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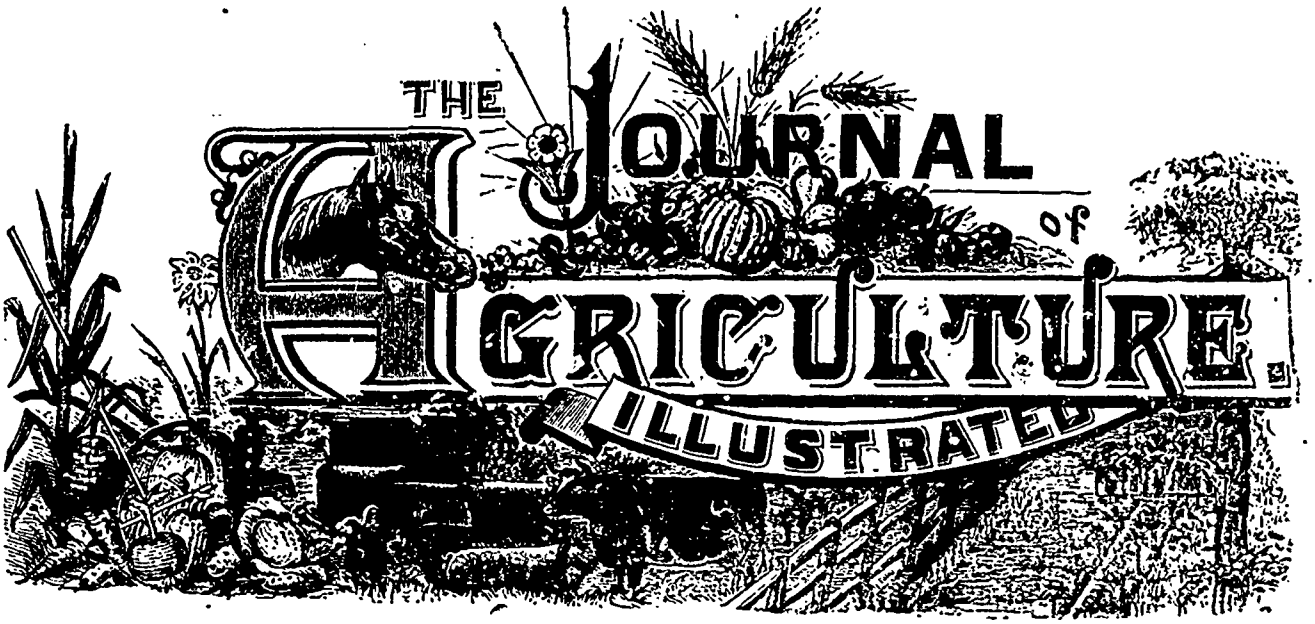

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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—EDITORIAL MATTER. All editorial matter should be addressed to A. R. Jenner Fust, No. 1 Kinkora Avenue, Dorchester Street West, Montreal—or to Ed. A. Barnard, Director of the *Journals of Agriculture*, &c., Quebec.

OFFICIAL PART.

Table of Contents.

Deliberations of the Council of Agriculture, held 29th and 30th October 1890.

Copy of a report of a committee of the Hon. Executive Council, held November 19th, 1890; approved by the Lieutenant-Governor, November 20th, 1890:

On the approval of certain resolutions of the Council of Agriculture.

The Hon. the Commissioner of Agriculture and Colonisation, in a memorandum dated November 19th, 1890, recommends that the resolutions, a copy of which is annexed to the above memorandum, passed by the Council of Agriculture on the 29th and 30th October, 1890, be approved by the Lieutenant-Governor in Council, in conformity with the provisions of article 1614 of the Revised Statutes.

Certified Copy.

(Signed) GUSTAVE GRENIER,
Clerk to the Executive Council.

The resolutions approved above are numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19, of the deliberations of the Council of Agriculture, dated 29th and 30th October, 1890.

The Council met at 10 A. M., the Hon. Joly de Lotbinière in the chair.

Present: The Hon. the Commissioner of Agriculture and Colonisation; the Hons. MM. Ouimet and Sylvestre; Messrs. Blackwood, A. Casgrain, E. Casgrain, Descarrie, Marsan, Moore, Morier, Ness, Péloquin, Pilon, Ricard, Ritchie, Rocheleau, and Valois.

The Hon. M. Dionne was obliged to remain at home on account of a severe accident.

Monseigneur Labelle, Assistant-Commissary, and Dr. Couture, V. S., were also present.

The minutes of the Council held 28th May, 1890, were read and approved.

The resolution in Council appointing Mr. H. D. Moore a member of the Council of Agriculture was read.

A letter was read from Dr. McEachran, D. V. S. excusing himself from attending, as he was unavoidably prevented from doing so.

1. Resolved, unanimously: that the Hon. Joly de Lotbinière be re-elected President of the Council.

2. Resolved, unanimously: that Mr. Pilon be re-elected Vice-president.

Monseigneur Labelle was requested to make an official report on the contract made, in 1883, with MM. E. Senécal & fils, for the printing of the *Journal of Agriculture* and on the execution of the said contract by the firm.

The Commissioner of Agriculture and Colonisation drew the attention of the Council to the opportunity offered to the Agricultural societies of sending, each, one pupil to the agricultural schools; and expressed his regret that up to the present time so little advantage had been taken of it.

3. Resolved, unanimously: That a fresh notice be sent to each of the agricultural societies requesting them to make choice, at the general meeting in December, of a pupil who will be received and maintained *gratis* at one or the other of our agricultural schools, provided he conforms to the regulations therein established.

Resolved, in addition, that the principal newspapers of the province be requested to publish the above resolution.

4. Resolved, unanimously: That a committee on schools, composed of the Hon. M. Ouimet, president, and Messrs. Pilon, Blackwood, Tarte, and Ness, be appointed to visit the agricultural schools at L'Assomption and Ste-Anne de la Pocatière, and report thereon as soon as possible to the president of the Council, for transmission to the Hon. Commissioner.

In reply to the letter of Mr. S. C. Stevenson, secretary to the society of Ayrshire breeders, it was:

5. Resolved, unanimously: That in competitions where prizes are offered by agricultural societies for registered stock, entries be not accepted by the secretary before he has received a regular certificate of their registration.

Proposed by M. E. Casgrain, seconded by Mr. Ness, and carried:

That seeing that a vast number of animals of the sheep and pig species are now registered, many of which are to be found in the possession of the farmers of this province;

And seeing that these animals are infinitely superior to the crosses of all kinds to be met with in our country parts;

And seeing that it would be advantageous to apply to pigs and sheep the principles adopted by the Council of Agriculture to cattle and horses; it be.

6. Resolved: That the agricultural societies be obliged to open distinct classes for registered sheep and pigs in their programme of operations and in their lists of pigs offered at the county and district exhibitions. Moreover; seeing that it is costly and troublesome to make entries on the registers of foreign countries, it is also resolved: That the Council of Agriculture open registers for all pigs and sheep derived from registered animals imported into this province.

Proposed by M. Péloquin, seconded by The Hon. L. Sylvestre.

7. Resolved: that the agricultural societies be allowed to substitute for the clover and timothy seed they annually distribute among their members other sorts of grass-seeds, such as orchard-grass, Hungarian-grass, &c., at the choice of their subscribers.

In reply to a letter from the president of Agricultural Society No. 2 of Charlevoix, it was resolved: 1. That this society must only purchase thoroughbreds. 2. That the secretary of this society may receive the sum of $50.00, in virtue of clause 1618 of the Revised Statutes, always providing that this sum do not exceed the 7 %, granted by law, on the expenditure of the society, the purchase of such animals being therein included.

8. Resolved, unanimously: That Drs. McEachran and Couture be requested to furnish a complete list of those veterinary surgeons whom they can recommend to the agricultural societies for the examination of stallions; and that Messrs. Pilon, A. Casgrain, Blackwood, Décarrie and Ness, form a committee to report on the veterinary surgeons to be recommended to the Council at its next meeting.

In reply to the request of the Saguenay agricultural society, it was resolved that this Society's grant for the current year, 1890, be refused, unless it sells the half-bred stallion it bought, in despite of its own rules and of the rules of the Council, and buy a thoroughbred registered stallion.

In reply to the request of certain farmers of the County of Megantic, praying that the limits of agricultural society No. 2 of the county of Megantic be defined in accordance with the law, which limits seemed to be unknown; it was resolved that the request be transmitted to the two existing societies of the county, and that they be asked to explain their views on this question as soon as possible, in order to enable the Council to decide on the said request at its next meeting.

In reply to a letter from the secretary of society No. 2 of Vaudreuil, advising the combination for the future of the two societies existing at present in this county, it was resolved that the present societies be informed that the Council cannot combine them unless the directors of the two societies make a formal request by a regular resolution passed at their respective annual meetings, and that this must be so as long as the two societies shall continue legally to exist and that clause 1623 of the Revised Statutes shall not apply to their county.

In reply to the Rev. M. Provost, it was resolved that the Council regrets not to be able to grant his request, but it hopes that the farm in question may be entered in the Provincial Competition of Agricultural Merit, which involves no expenditure on the part of the applicant.

It was resolved, in answer to the prayer of society No. 1 of Rimouski, that in view of the circumstances of, and the efforts made by, this society to conform to the rules of the Council, and the impossibility of finding a veterinary surgeon at the proper time, the society be authorised, for this once, to pay over the amount of the prizes given to the stallions at its last exhibition.

In answer to a request for a diploma and a gratuity on the part of M. Edmond Jobin, a licensed (*breveté*) pupil of the agricultural school at Ste-Anne, it was resolved that its consideration be remitted to the next meeting of the Council, in order that the powers of the said Council as regards the request may be ascertained.

9. Resolved, unanimously: That for the future the sums paid for entries to the exhibitions or to the competitions of the best cultivated farms be not considered as forming part of the subscriptions which confer a right to the government-grants.

10. That with a view to the putting into accordance with the law of the practice of the agricultural societies, which after having conformed to the provisions of section 1616 of Revised Statutes of the province for their institution and organisation, when once instituted, or organised, recognise as members all those who pay their annual subscription regularly, without compelling them to sign the declaration mentioned in schedule A of the said section;

And seeing that the introduction of any further formality than the honest payment of the annual subscription would still more increase the difficulties which impede the recruiting of members to fill up the gaps which are continually occurring in these societies;

The Council recommends the amendment of the said section 1616 by the substitution of the following paragraph for the second paragraph of the said section:

"The society shall consist of all those who have signed this declaration, as long as they continue to pay their annual subscription, and of all those who shall, for the future, pay this annual subscription at the proper (*utile*) time. (Carried).

And 6 P. M. having arrived, the Council adjourned to 9 A. M., Thursday, Oct. 30th, 1890.

SESSION OF OCTOBER 30TH, 1890.

