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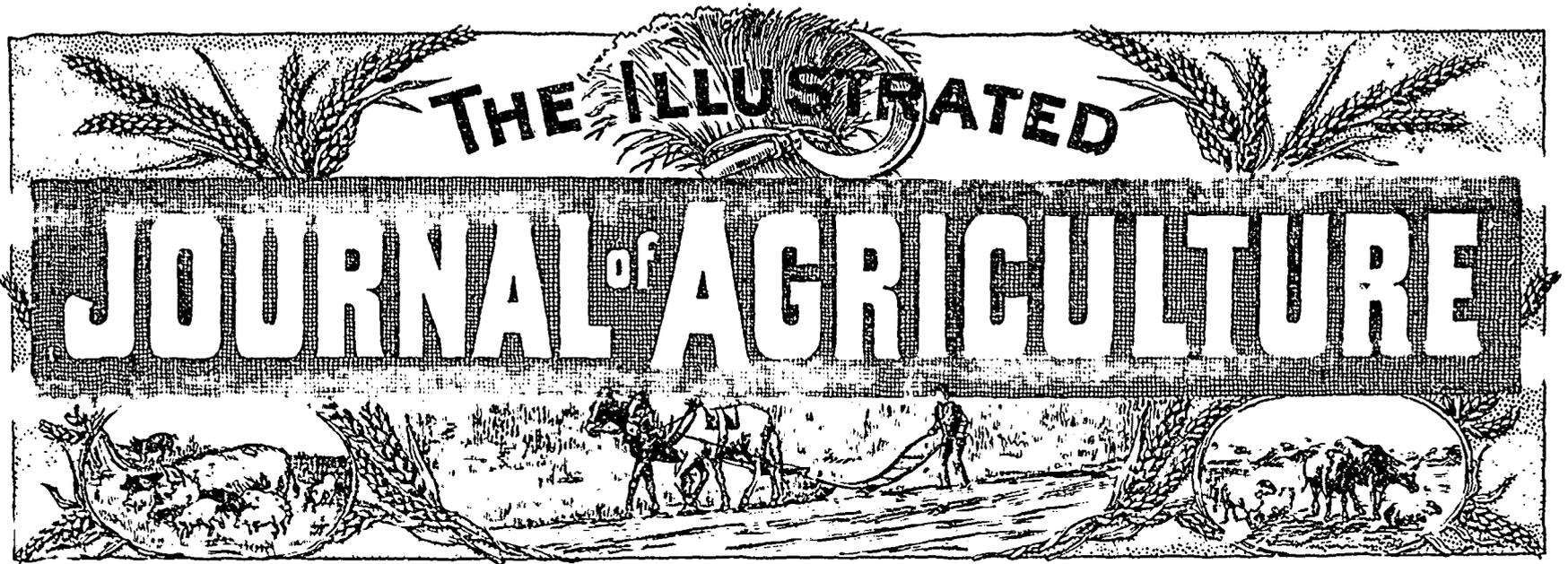
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The ILLUSTRATED JOURNAL OF AGRICULTURE is the official organ of the Council of agriculture of the Province of Quebec. It is issued Monthly and is designed to include not in name but in fact anything concerned with agriculture, as Stock-Raising, Horticulture, &c., &c.

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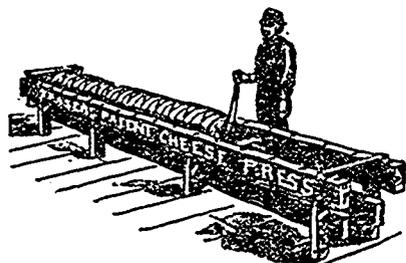
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The only one on the market, which the horses can run without their walk being bridged.



It affords us great pleasure to have it known that the improvements brought to our hay press "La Canadienne" have made it superior to all other horizontal presses working in the shape of half a circle. The fuller's course is 33 inches, that is from 6 to 9 inches longer than in any other horizontal press, which gives a wider opening to put the hay in and more speediness. Three men will do more work with our press "La Canadienne" than with any other press in the shape of a half circle, while it is much less tiresome for the horses. The materials employed are of the first quality, with the exception of two pieces of chilled cast iron, all the other parts are of steel and malleable cast iron.

We guarantee our press to work at the rate of 10 to 13 tons of hay every day without the horses being tired.

We manufacture four sizes of presses:

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We will send this press for trial to any responsible party.

Write for our Catalogue and list of prices.



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The iron work that support the drills is all in wrought iron which is very advantageous and economical as any blacksmith can make it, so that all long delays are avoided.

The sieve of our vibrating machine is longer and wider than all the other machines of the same kind manufactured in Canada. This new shape facilitates the cleaning of the grain and the sieve is less exposed to spread its contents outside. We give seven passes with this sieve.

The horse power runs on cast iron rails, all the shafts of the bridge are in steel and measure 4 of an inch which represents half a line of a larger size than those employed by the other manufacturers. All the shafts in the separator, the sieve and the horse power are in steel. We never use any iron shaft. Our machine is acknowledged to be the easiest to run and the one which lasts the longest.

We also manufacture a Canvas Separator with improved Railroad Horse Power; Railroad Upright Hay Press, Rod Upright Hay Press, Straw Cutter No. 9, 11, 13; Spring Harrows, 16 teeth; a Washing Machine patented May 1892.

We want active and responsible agents in all the localities where we have none yet. Any farmer shall find it an economy and be certain to have the most improved machine in applying to us. We allow a special discount for orders sent by mail.

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THE ILLUSTRATED
Journal of Agriculture

Montreal, August 1, 1893.

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Notes by the Way.

CROPS OF THE YEAR.—On the 20th June, we took a trip through part of the Island of Montreal and were heartily sorry to see the grain crops looking so backward. The heavy and continuous rains had encouraged the growth of weeds to an alarming extent, and in many instances the *cadluck* (*charlock*, *hulk* or wild mustard) and the *Guerlot* (?) bid fair to overpower the oats and barley altogether, particularly when the land had been ploughed in the spring and the seed sown at once. (1)

In land infested by these weeds we have always found the best treatment to be as follows: plough in the fall; in the spring, do not be in a hurry to sow, but give the weeds time to sprout, and, instead of two strokes of the harrow, give six. After the oats, &c., are up, about 3 inches high, give a double tine of the harrows, and let a couple of days elapse before rolling. But, after all, where a well managed root- or other hoed-crop recurs every fifth or sixth year, charlock and other weeds give very little trouble.

CLOVER.—If we expect to send clover-hay to England, we must cut the crop when it is fit, for if it is allowed to stand, as is the usual practice here, until the blossoms are fading, it will only fetch a very moderate price in the market. A piece of clover on a farm, at Ste-Anne de Beloeue, was just ready to cut on the 20th June, and it is still standing—July 1st (2)—Best clover-hay is worth in London \$42 to \$45 a load = 2,016 lbs., the London load being 36 trusses of 56 lbs. each. At Liverpool, Birmingham, &c., the gross ton of 2,240 lbs. is the rule. Meadow-hay is tied in trusses with ropes or bands made of the same material, but clover is always tied with straw-bands, as our Kentish men call them.

A late contributor to one of the States' agricultural papers recommends the use of the *tedder* in making clover-hay! Does he want to get rid of the leaf or to keep it on? The rules for making the two hays in the home-counties that supply the London market, the most difficult of all markets to satisfy, are simply these: keep meadow-hay on the move every three hours throughout the day, and never touch clover-hay, except to give it a gentle turn, once a day, getting it into big cocks as soon as possible. A farmer in the south-east of England who took a tedder to work his clover-hay would be considered crazy. The handle of a rake or a long stick is the only tool used unless when the hay is being cocked. And how the great stacks steam a few days after they are put up! One thing is certain: unless our clover-hay is sent to England in a very different condition to that we see in the Montreal market, we had much better keep it at home.

If any of our readers at Huntingdon or its neighbourhood will ask Mr. Robert Ness, he will tell them all about London clover-hay: he has seen it, and had it stick to his fingers, like a plug of black chewing tobacco.

The Montreal *Witness* seems to think the English stock will not take to our timothy-hay. No fear; they will eat it fast enough, but the English

(1) On July 12th, we took the same journey, and the improvement visible was almost miraculous.—Ed.

(2) It was not cut till the 10th July, and was then long past its best, though, of course, increased in bulk.—Ed.

stablemen will oppose its use as they opposed, in our recollection, Russian oats. And it is all very well to say the masters must make the servants use the provender for the horses that is sent in for them, but a stud-groom is an awkward man to offend, seeing that the condition of the hunters depends upon him, and no man fancies being left in the lurch after a twenty minutes burst, which he very likely would be, if he offended his stud-groom. "Beg pardon," Sir, "my horses can't go on that nasty foreign hay." would be the reply to a master complaining of his hunter giving in too soon.

FAT IN MILK.—In May last, the annual Conference of the British Dairy-farmers' Association was held at Yeovil, Somersetshire, the centre of the Cheddar district. Among many interesting questions discussed, the one of the influence of food on the quality of milk excited great attention. Mr. Lloyd, the well known agricultural chemist, held that "food influenced both the quality and the quantity of milk yielded by each individual cow," and this opinion does not seem to have been controverted by any of the practical farmers present.

By the bye, we are anxiously waiting for the result of the tests, ordered by M. Gigault to be carried out at the l'Assomption and Ste-Anne de la Poctière schools, on the effect of an addition of one pound of beans and a half-pound of linseed to the ordinary daily ration of a milk-cow. According to a letter from Mr. Barnard, this small addition to the usual food had the effect, at Roberval Convent, of increasing the yield of milk by 10% and the quality of that milk by the same percentage. See February No., 1893, p. 33.

DRIED BLOOD.—We hear, from trustworthy sources, that dried blood is to be had at New-York for \$14.00 a ton. Now, dried blood contains, or should contain, from 11 to 13 per cent. of nitrogen (equal to, say, an average of 14% of ammonia). This makes nitrogen cost only about 6 cents a pound, instead of, in nitrate of soda, 19 cts., which is a stupendous difference and needs explanation. At all events, the Central Syndicate will take orders, we believe, for dried blood at this rate, freight, &c., added, and we strongly recommend our readers to give it a trial next spring.

The nitrogen of dried blood is not in a fit state for plant-food, but is soon converted in the soil into ammonia and nitric acid, which are fit for plant-food. As it is less soluble than nitrate of soda and sulphate of ammonia, it should be sown and harrowed in with the seed, to give it time to *cook* before the plants want it.

CHEDDAR OPINIONS ON DAIRYING.— "That there are twenty different ways of making a good Cheddar cheese.

"That the working of a dairy of cows is often let out at 60 dollars a head.

"That the use of sour whey in cheese-making is beneficial.

"That fifty cows worked by the farmer's wife and family is a proper number for a dairy.

"That the fall of the price of cheese is equivalent to from 40 to 50% of the rent of land.

"That, as both the Cheddar and Cheshire cheese countries are on the red kuper marl formation, that may in part account for the excellence of their cheese.

"That, in the county of Somerset, factories do not answer.

"That a mixture of milks destroys the proper ferment, and thus factory-cheese is always second-rate (?)

"That lime must be replaced in a dairy-farm as well as phosphoric acid.

"That makers scald their cheese anywhere from 92° F. to 112° F., and still get prize-cheese!

"That cheese varies as the soils."

If the makers of Rhine wines recognize, as they do, the superiority of wine made in one vineyard over another, though the two are only divided by a footpath (Johannisberger Schloss), why should not the last opinion of the Cheddar men be a sound one?

FAT IN MILK AGAIN.—At West Dryden, New-York, wons Mr. A. Baker, whose Jersey cows, according to the "Rural," are worthy of all commendation. Mr. Baker appears to entertain the same contempt for the "colour-craze" in Jerseys as we entertain for the "feather-craze" in show-poultry, believing that the production of breast-meat is the real test of excellence in a Dorking.

Mr. Baker conceives that the amount of fat in milk can be increased, and he proves it practically. The first test he made was with the following ration:

Hay.....	20 lbs.
Corn.....	4 "
Oats.....	4 "

On this food, one pound of butter was made from 18 lbs. of milk.

The next ration was compounded of:

Hay.....	2 lbs.
Silage.....	40 "
Oats.....	4 "
Bran.....	4 "
Oil-cake.....	1 "

This had the effect of increasing the quality as well as the quantity of the milk, so that only 14 lbs. of milk were required to make 1 lb. of butter. The third ration was then adopted:

Hay.....	2 lbs.
Silage.....	40 "
Oats.....	4 "
Bran.....	4 "
Cottonseed-meal.....	2 "

With this, the quantity of milk yielded remained the same, but only 12 pounds were required to make 1 pound of butter.

CORN-SILAGE.—It appears that the proper state of corn for ensilage is not yet settled. Mr. Fisher who, if experience is worth anything, ought to know, prefers corn well advanced towards maturity; M. Lomiro, on the other hand, in his essay, read before the Dairy-men's Association, at Ste-Therèse, last autumn, holds that "silage-corn should be sown thick, and that it would be worth 1/2 more than silage from large stemmed corn with its cobs. Corn for silage should be sown in rows 20 to 24 inches apart, at the rate of at least a bushel of seed to the acre," which is about double the quantity recommended by others who aim at the ears being in the milk when cut for ensilement. Now, Mr. Baker, a most successful dairyman, says that "silage is the best milk-producer I have ever used, provided it does not have too much corn in it"! How shall we decide between three such practical men?

