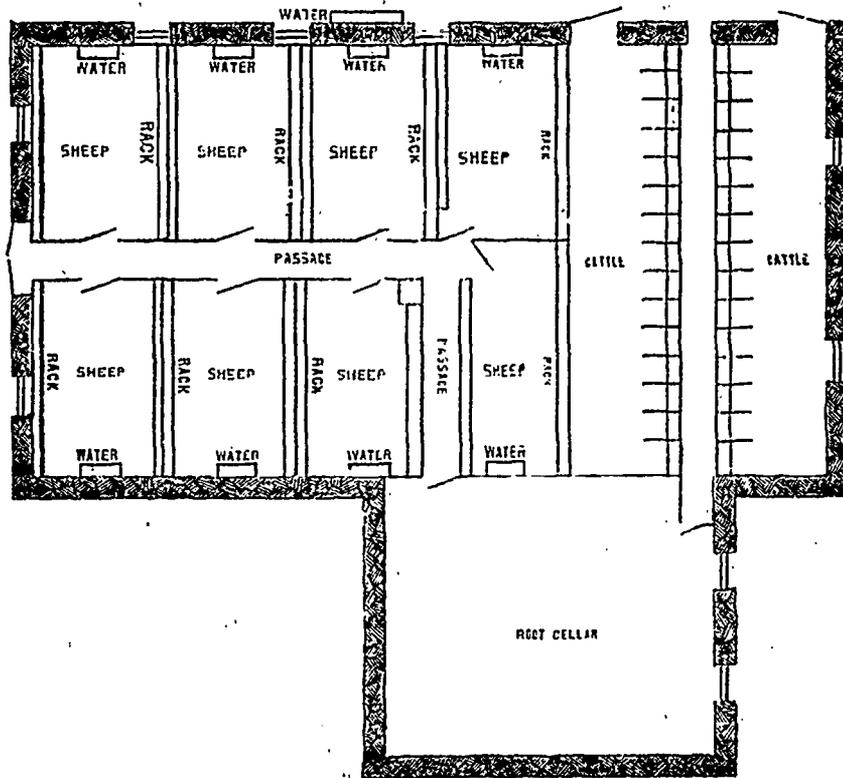


Fig. 366.

(1) The hack is never used in harness, in England. It would spoil him for the saddle, as he would soon learn to lean on to the collar, and become heavy in hand. A. R. J. F.

(1) Seven pounds of clover with timothy is quite enough.

A. R. J. F.

is most suitable to Red Top (*Agrostis vulgaris*), Creeping Bent (*Agrostis stolonifera*), Fowl Meadow Grass (*Poa serotina*), Rough stalked Meadow Grass (*Poa trivialis*), and Perennial Rye Grass (*Lolium perenne*), all of which do well on moist ground, and will not suffer from occasional flooding. Timothy will also do well on such land, and may be added to these in equal quantity, viz., an even proportion to make up two bushels by measure, or about 28 or 30 pounds to the acre. Orchard Grass does exceedingly well in damp, rich ground; but suffers from flooding. I have seeded a newly-cleaned and drained swamp meadow with the above grasses, using six pounds of each to the acre, and it turned out very well, making an early and late crop of hay, and yielding fully three tons to the acre the first year, and before the grass had become firmly established. White Clover came into the drier part of this field naturally as soon as the drains had dried the land, and grew luxuriantly, making a thick, close bottom which helped the bulk of the crop considerably and improved the pasture afterwards. These grasses are in their prime from May to July, and the earlier ones are green again late in the Summer and in the Fall.

For dried land and sandy and gravelly soils, there is no better grass than Orchard Grass, and it is not improved by any mixture with others. It has a habit of stooling, or growing in bunches, but this is not particularly objectionable so long as the quantity of hay and pasture is satisfactory, and I have not yet known an instance in which any complaint of this kind has been made. It is no use fighting against Nature, and when the land is well prepared, the seed is sown as well as possible and covered evenly, and the grass will grow in bunches, it is foolish to make a fuss about it if we get the grass. Orchard Grass is ready for cutting—that is, in full blossom—at the same time as Red Clover, and if anything is sown with either of these it should be the other. But for a permanent grass I know of none better than Orchard Grass for hay or for soiling; and none for pasture, except Kentucky Blue Grass in those places only, however, where the latter thrives the best, as in the West and Southern mountains. Elsewhere Blue Grass will not afford as much pasture as Orchard Grass.

#### THE FRENCH CANADIAN COW.

We are favored with the following letter from Professor Brown, of the Ontario College of Agriculture. All interested in this most valuable breed will be greatly obliged to Professor Brown for the lively interest shown and for his timely and most useful advice:

THE EDITOR THE JOURNAL OF AGRICULTURE

Sir,—I cannot resist telling *The Journal of Agriculture* and *The Dairyman* what I think about the French Canadian cow as to which you have often given your readers some valuable notes and advice. My first introduction to this class of cattle was six years ago, when the late Bishop Fuller of Hamilton wrote me with reference to what he had seen in some of the valleys away north of the St. Lawrence, where then, and now no doubt, the Brittany and Normandy cattle-blood exists as pure as when brought over some one hundred and fifty years ago. I believe that with the exception of the country fringing the bigger highways—land and water—and there only in remote patches, the Quebec cow of to-day is as thorough bred a Jersey, Guernsey, or other type of the French kine as we are getting from Europe. The necessarily in and-in breeding has made many weeds, along with some prominent maintenances of character, and possibly improvements, for even when unsystematised, this plan will now and again tell very

favourably. I know the kind fairly well having some specimens on this farm.

Such being the condition of your common cattle—something for that, more reliable and definite than Ontario grades—why is it you are not doing something to perpetuate and improve them? (1) That question is not sectional only, but clearly national, and surely your provincial government is wise enough to gauge these agricultural times and assist individual enterprise. (2)

I am not an unthinking advocate of “booms,” or other feverish things in any profession, but am able to see a fine future for the native cattle of Quebec under a thoroughly strict and practical registration. No doubt the work would be lengthy and difficult, but so has been that of all other classes. Think you would they not be as correct as the present entries of many Jerseys, Guernseys and Holsteins in Europe, which, with several others, are simply natives of districts, and only possess comparatively modern herd-books? Make a beginning, (3), get up a meeting at Sherbrooke during the exhibition next month, when I hope to be able to get down to help in some judging.

Yours faithfully,  
Guelph, 14th Aug. 1886.

W. BROWN.

Why? (1) Because the Council of Agriculture of this Province, until quite recently, and the Board of Agriculture, before the Council, have, for the last thirty years, systematically and totally ignored this very valuable breed. Even the existence of the breed has been repeatedly denied! And yet, Professor Brown, a comparative stranger to our province, is quite right in his assertion that this French breed not only exists, but that it greatly predominates amongst the agricultural population of French origin, mostly all over the province!