11. Resolved that: As the Council of Agriculture has frequently advised the government to adopt measures to favour the establishment of a national stud, and as a grant for this purpose was made in 1836, but never employed;

As the necessity of improving the quality of our horses has long been recognised, and is still more impressively felt now that the American market which lies at our door is closed against us, and we are in consequence obliged to seek new markets so far from us that we can only send thither horses of the finer quality on account of the great expense of carriage;

Therefore, the Council respectfully prays the government to be good enough to propose to the House to renew the vote passed in the session of 1886 for the establishment of a national stud. (Carried.)

The preliminary report of the committee on the Competition of Agricultural Merit was carried.

12. Resolved: That as the report of the judges of the Competition of Agricultural Merit demonstrates the exceptional excellence of the farming of MM. Charles and Zephir Champagne, the result of which is a most striking example of what intelligence, industry, and perseverance can accomplish, even when at the commencement of the work there was no capital available;

And as M. Charles Champagne, now 82 years of age, was the one who cleared the farm now in the Competition and gave to it that impress of altogether exceptional merit which the judges unanimously acknowledge to be visible in it;

And as, at his great age, it is doubtful, without prying into the decrees of Providence, whether he will be with us four years hence, at which date, according to the law, he who shall have the most distinguished himself, during the five years of the Provincial Competition, shall be entitled to receive the gold medal promised to "Great merit";

And seeing that, without any injury to the rights of those who, at the date fixed by the law, shall have the right to compete for this gold medal, the fact that such a prize should be now awarded to M. Charles Champagne would have the effect of showing the country how highly we honour Agriculture, and of encouraging the farmers of the rest of the province to renew their efforts to take a worthy part in the Competition of Agricultural Merit, which is only just at its commencement this year, has to last four more years;

This Council earnestly prays the government to take it upon itself to grant at once, as an exceptional mark of approval, a gold medal to M. Charles Champagne, to be worthily worn by this model Canadian farmer, with the consciousness of having well earned it, during the latter days of such a long and well spent life.

13. Resolved: That the thanks of the Council of Agriculture be offered to Messrs. Blackwood and E. Casgrain, the judges of the Competition of Agricultural Merit, for the zeal and talent with which they have acquitted themselves in discharging their so weighty duties.

14. Resolved: That the government has well deserved of the Province in instituting the Competition of Agricultural Merit, which promises to have the most beneficial results in promoting the advancement of agriculture in the province.

15. Resolved: That the committee named last year to organise the Competition of Agricultural Merit be entrusted with the continuation of the work, and that Messrs. Pilon and Ness be required to act as judges with Messrs. Blackwood and Casgrain.

16. Resolved: That it is of the greatest importance that the report of the judges, and the places of the farms entered in the competition be printed without delay with a view to serve for the education of the public as to the importance of this Competition, and to encourage farmers to take part in it next year; and that a sufficient number of copies be printed for their promulgation throughout the province.

17. Resolved that: As the agricultural society of the county of L'Islet intends to purchase a registered thoroughbred stallion during the course of the winter 1890-1891, in accordance with the regulations of the Council of Agriculture; this society be permitted to employ the grant for next year in this way, conforming themselves always to the rules of the Council.

18. The report of Monseigneur Labelle, Assistant-Commissioner of the Department of Agriculture, on the subject of the contract for the printing of the *Journal of Agriculture*, having been read, the Council adopted its conclusions, and advised the government to cause this contract to be carried out to the letter, especially with regard to the lectures that the MM. Senécal are bound to cause to be delivered at their own cost.

Moreover, the Council requests that a copy of the *Journal of Agriculture* be sent, regularly, to the president and secretary of each society, to keep them well informed of all the official acts of the Council; which copy is to be carefully preserved in the archives of such society.

19. Resolved that: The Council request the government to cause the *Journal of Agriculture* to be sent *gratis* to every member of the Agricultural Societies and of the Agricultural Clubs.

And the Council adjourned.

Certified true copy.

(Signed) ED. A. BARNARD,
Secretary of the Council of Agriculture and
Director of the *Journal of Agriculture*.

Quebec, Oct. 31th, 1890.

(*From the French.*)

1890.

Montreal, November 26th.

When, in 1878, I began to write for this Journal, I little thought I should see the thirteenth volume on the stocks! In that year, when the publication began, the general impression was that it would be brought to a close at the end of the first volume. However, it is still in existence, and, judging from the increased number of advertisements of late, it is at least not decreasing in circulation.

The past season was not a productive one. A sort of blight struck the grain-crops of all kinds as soon as they were above ground, and thenceforth there was no hopes of a good yield. Mr. Thomas Irving, of Logan's Farm, in the Island of Montreal, told me the other day that, in a journey from his home to the Saguenay, he did not see one single field of grain that was not more or less blighted! Barley was a strawy crop, with poor grain both in quality and quantity; oats were worse; pease ran to haulm, and, owing to the continued rain, in many cases never podded; maize, for ensilage, was a bulky crop, but watery, and for grain, a failure in many instances, as it never ripened. As for weeds, they did well, even better than usual, particularly in the corn, one piece of which, at Lachine, presented a sight that surprised me; the corn

being at least a foot shorter than the weeds. But then the farmer never turns his dung heaps, and does not believe in horse-hoeing.

As for potatoes, they were lamentably attacked by the disease, many an acre on the low lands was never dug at all, and it is a difficult thing in this town of Montreal to find a bag of sound ones. Down below Quebec, however, things seem to be better as regards this crop, and I expect 20 bags up from Métis shortly, where, I hear, the disease did not prevail.

The root-crop, where grown, of course did well, but, unfortunately, except in the neighbourhood of Montreal and in a few parishes in the Eastern-Townships, the acreage grown is too trifling to have much effect on the general prosperity of the country.

Grass was abundant from one end of the season to the other; as how could it be otherwise? But the quality, as always happens in such a dripping summer, was *washy*, and though the cows milked copiously, the milk was poor, and all horned animals were in a perpetual state of diarrhœa; consequently, the young ones did not thrive, and the grass-fed beef I never saw come into the market in worse condition. My excellent butcher, M. Richard, of Bonsecours Market, told me, in September, that he did not know where to look for a good, a really good beast. Lambs, too, made but little improvement as far as flesh goes, and never carried less internal fat. The good that might have been done by the administration of a few tons of the superabundant hay-crop of 1889 to cattle in the pastures during the past summer is unknown, but I regret to say that I never once saw it in operation.

As for the wheat-crop, I hardly saw any growing, and a good job too, for it must have been a complete failure except on the best light lands.

A nasty season altogether!

DE OMNIBUS REBUS.

Farms on shares.—I was speaking the other day about the practice of taking farms on shares, and mentioning that in Mr. Barnard's opinion, it is far wiser to agree with landowners for a certain fixed money payment. This reminds me of a conversation I had in 1886 with Dr. Bruneau, of Sorel, as to his root-crop. The Dr. remarked that, perhaps, it seemed to me that he had not enough acres in roots in proportion to the size of his farm, but, continued he, "what would be the advantage of a large crop of roots to me, considering that I should have to give half of it to my landlord?" Indeed, I do not wonder at his observation, for it would be a nuisance after expending labour and manure on an acre of swedes to have to resign, say, ten tons to the proprietor. Even at $2.50 a ton, that would make the rent equal to $25.00 an acre. And, then, the subsequent crop of oats, say, would be at least 30 bushels, and half of that would be worth $6.00, making the average rent for the two years $15.50 an acre. I take it, very little land, except in the neighbourhood of such towns as Montreal, Quebec, &c., is worth more than $4.00 an acre per annum, and even of such land as that there is not an abundance. The average rent of England is a pound ($5.00) an acre.

Butter-preservation.—New-Zealand is rapidly coming to the front as a producer of dairy-goods. Its cheese sent to England seems to be very good, but the long sea voyage appears to be inimical to the keeping quality of butter. Hence, as the average price of that comestible at home only averages ten cents a pound, it is not surprising that the colonists should try every means of preserving it in proper condition for exportation. After many experiments, Messrs Stevens and Mountfort, of Fielding, N. Z. have brought out an invention by which butter can be preserved without the addition of salt or any antiseptic compound. The process is as follow: The butter is placed in tin pans and covered with a lid to which an air-pump can be affixed. The lid is then soldered into its place, the air exhausted from the pan, and an automatic valve closes the orifice, which is covered up air-tight by a cap soldered to the lid. Samples of butter preserved in this way during three months have been examined by experts, and have been pronounced to be as fresh as on the day they were churned!

Now, if the process can be depended upon, and I see no reason to doubt its efficacity, the whole question of exporting butter from this province to the West Indies, or, in fact, to any other ports, would seemed to be solved, and as the apparatus is evidently an inexpensive one, I hope Mr. McCarthy will set about giving the process a fair trial before the next butter-making season opens.

The Chrysanthemum.—The exhibition of this flower by the gardeners of Montreal, in November, was a very creditable one. To me, the plant is more interesting than admirable, but I can understand the passion some people have for growing it; just as I have passion for growing tomatoes, though when grown, I don't care two straws about them. Perhaps sentiment may have something to do with my indifference to the beauty of the chrysanthemum, as when once the leaves of the trees have turned color in the autumn, I would rather not see flowers of any kind until

**** pulsam hiemem Sol aureus egit*
Sub terras, cœlumque æstivâ luce reclusit;

as our brother Vergil says.

The Chrysanthemum, the original color of which seems from the derivation of the word — *chrysos* gold, and *anthos* flower—to have been yellow, belongs to the same natural order as the daisy. Its origin is very remote. Cultivated varieties have been in existence in China for at least two thousand five hundred years, and are supposed to have been derived from an indigenous plant, the *chrysanthemum indicum*, the flower of which is small, single, and of a yellow color.

In 1824, there were about thirty varieties growing in the R. H. Society's gardens at Chiswick, and in 1826 the number had increased to fifty. Now, there are in England upwards of four hundred societies, with a membership of one hundred thousand, which devote their attention to the cultivation of this flower!

The Hamilton Fertilisers.—M. Séraphin Guèvremont, of Sorel, writes me word that: "The land on which we spread the artificial manure you sent us in the spring has yielded from 12 % to 15 % more bushels of swedes than the adjoining part that had none; that is, from 100 to 120 bushels more to the acre." Taking swedes to be worth 10 cents a bushel at Sorel, this would be equal to an additional return of from $10.00 to $12.00 an acre. All the land received a moderate dressing of common village dung.

I need hardly say that, as the fertilisers cost about $3.00 an acre, this experiment turned out a profitable one.

Black Tartar oats.—Last spring, I sent M. Guèvremont two bushels of Black Tartar oats, requesting him to sow them on ⅔ of an *arpent* of land and to report the yield. This is what he says about them: "The black oats have turned out very well. We have thirty bushels of them. They have yielded much better than the others we sowed, and we are very much pleased with them."