BASIC-SLAG.—Now that, as we saw just now, nitrogen is to be had at a

very low-rate, in the form of dried blood. we naturally look for an equally cheap source of phosphoric acid, and this we find in basic-slag, the refuse of the iron or rather steel foundry. Containing, in the best samples, about 18 oyo of phosphoric acid, besides being rich in lime, this phosphate can be laid down here, in Montreal, for about \$0.00 a ton of 2,240 lbs. or, say, \$9.00 for our ton of 2,000 lbs. This would make the phosphoric acid cost only 2½ cents a pound.

Now we suppose 40 lbs. of nitrogen and 54 lbs. of phosphoric acid will be admitted to be a full dressing for an acre of land requiring such manurial matters; the cost will be as follows:

300 lbs. of dried blood.....	\$2 10
300 " of basic slag.....	1 35
	—————
	\$3 45

But, it would, we think, be better to double the quantity of the slag to allow for slowness of decomposition, and, even then, the cost of manuring an acre of land would only amount to \$5.00.

The slag must be ground to the finest possible powder, and, like potash, should be sown broadcast before winter. Its chief quality, besides cheapness, is its faculty of duration; it is not, like superphosphate, washed out of the land or out of the reach of the plant-roots in one season, but, on the contrary, yields its plant-food up gradually for two or three years.

Slag is particularly suited to our black soils, on which it would, we believe, greatly increase the growth of clover; in fact, it may be used in every soil, as a source of phosphoric acid, and for every crop, except for swedes and turnips, where it would be better to use a quick acting superphosphate to push the young plant out of the fly's way.

For meadows, kamit might be added to the slag, though, as we have often observed, we have never seen the application of potash pay in this country. Where ashes have been profitably used, we have been generally inclined to attribute their good effects to the phosphoric acid they contain more than to the potash.

The slag may be mixed with nitrate of soda, but not with sulphate of ammonia, as the lime it contains would set the ammonia free, though, of course, if the fertilizer is to be applied at once and harrowed in immediately, the loss of ammonia will hardly be appreciable.

TREATMENT OF NEWLY CALVED COWS.

Do you want your mother cow to go about blaring after her calf when the latter has to be, as it must be, sooner or later, separated from her? If you do, then let her, as is often recommended by unpractical, unthinking people, suckle it for a few days—even a few hours will be enough. Our own practice has always been never to let the cow even see her calf, but to remove it as soon as dropped, and, except for an enquiring, doubtful glance, as much as to say: Why, what on earth has been the matter? the cows never seemed even interested in its progeny, of the existence of which they were, in most cases, absolutely ignorant.

Most of our readers have, doubtless, observed that, when a cow accidentally calves in a field or yard, the first thing she does on rising is to set to work and lick the calf all over. In fact, in our boyhood, we have often seen the farm bullock sprinkle the new born with salt to encourage the cow to

lick it. Therefore, as nature clearly points out the gluey matter as a medicine to the cow as well as a matter that should be removed from the calf's hairy hide, it is evident that some form of physic is needed by the cow, and as the first flow of milk acts on the indurated feces in the calf as a purgative, we think well of the habit of giving the cow, after she is quiet, a dose of her own *beistyn* mixed with such a quantity of thin oatmeal porridge as may induce her to drink it.

Do not cram your newly calved cow with grain or cake for the first ten days. Keep her moderately warm and well littered, and be sure that linseed crushed, or, if you have no crusher, ground with about double its bulk of oats, forms part of her food. Uncrushed or unground linseed, even if boiled for a dozen hours, is half wasted: take a gram of it into your mouth, and you will soon see why.

MILK IN THE SHADE—Every farm should have a road fenced on each side, from the cowhouse to the farthest pasture. The judges of Agricultural Merit, we are glad to see, lay great stress on this point. In cases where this road exists, there will be no trouble with flies driving the cows crazy and making them kick the pail over. When the cows reach the cowhouse, give each a handful or two of grain or cake: they will be all the more ready to go into their stall. For our part, we thoroughly believe in giving additional food to cows on pasture, except, perhaps, in the first rich flush of the grass. It not only keeps up the flow of milk, but strengthens the cow, particularly in such a season as that of the past spring and early summer. During the time of *washy* grass, when the cows are scouring, a couple of pounds of cottonseed-meal, or a quart of pease would tend to correct the looseness. And when, in October, the poor things begin to stand about the gate of the pasture, shivering with cold, and with their bellies only half filled, why not prepare some nice comforting mixture of chaff, meal, &c., to fill up the vacuum caused by the waning herbage. Winter butter will, we believe, pay well, but on condition that the cows go into winter-quarters in good condition and with their normal flow of milk unchecked, for you know, as well as we can tell you, that keeping up the flow of milk is one thing, and restoring it, when once fallen off, is another.

BROKEN-WIND.—In the county of Southampton, commonly called, though erroneously, Hampshire, there are more broken-winded horses than in any other two counties, of the same size, in England. In the same county, there are a great number of water-meadows: can there be any connection between the two phenomena?

The answer is "most undoubtedly, there is." Why? Because the "carriers" that take the water from the rivers (rather, *brooks*) run across the roads, and people allow their horses, heated with travel, to stop and drink at them whenever they feel inclined. The water from these brooks is not, like some of the trout-streams we have fished in the townships, bitterly cold, but moderately warm, or else they would not answer for irrigation. "Thousands of horses are ruined every year by this injudicious plan of watering after being heated by work or fast driving," says an American writer on the subject, and when we see the

man who looks after the City Passenger car-horses at Côte Street come out with a couple of pails of ice-cold water, we own we should like to upset them before they reach the horses. If a horse is allowed a "go-down" or even two, when he comes in to the stable, it will not hurt him, but he should be cooled off and have his hay, and then be watered before he has his grain.

THE HAY FAMINE IN ENGLAND.—If we do not look sharp, we shall find ourselves behindhand in supplying the English market with hay. Russia is bringing hay from her great Southern steppes to the seaboard, and the Argentine Republic has already sent some very fine lucerno or alfalfa—as the Spanish call it—which sells for £5.15 the gross ton = \$28 for our ton. United-States and Canada hay was on the market June 19th, and sales were making at from £5.5 to £6.5 a gross ton. English hay was fetching from \$40 to \$45 a ton, and oats going up in price rapidly. The writer's brother sends word that "my tenants have not a bit of old hay left and hardly any new, and the cows are very short of food in the pastures"; and this on some of the finest alluvial soil in the county of Gloucester!

PRICE OF STOCK IN ENGLAND.—Best 60 lbs. Down sheep are worth 5 shillings a head less than last year, and 40 lbs. Down fat lambs, that last summer were selling for \$1.54 a stone of 8 lbs., now only fetch \$1.24 a stone.

As for lean stock for grazing purposes, they can hardly be given away. The only cattle that keep up in price are milch-cows, the best lots at Islington market being still worth £220. = \$10.92, but fat cows only fetch sixpence a pound, the four quarters. (1)

R. A. S. OF ENGLAND.—The first and second prize aged shorthorn bulls at the great annual exhibition—they call it *show* in England—of the Royal Agricultural Society, at Chester, were bred by the Queen, to whom Lord Feversham paid \$5,000 for the winner of the first prize.

There are 118 shorthorns and 60 Herefords on show; in sheep, Shropshires are the most numerous; about 200 head being on the ground. (2)

The sheep-shearing machines seems to have been, comparatively, failures, the wool being unevenly shorn and the sheep cut rather frequently.

A 5-horse-power engine, with common paraffin as fuel, only consumed a cents worth per horse-power per hour. Cheap work indeed, half a dollar for a day's work!

A machine for making butter into pats, shown by Messrs. Hucks, of London, turns out 2,000 pats an hour! A good thing for creameries near large towns.

The *disc-churn*, a new invention, made butter of perfect consistence in four minutes fifty seconds! the grain seems to have been perfect.

THE SEASON.—Always in extremes, has been the season of 1893, up to date (2nd July). If drought sets in soon, as it surely will, keep the horse-hoe going between the rows of drilled crops, even if the horse does set his foot

(1) We regret to see that now—July 13th—prices are still worse.—Ed.
(2) Cheshire joins the county of Salop, commonly called "Shropshire."—Ed.

on a plant now and then. When maize is intended to ripen its seed, no doubt it is dangerous to horse-hoe deeply, for fear of cutting off the roots, which would delay the ripening process. But where potatoes, swedes, mangolds, &c., are concerned, keep the horse-hoe well down until the depth of 5 inches is gained. The plants will stand the drought all the better for it, and if a rootlet is cut off, nature will replace it with two or three more, and the delay in ripening in the case of root-crops does not matter much.

"INTRODUCTION OF THE RAPE PLANT INTO CANADA."

"It is not known when rape was first introduced into Canada, but it is now certain that it has been grown for several years past in the county of Wellington and in one or two of the adjoining counties. In other portions of the Dominion it does not appear to have been grown to any considerable extent, if indeed at all. However, since the bulletins upon rape culture were first issued by this station, it has been ascertained by actual test that rape can be grown in *fine form* in every province of Canada. A large percentage of the Canadian lambs shipped during the more recent years to the Buffalo market have been finished on rape." *The Rape plant by Professor Shaw, Guelph.*

In 1872, 20 acres of rape were grown at Hillhurst Compton, P. Q., by the Hon. Mat. Cochrane. In 1874, the editor of this periodical grew 5 acres of rape at St. Hugues, P. Q., and fed it off with sheep. There is an engraving of the writer's lambs hurdled on rape, in 1884, at Sorol, P. Q., in the 6th volume of the *Illustrated Journal of Agriculture*, p. 184., the photograph for which was taken on December 7th of the above year, just as the lambs were finishing their last fold. A very uncomplimentary likeness of the writer appears in the corner of the field, and the land may be observed to be ploughed up to the last possible furrow, to bury the sheep-manure out of all danger of losing its good qualities. The succeeding crop of oats turned out 70 bushels to the acre. In the June number of the *Journal of Agriculture*, vol. I, p. 22, (1879) is a full description of the rape-plant, its cultivation, and an engraving of the hurdle used by the writer at Saint Hugues. We have never ceased recommending the growing of the plant for sheep-keep, as being the best, the easiest, and the cheapest way of restoring the fertility of the worn out farms of the province of Quebec. Unfortunately, if we may be allowed to say so, nobody paid the slightest attention to our advice.

WASTE PRODUCTS—Things are very much altered since the *waste products* of the gas-works were contemptuously run into the nearest stream. Now, not only are the tar and the ammonia washed out of the gas in the process of purification carefully preserved, but at the works, in the coal districts of Britain, devoted to the production of the hard, dense coke used in working up metals, where until recently all the ammonia was lost, as much care is taken to preserve it as at the gas-works. In the great iron-works, too, large sums have been expended in apparatus for the recovery of this product.

Although not strictly associated with agriculture, we may be excused for mentioning the marvellous success that has attended the persistent efforts of our English men of science in their

attempts to recover the sulphur from the "alkali waste." Several chemical processes had been discovered able to accomplish this, but "they did not pay": at last, Messrs. Chanco, the great alkali (soda) manufacturers of Olbury, after expending fruitlessly ten thousand pounds, to say nothing of two years' hard work, triumphed over the difficulty. The process consists in passing the gases of the limekilns through the waste, to decompose it, thereby driving out the sulphuretted hydrogen, which is then sent through a kiln together with a regulated quantity of air, just sufficient in quantity to burn the hydrogen, when the sulphur, almost chemically pure, is deposited in brick receiving chambers. When these chambers are opened, great stalactites and fantastically shaped wreaths of yellow and brown sulphur are seen festooning the roofs and walls, and, after the sulphur has been removed, the waste is utilised for the manufacture of cement.

As the "alkali waste", accumulated at Widnes, Lancashire, covers 500 acres to a depth of 12 feet, and the quantity of sulphur recovered from it is expected, in a year or two, to reach upwards of a hundred thousand tons, the English wants will be fully supplied and fifty or sixty thousand tons will remain over for export. But what will the poor Sicilians do? Almost all the sulphur used in Britain came from the volcanic districts of their lovely but impoverished island.

AMMONIA.—Talking of saving ammonia at the gas-works, we mentioned, a short time ago, that all the gas liquor from the Montreal works is sent, after being concentrated, to the States. At Sorol, as well as at other small towns, it would, perhaps, hardly pay the manufacturers to put up an apparatus for saving the ammonia; but, a small fee to the men would no doubt induce them to collect the liquor in puncheons, and this, after being mixed with any rubbish, ditch-cleanings, &c., would be a most valuable dressing for any land. In fact, the head man at the Sorol works, shortly before we left that city, agreed to collect the ammoniacal liquor for us or for any one who would send vessels to receive it. We fear, however, that it still runs into the Richelieu.

GYPNUM.—Gypsum, well ground (to be of best value it should be nearly as fine as flour) should be obtained landed at any station on the W. A. R. at \$5, a ton or even at a less rate in larger quantities. Now it has been estimated by eminent authority that a ton of ground gypsum, saturated with ammonia, is equal in value to a like amount of the best superphosphate of commerce. From this our farmers will be able to judge whether or not they are fully improving all their opportunities for making cheap and valuable fertilisers.