Although unwilling to be unpleasant, we must add here, in view of future usefulness, that if our provincial exhibitions have created, comparatively, so little interest amongst the mass of our agricultural population,—that of French origin in this Province,—it is mainly due to the ostracism, by the exhibition authorities, of all the breeds of cattle to be found amongst the French population—from their noble and most excellent Canadian pony, and their very valuable French cow, down to their small but useful and hardy sheep, &c.—For the last thirty years,—to our personal knowledge and protest,—prizes have been offered—exclusively or nearly so—to breeds of stock of recent importation, in this province.

Even this year, although so much has been proved lately in favor of the French cow, this breed would have been entirely ignored, and in fact is ignored, outside of the timely action of the Lt. Governor and the Premier of this Province, who offer a few special prizes to French-Canadian cattle!

(2) Although little or nothing has been said in the English press, outside of this *Journal*, we are taking an active provincial action in this matter. By the care of the Provincial Department of Agriculture, greatly aided by the Quebec Dairymen's Association, a herd book is being prepared, under the supervision of a well informed and pushing committee. Their report is already in print. A law has been passed lately giving more powers. In fact, the work is progressing favorably, and the selections for the new provincial herd book are to be made with the aid of the best veterinary authorities, and with the greatest care—valuable milk and butter producers only, and of undoubted true breeding—being admissible to registration.

Again, we thank Professor Brown for this valuable and timely communication, and for the interest taken. If he so wishes, we engage to show him, in one small centre alone, over fifty good cows fit for registration!

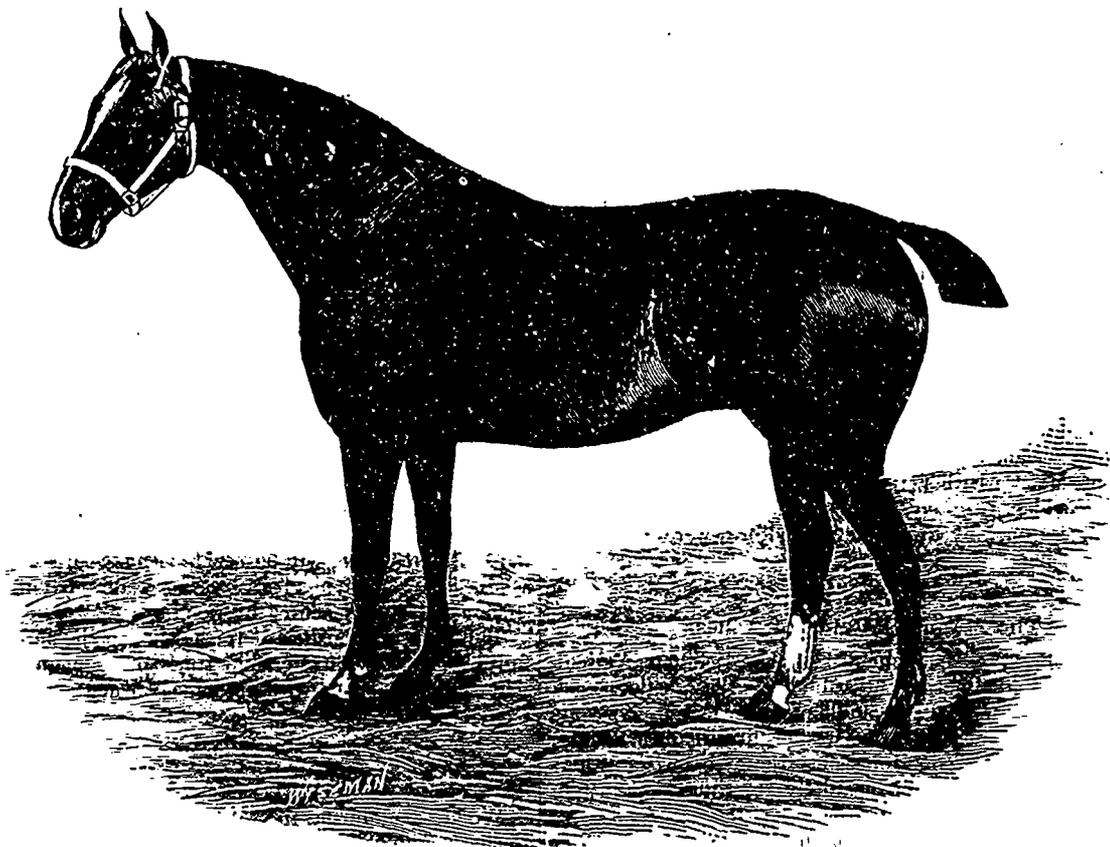
ED. A. BARNARD.

**SHEEP WASHING**

This subject has been discussed quite largely by wool growers in some sections this year, and many concluded to try the experiment of shearing their sheep without washing. It was an experiment which I don't think will be repeated; for but few would have tried it had they known how much loss they were to suffer by it. The old-time rule held to by buyers of the present day of deducting one-third for shrinkage of unwashed wool, is decidedly unjust to the wool grower. Here is my experience in this matter. My flock have averaged about 7½ pounds of well washed wool for five years or more. With that amount of fleece at 27 cents per pound (which price it would have brought had it been washed), I would have realized \$1.95 per head for the wool; as it was, I received less than \$1.78 by selling it at 20 cents per pound. There is no

Voelker (chemist), and Mr. Carruthers, consulting botanist to the Society. The weather was dry, bright and excessively hot.

Dr. Voelker explained that the object of the rotation experiments was to test the accuracy of the Rothamsted table, in which it is shown that while the manurial residue of cotton-cake consumed by stock is worth £5 13s. a ton, that of maize-meal is not worth more than £1 5s. The experiments have now been going on for ten years, and hitherto they had thrown no fresh light on the subject, the crops from the maize-meal dung being quite as good as those from cotton-cake dung. This, it is believed, is due to the soil being so excessively rich in nitrogen that the greater amount of nitrogen in the cotton-cake dung was not required by the crop. With the view of reducing the richness of the land so as to let the



HACKNEY MARE, WILD ROSE. Re-engraved from the London Live-Stock Journal.

doubt that the wool of some sheep will shrink more than that of others by washing; but in my opinion whoever sells his wool at a deduction of less than from 15 to 20 per cent. for the reason that it is not washed, is a loser.

Willow Creek, N. Y.

w.

**THE WOBURN EXPERIMENTS.**

JULY 1.

A pleasant day was spent on the Royal Agricultural Society's experimental fields at Woburn on Thursday, when, under the guidance of the officials of the Society, between forty and fifty members inspected the important series of trials which are being conducted there upon various manures.

Among those present were Sir Massey Lopes, Bart. (president of the Society), Sir John Bennet Lawes, Bart., Dr. Gilbert, Mr. H. M. Jenkins (secretary and editor), Dr

manures have full play, a change in the plan of the experiments was introduced last year. The plots were divided into two parts, one part getting no manure of any kind, and the other the same kinds of manures as before, but in much lesser quantities. Already this plan is beginning to tell, the crops of peas and barley being decidedly better on the plots which were formerly dressed with cotton-cake dung or with its equivalents in artificial stuffs, than on the plots which had been treated with maize-meal dung or with its equivalent in artificial manure. The wheat plant, unfortunately, was so much damaged by the backward spring that no reliable lessons can be learned from it this year. But the appearance of the barley and peas show clearly that the Society is now on a fair way to the solution of the important question taken up for settlement.