Now, 30 bushels from ⅔ of an *arpent* are equal to 45 to the arpent, and that is equal to 53 to the acre, which considering the season, is not a bad crop, though it might have been considerably increased by a little more attention to the harrowing in of the seed and the subsequent rolling. The reiteration of this species of advice may seem tiresome; but as it is aimed at one of the greatest defects of the province, I cannot help thinking it may, in the long run, do some good. Nine-tenths of the farmers in the more backward parts of the country imagine that harrows are intended to cover the seed with earth and nothing more. This is quite a mistake: a good drill puts the seed in and covers it, but that is not enough, the land must be cultivated, if you expect a crop: See next article.

24th November 1890.

A. R. JENNER FUST, ESQ.

Dear Sir,—Last summer, I cleared and stumped acres of the best alluvial or intervale land and had the same *limed* and plowed in the fall. I intend to have the land plowed again next spring and sown in barley with grass seed. Now, if it was not too much trouble for you, I would feel much obliged to have answers to the following questions:

1. Could the spring *ploughing* be done with the grubber or cultivator? The soil is deep, but very friable.
2. Could I sow with a drill?
3. What is the best drill and where could I buy it?
4. Are there grain drills which sow and cover the seed? Where could I get one and how much does it cost?
5. Would you advise for seed the double or four-row barley?

My land is in Baie des Chaleurs, six miles from the sea, in rear of Maria, the exposure towards the North, and surrounded by mountains. The geological formation is silurian; the forest comprises elm trees, of extraordinary large proportions and numbers, ash trees, alders, measuring on an average four inches in diameter and of a length from 15 to 20 feet. There was no lime in the soil, as seems to indicate the presence of ferns (fougère) which in many places had a height of over 5 feet.

I have the honor to be your humble servant,

J. C. LANGELIER,
Dep. Prov. Registrar.

In reply to the above questions, I beg to say that:

1. The spring work can be done much better with the grubber or cultivator, provided the fall furrow was not laid *too flat*.
2. If there are no roots or stones to break the implement, of course a drill could be used and with advantage.
3. Mr. Latimer, of Montreal, can supply a drill, and its selection I will look after, if Mr. Langelier would like me to do so.
4. I cannot recommend any drill that professes to do half a dozen things at once. A good drill costs about $55 or $60.
5. I should not advise sowing barley on newly cleared alluvial soils. Oats are the grain for that sort of land, and, particularly as it has been limed, I should expect a yield of from 70 to 80 bushels of Black Tartar oats to the acre, if the following system of cultivation be followed:

As soon as the land is perfectly dry, slip the *harrows* across and along the ridges; pass the *grubber* across the second stroke of the harrows and then give two more harrowings as before: the land ought then to be fit for the *drill*, but the farmer must judge of that, whether or no, by the *tread* of the land: if the foot meets with equal resistance both at heel and toe, and if the toe of the boot, on being drawn along across the ridges, makes an easy travel of it, and meets with no lumps that are not easily thrust aside, the land is fit to sow.

With the drill, I should sow, on land in the condition M. Langelier mentions, 3½ bushels of oats to the acre imperial, or 3 bushels to the arpent a double stroke of the harrows and a rolling will complete the job. The advantage of the drill is that all the seed is deposited at the same depth, therefore, it all sprouts at the same time, and, generally speaking, it all ripens at the same time. Broadcast requires half-a-bushel more seed to the acre, and the process of sowing is as follows:

A double stroke of the harrows, as before, that is along and cross; then the sowing, followed by a stroke of the grubber, to let the seed into the ground, after which as many harrowings as are necessary to make the land perfectly friable throughout, and a rolling ends the story.

The grass-seeds may be sown after the last harrowing, in either case, and the rolling will give them covering enough. If, however, you have a chain-harrow, I should recommend you to pass it over the grass-seeds, before rolling, or a bush-harrow would do: but the work of the chain-harrow is lovely.

If you *must* sow barley, I should, if I were you, try the one-half of the piece in 2-rowed and the other in 4-rowed; but I never either saw or heard of a good sample of *malting*-barley on new land. As for quantities of seed, 2¾ bushels of 2-rowed and 2½ of 4-rowed will be enough for an *imperial* acre, if drilled; rather more broadcast.

I should be very glad to hear from you after your crop of either grain is harvested and threshed.

Lastly; harrow, harrow, harrow!

ARTHUR R. JENNER FUST.

"GOOD, roomy cows" in England are worth from $100 to $130 apiece," says the Montreal *Journal of Agriculture*. Beef breeds, we suppose, but England buys fully half her butter.—*Vermont watchman*.

Yes, dear Dr Hoskins, these cows are "Dairy-shorthorns," and are the most popular of all breeds, giving an average of from 700 to 800 gallons of milk a year, and weighing, at the end of their time, from 800 lbs to 1,000 lbs, the carcass! England may buy fully half her butter, but please remember that she is a very small country, with an enormous population. A portrait of Victoria, in the last number of the Journal, gives a very good idea of what a Dairy-shorthorn cow is like.

The Convention of the Quebec Dairymen's Association.—The annual meeting of this association took place, at Sorel, on the 26th of November. It was, as it deserves to be, very well attended, and I regret very much that I was unable to be present, but an attack of my old enemy, inflammation, &c., prevented me from taking the journey. I should like to have heard my friend M. Séraphin Guèvremont's lecture on hoed-crops. By the bye, talking of hoed-crops, I may as well mention that the usual cost of getting up and filling into the carts of a crop of from 30 to 40 tons of mangels, the average crop of this season in England, is, according to the London Agricultural Gazette, from $1.50 to $1.75 an acre, equal to rather less than 5 cents a ton.

Crops.—MANGEL.—G. W. D.—Will you kindly inform me in your "Correspondents' Column," whether in saying that thirty to forty tons of mangel wurzel per acre will be quite within the average this year, you speak of the cleaned roots as they are stored, or whether the leaves also are weighed? When you speak of 6s. or 7s. an acre for getting up and cleaning the roots, is the filling into carts included in the price? [We mean roots stripped of their leaves, but cer-

tainly not cleaned for use. The 6s. or 7s. would include filling into the carts. We never used such an expression as getting up and cleaning the roots, as we expressly said that they must not be cleaned, and gave reasons. Both the questions asked are fully answered in the article in question, had the reader only taken the trouble to look.—*Ig. Gazette.*

The reason why mangels should not be cleaned is, that the act of cleaning off the trifling amount of dirt clinging to the roots is likely to break them, and thereby cause the mangels to bleed and rot. Swedes are always topped, tailed, *and cleaned.*

CREAMERIES BUTTER-MAKING.

(Continued.)

I do not intend to leave this subject until I have exhausted it, and to do that I have still much to say: I have to impress upon my readers many important points, the results of patient observation and of scientific experiments.

My lecture to-day will be devoted to the elucidation of certain processes, all of which are of the greatest importance in the manufacture of butter.

It has long been ascertained that the yield of butter and its keeping quality vary directly with the degree to which the cream is lowered on its exit from the separator. By rapid cooling, you get the twofold result of a better yield of butter and a superior keeping article. The cooling, it is true, diminishes the flavour, but this can be remedied by allowing 48 hours to elapse between skimming and churning, and setting the cream, 24 hours after cooling, in a place where it can gradually rise to a temperature of 60° to 65° F.

As to the cooling of the cream, it is not enough, in my opinion, to set the pans or pails containing it in running water or to pour it into a vat surrounded by cold water. Experience has proved to me that by letting it run in a thin sheet over a refrigerator the result was far more satisfactory, —since in this way an immediate cooling of every atom of the cream is brought about, whilst by the use of vats, pails, &c., refrigeration can only go on slowly, and is but too often incompletely achieved.

Another advantage attached to the use of the refrigerator is that it gets rid of the froth bubbles which all separators produce, and which are often very injurious to the butter. This froth is in reality an abnormal absorption of air by the cream, caused by the rapid revolution of the separator. It is easy to see that if the cream is allowed to run over the refrigerator in a thin sheet, the air will be disengaged from the cream, and the froth or bubbles will vanish.

One of the chief evils of this frothy cream is the production of a butter completely white; this is caused by the decomposition arising from the air held in excess, and hence the butter has an inferior appearance, with white patches in the yellow mass, and always fetches a lower price.

Unfortunately, there are as yet no good, satisfactory refrigerators here, but I hope that before the opening of the next season, one will be invented which will do its work properly. (1)

Rapid cooling and subsequent acidification of the cream before churning are the grand secrets for obtaining the greatest possible yield of the finest flavoured butter of the best keeping quality.

I have been speaking exclusively of the cooling of the cream, but I will not leave this subject without saying that, if farmers understood their own interests, they would, every one of them, also cool their milk immediately after milking, and at the same time give it a through aeration.

The effect of the cooling of milk after its is drawn from the cow is to make it lose its sliminess: the fatty globules, too, lose their adhesiveness, and nothing hinders their rise to the surface: this is the true explanation of the Swartz plan. In this case, a much greater yield of butter follows, since all the globules rise or are separated, according to the method of skimming pursued.

When the separator is to be used, it is quite as useful to cool the milk after milking. Thus treated, the skimming will proceed better and more quickly, the butter will be of finer quality, and will, in consequence, fetch a higher price.

The aeration of the milk will carry off the bad taste it may have acquired from various causes, and I particularly recommend its practice where a superior, well flavoured butter is desired.

In my next article, the last of this series, I shall treat the subject of ice-houses.

E. MACCARTHY.

(1) Why should not the refrigerator universally used in breweries to cool the worts, and which I can, from experience say is perfect, be adapted to this work of cooling the cream? The holes of the receiving trough would have to be a little enlarged, otherwise, as far as I can see, no alteration would be needed. Cold water runs *through* a succession of pipes, one above another, and the cream would run *over* one pipe after another, parting with its heat in its descent until it leaves the last pipe at the temperature of the incoming water. Of course, the advantages of the cream's perfect aeration and of its running *outside* the pipes, would be very great.

Advise to Butter-Makers.

I have often observed the serious error certain makers of butter fall into in churning together creams of different ages.

Never churn fresh cream with staler cream.

The effect of this is is that the butter separates from the staler cream more quickly than from the fresh. If you mix two creams, one 24 and the other 48 hours old, the butter will separate from the latter much sooner, and you will suppose the churning is finished; whereas, at that point of time, the butter of the 24 hours cream is only partly formed, and a notable proportion of it will remain in the butter-milk, causing a serious loss in the yield. E. M. C.

Dairy-shorthorns.—The first-prize winner at the annual Dairy-show in London, Eng., was again this year a shorthorn. Last year, it will, perhaps, be remembered, an extraordinary Jersey took the first, but in 1888, the first and second shorthorns' marks exceeded the first Jersey's by 40 °/₀ and the second Jersey's by 50 °/₀, the shorthorn *heifers'* marks, 91 and 85, being very little inferior to those of the Jersey *cows'*, 97.3 and 88.3. And yet these shorthorns are, as Dr. Hoskins says, of the "beef-breed"!