A. J. PINEO.

Now, here we have an instance of the danger of loose nomenclature. We should like to know who is "the eminent authority" who states that "a ton of gypsum saturated with ammonia is equal in value to a like amount of the best superphosphate." Gypsum is a compound of sulphuric acid and lime; superphosphate is a compound of phosphoric and lime, with a little gypsum. If the writer means equal in money-value, that may be, though we doubt it; but if he means in manurial value, there can be no compari-

son between the two, as superphosphate contains no ammonia at all. To call a mixed fertiliser, containing nitrogen, phosphoric acid, and potash, a superphosphate, is absurd; but it is too often called so, and we continually hear it said: "Oh! I put two bags of phosphate on that piece," which gives one no idea of what fertilising material has been employed.

COUNTY AGRICULTURAL SOCIETIES AND FARMERS' CLUBS.

The government of the province never intended to abolish the Agricultural Societies, as some people imagine, but it wished to put all the farmers on an equal footing, and in a position to benefit by its grants. In Ontario, there are County Associations and Township Associations. In Nova-Scotia and New-Brunswick, farmers can form as many societies as they wish to form. Nova-Scotia only grants \$400 to each county; our government not only grants \$704 to each county, but it also agrees to give, in addition, to each society in the county a sum equal to what may be wanting to make up the grant to \$704, if the subscriptions are sufficient. Thus, if an association subscribes \$400, it will receive its \$704, whatever be the amount granted to the Farmers' Clubs.—*Com.*

HAYMAKING.

A quick dry with the least handling will make the best hay. Grass is perfectly healthy—it does not need to be "cured." Too much shaking and tossing about will only lose the lighter leaves and flowers, which are the best of the plant. Don't wait till the grass is wood before you cut it. *There are more milk and butter in early cut grass.* What's the good of cutting grass for hay that the stock would not eat in the pasture? Old plants, like old hens, are less digestible than young ones. Another thing to remember: long keeping in bale or mow reduces the digestibility of the hay.

R. N. YORKER.

In reference to the hay crop, which promises to be large both in Quebec and Ontario, one of our local banks, largely interested in this industry, has recently sent out a circular to its agents giving advice as to the requirements of the British trade, and requesting them to make the facts known to their clients and to farmers generally. One of the principal points touched upon is the importance of early cutting so as to preserve the flavor of the article, *complaint being made hitherto by English buyers that our hay is altogether too ripe*, a condition which is intensified by the absence of the quantity of clover usually found in English hay. It is stated that, if properly cured, our hay would command from two to four dollars more in the European markets. And, in addition, it must not be forgotten that this is a crucial year for this industry, and will largely decide for the future the status that the Canadian article will have compared with others in the European markets.—*Witness.*

Very good advice, not to mow, clover too much, but meadow or timothy hay may be "broken out" as much as you please, *when fresh-cut*. If "long keeping in the mow" injures hay, how is it that *old hay* is always worth a pound a load more in England than *new hay*.—*Ed.*

CUTTING AND CURING CLOVER.

EDS. COUNTRY GENTLEMAN.—That clover hay is one of the best of dry foods when properly cured is a fact beyond dispute, and that most farmers do not understand the curing of it is another. Nearly all who write on the subject have different methods which will reach the same results, but most of them speak of using a hay tedder in handling it, and this is generally enough to settle the question of trying that plan, as most farmers have no hay tedder.

So I venture to give a plan which has been in every way a success for years—and I have no hay tedder. First, clover should be cut as soon as it shows the blossoms well and before all of it is blossom. The time of day when cut has much to do with a successful curing. I never start the machine in clover until the dew is off and then mow it, and in the heat of the day when it is partially wilted, rake it and put up in not too large cocks. These are generally left untouched one day, and if the weather is not first-class hay weather, they stand until the second day and then opened out, not very thin but in such a way that the air can get through it and the sun not dry it too much. After a short time the clover is put in the barn, where it can be kept as much as possible from air drawing through it. When it can be done, put in and fill the storage place as soon as possible, then put some straw or old hay on the top and you have something to absorb all the moisture that comes from the fresh cut clover and will have none on top black or moldy.

Should you get a field out and in the cock and a few days' rain come, it should be cocked over, and by this means it can be kept from coloring badly and getting musty. If one had caps to cover when cocked up, there would perhaps be no necessity of cocking over, yet I should not use the hay caps in fairish weather, as the hay will sweat and cure out better uncovered. Clover cut at the time mentioned and cured as directed will come out of the mow as bright and green as when put in, and even the pink color of the blossom will be nearly as bright as when cut, the leaves will not have been rattled off, and it will be as soft and pliable as partially dried clover when cut later in the season. While it is one of the most perfect foods properly handled, I venture the assertion that the larger per cent. of clover hay is cut too late and sun dried too much, so that very little but the stalk is left, is of very little if any more value than good straw, and generally, the cattle will eat the straw with decidedly more relish. Clover hay is splendid food for horses, cattle, sheep and swine, and all of these animals will thrive on it.

H. S. MATTESON.

Otsego County, N. Y.

DRAINING SILTY SOILS.

A writer in one of the States' agricultural papers, advises drainers to put straw or hay over the pipes when dealing with a soft sandy bottom. Our own experience, in England, of such land has been pretty extensive, and we invariably put hay under the pipes not above them, and covered them with the stiffest soil thrown out in digging the drains. Our reason for this is that as the water always rises into the drains from below, as we explained in our articles on drainage in the Journal for November, 1890, p. 101, q. v.,

it will carry the silt with it into the pipes. If possible, we should like to have the pipes and joints made absolutely impervious all along the top.

Many people have a notion that each drop of water that falls from the clouds, when it reaches the ground, has to hunt its way through cracks and crevices, following the easiest route, in fact, until it falls into the drain at the top. Nothing can be farther from the truth. *Percolation* is not the way. It is all done by the force of gravity. Hang up a sponge saturated with water; pour a small additional quantity of water on to the top of the sponge; what happens? The water begins to drop from the bottom of the sponge. So it is with drained land: there is a column of water retained; more falls from the clouds; the last drop, so to speak, of the column is pressed upon by the superincumbent weight and is driven into the easiest mode of exit, the pipes.

Farm Operations—August.

By the end of July, all the hay ought, in the western part of the province, to be safe under shelter. Harvest, barley first, will have been begun, and the pastures be getting bare. Roots, and other hoed-crops, should have great attention paid to them, and the early morning, when the dew is too heavy to admit of turning the oats or barley, will afford time for horse-hoeing. Why go into the bush to cut harts (withes), when equally good bands can be made of the straw of the crop itself? Sheaves of oats and wheat should be tied at once after the reaper, and made small, as, if they get wet, large sheaves take long to dry. Shocks, or stooks, 5 sheaves on a side, are long enough; cap-sheaves may be used, but are seldom required in our usually dry climate. Keep the horse-rake close after the reaper, as fresh cut grain does not shell out readily.

We never tied a sheaf of barley in our lives, and never saw one tied, though we farmed for several years in the midst of the great malting district in the S. E. of England. Let it stand, if for the brewery, till it is dead ripe, turn it gently with a rake, and, when the clover in it is thoroughly dry, put it up into a stack where it should sweat for 7 or 8 weeks. If intended for grinding or for poultry, it can be cut earlier than when intended for malting. There will be plenty of grass in the barley this year.

One-horse carts carry grain quicker than waggons: we tried the experiment 45 years ago and proved it. Carts are handier to turn, and small, quick loads clear the ground faster than large, slow loads. A harvest waggon is an unknown thing in Scotland, and although we cannot admit that the Scotch are better farmers than our Eastern-counties Englishmen, we must allow that, in all that concerns economy in farming, they beat us into fits. While you are busy with your harvest, do not forget the herd. You will, of course, have made some preparation for the cows, at least, and they should have their green-meat ready cut for them at regular hours, and not be allowed to stand *lowing* about waiting for it. Second-cut clover will be ready—or ought to be if the first-cut was taken early—and you would find the mixture of tares, oats, and pease produce more and better milk than maize, besides keeping the cows in better condition. Maize, in August, is but watery stuff, while the tares mixture, if in bloom, as it will be if sown early, is full of proof.

The flock requires attention: this is a bad month for the fly; particularly where sheep are allowed to run in the bush. Keep the hind-quarters clean; the wool between the thighs should be clipped to prevent the fleeces from accumulating there. Do you ever dip your sheep? It pays well to do so. Lambs and all. There are plenty of good mixtures for the dip to be had of any druggist: Sir John Lawes, who has been a manufacturer of fertilisers for more than fifty years, has just brought out a new dip of which English flockmasters speak highly; but it probably has not yet reached this side of the Atlantic.

Why let your ram-lambs run about uncut? It is not a difficult job, the castration of a lamb, and the meat is much improved by it. There is no objection to allowing the ram-lambs intended for winter-consumption to run uncut till weaning time, but, then, they should be cut at once. Lambs, to be eaten as lamb, should be castrated at ten days old.

Horses are hard at work in harvest time, and deserve better food than they can pick up in the over-eaten pastures: a bushel of oats, or better, of *gabourage*, should be allowed each as a weekly ration. Take care the foals do not suck the mares when the latter are heated from work.

Swine in the clovers, as last month, ought to be doing well. The young ones, intended for October pork should be getting a little better food. Skim-milk, barley or corn-meal, with a few pease, is about as good for them as anything. More profit from young porkers, if fairly kept from weaning, than from bigger hogs. A good breed of pigs ought to turn out porkers of 100 lbs. at 5 months' old without any great expense for food, but if kept principally on clover, they must have pease, or else the meat will be too soft. In the country-markets, coarse, big, old hogs are sought for, as being more economical—such things as we have seen at Sorrell—, but at Montreal, there is a great demand for good, tender pork, and it is almost impossible to find it. Hogs fattened from their birth ought to make a stone (8 lbs.), or rather more a week; but we are not speaking of such as those.

Poultry will soon be moulting and should be well fed. Horses changing their coats and hons moulting are weak enough without having to hunt for their own food.

Fences should be looked after. Pastures being pretty bare this month, the least weak place in a fence will be an inducement for the cattle to break through into the standing crops.

The milk will be increasing in richness these days. Cream is good in many ways, but do not let that induce you to rob your brother patrons by skimming the milk: the Babcock will, we hope, put a stop to this atrocious piece of dishonesty.

The Dairy.

JUNE OR JANUARY BUTTER?

This dairy, consisting of fourteen cows, four of which are with their first calf, averaged 331.5-7 pounds of butter per cow.

"What were your receipts for butter?"

"The total net receipts were \$1,161 for butter, not including value of skim-milk and calves."

"And the cost, please?"

"Estimating the cost of pasture during summer at 50 cents per week

for six months or \$13, the six months in the stable cost \$21.29 each—a total of \$34.29 per cow. This leaves a balance of \$680.94, a profit of \$48.61 per cow for the butter."

"The statement is made that one can make a quart of milk as cheap in January as in June. What do you think of that?"

"You see that I made 360 pounds of butter in December, and 65 pounds of butter in January. The cost of keeping is \$2 per month in summer, and \$3.55 in winter. So, for butter, summer is cheaper."

"I have a friend who claims that for profit cows should be fresh in spring. What do think about that?"

"A cow will probably give more milk if fresh in fall, provided she is kept in the best manner."

"But!" said I, "if she is fresh in spring, she gives the bulk of her milk when food is cheapest, as she dries up towards winter, less grain is required. In the coldest months, when dry, no grain is needed, and the cost of keeping is reduced to just a maintenance ration."

"How about the price of butter in winter?" he inquired. "You have to feed enough to maintain the cow, why not add grain and get butter enough to pay for both?"

My answer was, "Good butter packed in firkins sells in the fall for only a few cents less than winter butter. So many have gone into winter dairying that there is not difference enough in price to pay for increased cost of winter feed. But that is not the worst trouble. When fed on good hay and grain, the cost is from 18 to 30 cents per day, if the cow is fed, as she must be to keep up the flow of milk, so that she will be profitable during early summer. Now, how many cows are there that will make enough butter to pay for this ration? I think with scrub cows, barns and owners, there is more profit in letting the cows go dry from December till March."

"Well! Perhaps you are right, but there is no month in the year when my dairy does not more than pay for the food consumed." Let's leave this to the RURAL readers.—R. N.-Yorker.

CANADIAN CHEESE AT THE WORLD'S FAIR.

Total single exhibits of cheese 667, of which Canada sent 162 from 110 different factories. Of the 135 medals awarded, Canada won 126, and had 31 cheeses that gained more marks than the highest number assigned to the best cheeses from States' factories. Ontario received 69 medals; Quebec 52; New-Brunswick 1; Nova-Scotia 2; Prince Edward Island 2. Of cheese made in '93, twenty lots from Quebec received medals, but only one went to Ontario. (1)

THE NINETY DAYS TEST.

"The ninety days test at the Colombian Exposition has been very even so far. The markings of the judges on the butter have been very uniform, so much so that there is no difference in flavor for or against either of the breeds, as far as the market value is concerned. This being the case, of course the amount made, and the cost of the feed, and the increase or decrease in the live weight of the cows, will have to determine the awards.

(1) Many of our cheeses were destroyed at the lamentable fire in the "Cold-storage" department.—Ed.