In the exhaustive series of experiments with mineral manures, nitrate of soda, ammonia salts, and farm-yard dung,

the appearance of the crops tends so far to corroborate previous experience. The mineral manures—sulphate of potash, sulphate of soda, sulphate of magnesia, and superphosphate of lime—still seem to be of no use by themselves, for the plots that have had no manures of any kind for ten years carry quite as good-looking crops of wheat and barley. But in conjunction with nitrate of soda or salts of ammonia, the mineral manures are of marked service. Continuous dressings of salts of ammonia alone give fair crops, those from dressings of nitrate of soda alone being slightly stronger and darker in colour, indicating that the nitrate of soda acts more quickly.

Certain plots are dressed one year with nitrate of soda or with ammonia salts, the following year they get no manure, and the next nitrate of soda or ammonia salts again, and it is interesting to note that the withholding of the nitrogenous manure for one year at once brings down the crop to the level of the plot that has had no manure for ten years—thus teaching that these nitrogenous manures exhaust themselves in one season. This result is more strikingly shown on the wheat than on the barley plots.

On the plots dressed with farmyard manure the slow action and lasting properties of this manure are well demonstrated. The plots which were for several years dressed with farmyard manure, but have had no manure of any sort since 1881, carry almost as good-looking crops as those which have been getting dung all along—certainly much better than the unmanured plots, showing that the manure applied prior to 1881 is still influencing the crop.

The crops generally on the experimental field are far from promising. The land, as usual, is in as perfect a condition of tilth and cleanliness as could be wished, but the backward season has told seriously upon the grain crops, which at the beginning of June last year were quite as rank as they are today. The experiments on clovers and other seeds were explained by Mr. Carruthers; and in the afternoon the Park Farm, the Abbey Gardens, and Sculpture Gallery at Woburn, kindly thrown open by the Duke of Bedford, were visited by the excursionists.

#### The Manurial Value of Ashes.

Professor R. C. Kedzie, chemist of the Michigan Agricultural College, in estimating the value of ashes, calls potash worth five cents a pound; insoluble phosphoric acid, five cents a pound, and the mixed carbonates of lime and magnesia, one-eighth of a cent a pound, because these materials would cost these sums if purchased separately at wholesale rates in the open market.

When we consider how large an amount of vegetable matter is represented by a small amount of ash, the value of wood ashes for manure becomes evident. Thus only ten pounds of ash remain from the combustion of a cord of hard-wood, and only five pounds from a cord of soft-wood. One hundred pounds of ash represent the mineral matter of eighty-five bushels of wheat, eighty-five bushels of corn, or a ton of timothy hay. But small as is the amount of ash, it is still indispensable for the production of these crops, and must be present in the soil in available form before profitable cultivation is possible.

Let it not be supposed that the ash in all crops is identical in composition. The ash of each class of plants has a composition peculiar to itself, differing in some respects from that of other classes; yet there is a similarity in the ash of all cultivated plants. When the ashes of vegetable substances are served up for any plant by mixing them with the soil, such plant does not of necessity order every dish on the bill of fare, but selects such materials and in such quantities as are adapted to its wants and leaves the balance for some other occasion.

The hard-wood ashes analysed by Professor Kedzie were taken from a kitchen stove, the fuel being a mixture of beech and hard maple. In these ashes the potash constituted twelve and one fourth per cent and phosphoric acid six per cent. One hundred pounds were valued at \$1. In answer to a fruit-grower, who asked which he should give preference to for his fruit orchard, dry hard-wood ashes at \$3 per ton, or fine raw bone at \$38, Professor Kedzie replied: "The hard-wood ashes, by all means."

The leached ashes reported on were taken from a tannery, the leaching having been carried as far as was profitable. In these the potash was 1.6 per cent and phosphoric acid 6.8 per cent. Value of one hundred pounds, fifty-two cents.

Soft-wood ashes analyzed were the ashes from the planings of pine, hemlock, fir and basswood lumber, with some soft coal ash mixed in. This product represented the ash from saw-mill and planing-mill furnaces, and containing twelve per cent potash and four per cent phosphoric acid. One hundred pounds are worth eighty-four cents.

Corn-cob ashes were obtained by burning cobs in the open air. The potash is forty-five per cent and phosphoric acid four and one-half per cent. Value of one hundred pounds, \$2.50.

Tannery ash was obtained from the furnace of a tannery in Lansing, where spent tan and some soft coal were used for fuel. In gathering the specimen an effort was made to exclude the coal ash as far as possible. The potash was two and one-half per cent and phosphoric acid 1.2 per cent. The prolonged steeping of the tanbark appears to have extracted some of the potash and phosphoric acid. Value of one hundred pounds, twenty-two and one half cents.

In regard to soils most benefited by wood ashes, Professor Kedzie says: "Discarding ashes of mineral coal as valueless for manure, it may be said in general terms that the ashes of wood and of land plants of every kind are of value for manure on every kind of soil which has been reduced by cropping, but the greatest benefit is shown upon sandy and porous soils. On these "light soils" crops of every kind, but especially root crops and corn, will be benefited by a dressing of wood ashes. Fruit-trees and fruit-bearing plants having a woody structure will be benefited by wood ashes."

Thirty to fifty bushels of fresh ashes to the acre will be a full dressing, and three or four times that amount of leached ashes may be applied with permanent benefit.

DR. HOSKINS.

#### DAIRY FARMING.

We are glad during the week of the Dairy Conference in Derbyshire to call attention to the very admirable *Journal* of the British Dairy Farmer's Association, which both here and there has done and is doing excellent service. For the present we take one point only—the "datum" line for all future calculations which is obtained by the experience of some years. In the number which has recently been issued, Mr. E. C. Tisdall sums up, into one instructive whole, the results of seven sets of returns which have been made at Islington during the seven consecutive years' milking trials. Taken alone, each of these conclusions had a lesson of interest; taken together, they give an insight into the properties of our more prominent dairy breeds, which is of real importance. The milk of 129 cows has been tested, of which 55 were Shorthorns, either with or without pedigree, 42 were Jerseys; 23 were Guernseys; and 9 were cross-breeds. The average yield of each Shorthorn cow *per diem* was 42.89 lbs. of milk; of each Jersey, 27.34 lb. of milk; of each Guernsey, 27.43 lb. of milk; of each cross-bred, 43.53 lb. The average percentage of butter-fat was, with Guernseys, 4.52, with Jerseys, 4.17; with Shorthorns, 3.62, with cross-breeds, 3.57.

The total solids present showed an average of 13.87 for the Guernsey; of 13.70 for the Jersey; of 12.71 for the cross-breds; and of 12.69 for the Shorthorn.

Relative Value of Roots.

EDS. COUNTRY GENTLEMAN—What is the relative value of carrots and mangel wurtzel, in comparison with oats, for horses and cattle? In looking over the American Agriculturist for 1845, I find on page 78, March number, an account of 1,059 bushels of carrots raised on 1 acre by Mr. Wm. Risely, and 1,101 bushels of mangels on 1 acre by Mr. C. B. Weeks. Mr. Enos also reports 147 bushels of corn per acre—but as his papers were behind in coming to the fair, the premium was awarded to Mr. J. F. Osborn of Cayuga county, N. Y., who made 213½ bushels on 2 acres of land.