At the Chicago Fat-stock show, a shorthorn ox won the first prize offered for all breeds, and though a Hereford was adjudged to have the pull over him for superior quality of meat, the shorthorn won the first prize for the most important point: percentage of available meat to carcass. Sir John Lawes' table of the yield of his 196 cows for six years, as given in the December number of this publication, is worth looking at. They were all Dairy-shorthorns, but, poor man, I suppose he knows no better!

Manitoba wheat-crop.—After all, the wheat-crop in Manitoba was not so bad as the constant bragging of interested people led one to suppose. I presume the reports of the government of the province are more or less to be depended upon, and they give the yield as 20.1 an acre; in all 14,000,000 bushels. The quality seems to have been inferior, very little No. 1 hard having been harvested, and in addition to the damage done by the frost, rain seems to have spoiled the colour and

caused other injury to a good deal of it. The best is quoted in the Montreal market at 99 cents to $1.02 a bushel.

Two-rowed barley.—According to the reports of the government of Ontario, the quality of the two-rowed barly grown this last season there has varied very much, I presume, according to the quality of the land on which it was sown. Some of the statements sent in are very flourishing, but the great majority of farmers seem to think it is not "all it is cracked up to be." Well, sooner or later, people will find out that the soil has more influence on the malting qualities of barley than they at present are willing to believe.

The autumn cleaning of stubbles.—The following extract from Professor Wrightson's article on the autumn cleaning of stubbles, I especially recommend to the attention of my good friend Mr. Tuck of Lachine. After an acquaintance of more than three years, during which time our conversations on the cultivation of land were numerous, the only point on which we could never come together was the proper method of beginning the above operation. He, still I fear, adheres to the plough as the first implement to be used; I contend that the grubber, cultivator, or broadshare should start the work, and the plough, which must inevitably cut the roots of the couch-grass into pieces to be afterwards "scatted all abroad," as my Cornish friends say, should not be used until the horse-rake, &c., have collected the rubbish and the fire has disposed of it

SEASONABLE NOTES.

The season for autumn cultivation is drawing rapidly to a close. With November we may expect rain in sufficient quantity to drench the land to a degree which will interrupt tillage operations of a cleaning character, and extinguish the couch fires. The energies of the farmer and his men will be thrown into other channels, and the completion of the destruction of our enemies, the weeds, must be postponed until the drying winds of March again whiten our sodden fields.

The recent extraordinary run of dry weather has, however, given more opportunity for thorough cleaning, the advantages of which will be realised throughout the country in an improved condition of the land generally.

By autumn cultivation we mean the preparation for next year's root crop. Such cultivation is especially necessary in the case of clay lands, because these soils are often not workable in the spring. It might be useful to consider the entire question of autumn cultivation under three sections, namely—(1) cleaning (2) dunging, (3) deep ploughing. The first of these operations has been occupying attention for the last two months. It consists in eradicating the roots of weeds by a variety of processes in which the ordinary tillage implements are used, while the aid of steam power is often most beneficially called in. At no season of the year, indeed, is the steam plough, steam cultivator, or steam drag more welcome than during the two months which succeed harvest.

We do not propose on this occasion to enter minutely into the modes of cleaning land. The arch-enemy and object of attack is couch, and the means used are chiefly those best calculated to detach the long strings of this weed from the soil and to land them safely upon the surface. Too often what is done during one operation is undone in the next. Couch is brought to the top by means of shallow ploughing, and repeated harrowings and draggings, but a residue unfortunately remains which is again ploughed in, and thus preserved for future annoyances.

THE CULTIVATOR

is the best implement for preventing the resetting or re planting of couch. Let anyone watch the progress of a cultivator through the soil. Let him further make a simple experiment by tearing up a piece of paper and throwing the fragments before the advancing cultivator. He will notice that not one piece disappears The cultivator buries nothing, but *brings up and leaves everything upon the surface.* (1) Rakes and hand-picking, when it can be carried out, may be relied upon to get off all the couch thus brought to the surface, and a few weeks of exposure in November and December will kill a great deal of even this tough pest. How long a time will be required of alternations of temperature to kill a piece of couch grass lying on the surface we do not pretend to say, but certain it is that long continued drought, or alternations of frost and wet, will in time wear it out. If couch can be brought to the surface and left there it will die in time, and this may be used as an argument for leaving soils, after autumn cultivation, throughout the winter to make or to weather.

CLAY SOILS

are less addicted to couch than light ones, neither do the stringy roots spread so rapidly or adopt such a slender and sneaking habit of growth. Light lands are difficult to keep clean, whereas clay lands, when once clean, will continue so with less trouble. It is on such soils that the steam cultivator is most welcome and most essential. It only can be relied upon to rip them up even in the driest weather; while, as we all know, a dry condition is the best for working them. We may assume at this late period of the year that any cleaning operations required on clay soils have been accomplished. When good farming has been carried out for several years upon a clay farm it may naturally be expected to be fairly clean, and when this is the case we may proceed at once with deeper work.

Measurements of an English Racer.

In the last number we gave a portrait, reingraved from the London Live-Stock Journal, of the celebrated thoroughbred horse Ormonde, of which our contemporary says: "Ormonde is a bay, foaled in 1884, got by Bend Or,(2) dam Lily Agnes, by Macaroni. He had an unbeaten record on the turf, having won no less than £28 982. After being used at the stud for some time at Eaton (3) he was sold at an enormous price for exportation to South America."

Mr. Palfrey, who painted the picture from which this portrait was drawn, was so impressed with the proportions of this remarkable animal that he also prepared the accompanying diagram, and took with care the measurements as shown thereon, and which are given in detail in the following table:

EXPLANATION OF DIAGRAM OF ORMONDE.

	Ft.	*In.*
a Height: 16 h. 1½ in., or	5	5½
b Entire length from greatest projection of chest to greatest projection of quarter	5	4
c Entire length from occiput (between ears) to root of tail	6	10
d Length of head	2	1
e Neck, narrowest part	1	1
f From the pin or focus of the hair growth, immediately in front of ilium, to the extreme projection of quarter	2	0
g From elbow to stifle	2	9

(1) Italics mine. If you have not a good cultivator, get one: Coleman's is perfection. A. R. J. F.
(2) An heraldic term. A. R. J. F.
(3) Duke of Westminster's place. A. R. J. F.

Front Extremity.

h From ground to elbow	3	0
i From ground to trapezium (back of knee)	1	8½
j Width below knee	0	3
k Width immediately above knee	0	4¾
l Width of arm at elbow level	0	7½

Hind Extremity.

m From ground to point of calcis (hock)	2	2
n Width below hock	0	3½
o Width above hock (second thigh or gaskin)	0	6½(1)

In connection with these figures Mr. Palfrey writes:

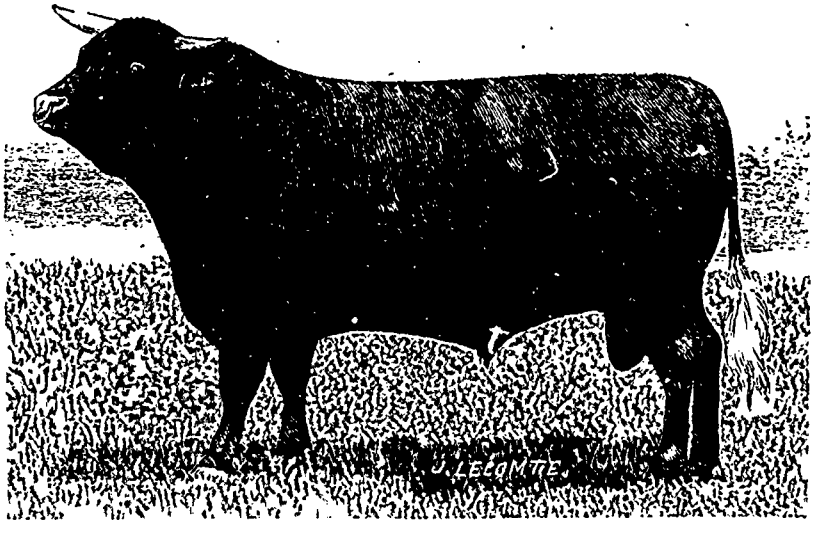
To the majority of men accustomed to looking over thoroughbreds, Ormonde, I think, would appear short in proportion to his height of 16 hands 1½ in. (or 5 ft. 5½.) He possesses a general squareness of outline on the broadside view, which is chiefly due to the perfect setting-on of the tail and the straightness of the so-called second thighs. His hocks, like those of his dam and the Sweetmeat line generally, when standing, are well within the vertical lines, tangent with the greatest proportion of quarter. He has a head indicative of great intelligence, although rather on the large side: and this is attached to a strong neck. He has also much length of leg, being, from the ground to the elbow, just 3ft., or about 1½ in. in excess of the average. His entire length (of 5 ft. 4 in.) corresponds with that of his sire, Bend Or, and is rather less than that of his grandsire, Doncaster, neither of whom attained 16 hands in height.

These proportions caused Ormonde to be, in breeders' phraseology, a horse with a "lot of daylight" under him—in fact, make him a direct contradiction of the beau ideal of conformation known as the "long low" sort on short legs, or "very near the ground" animals, so much extolled and expatiated upon by the *cognoscenti* (2) Nevertheless, the length of limb possessed by this, "the horse of the century," doubtless contributed in no small degree to propel him to victory over all courses, and against all comers, and had much to do with that prodigious stride which is never to be forgotten by those who witnessed it.

I have said that Ormonde has rather a large head. By comparison, this is so, it being 2 ft. 1 in. in length, or about an inch above the average. I long since ascertained that this is, ordinarily, 2 ft. in the racehorse. From this fact it follows that an inch and a half added to the length of two and a half heads would be equal to his entire length of 5 ft. 4 in. I first made his acquaintance in his yearling days, at which period I saw a good deal of him. He was always a tall, forward specimen, with a very stately walk; and on the morning he left Eaton for the Kingsclere academy (1) might well have passed for a two-year-old. He was then in company with some half dozen compeers, several of whom were voted more comely to look upon, and more than one raised greater expectations of future achievements than did the tall son of Lily Agnes.

(1) It is in this point that our horses in the P. Q. generally fail. A. R. J. F.

(2) Vulgarly, the *knowing ones*. A. R. J. F.



ENGLISH SUSSEX BULL, LORD OXEYE.

Mr. Palfrey says of horse portraits, what is not altogether inapplicable to many other animal engravings published from time to time, that a very large percentage of them "may serve to register the animal's color and white markings, when it possesses any, but no other purpose; the chief essential—correct proportion—being altogether ignored, or otherwise conspicuous by its absence, there appearing to be an assumption that anything may do duty for a horse portrait, even though it verge upon absolute caricature." (2)

A REMARKABLE CROP CONTEST.

Nearly 1000 bushels of potatoes, or, to be exact, 974 bushels and 48 pounds, have been grown on one acre of land in Johnson County, Wyoming, the past season. This crop wins the first prize of several hundred dollars offered by the AMERICAN AGRICULTURIST for the largest yield of potatoes on one exact acre. It was grown on *virgin soil*, without manure or fertilizer, *but the land was rich in potash, and the copious*

(1) Dawson's, the trainer. A. R. J. F.