The Shorthorns were at a disadvantage in regard to numbers when the test was started. Two or three extra cows did not calve as soon as was expected, but if they do well the amount of milk and butter will increase, rather than decrease, as the test progresses. Of course, the Shorthorns can hardly be expected to win, as no one has ever claimed that they were a dairy breed alone, though their beef qualities are everywhere admitted. The object of going into the test was to show the farmer that he could get good milk and butter, besides raising a calf that would weigh, at the end of one year as much as the calf of a strictly dairy cow would at the end of two years, besides, the quality of the beef would be much in favour of that Shorthorn calf. The test, so far, is helping to establish all that has ever been claimed for the Shorthorns."

The above extract is from the *Farmer's Advocate*. The writer, we suppose, is talking of the Shorthorns admissible to entry in the herd-book as not being dairy-cows. If he would visit Darlington fair, or any market in the North of England, or even Lincoln or Peterboro, he would see that the *Dairy-Shorthorn* is a dairy-cow indeed. The herd-book *Shorthorns* are dried off as soon after calving as possible, to make them breed again at once; they suckle their calves, if they can, and no cow wants to make more milk than her calf will take, so like the *Horsfords* and the *Highlanders*, or *Kyloes*, they are about the worst milkers that wear horns. There are exceptions, but the rule is as we have stated it.

DAIRY-FARMING.

Read by R. Campbell before the Farmers and Gardeners' club of Quebec at Bergerville.

MR. CHAIRMAN AND GENTLEMEN,

I have taken a subject to address you upon this evening which is so vast, that really it will allow of my taking up only a small portion of it and going over that in a very cursory manner and upon which there is so much to be said that I must necessarily leave a lot unsaid. It is "Dairy Farming."

The popular idea is that dairy farming is only concerned in the production of milk or the handling of its products. I think dairy farming has a much wider range than that. Dairy-farming is attached to the earth: to have milk we must have good cows if we have good cows, we must feed them, to feed them we must cultivate the soil; so you really cannot talk of the dairy industry without mentioning agriculture. General dairy farming should certainly concern itself with having the soil in such a state of fertility that the dairy man will obtain plentifully and profitably the raw material out of which he has to obtain milk, butter, cheese, beef and other animal products of concentrated quality and value. I shall begin therefore by trying to tell you what I conceive to be the purpose of skilful farm work. It is to procure and provide food of excellent quality: to maintain and increase if possible the fertility of the soil that there may be abundant store wherefrom to draw the raw material; and to give profitable occupation upon the farms of the country. In the production of food, dairy farming enables every one who follows it carefully, skilfully and with judgment to get more food from the same number of acres than he would otherwise do.

We are enabled by dairy farming

to protect our soil. Dairy farming, while providing large supplies of food will protect our soil and keep it rich to go on sustaining the large population for which food is to be provided. It will give employment to a large number of hands, and as we increase the population on our own lands so do we add value to our property and augment our profits. A dozen square miles in the heart of Africa where nobody lives would not be much of a fortune, but a small portion of land in the heart of London, Paris or New-York would have some value: so as we get population we get more value in our land.

Now I think dairy farming will enable our farmers to follow agriculture with these results: the obtaining of large supplies of food, the maintaining of the fertility of the soil as well as the increase thereof; and the supporting at remunerative rates of a large agricultural population. First then, the obtaining of large supplies of food. It will increase the supplies by giving to the plants which the soil produces an increased life-sustaining value by their being transformed from the vegetable state to that of an animal product. A man cannot live on grass, and even if we made twenty blades grow where there only used to be one, it would do the man no good, except the dairy farmer stepped in and turned them into a product fit for man's consumption. A corn crop cannot do much for us, unless the cow steps in between the cornstack and the man, then the man will be able to live on the corn and live on the best of food.

There is a great tendency to increase the consumption of food of a concentrated quality; and here let me cite a fact that in England to day the consumption of milk is quite five fold larger per head of the population than it was twenty years ago. The same is true of Canada, and the consumption of cheese has increased in United-States to such an extent that it is five-fold as many pounds per head of the population as it was 25 years ago.

Then, dairy farming while doing so much in the way of providing the world food will maintain the fertility of our fields. Many say this country is played out for growing grain and yet you hear many say that these northern climates are the very best for growing grain; so I consider that we should grow grain, but where the fault is you grow a large crop of grain and sell it all off the farm. I think you ought to grow cereals but quit selling so much; we should agriculturally be a grain-growing people selling animals and their products. Thereby we shall grow more grain, have richer fields and get more food. By this method we should get from our soil an ever increasing supply of food from a never diminishing store. Every plant that grows on a farm for the service of man requires three substances—nitrogen, phosphoric acid and potash. Now, when a farmer having an abundant crop sells the whole crop from his farm, he removes the whole of these three things which the plants took from the soil; but when a man feeds these plants to animals they toll their feed to the extent of 12 or 20 per cent.

Now, men may talk as they like about having strong hands and a willing back, but the man who has a clearhead, and can know what to do and how to do it is far better furnished for any task, even for digging drains, than the man who has only strong muscles. The cow is only a boarder with the farmer and if she eats more than she can pay board, she is not profitable, she ought to be made to pay her board as she goes and not allowed to run all

winter and then be taken in the spring and sold: now you must pay all that you got for last winter during the coming season. The cow ought to be made to know that it is her business to supply me with milk, then good calves, and then beef after that. If I look for the beef as the essential product of my cow I prevent her from serving me with milk, and I do not consider that a cow can pay her board in beef only. She can pay her board if she gives me milk first, so that I can raise calves and then if she pays the board bill in milk I can sell her for beef at the end and that is profit.

The next matter is to devise some way whereby we can reduce the cost of supporting the cow. The profit lies between the cost and the price realised, so that we have to examine the possibility of reducing the cost by changing the kind of food from hay and turnips to cheaper kinds like corn ensilage or clover ensilage. When the blossom is blowing off the hay-stalk you have the most food in it: the same with the corn. Make your food acceptable as to flavor and aroma: the wilting of the corn-stalk in the field before putting it into the silo—will much help this. One point to be referred to is making your cow begin to earn her keep young. It will always help the dairy farmer to increase his profits if he will make his cows begin milking at 2 years old. It has been stated by professor Robertson that there is no climate that will keep animals in better health than ours on the whole face of the globe. We have less disease than any country where animals are kept, the cold of winter gives them vigour of constitution and then more power for service. It has been said that winter dairying is unsuited to our cold climate, but professor Robertson considers it the best season for two things: for making fancy butter at the lowest cost of labor and money, and for raising calves to have constitution and vigor thereafter for thrift.

Now have we any fear that this kind of product will not be wanted for consumption? Take butter making, the best markets in the world are the British Isles where they centre from all quarters of the globe.

Now, how far off are we with butter? That is the question; and it is not in miles I mean but in price, for it matters little how far off we are for you might even ship to the man in the moon if the profit is good. Now, I believe we are distant from England about 1 cent a pound on butter. The winter affords us a good time for its transportation. The English import a great quantity of butter, and of all this Canada only supplies 2½ per cent, the other 97½ per cent is open to us if we will send suitable butter.

As to our cattle, we send 22 per cent of what England imports, and our cattle are received with favor. Now beef raising and butter and cheese making ought to be carried on side by side. The skim milk will suit for feeding. Now there is a product, I mean skim milk, which is often spoken of with contempt, let me cite an instance of its worth. In Denmark they have gone into winter dairying, and what they call partnership dairying; by that plan the farmers who furnish the milk receive full value per pound of the butter from the factory they support then they are charged with about 2½ cents per gallon, or ¼ cent per pound for the skim milk that is returned. The partnership companies realise enough from that quarter of a cent per pound to pay all manufacturing expenses and also in four or five years to pay for the building and

equipment where the business is carried on, so you see skim milk is of some value and the best way to materialise this value is to feed it to calves and hogs. We supply to England about 34½ per cent of all the cheese she imports and we may supply that proportion of butter imports if we can improve our butter which is gradually being done and will continue to improve as our butter-factories increase. Now I think we ought to raise more hogs with the milk. We import according to statistics nearly \$2,000,000 worth of hogs and their products. Now we should not do this; we should be sellers of hogs and bacon and hams and pork. We only furnish about 6½ per cent of what is bought.

Gentlemen it has been said and with great truth I think, that a farmer needs as much reflection to conduct his business, to manage his work as a diplomatist needs to direct the affairs of his country; a farmer needs to employ as much foresight to conduct his work in the most advantageous manner possible as an advocate needs to plead the most important

case; as much intelligence is needed by the farmer to carry on his business successfully as is needed by the doctor, the shopkeeper, by any professional man whatever, to manage his affairs no matter how complicated they may be. I will say more as much foresight is required in turning a dunghheap as in writing a diplomatic letter; always presuming that you turn your mixture in such a manner as to gain from it all the profit you expect.

Let me here, before closing, repeat that which has publicly been said at the annual meeting of the Dairymen's association of the Province of Quebec held in 1889.

Agricultural clubs are powerful promoters of the establishment of butter and cheese factories and consequently valuable assistants to the Dairymen's Association and to agriculture in general.

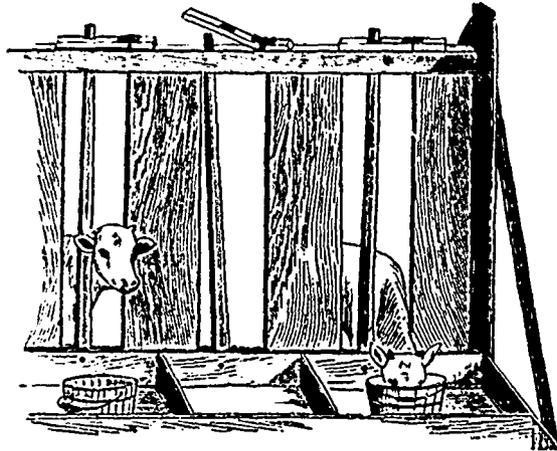
The Grazier and Breeder.

CALF FEEDING PEN.

BY W. M. CHAMPION, REABURN, MAN.

By the time your June number reaches your readers, many will be tussling with their young calves at feeding time, now just turned out to pasture; and to save many knocks both to feeder and calves, I advise them to make a calf stanchion and build it into the fence. To make it, it requires two upright ends morticed into two blocks for feet; let these be four feet long, with the upright placed in centre. Now saw gains in uprights six inches from each end, leave one inch full of upright, now take

either nicely smoothed poles, or better, strips of picketing, and nail in the gains out in uprights. Now you have your two end pieces standing on their own feet, and the strips, two top and bottom, nailed securely, or perhaps a half-inch bolt run through. Now any pieces of board will do for filling. The dimensions of any calf feeder are as follows, and I find it about right:—height of posts over all, four feet; between the long strips, three feet; a convenient length of feeder, twelve feet. Now this part of our scheme be careful about; begin at one end, next post put into the stanchion a strip four inches wide; now leave nine inches; now fill fifteen inches, then leave nine inches, and go on until you come to the end, always nailing filling; now take four inch strips for your stanchion, and you have, as it were, a mortice at top and bottom, put this into the nine-inch vacancy and leave only four inches for the calf's neck; tapor at the top your stanchion, so it will give your calf room to get his head in, and fasten bottom of stanchion by putting in



either a bolt or oak pin. When feeding time comes, all the calves that can get their heads in will be ready to fasten in, and when they are fed shove out their heads, and there will soon be another ready to shut in; to hold the pails for feeding, run a pole from one foot to the other, and between each stanchion brace to the bottom of feeder by nailing short pieces, and each calf has its own bucket, and no wasted feed or temper.

TUBERCULOSIS.

"What causes bovine tuberculosis?" asked a correspondent of the "Rural New Yorker" of Dr E. T. Brush, who replied as follows;—"In a word, inbreeding. All breeders know that this practice tends to weaken the offspring, and the longer it is continued the more apparent becomes the weakness. There are two permanent varieties of the domestic breeds of the bovine tribe, one the large and the other the small form. To the latter belong the most noted distinctively dairy breeds, and to preserve their dairy qualities they have been closely inbred. The result is that they are nearly all scrofulous and tuberculous. From the large variety come the half-breeds. The distinctive breeds of each are formed by greater or less infusions of blood from the opposite variety. Among half-breeds the one most closely inbred is the Shorthorn, and this is the most tuberculous. The disease develops less frequently among the half-breeds than among the dairy breeds, because the former are generally killed while young, and are not subjected to the extra strain, of giving milk. Too early fecundation is also

given as another cause of tuberculosis." "Are any breed of cattle more subject to the disease than others, and why?" "From the answer to the previous question it will be seen that the more closely a system of inbreeding is pursued and the longer it is continued the more likely, other conditions being equal, is the strain or breed to be subject to tuberculosis. The beef breed which has been most closely inbred and which is also most tuberculous has been named. The dairy breeds which have been most closely inbred are the natives of the Channel Islands. An official of the Bureau of Animal Industry says that 20 per cent, of the thoroughbred Jerseys of the Northern States are affected with tuberculosis. The inbreeding to which this breed, as well as the other Channel Island breeds, has been subjected for many generations, and the unnatural forcing for large milk yields, have contributed to this result. These are the facts; are the deductions reasonable? Proper housing and care, avoidance of too early breeding and too long continued milking, and general sanitary precautions, will prevent the development of the disease. No cow should drop a calf before she is 3 years old."

NUTRITIVE RATIOS.