Also on page 193, June, 1845, American Agriculturist, I find a report of Mr. Leak, to the South Carolina Agricultural Society, of his making 156,816 pounds of green corn fodder on 1 acre, and it weighed, when dry, 27,297 pounds; so you will see that 70 tons of ensilage has been made in South Carolina.

What a benefit all of us might derive from these lessons if we only went to work right, and could hold on to them. In stead of the vast amount of land which we try to work, would it not be infinitely better and cheaper for us all to put in only ¼ the area, and put the full amount of labour on that part, instead of what we do. Our farmers seem averse and incredulous as to the intensive system of farming, and nearly all are ridiculed, and called "fools" who attempt it. A few who have the means are able to follow it, but it seems hard to get us out of the ways we have so long been in. Carrots and beets are no doubt better (in my opinion) for milch cattle, than for fattening beef and young cattle. I saw an estimate made years ago, in which a bushel of carrots was said to be equal to a bushel of oats. It appears to me that is too much. Carrots at 60 pounds are nearly double oats, at 32 pounds per bushel—but there is a large per cent. more of water in carrots than in dry oats. In 1854, I was at my father's in Hancock county, Ga., with Mr. D. Redmond, then editor of the Southern Cultivator at Augusta, Ga. My father had a few acres of carrots in the garden, and they were fine. Mr. Redmond proposed that we dig a small piece of one row, to see the yield of an acre of such carrots. I think the rate was nearly 1,400 bushels, but that was only a small space, and far different from any field crop. If our farmers would grow more roots and crops of that kind for our cattle, I feel sure we would be highly rewarded for our labor, and stock greatly improved.

Gordon County, Ga., June 18.

WM. H. BONNER.

[Answer by Prof. E. W. STEWART.]

The question, asked by Mr. B., as to the relative value of carrots and mangel beets to oats for horses and cattle, cannot be answered direct, because the former do not furnish a complete ration, while the proportion of the nutritive elements of oats do furnish a complete ration. The value of carrots and beets largely depends upon other food to be given with them. These roots contain a digester called *pectin*, which assists in the digestion of other food, and thus are often rated by practical feeders much higher than their nutritive ingredients will warrant. The most advanced feeders now understand that the price affixed to a food means its value in combination with other food. The high value sometimes placed on carrots as a part of the food for horses has a good foundation. Prof. Mapes was accustomed to say that a bushel of carrots and a bushel of oats fed together were equal to two bushels of oats (a bushel of carrots is nearly double that of oats). This was

a strong statement, but justified under some circumstances. The horse often contracts various diseases of the digestive organs, from eating concentrated food alone. If a bushel of carrots is fed with a bushel of oats, the carrots assist in perfectly digesting the oats, keep the stomach cleansed and healthy, and the horse performs his service as well, and keep in as good condition on eight pounds of oats and sixteen pounds of carrots, as on half a bushel of oats. But a comparison of the chemical constituents of the two foods is not so favourable to the carrots. The following table shows the chemical elements of these foods, and also fodder corn in tassel. I give the digestible nutrients:

	Albumi- noids. lbs.	Carbo- hydrates. lbs.	Fat. lbs.	Value per 100 lbs.
Carrots .....	1.4	12.5	0.2	0.18
Mangels .....	1.1	10.0	0.1	0.15
Oats.....	9.0	43.3	4.7	0.98
Fodder corn in tassel...	1.3	10.0	0.3	0.16

It will here be seen that the value of oats is 98 cents, and carrots only 18 cents per 100 lbs., or carrots contain less than one-fifth of the digestible nutrients of oats. Carrots have 85 per cent water; oats only 14 per cent. Mangels contain 88 per cent water, and have less nutritive matter than carrots. It will thus be seen that these roots have been greatly over-estimated. Yet it is still true that a feeder, who does not know how to keep his work horses in health, had better feed two bushels of oats and one bushel of carrots, than three bushels of oats. But this is making a very large allowance for the healthful influence of the carrots. If horse feeders were careful to give all grain food upon slightly moistened cut hay, so that both are eaten together, with half a pint of flaxseed boiled and mixed in the ration once or twice a week, there would be no necessity for carrots to improve the health. The flaxseed contains a digester in its mucilage, and is a most excellent cleanser or soother of the digestive organs. A handful of linseed-cake meal placed in the feed each day will answer the same purpose.

England is the greatest producer of root crops, and it may be instructive to note their practical use there. T. E. Paulett, one of her most intelligent sheep-feeders, in an essay before the Royal Agricultural Society, gives the weight of Swede turnips eaten by sheep from the age of six months—ewe lambs, to over two-year-old rams, at from 18 to 30 lbs. per head per day. Bullocks consume 120 lbs., beside other food. Swede turnips have the same nutritive value as mangels. The English bullock usually eats 10 lbs. of hay with some chaff, and 6 to 8 lbs. of oil-cake, with its Swedes, and this turnip has the same nutritive ratio as corn meal; it can therefore be compared with it. If 735 lbs. of Swedes are required to balance 100 lbs. of corn meal, let us see how this would work practically in feeding the English bullock; take the 10 lbs. of hay, 7 lbs. of linseed oil-cake, with 15 lbs. of corn meal to balance the Swedes. Who can doubt that this would fatten bullocks faster than with the Swedes? An excess of water is a detriment in fattening, and the bullock would take 105 lbs. of water in the turnips, and this water must all be evaporated and disposed of at the expense of the food. With our cost of labor, does any one believe that we could raise nine tons of turnips or other roots as cheap as one acre of corn?

I have also given, in the table, fodder corn in tassel, to show how completely it balances the roots; and as 20 tons of such fodder corn can be raised and preserved in silo at one-third the expense of 20 tons of roots, for winter feeding, the economy of raising roots in this country is certainly not apparent.

One-third of the enormous crop B mentions of fodder corn as reported from South Carolina would be most encouraging as against any possible root crop. The south has also a most admirable balance for its corn ensilage in decorticated cottonseed meal, beside its cow peas, clover and other nitrogenous crops. Here is a capacity to produce very large ensilage crops, having at hand the most nitrogenous foods to balance this for a milk, butter and fattening ration. Using moderately its available means, it may not be tributary to any part of the earth for its beef, butter, bacon and mutton.

B's views as to the importance of a more intensive system of farming in this country, where the struggle is to work the greatest number of acres rather than to produce the most profitable crops, are very sound. It would be much more profitable to raise 36 bushels of wheat on one acre than to raise this amount on three acres, as we do, and so of most other crops. And the most encouraging out-look of the present is this increased tendency toward a more intensive system of agriculture.