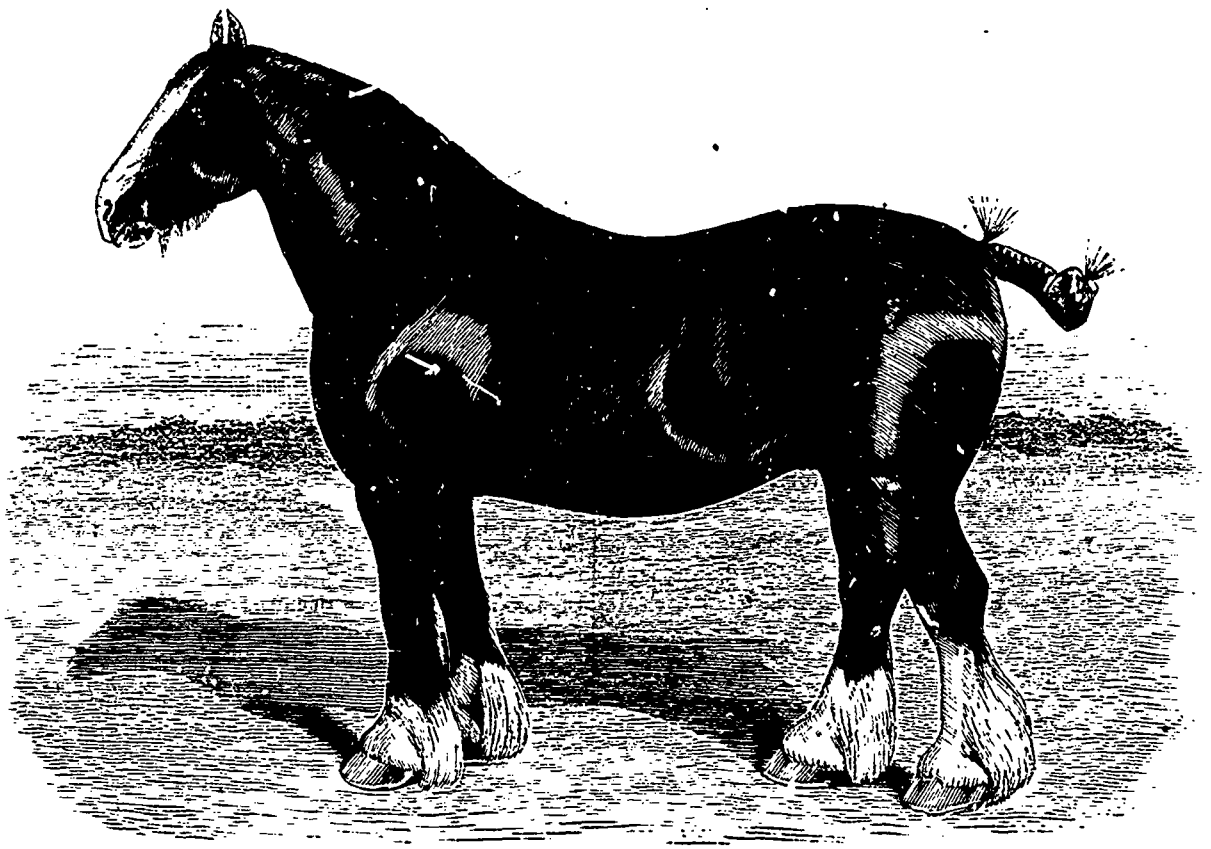
(2) This was, unfortunately, crowded out last month. A. R. J. F.

irrigation was of water also rich in saline material. (1) There were 22,800 hills on one acre, and 1360 pounds of sets, containing one, two and three eyes were planted of the Early Vermont and Manhattan varieties. The profit on the crop on this first prize acre was $71¼ exclusive of $500 in prizes. Another large crop was that of M. A. Chisholm of Del Norte, Colo., of 847 1-2 bushels on 1000 pounds of fertilizer. There was great interest in the competition in the famous potato growing county of Aroostook, Northern Maine, where the crops secured ranged from 450 to 746 bushels per acre. These crops largely exceed those grown in a similar competition last year, when 738 1-2 bushels of potatoes in Aroostook county took the grand prize of $1100. Other prize crops last year were—135 bushels of oats on one acre, 80 bushels of wheat and 235 bushels of shelled corn. It appears from the forthcoming issue of the AMERICAN AGRICULTURIST, in which the results of the contest are to appear, that the average Western potato crop on virgin soil is hardly up to that under ordinary culture in the East, while intelligent fertilization seems equally profitable in both sections. The wonderful operation of the mysterious laboratory of the soil is emphasized by the evidence in this competition that crops were increased 50 or 100 per cent. by the application of actually pure plant food at the rate of only one pound to 100 or 200 square feet of land. The superiority of fertilizers or chemical manures over stable manure for potatoes is also emphasized by the two years' contest.—*Am. Agriculturist.*

(1) In the leading article on this crop, the A. A. says that "the water of irrigation is probably rich in potash" Which is a kind of argument not worth talking about. I cannot see any good to be derived from the donation of prizes for crops grown on maiden soils like the one mentioned above. The Italics are mine.

Well, which of the two statements below is right I leave to the judgment of my readers. From private sources of information, I learn that, except on the very heaviest, poorest clays, English farmers are doing better than they have done for some years. Best white wheat is worth 40s a quarter, and many of our best farmers have threshed out from 50 to 60 bushels an acre: 56 bushels at 5s a bushel = £14 = $70 an acre.

Sir John Lawes makes the average crop of England-har-



SHIRE FILLY WILLINGHAM PROSPECT

vest of 1890—equal to 32 bushels an acre. Beef and mutton, veal and pork, are selling well, and butter with other dairy-products are fetching remunerative prices. The fall wheat is all in the ground, with every prospect of a good plant, and tares, rye, winter-barley and ts, with an enormous crop of swedes and mangels, are present to show a good look-out for cattle and other stock in the future. Best Kent hops are selling for £16 a cwt. against £7 last year. The potato-crop is a heavy one in Britain; the fine weather in the fall saved a good deal of the early consumption of hay: altogether I think I have a good right to say that the extract from the American Agriculturist is about as gross a mistatement as it is possible to concoct.

"Notwithstanding the heavy decline of the rent of farm lands in England, it is more difficult to find tenants than has ever been known before. Hop and arable farms are the most diffi-

cult to let even at half their former rent; good grazing farms will let when the rentals are considerably lowered."

American Agriculturist.

THE AGRICULTURAL OUTLOOK.

The result of a tolerably comprehensive inquiry as to unlet farms, instituted by a provincial contemporary endorses the opinion we have maintained in these columns, that the outlook for agriculturists is decidedly encouraging. Seventy-five per cent of the reports received during the inquiry were distinctly favourable, while a moiety of the remainder were of a satisfactory, though not over sanguine character.

The unfavourable returns were confined to farms which presented special difficulties in cultivation, or, having been allowed to get out of condition, would require a very heavy expenditure to bring them into "good heart." In connection with the reassuring prospect, it is pleasant to note an increasing recognition by the English farmer of the remunerative quality of *petite culture*. Though much has already been accomplished in this direction, very much more should be attempted; and Sir Roper Lethbridge has performed an important public service in directing attention to the vast quantities of foreign fruit, which could be better produced at home, now brought into the London market—

DAILY GRAPHIC, Nov. 20TH.

As regards the crops, the wheat already thrashed has turned out remarkably well, in many instances above an average, even as high as 50 to 60 bushels per acre. Barley excellent in quality, bright in colour. Beans, very much above expectation. Late peas seem almost the only crop which is deficient, having run rather too much to straw. Oats of all kinds are excellent. Roots, such as mangels, Swedish turnips, and carrots have turned out well, and are now secured in a healthy condition —*Vale of Evesham report in Ag. Ga. Nov. 20th*

OUR WEALTH OF LIVE STOCK.

Some interesting calculations of the value of the live stock held by British and Irish farmers, prepared by Mr. R. E. Turnbull, are published in the Journal of the Newcastle Farmers' Club. They are evidently founded, as far as the number of animals is concerned, upon the official statistics collected in June of each year. The following table shows the estimate value of the live stock in 1887 and 1889, and the increase in each case within the two years:—

Value of Farmers' Live Stock in the United Kingdom.

Description of Live Stock.	Total value in 1887.	Total value in 1889.	Increase in total value per cent.
Cattle.....	£100,018,452..	£120,702,141.....	20.7.....
Sheep.....	38,417,735..	50,826,357	32.3.....
Pigs.....	6,511.675..	6,825 263.....	5.0 .....
Horses.....	35,778,875..	45,807,720.....	28.0.. ...

Mr. Turnbull concludes that the total value of the live stock of this country, including poultry and goats, was last year, £227,771,481, or at the rate of £4 15s per acre, whilst in 1887 it was only £183,806,737, or £3 16s 9d per acre. The increase within the two years has thus been £43 964,744 or 18s 3d per acre—*Bell's Weekly Messenger Nov. 14th.*

Dawes' Farm, Lachine, Dec. 1890.

Dear Mr. Jenner Fust,—I must apologise for not replying ere this. You know my time is pretty well taken up. Just had to take the chance of seeing the farmers passing.—Have only seen three thus far.

R. Shields 1¼ acres = ten tons an acre.
Al. Dawes 1½ " = " " "
R Muir 2 " = six " "

Threshed our buckwheat, last week, and went on with the oats. Could not finish, as we met with an accident. A large stone went into the drum, and smashed the concave to pieces, will have to wait for a new one. The stone was the size of a cricket-ball, so hard that it did not break. Both thresher and engine were doing good work. Cattle all doing well, have several calves which are doing well. Had a litter of 12 pigs two weeks ago. Have commenced our ensilage, which is good. It has gone down a good deal in the silo.

Yours very truly, H. TUCK.

I do not think that from 6 tons to 10 tons per acre of sugar beets can be a very profitable crop for the farmer, even at $4.50 a ton. I confess I prefer Mr. Tuck's mangels at 30 tons and his swedes at certainly 35 tons an acre, even supposing them to be only worth $2.00 a ton for cattle-food, or $60 to $70 an acre. Mr. Muir's beets, when I saw them on September 24th, seemed to be "stuck," and, as I mentioned in the November number of the Journal, the ground was so hard that the roots had no chance to swell. And the same with Mr. Albert Dawes' piece.

The Farnham factory, I see by the Montreal Star, completed its season about December 5th; having disposed of 6,000 tons of beets, which, taking the average of the three crops mentioned above, would account for the yield of 700 acres. I know, of course, that the factories want small roots, but surely they cannot require them so small as Mr. Muir's, which were hardly bigger than black radishes.

The Dairymen's Association.

Nothing could have been more successful than the Dairymen's Convention at Sorel on the 26th and 27th of November, 1890. As my friend Dr. Bruneau observed towards the end of the meeting: Only one thing is wanting: the Convention should extend to four days instead of two.