The attempts to formulate precise "nutritive ratios" of feeding materials which have been so much in fashion lately, especially in the United States, have often been proved to be untrustworthy, unless they are properly taken as guides, and they have received a fresh blow from Mr. R. WARINGTON, F. R. S., who has contributed an article on "Soluble Carbohydrates and Fibre" to the *Agricultural Students' Gazette*. In the first place, he points out that the methods of ascertaining the proportions of these constituents in a food are faulty in the extreme. It is customary to estimate the quantity of fibre by successively boiling the substance, coarsely powdered, with dilute sulphuric acid and a dilute solution of potassium hydrate, the matter not dissolved being reckoned as fibre. But a good deal of the fibre is dissolved in the process, and the more the stronger the solution and the longer the boiling goes on. As to the "soluble carbohydrates," they are assumed to be equal to all undetermined matters in the food, the result being affected by any errors made in the determination of other constituents. Ripe straw, Mr. WARINGTON remarks, contains no starch, and only a trace of sugar, while it yields very little soluble matter to water; yet it is credited with 30 to 40 per cent. of "soluble carbohydrates." The carbohydrates exist chiefly in the form of cellular tissue, the composition of which is exceedingly complex, very little being known as to the nutritive value and digestibility of some of its constituents. SIR JOHN LAWES has recently stated that the usual chemical analyses of grass, silage, hay, and straw afford no certain guidance as to their nutritive value, and Mr. WARINGTON says that the same might be said of analyses of roots. "In the use of these vegetable foods," he adds, "we neither know the nature or proportion of many of their constituents, and we are equally ignorant of their value for animal nutrition." Even when digested and passed into the blood, some of the carbohydrates, such as certain sugars, are not oxidised, but pass out of the system unchanged without having served any purpose of nutrition.

While the writer urges that important changes in our methods of food analysis are needed, the first things to learn are what are the nutritive constituents of a food, what is the action of the digestive process upon them, and what is the use to the animal of the products of digestion.

Correspondence.

VENTILATION IN PRIVIES.

An esteemed correspondent writes us:

Chesterfield Chambers,
18, St. Alexis Street.

Montreal, June 3rd, 1893.

MY DEAR SIR,

One of the most disagreeable features of country life, is the stinking cabinet d'aisance. I have discovered a plan of ventilation, which removes entirely



the smell making the ordinary privy almost inodorous.

Two diamond air holes 6 inches square in the gable and 2 inch auger holes at the end of the seat to the out-

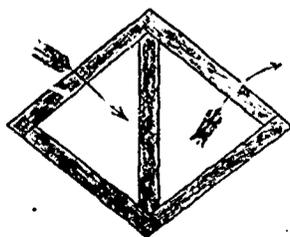


side, and a row of 2 inch auger holes 6 inches apart on the back of the house under the line of the seat.

Try the experiment and if a success publish a cut of it in the *Journal of Agriculture*.

Yours truly, G. W. S.

The system proposed is certainly efficacious. The only objection would be in winter, when the extra ventilation from below might be most hurtful. The diamond openings might be trapped, so as to open and close at will. Instead of the auger holes proposed, we prefer a ventilator starting below the seat and going through the peak of the roof. This ventilator should have a double partition, crosswise, allowing the cold air to come down from above by one of the partitions, whilst the lighter gases would have an exit through the other. This doubled partition ventilator will be found very useful in all buildings requiring constant ventilation. The drawing, number 3, shows the opening of this ventilator. The arrow pointing upwards shows the current of foul air issuing



from below and the other, pointing inwards, indicates the descent of fresh air from above.

Such ventilators should not be made

too small, as the draft would then be greatly impeded. A square of ten inches would answer in a privy.

However, there is a simple and most efficacious mode of abating all smells from privies, cesspools, &c. It consists in the use of dry earth, thrown over the decomposing mass from time to time, as often as necessary. This can be collected by the road-side during the dry season and put aside under cover, when convenient. Dry earth never freezes and can therefore be used at all seasons. No decent family should be without a full supply to last the year round. The manure supply will thus be increased considerably and a great annoyance destroyed.—*F. R.*

The Flock.

To What Extent Can We in this Country, Follow the English Methods of Sheep Husbandry with Profit?

[Read by Mr. John Jackson, Abingdon, Ont., before the last meeting of the Dominion Sheep Breeder's Association.]

Sheep farmers in England do not all follow the same methods of care and management of their flocks. In some sections where they have shaded permanent pastures the sheep are allowed to roam at large for a portion of the season. In other parts of the country they are folded in hurdles summer and winter. In some cases they are folded on grass land, and moved every day; in others they are kept in folds, the grass being cut and fed in racks—in this they are moved at regular intervals, so that in either case by this system the land is regularly and evenly manured. And again, in other cases the land is sown with vetches; the sheep are then folded on this land, the vetches being cut forward of the fold and also fed in racks.

Another thing the flock masters are very particular about is to use nothing but a first class ram, even in the flocks that are only kept for wool and mutton. They attend the ram sales and buy the best they can get. I know of a breeder that sold last year at the Cirencester Ram Sale forty rams that brought enough money to pay the rent of a good farm of 800 acres, and most of these rams would be bought for crossing. But to determine just how far we can follow the English practice of management in our flocks, we must first consider the different circumstances in which we are placed, our hotter climate in summer, the more intense cold in winter, the smallness of our flocks, cost of labor, the value of the product, etc. Yet in many ways, to a certain extent at least, we should do well to follow their example in the care and management of their flocks. And, while the hot sun and severe frost may be against us to some extent, our climate as a whole is ahead of the English climate for the health and growth of sheep. (1)

In the first place we should do well to pattern after them in the selection of better rams. We now have well-established flocks of all the leading English breeds to supply rams, and which can be purchased at reasonable figures, but too many of the best of these find a market in the United States. It will pay every breeder, even if his flock is small, to use nothing but a good pure-bred sire of some one of

the established breeds. He should settle on the type of sheep that suits his fancy, and at once aim to produce it, and with proper care the result will be as it has been in England; and whether that fancy be for a long or short wool, a white or black face, I would repeat what has been so often said—to keep some one particular breed year after year, always selecting the best to breed from, and the result will be practically a pure-bred stock, notwithstanding the "whims" of those who talk about trouble for the first cross, and a flock running out if kept on the same farm too long. These are theories that have long ago exploded. Another English practice that would be profitable to follow is to castrate all the ram lambs in a mutton flock at an early age. There is a great loss in this country by neglecting this; it is not only when sold to the butcher, but too often some of these cross-bred lambs find their way into other flocks, are used to breed from, and thus cause still greater and almost irreparable loss. (1)

If it would not pay us to fold our sheep on grass in our hot summer weather, it would pay to put more on our pasture, and supplement the pasture by sowing vetches, which are a most excellent food for sheep. This could be fed off by folding the sheep on the land, cutting and feeding in racks the same as in England—by putting them on in the evening, allowing them to remain till morning, then to run in some shady place with a supply of water for the rest of the day. A separate fold with a "lamb creep" would be a good way to push the lambs forward for the butcher or the show ring. These vetches, if sown early, would be ready to cut about the 1st of July, a time when pasturage is often dry and scarce, and if well manured this land would make a good preparation for wheat, or for turnips or rape to be again fed off in the fall. By sowing the vetches at different times, as they do in England, they can be used for a much longer time, and when this is done, have a good piece of corn ready. In this plan we have quite the advantage of the English flock master. I need not tell you what a large quantity of this can be grown on a small plot of land. There is nothing they can grow in England that will at all approach a good crop of corn. It is also a most excellent food for sheep and lambs, especially when run through a cutting box; it is very easily cut even with a hand box, and, when quite green, enough can be taken in at a time to last a week by standing it on end to keep from heating. But it must all be cut before frost, and be allowed to partially cure, and then put inside on end; it will make the best of feed for sheep right up till winter sets in.

Again, if we cannot feed our roots on the land as they do in England in the winter season, we can grow them (and should grow more of them) and feed them inside, where I believe they will do the sheep more good than if fed on the land as they are in England; for even there they are often more or less frozen, at other times in mud to the knees. Another thing I have noticed when travelling through England, that is temporary buildings at the corners of two or more fields for shade and shelter. This in many cases would pay in this country. Then there is the dipping to destroy ticks. This is regularly attended to in England, and it would pay every owner of sheep in

(1) We have spoken of this at least a dozen times, but the omission to castrate is as ripe as ever.—*Ed.*

(1) By no means the case.—*Ed.*

this country to follow their example. Some neglect this, but I hope not any members of the Sheep Breeders' Association.

Now, while it may not be practicable to follow all the usages of English flock masters, by applying what we can to advantage I believe we can increase our flocks twenty-five per cent, in number, and as much in quality. Another method which the English breeders have of improving their flocks has been very little practised in this country, that is, the letting of rams—the same thing could be done here with good results.

Many breeders of the very best animals who follow the shows will not sell their best rams, but might be induced to let them out for the season, and it would pay the breeder of a pure-bred flock at least to give the same price for one season's use of a really first class ram that would buy a second rate one out and out, and the cost of shipping a sheep to and fro in this country is considerably less than it is in England.

We have heard a good deal about the different breeds of sheep being only adapted to certain localities in England, and that each of those will yet find their natural element in certain localities in this country. I must confess I don't take much stock in this theory, although there may be some force in it. The fact of the case is, England does not fully bear this out. Right at Cirencester, the very home of the Cotswolds, we find a very large flock of Southdowns doing well. (1) In Oxfordshire, the home of the Oxfords, you will find a noted flock of Oxfords on one farm and Cotswolds on the adjoining one, and a few minutes drive from there will take you to one of the leading and oldest flocks of Southdowns in the kingdom. In Cambridgeshire (2) you will find the most celebrated flocks of Southdowns, Hampshires and Shropshires. In Norfolk, right among the black faces, you can find a very noted flock of Cotswolds. The same may be said of almost every county in England. It is true, as far as practice goes, there are a few exceptions. In Essex they are principally Southdowns, Lincolns in Lincolnshire, and Shropshires in Shropshire. However there is a great advantage in having each breed located together. The more of any one kind found in a certain locality the more that section will attract buyers; even if it be but a uniform flock of grade sheep all of similar type, butchers, drovers and shippers would pay more for them. An even lot of anything will always command full value in the market.

THE SHROPSHIRE.

In describing "What a Shropshire sheep should be," Mr. Mansell says, "I cannot do better than give the points which influenced the three eminent men, viz., the late Mr. R. H. Masfen, Mr. John Evans, and Mr. Henry Lowe, who acted as judges at the Birmingham meeting of the Royal Agricultural Society in awarding the prizes at that show. They say, in their

(1) True; but when Lord Ducie gave \$500 a year for Jonas Webb's Southdown ram to put to Ellman's Southdown ewes in the lush pastures of Tortworth, Gloucestershire, he confessed to us that he had better have stuck to the Cotswolds. The Down wool became open and the lambs were poor things. The Oxfords are half-bred Downs and Cotswolds, and the Cotswold Hills are very like the Southdown Hills.—*Ed.*

(2) A Chalk country, just like the home of the Southdowns.—*Ed.*

report in the Royal Journal, that they selected for prizes those animals which they considered best calculated to uphold and perpetuate the most distinctive type of the Shropshire, viz., a well-developed head, with clear and striking expression of countenance, a muscular neck well set on good shoulders, the body symmetrical and deep, placed as squarely as possible on short legs, due regard being paid to grandeur of style, a well-covered head, and wool of the best staple and most valuable kind, rejecting as much as possible all animals showing an inclination to produce black wool or dark skins. I may add, as a rider to this description, that the skin should be a nice cherry colour, and the face and legs a nice soft black, not sooty, not rusty brown, and free from all white specks. The belly also should be well-wooled, and all inclination for the wool to peel at the jaw and legs should be avoided. These are minor points, but, to assure success in the showyard, or remunerative results in the sale ring, they must not be lost sight of.

The Horse.

HORSE BREEDING FOR A SPECIAL PURPOSE.

BY A. B. SCOTT, VANNECK, ONT.

I am well aware that this subject may not be very interesting to a great many farmers who are overstocked with horses, and, perhaps, trying to get out of the business and go into something that is booming. Now, that is a wrong course to pursue, for you will have to sell at a sacrifice and buy at a very high price, and by the time you have stock to sell again that class of stock may be as cheap as horses are now, so that, by that course, you are just chasing the market and are not likely to overtake it.

If ever we expect our horses to reach a high standard in their classes, we must breed intelligently, using our very best judgment, and not, as a great many have been doing, breeding merely to raise a colt.

There was a time when the breeding of general purpose horses in Canada was carried on at a fair profit, but that time has passed. The introduction of the cable and trolley cars has greatly reduced the demand for this class of horses.

Anyone who takes the trouble to study the principal horse markets cannot fail to see that if there is anything to be made by breeding horses, it must be by breeding for a special purpose, and people who persist in breeding to cheap, mongrel-bred stallions must pay the penalty of their folly by being stocked with a class of horses that there is no demand for. There are plenty of pure-bred stallions of the different classes within reach of all, at reasonable rates, so that there is no excuse for using poor sires; but do not suppose that all depends on the sire, for it is of the utmost importance to select our best mares for dams. Everyone ought to consider what class he is going to raise, and strive to have the very best in that class.

In the principal markets of the United States, good old carriage, express and heavy draught horses are selling well, and, I think, there is a fair prospect of having the privilege of selling in these markets in the near future; but, if we do not breed the right kind, we shall not have them to sell when the opportunity comes.

Farmer's Advocate.

CARE OF A STALLION.