#### Silos and Silage in Scotland.

The late appearance this year of the annual volume issued by the Highland Society is in some measure atoned for by its very lengthy and exhaustive report on "Silos and Silage in Scotland," which must have entailed a good deal of labour, and required extra time to complete. It will be recollected that at the general meeting in January last year it was resolved to appoint a committee "to gather and publish details of a practical nature regarding the use of silage." Shortly thereafter a committee of six was appointed, with Mr. Mackenzie, of Portmore, as convener, who drew up a set of queries regarding the construction of silos and the making and using of silage, and sent them to all persons in Scotland who were known to have silos.

Dr. Aitken, to whom the task of editing the replies and drawing up the report was entrusted, in the absence of Mr. Mackenzie, of Portmore, the convener of the committee, has done his work well. No fewer than ninety-five silos are described by seventy correspondents, of whom about two-thirds have single silos, in some cases divided into compartments by brick or wooden partitions, twelve have two silos each, while one has three, another four, and another five. The capacity of the silos varies from 10 to 900 cubic feet, and the dimensions differ accordingly, length from 7 to 60 ft., with an average of over 20 ft.; width from 8 to 27 ft., but the usual width from 10 to 12 ft., which is found most convenient for placing and removing the covered boards; the depth varies from 4 to 24 ft., but the usual depth is from 10 to 14 ft. The material of which new silos were built were stone, brick, and concrete, with a smooth facing of cement inside to oppose as little friction as possible to the sinking silage. The cost of making a silo varies, of course, with the material of which it is built, the presence or otherwise of pre-existing structures, the kind of labour employed, and many other contingencies.

The crops ensiled are divided into three classes—first, those which are valuable, and which, if not eaten green, are usually made into hay, such as meadow grass, rye grass, clover, tares, and lodged corn; second, those which are frequently allowed to go to waste, or which are used for litter, such as grass from woods and hedge-rows, lawn mowings, rushes, bracken, &c., and coarse hill grasses refused by stock; third, forage of various kinds put into silos by way of experiment, such as comfrey, nettles, thistles, cabbage-leaves, &c.

As regards the first class, the uniform verdict of the exper-

imenters is, that the crops have been preserved in excellent condition as a whole, while the expense of cutting, hauling, and pressing is variously estimated at from 1s. to 8s. per ton—the usual cost being about 3s. per ton. As regards the second class, the success has been no less complete, and we are presented with the substantial fact that hundreds of tons of fodder have been preserved and eaten, which but for the silos would have been in great measure wasted. In the third class, the few experiments recorded appear to have been failures, the method of making good silage from leafy forage not being yet so well understood.

In almost all cases the grasses were ensiled whole; where chaffing was tried it was found to be no great advantage. Tares, rye, and green oats, on the other hand, made very sour silage when put in whole, but were much improved by chaffing. Ensilers are not agreed as to the best time for cutting crops for silage. Some prefer them immature, others at their greatest bulk, and others when full ripe; but crops put in dead ripe have frequently produced poor silage. Crops have been ensiled in all weathers, but the best silage seems to have been made in dry weather, especially when the crops were full of natural sap. The drier the crop the more need of heavy pressure. Various systems of mechanical pressure were tried with varying success; but in most cases the pressure applied was dead-weight, consisting of stones, bricks, concrete blocks, gravel, sand, earth, or water, amounting usually to between 100 and 200 lb per square foot; and where different amounts of pressure were tried the heavier pressure was usually preferred. Nevertheless, good results are said to have been attained with pressure much below 100 lbs. It is not considered necessary to apply pressure when the silo is being filled on consecutive days. But great importance is attached to the heavy tramping of the forage while filling, especially round the walls and the corners. The less the pressure the higher the temperature usually attained by the silage during fermentation; but much depends on the dryness of the forage. If very dry or very wet it does not heat so much.

Four instances of making silage in stacks are recorded, and the success attending the experiments is such as to encourage many to adopt it. The chief requisites for the success of stack silage seems to be that the forage should be pretty wet, and that it should be trodden equally on all sides and not so much in the middle. The heat attained is very great, and the silage is much discoloured, but it is excellent feeding material. There is considerable waste round the sides from mould, but that may be greatly prevented by syringing with brine or other antiseptic solution.

Silage has been given to all classes of stock, sometimes with and sometimes without other feeding, and the uniform experience is that having once eaten it stock prefer it to other kinds of fodder. The daily ration of cattle was about 30, 50, or 70 lb., according as the animal was one or more years old. Calves received 12 lb., and sheep from 7 to 9 lb. A great proportion of the silage was given to dairy cows, from 50 to 70 lb. daily when given alone. The silage in about one-half of the cows was given instead of turnips, either in whole or in part, and in the others it took the place of hay. A mixture of silage and other fodder was usually preferred. In twenty one cases a direct comparison is made between silage and turnips, and in sixteen of these cases silage is considered the better feeding material; in four cases they are regarded as of equal value, and in only one case, in which cabbage-blades and other green stuff formed part of the silage, were turnips considered better.

The universal opinion of the experimenters is, that silage is a great boon to agriculture; and it is the opinion of Dr. Aitken and the committee that we are only at the threshold

(1) Bracken is fern

of the investigation. It should be added that a considerable number of analyses of silage are given in an appendix to the report.

### Experiment Grounds of the Rural New-Yorker.

#### A QUESTION SUBMITTED TO OUR READERS.

In February of last year half of a three-acre lot belonging to an esteemed neighbor was given 11 loads of city stable manure. It was spread evenly over the surface where it remained thus exposed until the following April. The same quantity of manure was placed in a heap on the other half where it remained also until April, having been turned often enough in the interval to prevent burning. It was then spread and the entire field (three acres) was plowed. The plowman noticed that the soil underneath the half upon which the manure was spread in February was mellow, yielding readily to the plow—while the other half upon which the manure had not been spread until April, was so much harder that it was easy to tell whenever the plow passed from one to the other. The manure pile had so shrunk during the winter and covered the acre and a half so sparingly, that Mr. Bogert, the owner, concluded to give it an additional spread of three bags of high-grade complete chemical fertilizer, that is, at the rate of 400 pounds to the acre. The entire field was then harrowed and planted to potatoes. The vines of the acre and a half which had received the stable manure alone, spread in February, were thrifter during the season than those on the other part, and the yield of potatoes was one-quarter more. The entire field was then fitted for rye and seeded to Timothy last Fall, and to clover last Spring. The rye on the half where the stable manure had been spread in February and which had received no chemical fertilizer, was appreciably heavier than that on the other half, and when the rye was cut, as now, the clover was so much thicker as to mark the boundary distinctly. Previous to 1885, the field had been treated in every way the same for many years, and so far as had been noticed the yield on the two halves was the same.

Mr. Bogert called the writer to look at this field and to explain why the two halves should yield so differently under the treatment described. Why was the manure which was spread in February more effective than the combined chemical fertilizers and the same quality and weight of manure which had been kept in a heap and spread in April? We have no satisfactory explanation to offer, and the question is submitted to our readers. It should be considered that the soil under the manure spread in February was mellow and friable as compared with the other part. But is that a sufficient explanation?