The lectures were numerous and interesting, and the discussions springing from them were more than commonly important. Indeed, the discussions are, in my opinion the most valuable ingredient in the whole *farrago libelli.*

M. Herreboudt, an envoy from Belgium, laid before the assembly a plan for the introduction of Canadian dairy products into his country. M. Beaubien spoke, as usual, of the importance of ensilage, and, I have no doubt, interspersed his lecture with those sallies of real fun which he seems to keep in stock. No one will suspect me of flattery, but I must say that one of the most agreeable, though by no means the easiest, of my annual tasks is the translation of M. Beaubien's address to the Dairymen's Convention.

Mr. MacPherson, M. Chapais, and others, treated the subject of the dairy-business in full, Mr. Fisher, M. P. confining himself to the silo-question.

At the close of the Convention, the President, M. Bernatchez, M. P. P., offered the special thanks of the meeting to the Secretary of the Dairymen's Association, M. J. de L. Taché, "who, from its inception, has been and is the mainstay and support of that society."

The next Convention will be held, in November, 1891, at Montmagny. I wish I could see more English-speaking members of the Dairymen's Association, and more French-Canadian members of the Montreal Horticultural Society.

Sussex Cattle.

A really good portrait of the best Sussex bull of his year will be found at p. 8 of this number.

Sussex cattle are clearly descended from the aboriginal race of the country. In colour like the Devons—the true or North Devons,—they are coarser and heavier in build; famous draught-oxen, and copious milkers, though their milk is not so rich as that of the Devons. They are greatly esteemed by the butcher, as their hides are heavy and they carry a great quantity of inside fat. Their great fault used to be a hollow behind the shoulder, but, judging from those I saw at Mr. Whitfield's, Rougemont, in 1885, this defect has been thoroughly got rid of.

Shire-horses.

The portrait of the Shire-mare on p 9 is the very image of one of Messrs. Dawes' mares, daily to be seen at Lachine trotting along, at the rate of 8 miles an hour, with a load of dung behind her.

"In 1685," says Macaulay, "our native horses were valued at not more than 50s. apiece. The modern dray-horse was not then known. At a much later period, the ancestors of the gigantic quadrupeds, which all foreigners now class among the chief wonders of London, were brought from the marshes of Walcheren."

Potato crop.—The average yield of the potato, in England, is 240 bushels of 56 lbs. each per acre. In Scotland, about 265 In the States, this year, 1890, the American Agriculturist's prize was awarded to a virgin soil, irrigated crop of 974 bushels; but the average of the whole county was only 57 bushels an acre of 60 lbs. a bushel.

Cattle Condiments or Spice.

I see that as long ago as April 1880, I began an article on the above stuff in these excessively rough terms: "There has been, and I suppose there always will be, a considerable amount of swindling carried on at the expense of the farmer. As a rule, Cattle Condimental food is a complete imposition. I won't mention names, but I have seen $120 a ton paid for a mixture of linseed, pease and lentils, finely ground and well mixed, flavoured with fenugreek and gentian, and coloured with turmeric. See Journal, vol. 1, p. 180."

A company has been started in England to bring a composition of the above sort on to the market, and I print herewith the opinion of the wellknown paper, the Financial News, on the subject. The note in brackets, is by Messrs. Downes and Co., the Liverpool manure- and seed-brokers.

The Profits on Cattle Spice.

The profits from the manufacture of cattle food, as shown in the prospectus of a well known Cattle Spice and Poultry Food Company, are almost on as liberal a scale as those drawn from patent medicines. A business which manufactures a ton of stuff for £6 6s. 4d., and sells it for £27 9s. 2d., is the sort of thing everybody would like to be in. But, apparently, the opportunity is not to be given to many to share in the profits, for, though £60,000 of the capital of the company is nominally offered to the public, more than half of it is to be applied for by the directors and their friends.—FINANCIAL NEWS. [The above we reproduce for reasons which will be obvious to the reader. Such profits are extortionate.—S. D. & Co.]

An English idea of fair profit.—The broccoli crop is looking splendidly, and in some fields many are "coming in." Some have sold their crops for about £20 per acre at purchasers' risk. This price will pay fairly well as the broccoli crop is grown on the land that was cropped with early potatoes, without any additional manure for the second or catch crop.

Yes, $100 an acre for a second crop on the ground and no risk of marketing *is* a fair profit, though the rent towards the Land's End, whence the above report comes, is $50 an acre.

A. R. J. F.

THE DAIRY.

BUTTER RATIO OF VARIOUS BREEDS.

We have been so often asked to state the usual yield of butter to a given quantity of milk from the different kinds of cows—the same query being repeated again and again by different correspondents—that we deem it desirable to devote an article to the subject. The milking trials of the British Dairy Farmers' Association have now been in operation for a period of about eleven years, and the figures that have accumulated regarding some ten different breeds, give us an authoritative and reliable foundation on which we can calculate the comparative butter ratios of those breeds. The amount of butter-fat shown in analysis represents the utmost amount that it is possible to extract from the milk, in fact it shows a little more, because even our separators leave a small fraction of a percentage in the residue, while the ordinary modes of creaming leave still more. Commercial butter, however, contains a great deal more than pure (or impure) butter-fat. The Dairy Commission of Minnesota states that honestly made butter may contain as much as 20 per cent. of water, while some samples have been found to contain as little as 5 per cent. Probably 10 per cent. of water will be found in average good butter as met with in the market. In addition to this, however, "brining" will probably represent about 2 per cent. of salt, while there will always be some caseine and "other impurities" present. We cannot allow less, therefore, than about 15 per cent. as a total, leaving 85 per cent as pure butter-fat. Taking this data we can calculate from the analysis the probable proportion of butter that could be churned from the milk of the various breeds if the process were carried out in exactly the same way for all. Fortunately in the first part of the Journal of the B. D. F. A. for the present year there is a table of the average composition of all the samples of milk analysed during the ten years ending 1889, and from this we can easily calculate the butter ratio of all the breeds tried during these ten years. Below is a table with these figures worked out while a second column shows the ratio for the single cows winning the first prize in the various classes at the late competition. It may be just necessary to define the "butter-ratio" as the number of pounds of milk required to produce one pound of butter.

	Average of 10 years.	Prize Cows. 1890.
Shorthorns	22·8	23 9
Jerseys	18·6	14·6
Guernseys	17·8	18·3
Crosses	23·0	—
Dutch	26·1	20 6
Ayrshires	20·4	20·4
Devons	17·3	—
Red Polls	23·6	21 3
Welsh	20·4	—
Kerries	.9·3	17·0

It is noticeable that the best cow at the milking competition does not always show the highest percentage of butter-fat, or the highest butter-ratio, because several other points are taken into consideration in awarding the marks. The average of the first, second and third prize cows in the Shorthorn, Jersey, and Guernsey classes of this year are given, so that the results

may not unfairly compare with those of previous years. As a rule the chemical analysis corresponds very closely with the actual amount of butter obtained by churning. The Jersey and the Guernsey butter trials which have been carried out give us a means of testing these by actual practice, and it is interesting to compare the results from each. For instance, the best milking Jersey of this year is only the second best butter cow. For the purposes of our calculations we have assumed that there is 15 per cent. of water, &c., in the butter, and this gives a ratio of 1 lb. of butter to 14·9 lb. of milk for the three prize animals. In the actual churning they showed 1 to 16 68, so that probably there was less than the quantity of water, &c., present than we have allowed for. The best butter Jersey, however, showed a ratio of 14·28 lb. If we go back to the previous year, however, we get results that have never to our knowledge been equalled before or since. It will be, in the memory of some that Mr. Brutton's Baron's Progress showed a butter ratio last year of 11·3, and another animal yielded 11·4, but these are results far and away beyond the usual run of the best animals. In fact, the former of these two (we presume it is the same animal) shows in this year's trial a ratio of only 15·9.

As a general rule the results appear to keep about the same, with a slight improvement in some of the instances. It must of course, be noted that these results are from selected animals, good enough to send to a show with some chance of success, so that for the ordinary herds of the farm it will be necessary to allow a certain percentage extra; but for a comparative guide the figures are perfectly reliable, and are certainly very instructive.

MILKING TRIALS AT THE LONDON SHOW.

The results of the milking trials at the recent London Dairy Show are given as follows:

It will be remembered that last year the highest number of points was gained by a Jersey. This year the Short-Horns have again come to the front, and are not equaled by any cows competing, although the Dutch cow, No. 257, obtains almost as many marks. The first and second prize-takers and the reserve Short-Horn gain more points than the highest gained last year. In connection with these results it is to be regretted that this year, as well as last year, the cow which would have obtained the highest number of points failed to produce milk containing 3 per cent. of fat, and therefore 10 points were deducted. A new departure was made this year with a view to discover whether, in the future, it may not be possible to estimate the relative merits of the cows as regards profitable milk production. The problem is a difficult one, and will require much attention on the part of the judges. As a first step, all the cows competing have this year been weighed. In all there were 55 entries for the milking test, and 40 cows and heifers actually went through the trial. The figures obtained in these trials show the actual weight of fat produced by each animal in the day, and also the actual weight of casein, sugar, &c; the one indicating the butter-making capability, the other the cheese-making capability. It is interesting to classify these for the several breeds as in the following table:

First Prize Cows.	*Weight of Fat yielded in one day.* lb.	*Weight of Casein, &c., yielded.* lb.
Short-Horn	2.26	5.17
Jersey	1.89	3.06
Guernsey	2.00	4.40
Ayrshire	1 87	3.97
Dutch	1.85	3.87
Dexter Kerry	1 32	2.40
Red Poll	1.14	2.58

The chief point which will attract the notice of those interested in the composition of milk is the unusually low percentage of "solids" other than fat in some of the samples of milk. There can be no doubt as to the genuine nature of these samples, and the problem as to the reason of these results is an interesting one. It only points to the fact, which is more and more impressed upon me every year that much as we know about milk and its production, there is evidently much to be still learned, and that one of the most valuable aspects of the milking trials is that they afford every year fresh facts either confirming old views or opening new ones.—*Eng. Ag. Gazette.*

CHURNING WHOLE MILK.

EDS. COUNTRY GENTLEMAN.—In a late number of your paper, page 665, Mr. CURTIS gives the following advice to Dairy Farmer who seeks directions for churning whole milk: "If the milk is to be churned it should be aërated well, and then churned while sweet. The butter will not be of the same favor of ripened cream, but possess a milky or sweet-cream taste—all right for those who fancy the flavor."

I have been waiting for some one to put Dairy Farmer on a better track, for if he adopts the plan suggested, he will soon get pretty sick of his experiment. Since, no one seems prepared to suggest a better way, would you permit me to give him a bit of my experience?