Before dealing with the treatment of the foal and youngster till he reaches a saleable age, let me add a few words to what I have already said on the subject of stallions. An entire horse that has been wintered well and starts his season in robust condition, with a month's daily exercise to strengthen his muscles, invigorate him, and prepare him for the road, should be able, at three years old, to serve 50 mares, at four years old 100 mares, and afterwards 100 to 150 mares a season, till he is ten or twelve years old. Up to a certain point, an easy tempered, vigorous horse does his work better and foals his mare more surely the more he serves. A five-year-old horse that serves 70 mares in a season will be a surer foal-getter than one that serves only 20. When I say that a horse at age may serve without injury to himself or his reputation 150 mares, I presume the horse to have been kept high on the best quality of liberal rations, well stabled and cared for, and to be travelling a fair but not excessive distance with, say, three nights a week in his own stable. The capacity of a horse depends on his temperament. Thoroughbred stallions should as a rule not serve more than from 60 to 80 mares a season. I have known a Cleveland stallion serve 260 mares a season, with a high percentage of foals—a record not to be commended. Much depends on care being taken that the mares are in the right condition. It can easily be understood that a horse that stops the great majority of his mares with one service apiece can do a much better season than one that has to cover his mares three or four times; 50 may be enough for the latter, 150 not too many for the former. I had a four-year-old Cleveland that covered over 100 mares at that age, foaled his mares wonderfully well, and finished his season in better condition than he commenced it. At the end of the season I showed him in a large class of coaching stallions at the Yorkshire Show, where he took second prize to Sultan, and where I sold him for a high figure to South Africa. Let me illustrate what I have said from another experience. I had an old thoroughbred stallion, Syrian, 23 years old, and limited to about 20 mares besides my own. He foaled his mares only moderately, and his groom advised me to let him serve 50 mares, and he would do better. Accordingly next season I let him serve upwards of 40 mares besides my own, and he foaled his mares splendidly. One man who sent five mares to him had five foals, one of them off an aged mare that had refused to breed for some years. A horse that does not travel or get plenty of exercise cannot serve as many as a horse that is out most of every day in the week. Much also depends on the groom. A steady, careful man, who is fond of and studies his horse, is the only sort that should have charge of a stallion on the road. At the termination of a season stallions that have been kept full of flesh should be gradually cooled down and their beef reduced, and if the owner has not a loose box with a good run they should be turned out for some hours a day. I do not say this is desirable in the case of all horses, or in the case of a thoroughbred which has all his life been used to a warm stable and dry meat.

THE YOUNG FOAL.

And now let us return to the foal just dropped and which has learned to

suck. There are, in the first place, two things to watch—viz., that the bowels act, and that they do not act too freely. To ensure the first, many use a tallow candle as a suppository the first day. To guard against excessive scouring the following treatment should be pursued: As a rule, nothing should be done to obstruct Nature's efforts and a little laxness of the bowels need not cause any anxiety, but where regular scouring or the "shute" sets in I have found a dose of camphor dissolved in fine spirits of wine a most effectual remedy. The foal that scours should be kept warmly covered in a blanket or woolen rug fastened round the belly, and its legs bandaged in woolen bandages up to the arms and thighs. The following treatment is also recommended: Give 20 oz. of castor oil with a half-ounce of laudanum. Such water as is given should be very little in quantity, and tepid. The diet should consist of rice boiled to a pulp in new milk, and about a quart of new milk may be given during the day. When the foal is stronger, a few crushed oats and good old hay may be given.

It is a mistake to play with foals when they are very young, as they soon learn that kind of familiarity which breeds contempt, and pick up such tricks as biting, using their teeth, and striking not only with their hind feet but their fore feet; they are, however, all the better for being nicely handled, taught to load, and to understand the voice and gestures of their attendants. Foals so handled become very tractable, and with young horses well handled there is much less trouble when the time for breaking, mousing, and backing arrives. I have had youngsters which have had a show career from their earliest days, and such an education has its dangers and disadvantages but it has always resulted in their being almost broken, so docile, intelligent, and teachable have they become from constant association with man and his ways. They are at home in any stable; they take their place in the train like any Christian: they will follow, load, walk, trot, turn, "come over," back, lift their feet, stand dressing, shoeing and clipping, understand the words of command, and are accomplished in all those little details which the horse that has run wild till four years old learns only with great difficulty and at the expense of much time and patience on the part of his instructor. To such horses as are accustomed to being handled from foalhood, the sight and noises of the road and town have no terror. He does not plunge at the sight or sound of the steam engine, start at the hip crack, or shy at the wheelbarrow on the road side, or fly from the bird darting from the fence; he knows the ways of the world, and has an intelligence all the greater for its early development.

A foal may be weaned towards the end of September or in October, and he will be all the better fitted to encounter the hardships of his first winter if he has been living out-of-doors day and night throughout the summer. It is highly desirable when he has learned to eat that he should have his little ration of crushed oats and bran-mash when his dam is having her feed in the earlier part of the year; and for keeping foals in sleek, healthy condition, a teacupful of limewater and linsced oil well mixed together and put into the bran-mash once a week is effective in keeping skin and bowels in order. It may be said that this sort of thing is all very well in a gentleman's stable, but it will not be worth a farmer's while to trouble about such

details. My reply is that nothing is truer economy than to do well to the foal, for the foal is the father of the horse just in the same way as "the child is father of the man." It is during the first 18 months of a horse's life that the whole foundation of his future career is laid. In this period the bone and framework is to be made and receive its form, and strength received to overcome any defects and infirmities which without generous treatment will become intensified.

The first winter is the hardest time in a horse's life; he is an orphan, deprived of the shelter and the companionship of his dam, and if a colt, after the hardship of winter, he will probably have to undergo the shock of castration in the spring—and for all this, and against the ailments of youth, it is necessary that he should be well fortified. I am no advocate of coddling young horses, but to fit them for growing, thriving and enduring cold, their diet should be a generous one, of crushed oats, bran, turnips, chaff and good hay, and anything extra afforded them in wintry weather will pay well. Should strangles or influenza seize the foal that has been weaned in October, kept in a poor pasture in November, and on short or bad rations during winter, what chance has he of surviving or of quick recovery? If he lives, he will be left so exhausted that his growth will be permanently stunted, whereas, if equipped against all events by a liberal diet, he will generally defy them. Throughout late autumn and winter, foals should be housed at night, but not put into close, unventilated places. I have sometimes seen the door of some outhouse thrown open and a mob of foals and yearlings plunge out, followed by a rush of hot, fetid air, much more likely to knock you down than the charge of the prisoners out of the steaming black-hole into the cold piercing air of a January morning.

Some persons advise the docking of foals, but though undoubtedly the operation may be done then with greater ease than later on, I believe it to be a mistake; I am sure it is with half-bred foals. It is easier when they are three years old to know how much or how little to take off, and many a foal that is docked may require a second docking at four years old to suit the taste of some buyer or dealer. (1) If the foal turn out to be neither hunter nor hack, but more suitable for harness or a trooper, he cannot be given back the lost inches of his tail. It is wiser to wait till the horse is three years old, and when his trade is fixed, his tail can be arranged to suit the taste of the market. The operations of docking and castration should be performed by an experienced practitioner or veterinary surgeon in cool spring weather if possible, when there is danger neither from frost nor summer's heat and flies. Care should be used after both operations, and the newly-docked horse should not be worked or heated for some two weeks after the event. Docking is really a needless operation, but will be continued as long as the fashion for short tails lasts, and it is not such a cruel operation, as it is sometimes represented to be. I have seen a young horse docked while eating the feed of oats which had been taken out to catch him with, and never take his head out of the manger during the amputation or dressing!

A horse in his second or third year needs less attention than in his first,

(1) One of the leading dealers in London begged us never to touch a colt's tail if intended for sale. "We know what sort of a tail suits the horse better than you can," Ep.

but all that is given him is not lost. He should have good pasture and change of pasture during the summer, a run in a clover or old-land fog in the autumn, and sound hay, chaff, chopped straw and turnips during winter. The water supply should be pure and plentiful, and in cold weather he should have the shelter of a shed or foldyard. It is good for foals and yearlings to run together; they exercise themselves better than when alone, and for blood and hunter foals, that will have to gallop if they are to sell well, it is important that they should run out with another of their kind. It is well worth while looking over the feet and mouths of young horses from time to time, and having the hoofs that require it trimmed, and "wolf teeth" extracted—which latter are often the sole cause of a young horse doing badly and losing flesh.

A two-year-old agricultural colt or filly may begin to do a little work on the farm and help towards its keep, but if a filly two years old and rising three is put into light work she should on no account be put to the horse at that age. I have observed no harm done by breeding off two-year-old mares that are left unbroken and well kept till they are rising four; in fact, it is better for a two-year-old mare to go to the horse, say in June, foal in May, when she is three years old, and not go to work till the following "back end" when she is rising four, than to go into hard work on the farm straight away. A hunter mare is not any the worse for having a foal in May at three years old and remaining unmade till the following December, when she may be backed and ridden, and not only see but go to hounds before the end of the hunting season.

A young Hackney should be run in hand frequently—the more the better after he is two years old, to teach him to trot and move fast and freely; his action thus early cultivated will rapidly improve when he gets into work and on to hard meat, and gets his nose pulled in by his rider.

As to the manner of accustoming young agricultural horses to the harrow, the plough, and the shafts, it would be more appropriate for the farmer to teach me than that I should attempt to advise him; but all young horses that have learned to run well in hand show themselves off to much greater advantage when the day of sale comes than those which have to be hauled about at the end of a halter, and whose only attempt to go is to flounder and buck forward in response to the application of the whip behind. Those farmers who have the old-fashioned horse-wheel threshing machines often find that for young horses there is no better method to teach them their first lessons in farm labor than to put them in with the older horses, where they soon learn that it is easier to cheerfully perform a task they cannot escape from than to refuse it. There are many useful lessons that may be taught a young horse and he should always be corrected from his earliest days for any vicious tendency; he should never be allowed to strike, bite or rear, without a severe reprimand. A horse should be taught to stand when left by his master. The Arabs teach this to perfection. My Arab horses here, like all Arab horses, are taught to stand anywhere at any time immediately the reins are thrown over their heads on to the ground. You can thus leave them in the desert for hours together with perfect confidence that they will not move a yard from where you have left them. This very day I was going at a hand gallop

on one of my Arab mares when the buckle of my snaffle rein came unfastened and the two ends fell through my fingers to the ground, when she stopped as if shot, throwing me forward on to her neck. It takes about three days to teach a young horse this, by leaving a lad with the horse to put his foot on the rein every time the horse attempts to move, thus giving him a sharp check that unpleasantly remind him that he must remain where he is.

ALFRED E. PEASE.

(Cultivator.)

THE FOAL.

Mr. W. Brownlea, of Hemingford Que., gives his treatment of young foals as follows: We usually raise from two to six colts each year. If the young foal has no movement of its bowels, we give an injection of strong suds made with Castile soap and soft water at blood heat, to which it is well to add a little castor oil. It is much easier to give an injection with a large syringe than a small one. Give one injection after another until successful. Do not be discouraged if you have to spend the whole day doctoring. We have never lost a colt since we began using the above treatment, with the exception of the first one, which was allowed to go too long before anything was done. We never give castor oil inwardly, because we find that it makes the colt sick, and it will not suck and soon dies. For diarrhoea (1) we give Dr. Fowler's Extract of Wild Strawberry with good results, having saved a number in this way, giving a quarter or a third of a bottle at a dose, one to three doses generally effecting a cure, and never leaving any injurious after effects.

Poultry.

HOW TO CARE FOR, FEED, MANAGE AND MATE THEM—THE PROPER TREATMENT OF THE LAYING STOCK IN WINTER—ESSENTIALS TO EGG PRODUCTION—FOOD AND EXERCISE—MEAL AND VEGETABLES—THE MORNING AND EVENING MEALS—THE BENEFITS OF CUT GREEN BONES.

BY A. G. GILBERT.

Manager Poultry Department, Central Department Farm, Ottawa.

It is desirable to obtain eggs in winter, — because at that time the highest price is obtained for them. To secure a steady supply of eggs, it is necessary to know how to properly feed and treat the laying stock. It is of this we will attempt to briefly treat in this chapter. In the first place the layers should be under two years, and under no circumstances should they be allowed to exceed that age, for the reason given in the article preceeding this one that an old hen moults so late, that before beginning to lay she will eat up any future profit she may make. Again, old hens will not stand the stimulating diet that a pullet will, for what will go into eggs in the latter will make the former so fat that she will not lay at all. It will be found that pullets and yearling hens will give the best results.

(1) We have always found "Dwight's Mixture" the best cure for diarrhoea, and Mr. Tuck, at Messrs. Dawes' farm, swears by it.—Ed.

THE BASIS OF WINTER LAYING.

The whole basis of winter laying may be summed up as follows—Supply the hens in winter with what they can pick up during the summer months. A hen at large supplies herself with grit, in the shape of sharp, flinty substances. It must be remembered that grit is the hen's teeth, and is used in the gizzard for grinding up the food. She picks up insect life in every shape, and eats a very large quantity of green stuff. She keeps herself free from vermin by dusting in the dry earth. She eats the grain that may be thrown to her and is off again in busy search. She is in a state of constant activity, supplying herself with all the essentials necessary to make the eggs, which she deposits in greater number than when leading a state of artificial existence, as she has to do for many months of our year.