#### Rotation of Crops.

The correct theory which underlies and explains a rotation of crops is not yet determined. The farmer finds it an advantageous thing to practise, yet does not surely know why. It was considered of leading importance by the Romans, and many explanations of its use have been imagined, and successively given up. De Candolle taught that the roots of each kind of plant gave off excreta poisonous to itself, while harmless or nutritious to some others. But Tull and Smith, of Lois Weedon, and later Sir J. B. Lawes, have grown the same crop in succession for many years, with no sign of such effect, and it has been commonly done in our own Western culture. Gardeners frequently continue the same crop year after year. These facts disprove also another theory, viz., that minute insects, and parasitic growth, peculiar to each plant get the upper hand when it succeeds itself too continuously. Probably rotation is justified more by convenience than by any absolute necessity for it. Beginning with the

turning down of a coarse sod, the farmer finds a strong free-growing plant best adapted to the rough bed, and the time of plowing, convenience of applying manure, &c., guide him in arranging the further succession. Plants that root deeply and bring nutriment within reach of shallower rooting cereals, should naturally precede them. But even that item of theory is hardly yet established. Another consideration is that crops sown in the fall favor certain winter and spring weeds, which a plowing for any summer crop destroys. Here we find a very important advantage in alternating these, instead of repeating the same crop on the same land, additional to the advantage of famishing out parasitic organisms.

#### ALSIKE.

*P. R., Stroudsburg, Pa.* 1. Would you recommend Alsike Clover as a hay producing plant for meadows? 2. If so, how much seed per acre, and how should it be sown?

Ans—1. Alsike Clover, when grown alone, makes, even on heavy, rich, moist soils (the soils best suited for its growth), only a moderate quantity (say a ton or less per acre) of only fair hay. It "looks big" when growing; but it is found to be very light when cut and cured, and we cannot, after much experience, recommend it for sowing alone, except when desired to produce seeds. It is very valuable for mixing with other seeds when seeding down the lands. Used in this way it fills in the bottom very nicely and stands wet and cold much better than other clovers; it fills up any spots from which they may be killed out, and in these ways it adds several tons to an ordinary meadow in the yield of hay. It should be sown in Spring, and if designed for growing a crop of seed, it should be sown alone, or with Timothy, using six or eight pounds per acre; but for other purposes it should be mixed with the other "grass seeds." Prepare as for ordinary seeding and then add two pounds of Alsike seed for each acre. R. Y. N.

#### The Oleomargarine Bill.

In the United States Senate, July 20, the House bill "defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine," was passed, with an amendment reducing the tax on the latter substance from five cents to two cents per pound, by a vote of 37 to 24. The section as to penalty was also amended so as to read as follows:

"Every person who knowingly sells or offers for sale, or delivers or offers to deliver, any oleomargarine in any other form than in new wooden or paper packages as above described, or who packs in any package any oleomargarine in any manner contrary to law, or who falsely brands any package or affixes a stamp on any package denoting a less amount of tax than that required by law, shall be fined for each offence not more than \$1,000, and be imprisoned not more than two years."

A committee of conference was appointed to present the Senate amendments to the committee of the House, when an effort was unsuccessfully made to consider the subject on the 22d. Action was reached, however, on the 23d, when the House concurred in the Senate amendments, and the bill now goes to the president for consideration.

If this law is introduced as a measure of protection for the producers of genuine butter, the low rate to which the tax on oleomargarine has been reduced, strikes us as quite sufficient to defeat its object entirely.

R. Y. N.

Silots, however constructed, will soon have run their rapid course and be no more. The silage stack is plainly the silage

factory of the future. And perhaps all those gentlemen who are now so eager about their patent rights in pressure chains and pressure apparatus generally will be able to take less comfort than they imagine out of the prophecy. For it is quite upon the cards that silo stacks may ultimately depend on their own pressure only for their safety; and that topping up a heap of green grass with the coarser and less valuable portion of the swath may give all the pressure ultimately found necessary. The first yard in thickness of a lofty silage stack may, indeed, be spoiled, and find its only use to be in the mere pressure which a load of any kind can give; but the first yard wasted in the dung yard, if it has four yards of good solid food under it, may be a cheaper pressure apparatus than any that has been patented.

*Eng. Ag. Gazette.*

We would repeat our advice to farmers not to sleep in the same undergarments worn during the day. It is more than worth the trouble to take off the undershirt as soon as day's labor is finished, rub the body thoroughly with a harsh towel, and put on underclothes which are perfectly dry. (1)

R. Y. N.

Prepare for sowing Rutabagas. Large crops are secured by sowing in drills 18 inches apart and thinning out. One pound of seed to the acre. 15 July. (2)

R. N. Y.

Corn, by far our most important cereal crop, promises a large yield per acre; but it can hardly be as large as the phenomenal output of 1,936,000,000 bushels last year. Then the yield was 26½ bushels per acre on nearly 74,000,000 acres—the first full average in the rate of yield since 1880.

Last year the oat crop was the largest ever grown—629,000,000 bushels on 23,000,000 acres. On a slightly increased acreage, the crop will be much less this year—probably not over 600,000,000 bushels—as it has been seriously injured by drought and insect pests in many parts of the country, but especially in the west.

R. N. Y.

**COSTS AND VALUES.**—Prof. I. P. Roberts finds it cost him 1½ cent per quart to produce milk on the Cornell University farm, and the value of the manure he estimates at 16½ cents a day per cow. This was in an experiment to test the value of the manure by special feeding for the purpose. Only the manure of well-fed milch cows could be so valuable, and to secure or retain this value, the manure must be carefully housed. There ought to be profit in producing milk at 1½ cent per quart, even in these times of low prices.

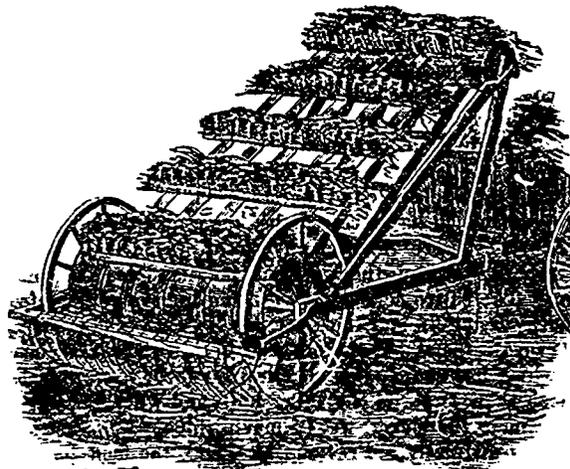
#### HAY LOADER.

This hay loader collects the hay from the ground, raises it to a suitable height, and discharges it upon the hay rack of the wagon. The wheels are rigidly attached to the axle, to which, or to the spokes of the wheels, is secured a large drum. The ends of the axle revolve in bearings near ends of side bars of a frame, the forward part of which is provided with a staple to engage with a hook attached to the rear end of a hay rack. To the upper ends of inclined and properly braced standards secured to the forward ends of the side bars, is journaled a small cylinder. Around the two cylinders are passed endless belts united by cross bars, to which are attached teeth having their outer parts curved forward

slightly, so that they will take hold of the hay more surely, and carry it up the elevator and discharge it more readily at the upper end. Upon a cross bar uniting the rear ends of two bars pivoted to the ends of the axle are held the rake teeth, which are bent forward and then downward, and their lower parts are curved forward until the lower ends are near the ground beneath the axle.