For a number of years past we have been running a milk-and-butter factory in the vicinity of Montreal. We get our milk, delivered by rail, from a number of farmers in the country, paying for the milk at the farmer's station ten cents per imperial gallon of ten pounds in summer time, and fifteen cents per gallon in winter—the freight costing from one and a half to two cents per gallon extra. This milk is received from the station at 9 o'clock every morning (Sundays excepted), and after being strained and heated up to about 70°, it is placed in a warm room until the following morning, when it has become thick. It is then cooled to a temperature of 80°, and churned by steam power, usually taking from fifty minutes to one hour in the churning.

This butter is equal in favor to the best cream-churned butter, while the product is greater, and it is put up in quarter-pound prints and sold at fancy prices to gentlemen's families, who willingly pay much more for our butter than the price of any other butter that is sold in Montreal. The buttermilk is retailed to customers in the city, who pay 14 cents per gallon for it, winter and summer, when there is any amount of *habitant* buttermilk being peddled through the city at from 8 to 10 cents per gallon. This buttermilk having been churned before any process of decay has begun, will keep good more than twice as long as ordinary buttermilk, and a large proportion of our customers began to use our buttermilk by the direction of their physicians when they were invalids. We have experimented with churning the milk when sweet, as well as at every stage of sourness, and find that the proper time is just when the milk thickens, and we make it a point to keep it warm enough to cause it to thicken in about twenty hours after it is received. Should we churn it while sweet, it would require to be much warmer when churning, or else it would take double the work to churn, and in either case there would not be nearly so much butter, and the quality would be very inferior. If the milk is churned when sour, but before it is thickened, it will be more difficult to churn, and the yield will not be quite so large as when it gets time to thicken before churning, and the buttermilk will not be nearly so good in the former case as in the latter, for milk churned before it has thickened will become "clabbered" after churning and resemble old skim milk more than buttermilk.

DAVID CURRIE.

VARIETIES OF POTATOES.

In an article in the *Times* Mr. Shirley Hibberd writes as follows as to varieties of potatoes :— (1)

It is observable that certain varieties suffer less than others in times when disease prevails ; some even escaping unharmed when others on the same ground succumb quickly, even to the extent of obliteration. Speculations on the causes of the difference have been fruitful of results. Certain kinds have become known as "disease resisters," the power of resistance appearing to reside in the article, which by extra firmness of texture offers an impediment to the penetration of the agent of destruction. While many varieties, once renowned for productiveness and high quality, have passed out of cultivation, owing to their small powers of resistance, others of the older kinds remain, and within the past ten years or so have been added to and improved upon ; so that we now possess an extensive collection, the merits of which are well known to the foremost cultivators, who in such a season as the present find their reward for the recognition in having plentiful crops to sell at high prices, instead of having to flow with the dull stream in disappointment and dejection.

The far-famed Magnum Bonum was the first of this series, the original distribution of which in the year 1876 we owe to Messrs. Sutton and Sons, of Reading. Subsequent to the establishment of that variety the Reading house has sent forth a number of original seedlings that now constitute a series quite unique in distinctive qualities and the capability of resisting the assaults of the fungus. There is no parallel to this useful work in that of other raisers anywhere, inclusive of those of the United States, to whom we are indebted for Beauty of Hebron and other superb varieties. There can be no limit to the usefulness of the school of which Magnum Bonum, Reading Russet, and Satisfaction are the representatives, for they offer us all the varieties of form and colour that were known in the older kinds, while adapted to every variety of soil, and combining the tuber quality with high productiveness and a peculiar power of resisting disease. As benefactors in this direction Messrs. Sutton stand alone, but justice must be done to the memory of the late Mr. James Clarke, of Christchurch, the raiser of the Magnum Bonum, which was no chance production, but the result of a true scientific endeavour to establish a new race of potatoes, the constitution of which should fit them for the climate of Britain more effectively than that of the older favourites. As these robust and stout-textured kinds become known and appreciated the disease will be further and further from us, and improved practices will co-operate with the work of the raiser in augmenting the usefulness of the potato.

In a comparison of varieties that are now cultivated on a large scale, the Champion makes but a poor figure, and is the poorer in such a season as the present by reason of its lateness. It does not form its tubers until most other sorts are nearly ready for lifting, and by thus prolonging its growth far into the autumn it imitates those unfortunate beings who lose their trains because the clock is wrong, or present themselves where invited just too late for dinner. The Champions are only now beginning to make a show of business, but the Magnums may be lifted where they were planted in reasonable time.

A Scant Hop Crop and Rising Prices.

We condense the following from a recent article in the New York Times :

This year's hop crop is harvested and the supply is short. The quantity of new hops which will be offered in the market during the coming year will fall below the figure at which the annual average consumption is placed. Prices are higher now than they have been since 1882. It costs a farmer from 10 to 12 cents to grow a pound of hops. In the year 1880, prices were so low that it hardly paid him to raise any hops at all, as he could sell them at a profit of only a few cents, or only at cost price. So it happened that many farmers stopped growing them altogether, and that others raised less than was their custom and of an inferior quality. The result of this was that when the crop of 1882 was harvested it was found that there was not enough to supply the demand for the next year.

The moment the truth of this was established, prices took a few jumps, and before any one fully realized the condition of the market the rates had gone as high as $1.25 a pound. Of course this was an incentive to the greater cultivation of hops, which was shown in the very large crops raised the world over in 1883, 1884 and 1885. In 1886 the crop in New-York State, which up to that time had always been the centre of the hop raising industry in this country, was almost a failure, and since that our State has had to hustle to hold its own with the Pacific slope, to which a large part of the industry was transferred. During the last five years there has been an immense increase all over the world in the consumption of beer and, as the cultivation of hops has not been making proportionate stride, it now looks as though the demand were once more to outstrip the supply. For, as could easily have been foreseen, the enormous prices of 1886 were not lasting, and by easy stages went down again until in 1889, hops could be had for 8 and 10 a pound, and farmers found, when they cast up their yearly accounts, that they had lost by raising them. The result was that they became discouraged, and to-day there is a scarcity of hops in the market. The same hops that last year were sold for 10 cents a pound, although inferior to this year's crop, are to-day selling at 30 and 35 cents, and it is expected that first-quality hops will soon be selling at 60 cents. The market in Germany has advanced 10 cents in two weeks.

Mr. Albert Lilienthal, a dealer in this city, puts the supply of the various countries in this way :

"England, with an average yearly consumption of 400,000 bales, of 180 pounds each, has grown less than 150,000 bales. Its old stock is about 60,000 bales. Germany's crop it is impossible to estimate accurately, but according to the best authority it will hardly be more than one-half of last year's, and there will be no surplus for export. The United States, with an average yearly consumption of 225,000 bales, has grown 150,000 bales. The old stock on hand, making allowance for every nook and cranny in the country, consists of hardly more than 25,000 bales."

Mr. Lilienthal then sums up in this table, showing the deficit in bales of 180 pounds :

England	190,000
European Continent (estimated)	20,000
America	50,000
	260,000

He places the annual consumption of hops in the world at about 1,000,000 bales.

The McKinley bill has given a check to the importation of German hops, the duty on that product now being 15 cents a pound, or nearly double the old rate. With the recent advance in the German market it is impossible to buy German hops here for less than 50 cents a pound. English hops are rapidly being bought up by English brewers, and it is expected that there will soon be a move to buy up American hops and send them to England.

(1) Died last month, poor fellow.

THE HERBAGE OF PASTURES.

Surely Mr. Fream's second paper on this subject is worthy of something more than the very brief notice accorded by reviewers of the Midsummer number of the "Royal" Journal. At any rate, that was my impression after looking through my own copy, and I doubt not that most farmers will agree with me in my high estimation of such a record. Though far from exhaustive, its scope practically covers the whole of the British Isles, and its facts, to say the least, are most interesting—may I not go farther and add instructive?

Take, for example, that turf sent by Mr. Charles H. Eady, Home Farm, Ardington, near Wantage, Berkshire, from the estate of Lord Wantage in the Vale of White Horse, of which Mr. Eady says:—"I have forwarded a block of turf cut from a field bearing the best character of any in this immediate neighbourhood; it is 46 acres in size. The last week in April I stocked it with forty-four Hereford steers and four Shire fillies; the Herefords were all fat, and sold to a London dealer by the middle of July. I then drafted thirty-six other Herefords into it from inferior pasture; they were all fat and gone by the end of August. I then, stocked it with forty Short-horn heifers; twenty of these were sold fat at the end of October, the remaining twenty, being half fat, were put in the stalls about the first week in November. I then put in twenty four Welsh runts (stores), to clean it up, and they have (February, 14th) until quite recently been doing well, when I moved them into strawyards." He adds the significant fact, "I have never known any artificial food of any kind given to beasts in the field."

Dr. Fream's analysis of the herbage of this singularly nutritious pasture shows that fully a third of it consists of white clover, and almost three fourths of the grasses consist of perennial rye-grass. The soil has nothing of the character of a rich alluvial deposit, but is described as eight inches of strong loam resting on a very sticky, greyish clay.

Of course, the condition of the beasts when turned into the pasture had its influence upon results, but the bulk of herbage there must have been to carry such a head of stock, and its highly nourishing properly was assured by the predominance of the clover and rye-grass.

It would probably be thought rank heresy to recommend as permanent pasture for any soil a mixture consisting chiefly of perennial rye-grass and white clover, with just a dash, of fiorin, crested dogstail, and timothy, yet that is practically the composition of Mr. Eady's pasture, and in the first part of the Royal Journal for 1882, containing Mr. Faunce de Laune's famous paper on the selection of grasses for permanent pasture, Mr. C. Randell, in a short, pithy paper on the same subject, actually recommended for clay land a mixture consisting of cocksfoot, perennial rye-grass, cowgrass, and Dutch clover. His aim evidently was bulk of herbage and nourishing quality. A full early growth is a certainty when rye grass is plentiful in pasture; and according to Mr. Eady's statement, it also affords, an equally abundant late supply of feed.

I have often heard it said that said that the pasture on Pevensey Level, in Sussex, will *graze* a beast and a half to the acre, and have seen many a beast brought from there in prime condition in October. A high privilege is it thought to obtain a few acres of that "marsh" land by cultivators of the poor, thin soil on the Hastings sand formation, but its fame is more local than general, and that is probably why a specimen of it was not obtained by Dr. Fream. In 1888 turf taken from five fields in Romney Marsh, was under trial, and the herbage was found to consist almost exclusively of three-fourths of perennial rye-grass and one-fourth white clover. The soil of both marshes is a rich alluvial deposit.

It is a singular and notable fact how largely white clover (*trifolium repens*) enters into the competition of the best old pasture, one of the most remarkable instances being that of the rich herbage of Beeby Manor, Leicestershire, which contains upwards of 40 per cent. of it. A fair proportion of muriate of potash in a manure dressing always ensures a free growth of this clover, and as coming well within the scope of every farmer, I may mention the excellent effect upon it of a liberal dressing of wood ashes saturated with sewage.

How would the new pastures laid down during the last decade bear the test of a similar experiment by Dr. Fream? If particulars of seed, cultivation, age, and present condition could be had, the result could not be otherwise than instructive.