THE LESSONS TO BE LEARNED.

What are the lessons to be derived from this? Simply that the nearer we approach, in our treatment of the layer, the natural condition, the more eggs shall we get. The laying stock then should have as much room and range as possible. If the layers could have a small apartment to roost and lay in, and a larger one with a floor of 2½ feet of dry earth or sand with coal ashes and siftings, bits of mortar, broken crockery glass, lime &c., &c., mixed, to range in, they would have a splendid opportunity to roll and dust and to keep themselves busy scratching. An incentive to renewed exertion might be given, by occasionally throwing a handful of grain and covering it up with the sand mixture, so as to make the hens search for it. Care must be taken to have the earth and sand perfectly dry or more harm than good will follow. Many farmers have an old barn or shed to which they could allow their fowls access to. Occasionally, a mild day will present itself, when the doors of the fowl house might be thrown open and the interior aired. But care must be taken that the fowls are not so exposed as to suffer from cold or damp. Where the fowls have such treatment as the above, there will not only be more eggs, but there will be freedom from vermin and the vices of egg eating, feather pulling &c., &c.

SMALLER QUARTERS AND EXERCISE.

When it is not possible to afford any more than limited quarters, the fowls should be kept in small colonies. More eggs will be got from 30 hens with plenty of room than from double that number crowded. Each fowl should be allowed at least 5 to 6 ft square of room. The floor should be covered—when dry earth or sand cannot be had—, with cut straw or chaff, the grain food thrown in this and the fowls made to scratch vigorously to find it. A cabbage suspended from the ceiling high enough from the ground to cause the hens to jump to reach it is a very good plan. A piece of tough meat might be placed in lieu of the cabbage occasionally.

GRIT.

This essential may be supplied in the shape of broken or ground oyster shells, fine sharp gravel, broken delf glass, &c., &c. Grit must be supplied in some shape, or the hens will become crop bound from inability to digest their food.

LIME.

Another necessary is lime to make the egg shell. Some writers contend that lime is supplied with the ordinary green and grain foods. But it is best to be on the safe side and supply lime in the shape of broken oyster shells, old mortar, &c., &c. Observation of a hen roaming about will show that she helps herself liberally to substances containing a large percentage of lime.

GREEN OR VEGETABLE FOOD.

Did you ever notice the quantity of grass a hen eats when at large? If you have not, then do so, and you will be astonished at the quantity. A substitute for grass in winter is found in cabbage, turnips, carrots, beets or any vegetable that a farmer usually has in abundance. Clover-hay cut into small lengths, steamed in boiling water until comparatively soft, and fed alone or mixed in the morning warm mash, is excellent. Boiled oats is said to be a very good substitute. A substitute for green food,—where green food proper, cannot be given,—is necessary.

THE DUST BATH.

Where it is not possible to have the flooring of dry earth and sand, it will be necessary to have a large box, or a portion of the floor set apart for a dust bath, the means by which the fowls keep themselves free from lice. When lice take possession of a hen-house, or a flock of fowls, no eggs can be expected. Hence, the importance of the dust bath. Many a farmer treats his fowls fairly well and wonders why he does not get any eggs? Upon investigation he will discover that lice are the cause. Some of these pests are not seen in day light, seeking refuge in cracks and crevices, but swarm out at night and feast upon the life blood of the fowls.

THE MORNING FEED.

There is a variety of opinion as to whether the morning feed should be hot or cold, soft or hard. It is a good plan for the farmer's wife to have a pot or pail standing by into which she can have thrown the waste of the table, kitchen scraps, bits of vegetables, peelings &c., &c., Boil all together and in the evening, or early morning, mix with any meal stuff that is in most abundance and feed enough to satisfy, not to gorge.

Feed in the narrow trough described in article in April number under sub-head "Other little Necessaries." It is a matter of very great importance that just the right quantity should be fed of any sort of food, grain or soft. The mash should be mixed until it is "crumbly" and should not be given "sloppy." The hens should not be fed enough to make them disinclined to scratch for any grain that may be thrown to them to keep them busy. When a hen has so much food that she will stand about idle, she has been gorged. The laying hens will be found to be the active ones. For noon, a handful or two of oats may be thrown among the straw. At night, send the layers to roost with a crop full to do them over the long night fast.

OTHER NECESSARIES.

Meat of some kind must be fed the laying stock in order to get eggs. No better incentive to egg production can be had than cut green bones.

There can be no doubt about this and the bones have the advantage of containing so much lime. Where green bones are fed, less grain may be used. It is a mistake to suppose that laying stock have to be gorged with the most expensive grain in order to obtain eggs. A variety in diet is essential and with proper management that diet can be made economical. Experience will be a good guide as to what to feed and to the "happy medium" in feeding. Mills to "cut," not "grind" bones are not sold, but in case the cost might be considered as an insuperable difficulty, bone preparations are sold at moderate prices by the Fertiliser Companies. Although not desirable, it is better to burn the bones and so feed them, rather than not give any. Many farmers however have meat in fair quantity.

Another important feature of winter laying is the water, and that should be given in liberal quantity, with the chill taken off. Better still, if the poultry house is just so warm as to prevent the water from freezing. It has already been stated that a warm poultry house means economy. The food given to fowls, which shiver during the long cold winter months in a house little better than an open shed, is levied upon to keep up the animal heat. No chance for eggs in such a case.

Much space has been given to this subject because it is an important one, and more may be said about it before going on to the subject of the proper feeding and treatment of the young chicks so as to make them early market fowls and layers.

I might add that any questions in relation to the subject matter of these articles, if addressed to you or the writer, will be answered with great pleasure.

Where milk can be had, it makes one of the best poultry foods known. It may be fed to the laying stock, mixed with their soft food, or it can be given as a drink. It may be given sweet, skimmed, sour or in any shape. When sour or in curds, it will be eaten greedily mixed in the early morning meal. It will be found a valuable aid to egg production.

SUMMARY.

The following points will be found useful.

1. Select the best layers for the winter pens.
2. Supply the layers with bones, oyster shells and vegetables.
3. Kill the drones, for they eat the profit made by the good layers.
4. Keep the layers, if possible, in a temperature where the drinking water will not freeze.
5. The laying stock should be supplied in winter with all the material necessary for making the eggs. The best layers will generally be found to be the most active ones. The Black Minorcas are rapidly coming to the fore as winter layers.
6. Where the water is kept from freezing, it is of special advantage to the hens with large combs.
7. In cold poultry houses the food instead of going into eggs goes to keep up the animal heat.
8. Fowls divided into small colonies lay more eggs than when crowded together.
9. Keep no layer over two years, for it then moults so late that all future profit is eaten up before it commences laying.
10. Intelligent and systematic management is as necessary in the poultry department as it is in every other line of business.

POULTRY EXHIBITIONS.

Shows and shows, but to what purpose? *Cui bono?* Some people say poultry shows have done more harm than good, and doubtless for a while they did work injury to certain breeds of fowls. The evil, however, was, after hard fighting, made manifest, and when "the fancy" could no longer exercise its pernicious influence and its accompanying bitterness, poultry shows again proved beneficial. I was greatly surprised by the great amount of interest taken in exhibitions that have lately been held, and also by the more careful and correct judging of poultry that are specially adapted for the farmyard. There is no more visible proof of this than is afforded by the entries and adjudications in the Dorking classes; if "fine feathers make the birds," whiteness of flesh is of more consequence, and now instead of spots and "sooty" blemishes, we have white down to the tips of the toenails. This is as it should be. To bring back the fading or blotted-out characteristics of such a variety as the Dorking was in the power of the judges, and when they themselves ceased to be in the power of "the fancy" their duty was well discharged. At an agricultural show we expect our best birds to be thoroughly good and true representatives of the class in which they stand, specially when that class is supposed to be made up of useful fowls for the farm. There is outside these a wide range for the fancy to disport itself without spoiling flesh for feathers. For many years past these colomus have been protesting, warning, and showing up the effects of carelessness in practical matters. Men like Mr. Harrison Weir have joined us, Mr. Tegetmeier elsewhere has rendered good service, and so it comes to pass that the mean tricks of former days, the "little" points and wranglings, are not so numerous, and if fanciful prices are more scarce, the really good article receives its fair share of commendation and obtains a just market value. W. J. P.

Competition of Agricultural Merit.

THIRD YEAR, 1892.

Report of the Judges of the Competition.

(Continued.)

No. 66.—W. THOMAS SMITH.

On the 7th. September, we visited the farm of Mr. Wm. Thomas Smith, New-Carlisle, Bonaventure. It contains 150 arpents, 68 of which are arable, and 75 in bush. The soil, in general, is sandy.

As we do not approve of Mr. Smith's rotation, we only gave him 2½ marks for that item. His system is: First year, oats; second year, wheat, barley, oats, and potatoes with fish-manure; third year, oats, buckwheat, with seeds and in-ploughed dung on about ¼ of the land he ploughs. He mows 3 years and pastures 3 years. We advise Mr. Smith not to plough more land than he can find manure for in the course of the rotation.

Division of the farm and fences, good. No weeds in the fields. The house is good and suitable to the family.

All the necessary buildings on the farm are not too convenient, but they

are sufficient for the stock. The implements are good and there are enough of them.

For care and preservation of manure, we grant 5 points—the maximum.

General order and management, sound: no accounts kept.

Very few permanent improvements made by Mr. Smith: only a few forest trees planted.

Stock: 1 brood mare, 1 work-horse; 5 milch-cows, 1 fattening beast, 2 2-yr-olds, 2 yearlings, and 2 calves; 8 ewes and 8 lambs.

Crops: 1 arpent of wheat, 2 of barley, 23 of oats, 1 of buckwheat, 1½ seed timothy, ¼ of swedes, 2 of potatoes, 15 in meadow, 20 in pasture, and a garden 70 x 100 feet.

Mr. Smith having earned 67.20 marks is entitled to a diploma of Merit.

67.—NAPOLÉON CATELLIER.

Our visit to the occupation of M. Napoléon Catellier, of St. Vallier, Bellechasse, was paid on the 19th. August. The farm consists of 120 arpents, of which 90 are under the plough, and 30 in bush: all heavy land.

Rotation: First year, wheat after meadow and oats after pasture, both sown down to grass. He hays 5 years and pastures 2 years. Top-dressing the second year's ley. As he ploughs every year, 50 arpents and only manures 8. His system is incorrect, as he does not manure all the land he ploughs: we therefore deduct 2 points for this item.

Fences and division of the farm are good.

As to weeds, we deduct 1 mark, since there were some daisies to be seen in the fields.

The buildings were very good; barn, stable, cowhouse, piggery and sheepshed, are well suited to the occupation and economical of labour.

Only 3 marks out of 5 for implements, as they were not complete.

Maximum of marks for increase and preservation of manure, which were perfect.

General order, good, but M. Catellier keeps no books.

Ditches sufficient in extent and well cleaned out.

Stock: 1 brood mare, 3 work-horses, 1 2-yr-old colt; 2 bulls, 8 milch-cows, 3 fattening beasts, 4 2-yr-olds, 3 calves; 8 ewes and 10 lambs.

Crops: 4 arpents of wheat, 50 of oats, 1 of peas, 1 of seed-timothy, ¼ of swedes, 2 of potatoes, 50 in meadow, 25 in pasture, and a garden 100 feet square.

M. Catellier wins a diploma of Merit, since we awarded him 66.50 marks.

No. 68.—FRANÇOIS GOSSELIN.

The 3rd. August saw us at M. François Gosselin's, at St. Victor, Tring, Beauce. This farm, composed of *terre-grise* (loam?), with a porous subsoil, contains 300 arpents, of which 130 are arable, 80 non-arable, and 90 in bush, part of which is a fine maple grove.

Only 2 marks given to M. Gosselin for his system of cultivation, of which we do not approve. Rotation: First year, on meadow, oats with seeds, to wit, 10 lbs. of timothy and 8 lbs. of alsike-clover to the arpent. He mows his meadows 4 or 5 years. He only leaves his pastures one year in oats, with grass-seeds, and feeds them 4 or 5 years. He top-dresses his meadows as soon as the hay is cut, but he does not manure all the land he ploughs. We advise M. Gosselin not

to plough up more land than he has manure for.

The fences and the division of the farm are good. As to weeds, we cut off 1 mark as there were a few daisies about. The house is some distance from the farm: it is a very suitable farm house.

The buildings are capital; the implements good, but not enough of them; we only allowed 3 marks out of the 5 for this item.

The manure is well cared for, but not increased in quantity: we deducted a half-mark for this.

Management, in general, good; still we took off a quarter-mark for some faulty work in the fields. No books kept by M. Gosselin.

Full marks allowed for stone clearing and other permanent improvements.

Stock: 3 work-horses; 1 bull, 7 milch cows, 3 2-yr. old beasts, 4 calves; 8 ewes and 10 lambs.

Crops: 12 arpents of oats, ¼ of potatoes, 60 in meadow, 50 in pasture, and a garden 30 x 40 feet.

M. Gosselin, having obtained 66.50 marks, is entitled to a diploma of Merit.

No. 69.—ADOLPHE BEAULÉ.

We inspected the farm of M. Adolphe Beaulé, of St. Vital, Lambton, Beauce, on the 4th. August. It consists of 105 arpents, 55 arable, 22 in pasture, and 28 in bush; the soil being composed of *terre grise and jaune*, with a porous subsoil.