As the machine is drawn forward, the rake teeth collect the hay, and the carrier teeth carry it up over the small cylinder and discharge it into the hay rack. In the rear ends of the side bars of the frame are holes to receive a pin, by which the rake teeth can be raised more or less from the ground. When detached from the rack, the forward end of the machine is supported upon a hinged leg.

This invention has been patented by Mr. B. D. Spilman, of Fort Meade, Dakota.



SPILMAN'S HAY LOADER.

#### REARING RABBITS FOR PROFIT.

[In Answer to the Inquiries of W. J. B., Milton, Ky.]

**EDS. COUNTRY GENTLEMAN**—The rearing of rabbits for sale may be made a profitable employment—no more difficult to manage than the breeding of poultry, and with even better pecuniary results. These animals are hardy, exceedingly prolific and are cheaply fed. They are not subject to any serious diseases, and when kept in a manner consistent with their natural habits, are very little trouble—requiring only room enough in a safely enclosed place on dry ground, and convenient nesting places, to thrive in a satisfactory manner. The flesh is quite as good as that of poultry, and is quite as salable in the markets.

The choice of variety is important, because the flavor of the flesh and the weight depend much upon the selection. The Belgian rabbit is considered the best for market purposes, and grows to a large size. If one should desire to go into the business of rearing these animals for profit, this breed would be the first choice; but as few are kept in this country, it would be necessary to import the stock from England, where it is largely kept by fanciers, or from its native country.

Our northern hare, which grows to the weight of eight or nine pounds, and the English hare of about the same size, might also be kept with profit. The English hare would be preferable, as having long been used to the feeding which would be most conveniently provided, and being already domesticated and kept for the supply of the markets. This animal has been brought to this country for sale during the

(1) In what country do farmers sleep in their flannels? A. R. J. P.

(2) Fancy! Prepare to sow swedes in the middle of July

winters to a small extent, and has been received with favor in the markets, although it has been sold at a high price—viz, three dollars per head.

But whether the large Belgian rabbit or the English hare be chosen, the management would be the same. A large enclosure would be required, not less than ten acres, surrounded by a safe, tight fence, to keep them in and the dogs out. A piece of rough woodland, with plenty of low-growing underbrush and ferns, would be needed, to furnish cover and breeding places, and a grass field or pasture properly provided with acceptable food, with some ground for crops of various roots. A useful improvement upon nature would be to provide dry coops, and distribute these about the preserve for the use of the young litters.

The food of the rabbits and hares consists of clover, grass, tares, pea-vines, cabbage, turnips, both young and in the root; celery, parsley, lettuce, carrots, beets and mangels. A small patch sown to wheat would furnish useful food in the late fall and early spring; while the cabbage, turnips, celery and carrots, with some bran, would provide acceptable food for the winter. A little salt is necessary for the health and these animals are exceedingly fond of it; so much so that it is used as the best of all baits for enticing them into traps.

It would certainly be best to keep only the pure breeds, and not attempt to cross them with our small wild rabbits. These are too small and cheap for profit, and would cost more than they would be worth to get a stock of them alive. I have often thought of the advantages of introducing the English hare for breeding and feeding for market, or else our own northern hare, which is quite as large, but being native to the soil would not be as popular and profitable as the foreign hare or rabbit. This English hare would be a valuable acquisition to our stock of food animals, as it provides the material for a large number and variety of most toothsome dishes, the cookery books having not less than twenty different ways of preparing this animal for the table, and in every one the peculiar tenderness and gamy flavor of the flesh make it most desirable. It is estimated that 50 of these hares and about 100 of the Belgian rabbits can be kept the year round on an acre of ground. More can be kept, of course, if a winter supply of vegetables and roots is provided, for a pound of roots and cabbage heart, with two ounces of bran, will afford abundant provision for a hare or for two rabbits, but a change of ground and a yearly plowing will be necessary to preserve cleanliness. They could be kept much more easily in the South, where the ground is free from deep snows, than in the North, although our native hare is an inhabitant of the most northern States, and is exceedingly abundant in Canada and the northern lake regions, where I have seen the swampy thickets trodden hard by their countless numbers, and have known over 100 taken in snares in a night by one trapper. But the southern winter climate is so much like that of England and the north of Europe, Belgium especially, that the animals would be wholly at home there as far as climate and natural food are concerned.

H. STEWART.

Highlands, N. C.

CROSS BREEDING.

EDS. COUNTRY GENTLEMAN.—It has been found from long experience, and of the fact there is really no doubt, that for the poultry-keeper, whose object is profit, judicious crossing is a decided advantage to his pocket, in that it assists the securing of a better result from his venture than if he restricted himself to pure breeds alone. The reason of this is not far to seek, for the tendency of all pure bred fowls, that are at all carefully bred, is to improve in mere outward characteristics at the expense of inward qualities. And this tendency must certainly be combated if success has to be attained. In

my remarks on the Houdan fowl I mentioned that French poultry breeders have managed to preserve the characteristics of their fowls, and at the same time maintain, if not improve, the economic qualities; but it is to be noted that they place the latter first. This must not be taken to mean that they neglect the outward characteristics, but that they do not make the improvement of these their chief aim, regardless of what the effect may be in other ways. They know that birds which have special outward characteristics are best, either as layers or on the table, and thus they look out for these points and breed for them. But they give the points a much greater breadth of meaning than do English fanciers, and in judging they go upon a different plan to that followed here. In an English show, the judge regards as all important, shape, size, color, comb legs, and general contour, and does not seem to care whether the birds are likely to make good table fowls or first rate layers. Across the English channel the judging is exactly reversed. The points which denote economic qualities are looked for first of all, and then an examination is made for the externals. At the great Paris show I have seen good looking La Flèche thrown because they were rather coarse in comb, a fine comb being regarded as the sign of a fine fleshed table fowl. A Crève with white feathers is there thrown out as in an English show, this being thought a sign of impurity. But the crest is not allowed to settle matters entirely, as is too often the case here, the result of which is seen in the diminished size of the fowls and their lessened fecundity.

From what I have stated it will be seen that the system of breeding adopted in England—that is, among those who go in for keeping show fowls—is to place first those qualities that are of the lesser importance, and hence, it is that we find a deterioration in profitable qualities among so many of our varieties. Crossing very largely remedies this, for it is found that first crosses between suitable breeds at once gives us hardier and more prolific birds than were either of the parents. This crossing, strange to say, is only beneficial between two pure breeds when it is the first cross, and if persisted in afterward soon results in injury to the whole stock. A pure-bred cock introduced into a lot of mongrels will improve them, but a bird so introduced that is himself a cross will not have nearly so much influence. This fact needs to be repeated continually, for farmers and others seem very slow to realize it. The thing is, however, self-evident to all who have in any way tested the question, and it is this fact which accounts for the poor, miserable specimens that we see in so many farm yards. These have generally been crossed for years without thought or reason, except, that, perhaps, a new cock has been introduced now and then, just as fancy dictated—sometimes a Brahma, now a Cochin, then a Game, and so on until the produce is a real mixed up lot, and the cleverest ornithologist would be puzzled to tell what breeds had been concerned in the business.