EAST ANGLIAN.

(1) i. e. fatten.

The Agricultural College Fund.

Editor Vt. Watchman:—As Governor Page well says to the legislature, "It is a matter which should receive your immediate and careful attention, to the end that ample discussion may be had before the hurry of the closing days of the session shall divert your attention to matters of infinitely less importance." Now, what have we, the agriculturists and mechanics of Vermont, to say to our representatives and senators—we, the productive workers of the state, the toiling farmer and mechanic; we who are heavily taxed, hard-worked and poorly paid? Why, simply this, that we want the full benefit of this munificent gift that the United States congress intended we should have. After the experience we have had with a union college(1) for the last twenty-five years, and seeing the same experience in many other states, it is probable that no sane and sensible man in Vermont can honestly say but that he thinks a separate agricultural and mechanical college, equally well equipped and equally well managed, would do infinitely more good than the present arrangement.

J. C. CHAPIN.

(1) That is, classical and agricultural combined.

AGRICULTURE.

Paris, 25 October 1890.

Dairy industry and meat production are extending so rapidly, that farmers are hardly able to keep up with the requirements of the new departure. As the consequence of this advance, the increased production of soiling and of roots, becomes a corresponding necessity. M. Lecouteux draws attention to oats as a soiling crop. It is a plant that, whether in the green or the harvested state, is invaluable, because rich in nitrogenous matters, and easily digestible. Per acre, it is perhaps among cultivated crops the one which yields the largest amount of meat forming substances. Oats occupy so important a roll in rotations, that the crop enables the farmer to economize in the matter of meadow land. Oaten soiling has a few superiorities worthy of being weighed; the seed costs less than tares, peas or maize; and it is green in July, when the hot and dry season tells on the supply of cut forage. Some cultivators of dry lands, sow crimson clover—red clover if the climate be hard—along with the oats, and cut down the latter when the grain has so commenced to form, as to be in "the milky way," when pressed between finger and thumb. The oats can thus be cut with a good bottom of young clover.

There are three difficult food periods in the year for

farmers: early spring, mid-summer and between the close of aftermaths, and the commencement of root rations. Ensilages, whether in trench or stack, lessen the difficulty. On the continent carrots, cabbages and parsnips, are at present being relied upon as excellent auxiliaries. Carrots rank first; it is a safe crop, and often covers the void created by shortcomings in the clover, turnips or potato yields. The carrot belongs to the wildings so common in meadows, and seedsmen, in recent times too, by successive cultures of the wild, obtain new varieties of the plant for edible ends

Four varieties of carrots are cultivated in France: the white, yellow, red, and violet. The white or Belgian carrot with green crown, grows partly above ground: it is very valuable and productive. Its odor and flavor recall somewhat that of the parsnip. The Breteuil, is a variety of white carrot, that grows under ground. The yellow Achicourt—so named after a town in Picardy—is very much esteemed for field culture: it has a long conical, and voluminous root. The Flanders carrot, is a red-yellow, symmetrically conical: strikes down deeply into the soil, and is very productive. The violet variety is inferior to those named. The carrot prefers a climate rather humid: light soils, loams, and peats, if well tilled suit the plant. Alluvial sands produce double the weight of roots as calcareous soils.

The carrot is a slow sprouter and weak in its early growth. The Belgian variety in these respects is less so than others. Particular care ought to be given to the seed; it should be the product of last season's growth. As the carrot has a tendency to degenerate the plan current in France is not bad; that of farmers raising their own seed from selected roots, and exchanging it. The hairy films should be rubbed off the seed before sowing; this can be done by mixing with dry sand, or germinating them in advance, in sand moistened with a solution of wood or peat ashes. There are 280,000 seeds, in a pound of carrot seed, and from 5 to 6½ lbs. will seed an acre—for it is prudent to be liberal. Although the carrot is a food searcher, by penetrating deeper into the soil, and so not as exhausting as globular roots, yet it requires a relatively rich soil; double the weight of its roots and leaves per acre, is the amount of farmyard dung to be applied. Thick sowings are best for poor land. (1)

The after culture of the carrot consists chiefly in weeding and hoeing: the former to be undertaken as soon as the plant is distinguishable—never an easy matter, but less difficult for the Belgian carrot. From 10 to 17 tons is the yield per acre, and the leaves represent about one-third more. Carrots store well, either in silos, cellars, or thatched heaps, and can resist a temperature as low as 42 degrees. If the summer has been dry, the carrot will make up for lost time in growth and swelling. A fork is the best implement with which to raise the roots.

The carrot is relished by all farm animal, the yellow especially as it contains 3 per cent less water than the Belgian; 15 to 20 lbs. a day is the feed for a horse, and allows of oats being economized: carrots impart vigor and strength to horses, rendering the skin supple and the coat shiny. They are excellent for foals; crushed when cooked, and given to calves in their milk is a common plan for helping them forward for the butcher. Ewes are partial to carrots, which improve the milk and so tell on the lambs. The carrot contains a volatile oil which exercises a beneficial effect on horses.

According to Boussingault, the leaves contain more fatty matters and albumen, than the roots, and six times more of salts. The root, contains 10 per cent of sugar, and the leaves, 7. The carrot is from ⅓ to ½ less nutritive than hay. In laying down land to pasture in France, about one pound of wild carrot is mixed with the seeds—like parsley in some cases, as a seasoner or a condiment to the grasses, it imparts a perfume to the hay—aids digestion, and certainly promotes the secretion of urine.(1) Animals only relish it before coming into flower.

M. Gatellier states that the quantity of gluten in wheat, depends on two causes, the richness of the soil and the variety of wheat. The wheats of English origin are often poor in gluten, these wheats grown from American and Australian grain raised on newly reclaimed soils, are rich in nitrogen, and yield the highest percentage of gluten. He also asserts, that the grain of wheat grown on virgin soils, has a tendency to become deformed, and in place of being round, is elongated. The cutting of wheat 15 days before maturity, does not affect the yield of gluten, but on the contrary, augments it. M. Joulie has shown, that between the fecundation and the maturity of the wheat, some complex phenomena take place. There is migration of the nitrogenous and the phosphate matters towards the ear, and a retrogression of potash from the ear to the soil. Hence, the importance of the period for cutting wheat. As soon as the red or white color of the grain can be recognised, there is no inconvenience in cutting, but on condition, that the wheat be left in shock till the complete ripening of the grain. In addition to the richness in gluten in wheat being dependent on the variety cultivated, the same remark bears in the thinness of the skin or bran, a very important question with millers.

The cultivation of cabbage, like carrots, is also extending as an interregnum soiling crop in summer, or before the commencement of turnip feeding. There are three or four varieties of cabbage patronized for field culture in France. Decandolle gives a list of several varieties of wild cabbage, that grow spontaneously on the northern shores of France or the coast of England. Pliny describes three varieties of cabbage. The Gauls utilized cabbage for their alimentation before they were invaded by the Romans. There is one variety of cabbage, extensively cultivated in Normandy and Bretagne, and since five years in the agricultural zone of Paris—the tree or headless: perhaps the "bush cabbage" would be its most descriptive name. It is the variety which differs least from the wild cabbage. It has a very long stem, sends out several branches which are well covered with leaves; the latter never heart. It is a hardy variety, and is less particular about soil and manure.

However, it would be a mistake to conclude, that the cabbage can be cheated; it only yields large returns on strong rich soils, and these conditions are imperative for the Drumhead. In France, the seed is sown in April, in a select plot, as a nursery, to be planted out in June after a soiling crop of rye &c. The dung is ploughed down, and 3 to 5 cwts. of guano hoed in as a top-dressing when the young plants have well struck. One pound of guano per 43 yards, represents a total of one cwt. per square acre, so this will enable the scatterer of the dressing, how to regulate the spread. The other plan is, sow in a nursery bed in August, and plant out in April, on land with farmyard manure ploughed down in autumn, freshen up the soil before dibbling the plants—if Drumheads, in rows 26 x 29 inches. A top dressing of guano will not be lost on the crop. In the case of the bush cabbage, the leaves can be stripped off from August, taking care not to injure the stem, and the operation can be continued till the following April. The Drumhead is given to cattle and sheep in the yard, stall, or paddock.

The bush cabbage yields from 6 to 9 tons of soiling per acre; the Drumhead from 25 to 34 tons. In the South of

(1) This would be about 40 tons an acre! A. R. J. F.

(1) True enough in man as well as beast. They have helped me wonderfully. A. R. J. F.

France, and in climates with a soil relatively light, the bush cabbage is grown for its seed to make oil. The hearted cabbage suffers on the appearance of frost . it is difficult to preserve, and on large holdings impossible, so ought to be fed it off before attacking the turnips. Cabbage is relished especially by cows and sheep, fattening the latter rapidly. It thins the milk of cows, and if given too liberally, imparts the cruciferæ flavour to the milk ; butchers object that the same odor can be communicated to meat, and three weeks before being sent to market. cabbages ought not to be given to fat stock, this removes the well known "cabbage-rabbit flavor." If pulled during frost, the cabbages should be allowed to thaw and drip before being given to stock. Cabbage is, though a grateful, not a very nutritious food : it contains 92 per cent of water—the inner leaves 2 per cent less; 4 of sugar and 1 of fat, that is a total of 5 per cent of carbo-hydrates, albumen exists to the extent of 2 per cent. Cabbage is 5 to 6 times inferior to hay.

In presence of the disastrous flood in the South of France, the government has drawn up a vast project for replanting mountain slopes : the first territory to be operated upon, will be the maritime Alps, the department of the Var and the Cevennes. The shelter will increase the value of available land, by equalizing the climate, and especially securing a more humid atmosphere—that which existed before the forests were hem down—during the Saharian (1) months.

The government also is studying a plan for establishing model gardening schools, to be directed by "female" teachers. model dairies will be connected with the school and also bee, and silk worm culture, where the latter suits. Each of the new schools will be a meteorological station, as it has been found female are more attentive and careful in recording the registration of the readings of the intruments, than men. For executing the heavy work of the garden, &c., labor will be hired. Some of the schools will have intern pupils, to be instructed in house-keeping. Senator Schoelcher intends to propose. that a girl obtaining a diploma at these schools, be accorded a free grant of land in some of the colonies, and be aided to emigrate thither, and set up in case she finds a husband.

For many years past several seed merchants and farmers have been justly famous for their pure selections of old sorts of wheat, but the sorts themselves have not been improved. The pedigree wheats have been recommended under an erroneous idea that their seeding with enlargement of the ear and grain rendered the plant more productive; but, however much pedigree wheats, and a false principle of improvement, may be advertised, the wheats are enfeebled by the method of producing them, and by the enlargement of the grain; and the old sorts tried side by side with them have proved superior to them in yield and quality.—*En. Ag. Gazette.*

(1) A new adjective to me! From the Sahara Desert, I presume.
A. R. J. T.

NON-OFFICIAL PART.