These results, as seen in too many farm yards, show that while judicious crossing is undoubtedly beneficial, without proper consideration it is positively injurious, and does more harm than good. For instance, a Brahma has a large frame, fairly good meat—though this meat is not in the right place—is a moderate layer, and a good mother. To cross it with a Cochin, which is as large in frame, and something of the same shape and type, would at once injure the quality of the flesh, and impair the productiveness as layers of eggs, and do no good so far as the size is concerned, only improving in one point, if that be an improvement, namely, in the sitting quality. Leghorns and Minorcas are good layers, small eaters, non-sitters, and being essentially laying fowls, are only moderate in quality of flesh. To cross these with Game would certainly improve the quality of the flesh, but it would at the

same time injure the laying powers reduce the size of the eggs laid, and the progeny would be uncertain sitters, and not such as we should care to entrust valuable eggs to. In order, therefore, to obtain the benefits from crossing, it must be done in a proper manner, and the characteristics and qualities of the fowls mated must be so blended as to best secure the object in view, or the result is certain to be a great disappointment.

From what I have here stated, it will be seen that one of the first things to do is to ascertain the characteristics of the fowls which it is proposed to use, both as a breed and as individuals. In all the pure breeds there are leading points that we can look for, and which are to be found in all the varieties specially noted either as layers or as table fowls. For instance, all the very best layers are noticeable as having large combs—that is, large for the size of the fowls themselves. Leghorns, Minorcas, Andalusians and Spanish have large single combs, Hamburgs and Redcaps large rose combs, and Houdans large leaf combs, in every case this being a very prominent feature. I do not say that the comb is the invariable sign of good laying qualities, for Dorkings have large combs, and sometimes Cochins also, though in both these cases the comb is not nearly so large in proportion to the size of the fowls as in those cases just mentioned. With these exceptions, it will be found that the size of the comb is a pretty sure indication of the laying qualities of the birds, and in looking out for good layers, this will be found a pretty safe guide, when in conjunction with a rather small body.

On the other hand, the qualities which indicate the best table fowls are to be looked for in the body rather than in the head, though, as I have already mentioned, in France a small neat comb is regarded as the *sine qua non* of a good table-fowl. Dorkings, Crèves and Game, which stand in the fore front in this section, have thick set bodies, showing the greatest depth from the breast to the back, and have flesh upon the bodies rather than upon the thighs. Game fowls are not bred long on the leg for show purposes, but for producing table-fowls, I prefer them shortish in this respect, and both Dorkings and the best varieties of the French breeds are, or should be, of this stamp. Birds with a lot of flesh on the thighs are not well furnished in that respect on the breast, and as the quality of the meat on the former is decidedly inferior to that on the latter, such fowls are by no means so good for table purposes. Hence it is that the Asiatic varieties, *i. e.*, Brahmans, Cochins, &c. are not in Europe regarded as first-class on the table. What is known as depth of keel should always, therefore, be looked for in selecting birds intended for table purposes. All round fowls are those which, while not excelling in any one quality, are yet good in all. These are very good indeed, where it is found that a fowl which is at once a fairly good layer, and yet a passable table fowl, pays best. Of course, in such a case as this the profit will not arise from the one quality, but from the combination. It is necessary in crossing, therefore, to remember that what is wanted is to have sympathetic breeds put together; that is, breeds which will reproduce their good qualities in an even stronger form in their progeny. Unless care is taken to secure this the crossing will only result in greater hardiness of the fowls, but will not in any way add to the profits of the owner. This hardiness may be at the expense of some intrinsic merit, and thus be purchased too dearly. I do not say that if a man has a good table fowl which he wishes to make a better layer without losing the good table quality, he cannot succeed. But unless he exercises very great care in the selection, he will injure the latter. As a rule, we may take it as certain that a really first class layer cannot be a good table fowl.

STEPHEN BEALE. *H—, England.*

Although tobacco has hardly been a profitable crop for the past year, about the usual area has been planted, chiefly because it is difficult to get out of a long continued routine, and because no other "money crop" can be so easily raised by the growers. The outlook is reported fair, though it is much too early yet to speak definitely. Hops have been a very unprofitable crop the past year. While it costs from 13 cents to 14½ cents a pound to raise and handle them, they have been selling for all the way from four and one-half to 12 cents. There has been some decrease in acreage, chiefly by the plowing up of old yards and the dropping out of those who were not regular growers, but who were induced to enter the business by the high prices that ruled a few years ago. Until a few days ago reports from all the hop-growing sections were exceedingly favorable, and a continuance of over-production and low prices seemed inevitable; but for a few days complaints have been coming from Otsego County and the adjoining hop growing parts of this State to the effect that the yards were in danger of destruction from insect pests and "honeydew" on the vines. (1)

On referring to the *Journal* of the Royal Agricultural Society of 1876, I find the following in Dr. Voelcker's article on value of manure from food:

"Mr. Lawes' estimate of the manure value of different kinds of feeding stuffs however are based on carefully ascertained facts, and so far have a permanent value; but in their application in practice it appears to me that we should be nearer the mark if we deduct from 30 to 40 per cent. from the estimated money value which is given in the table." He says further on: "Mr. Lawes is fully alive to the fact that it is not possible to recover in practice the full estimated manure value of purchased foods, for in his valuable paper on the valuation of unexhausted manure, Vol. XI. of this journal, he says: 'If purchased food be consumed with a root crop by the outgoing tenant, and he takes no crop grown by the manure produced, he should be allowed 17s. for every 20s. of the original manure value of the food if it had been consumed on the land. (2) or 16s. if consumed in yards, Mr. Lawes thus makes a deduction of 20 per cent. from the calculated manure value of the purchased food, while I am inclined to allow the larger deduction of from 30 to 40 per cent. if the food be made into bulky farm yard manure. If the food be consumed by sheep with a root crop, Mr. Lawes' estimated manure value of linseed and similar nitrogenous articles of food, with a deduction of 20 per cent., I believe gives a fair and correct estimate of the practical manure value of oil-cake and similarly constituted foods."

From these quotations we may assume that the late Dr. Voelcker considered that when cake was fed on the land the deduction should be 20 per cent. of its calculated manure value, and when fed in yards the deduction should be 30 to 40 per cent. While therefore it is evident that the late Dr. Voelcker's authority cannot be quoted as sanctioning a general deduction of 40 per cent. from the calculated manure value of a cattle food, it should be pointed out in justice to Mr. Punchard that at the time Dr. Voelcker wrote, ten years ago, his valuations would have been confined to the cake consumed in the last year or two of the tenancy, and it does not appear probable that any material change would be made in Mr. Punchard's estimates if they had been calculated upon our more recent tables, which extend the compensation over eight years.

(1) Hops, to pay should average 15 cents a pound one year with another. Tremendous crop in England this year. A. R. J. F.

(2) *i. e.* by sheep, or by cattle in the pastures.