Rotation: First year, after meadow, oats or wheat, after pasture, oats; second year, oats were there was wheat; he sows oats, buckwheat with 5 lbs. of clover and 6 lbs. of timothy to the acre, with in-ploughed dung; where oats followed pasture, he sows oats and buckwheat with seeds, without manure on the land ploughed for the first time. Hays for 3 to 4 years, pastures for 3 to 6 years. He manures ¼ of the land he ploughs. His system is good, but because ¼ of his land gets no manure, we deduct one mark for this item.

The division of the farm is pretty good, still, we deduct half a mark.

The fences are of wood and well kept up, and there are no weeds about the farm.

The house is good, but the other farm-buildings are old and by no means fit for their purposes; so M. Beaulé is to put up new ones.

The implements are well cared for and almost enough in number.

Maximum of points allowed for increase and preservation of manure, which are perfect.

General condition, except the buildings, good. M. Beaulé keeps no books.

Nine marks out of 15 given to M. Beaulé for permanent improvements.

Stock: 1 brood-mare, 1 work-horse; 1 bull, 6 cows, 3 fattening beasts, 3 calves; 1 ram, 6 ewes and 6 lambs.

Crops: 1 arpent of wheat, 15 of oats, 1 of buckwheat, 1 of seed-timothy, ¼ of swedes, ¼ of potatoes, 25 in meadow, 28 in pasture, and a garden of 1 arpent.

The number of marks, 66.45, accorded to M. Beaulé entitle him to a diploma of Merit.

No. 70.—F. LEBLANC.

Our visit to M. François Leblanc of Ste. Monique, Nicolet, took place 11th. July. This farm contains 275 arpents, of which 190 are arable, and 85 in bush, the soil being clay, with an occasional occurrence of bog-earth.

Rotation: First year, wheat, oats, peas, and a mixture of peas and oats

(*gabourage* or *goudriole*); sometimes, he puts a piece of meadow in potatoes, with manure, on some meadows, he sows oats with seeds. Second year, wheat after wheat, *gabourage*; after the former *gabourage*, where were potatoes, he sows wheat with seeds. He mows 4 to 5 years and pastures 2 years. This system is defective, because M. Leblanc rows two grain-crops of the same sort in succession, and only manures a small portion of the land he ploughs; so, M. Leblanc only gets 4 marks for his rotation.

The division of the farm is fair, but we deduct half a mark on account of there being no farm-road.

The fences are good; as for weeds, we not only could not give marks for their extirpation, but we felt inclined to deduct marks from other items on which he had gained some.

The house is good, but the farm-buildings are not at all suited to their purpose.

The implements are sufficient in number and well cared for.

Nothing can be better than the pains taken to increase and preserve the dung, neither can we desire to see better management in the fences, the buildings, and the field; but, there are no books kept.

As to permanent improvements, M. Leblanc has made but very few.

Stock: 3 brood-mares, 1 work-horse, 1 2yr. old colt; 1 bull, 18 milch-cows, 4 fattening beasts, 3 yearlings, 4 calves; 10 ewes and 13 lambs.

Crops: 8 arpents of wheat, 52 of oats, 10 of peas, 14 of *goudriole*, 1 of seed-timothy, $\frac{1}{2}$ of beans, 2 of potatoes, 55 in meadow, 70 in pasture, a garden of 175 x 100 feet, and a hive of bees.

M. Leblanc, winning 66.10 marks, is entitled to a diploma of Merit.

No. 71.—AMBROISE THIBAUT.

The farm of M. Ambroise Thibault, St. Valère, Bulstrode, Arthabaska, measures in superficies 105 arpents; 52 of which are under the plough, 5 non-ploughable, 47 in bush. We inspected it on the 30th. June. The soil is a mixture of gray and yellow loam.

The system followed is pretty good, but we deducted 1 mark from the 4, because he ploughs more land than he can manure. Rotation: First year, wheat, oats, with grass-seeds—1 gallon of timothy and 5 lbs. of clover to the arpent. Second year, a hoed crop after wheat. Third year, after the hoed-crop, wheat with seeds. He hays the meadow as long as it yields well, and pastures it for 2 years. Part of the land receives no manure during the rotation.

The farm is not sufficiently divided into fields, but the fences are good, and there are no weeds to be seen.

The house is a good one and suited to the needs of a family but the other buildings, though in good order, are not conveniently arranged.

The implements are well taken care of, and almost sufficient in number.

As regards the increase and preservation of manure there is a loss of fertilising matters in it, as there is no shelter.

General management good, but no accounts are kept by M. Thibault.

We allowed 9 marks out of 15 for cleaning and utilisation of stones, levelling, straightening of water courses, and planting trees.

Stock: 2 work-horses; 6 cows, 1 fattening beast, 1 2-yr-old, 1 calf; 1 ram, 8 ewes, and 9 lambs.

Crops: 4 arpents of wheat, 15 of oats, $\frac{1}{2}$ of buckwheat, $\frac{1}{2}$ of beans, $\frac{1}{2}$ of turnips, $\frac{1}{2}$ of flax, 1 of potatoes, $\frac{1}{2}$ of corn, 25 in meadow, 19 in pasture, $\frac{1}{2}$

in orchard, and a garden 60 x 30 feet. M. Thibault gains a diploma of Merit, as the marks we assigned him were 65.90.

No. 72.—LOUIS BRUNELLE.

The 15th July saw us at the farm of M. Louis Brunelle, of Gentilly Nicolet; it contains 125 arpents, 72 under the plough, 53 in bush, the soil being partly sand, partly clay.

Rotation: First year, wheat, oats with seeds, except 2 arpents on which he sows no seeds. Second year on the two acres of oats without seeds, potatoes dunged. Third year after potatoes he sows wheat with seeds and then leaves it 2 years in meadow and 1 year in pasture. In preparing for potatoes, he ploughs in the dung in the fall, and ploughs again in spring. We deduct 1 mark from this item, the system being defective in that M. Brunelle does not manure all the ground he ploughs.

As the farm is not properly divided, we deduct 1 mark out of the 2 allowed for this item. The fences are good, and there are no weeds.

The house is well ventilated, and properly divided for a farm of this kind.

The farm-buildings, except the house, are by no means convenient. The manure is well kept and increased in quantity. No books kept.

Not enough implements, though they are well cared for. General management, good.

M. Brunelle has not made many permanent improvements. The stock—few in number—consists of: 1 work-horse; 1 bull, 7 cows, 1 young beast; 1 ram, 8 ewes, and 6 lambs.

Crops: 3 arpents of wheat, 15 of oats, $\frac{1}{2}$ of seed-timothy, 2 of potatoes, 4 in meadow, 18 in pasture, $\frac{1}{2}$ in orchard, a garden 90 feet square, 50 hives of bees, and all things needed for the preparation of the wax.

We granted M. Brunelle 65.90 marks, entitling him to a diploma of Merit.

No. 73.—FRANÇOIS THIBOUTOT.

We visited, on the 17th. July, the farm of M. François Thiboutot, of St. Louis, Lotbinière; it comprises 145 arpents, of which 139 are arable, and 5 in bush, the soil being generally clay with some parts sandy.

Only 2 marks given to M. Thiboutot for his system of farming, as we did not find it a good one. Rotation: First year, wheat, barley, oats, peas, with seeds: he only manures the poorest parts. Second year, after peas he puts potatoes, 2 years running on the same spot, on 3 fields; he changes a field every year. The meadows stand 3 years for hay and 2 for pasture. Only a small part of the ploughed land is manured.

The division of the farm and the fences are not good. There were no weeds on the land, and the buildings are excellent and well suited to the needs of the farm. The implements, too, are fairly complete in number and of good kinds.

No shelter for the manure, so it is not well preserved. The general management is by no means satisfactory, and no books are kept.

M. Thiboutot obtains 8 marks out of 15 for permanent improvements.

Stock: 1 brood mare, 1 work-horse, 2 2-yr-olds, 1 yearling; 1 bull, 10 cross-bred cows, 2 calves; 1 ram, 6 ewes, and 8 lambs.

Crops: 7 arpents of wheat, 1 of barley, 20 of oats, $\frac{1}{2}$ of peas, 5 of *maslin* of oats and buckwheat, $\frac{1}{2}$ of seed-timothy, $\frac{1}{2}$ of potatoes, $\frac{1}{2}$ of corn,

75 in meadow, 26 in pasture, a garden of one square arpent, 13 hives of bees, and very fine carpets, quilts, and knitted work, made in the house.

The marks awarded to M. Thiboutot being 65.45, he is entitled to a diploma of Merit.

No. 74.—ROBERT NOBLE.

On September the 12th, we visited the farm of Mr. Robert Noble, township of Restigouche, Bonaventure, "P. O. Sellarville," containing 100 acres, 120 under the plough, 480 in bush, the soil being partly alluvial, partly loam, with a porous subsoil. Both in its size and in the quality of the soil, this farm offers every advantage for a superior agricultural exploitation. Mr. Noble's rotation is: First year, oats. Second year, oats. Third year, oats with dung ploughed in and grass-seeds. He grows potatoes the second or third years on the stubble. Hay is made from 3 to 5 years, and he pastures 3 or 4 years, generally top-dressing the meadow the first year. He only manures half the land he ploughs; the other half is manured during the next rotation. We do not approve of this system. We advise Mr. Noble not to plough more land than he has manure for during the rotation, and we only grant him 3 marks out of the 4 for this item.

The division is good, but the fences are neglected. Meadows and pastures are capital and free from weeds.

Not enough buildings generally speaking. Nearly enough implements. The manure not well preserved.

The general management far from what we could wish in all the departments, and Mr. Noble keeps no accounts. Very few permanent improvements made. Cattle and horses, very good: 1 brood-mare, 3 work-horses, 1 3-yr-old colt, 1 2-yr-old, 1 yearling; 1 bull, 8 cows, 5 fattening beasts, 8 2-yr-olds, 2 yearlings, 4 calves; 1 Shropshire ram, 16 half-bred Southdown ewes, and 13 lambs.

Crops: 3 acres of barley, 19 of oats, 1 of potatoes, 51 in meadow, and 26 in pasture.

We accorded Mr. Noble 65.40 marks, which entitles him to a diploma of Merit.

No. 75.—HENRI BÉLANGER.

On the 23rd. of last July our duties led us to inspect the farm of M. Henri Bélanger, at St. Valier, Bellechasse; it contains 150 arpents, 147 of which are arable, the soil being stiff, but partly sandy.

Rotation: First year, wheat with seeds, oats. Second year, he sows oats again on the same land, where it is not fit for wheat, with dung ploughed in and seeds. Third year, oats again, with dung and seeds, with a view to the destruction of weeds in certain places. Out of 40 arpents he ploughs, he manures 9, and leaves the meadow down from 3 to 5 years. In other places he only sows 1 year and pastures 2 to 3 years. As we do not approve of M. Bélanger's system of cropping, we only give him 2 marks for this item. We advise him not to plough more land than he can manure in the course of the rotation.

Only 1 mark allowed, out of the 2, for the division of the farm into fields, as it is not perfect.

Very good wooden fences. A few weeds to be seen in the fields, so we deducted 2 marks for this item.

The house is good and convenient, as are all the other buildings which are perfectly suited to the wants of the farm.

The implements are almost suffi-

cient in number, and well kept in order.

As to the preservation and increase of manure, we only awarded 4 out of the 5 points, as there was no shelter for it.

General order and management, good; but, as M. Bélanger keeps no books, we only allowed him a half-mark for some "memory-notes." The ditches were numerous enough, and kept well cleaned out.

Stock: 2 brood-mares, 2 work-horses, 2 bulls, 8 cows, 12 fattening beasts, 1 2-yr-old beast; 7 ewes and 9 lambs, half bred Leicester.

Crops: 3 arpents of wheat, 35 of oats, 1 of peas, $\frac{1}{2}$ of flax, $\frac{1}{2}$ of turnips, $\frac{1}{2}$ of potatoes, 64 in meadow, 5 (sic) in pasture, and a garden 100 feet square.

We gave M. Bélanger 65.40 marks, which gives him a right to a diploma of Merit.

No. 76.—NARCISSE CROTEAU.

On August 15th, we were at the farm of M. Narcisse Croteau, at St. Croix, Lotbinière; it contains 90 arpents, of which 75 are under the plough and 15 in bush: soil, clay.

Rotation: First year, wheat, barley, oats, buckwheat, with seeds. Meadows stand for hay 4 to 5 years and 2 years in pasture. He generally top-dresses the meadows after haying, and the pastures in the fall in preparation for potatoes, manuring about 3 arpents a year. We only give M. Croteau 1 mark for this very defective system of farming. No more land should be ploughed than can be manured during the rotation.

The division of the farm is good, as are the fences, which are kept in proper order.

We took off a mark from the item for the extirpation of weeds which was hardly sufficiently attended to. The house fairly satisfactory, and pretty well suited to the wants of the family. Barn, stable, cowhouse, sheepshod and piggery, though not on the improved plan, are sufficient.

Implements are insufficient in number, but well cared for, and the manure is well preserved. M. Croteau keeps no books. He has made some permanent improvements on his farm, for which we grant him 8 out of the 15 marks allowed.

The stock is good: 1 brood-mare, 1 work-horse, 1 yearling colt, 1 foal; 8 ewes, and 13 cross-bred lambs.

Crops: 3 arpents of wheat, 20 of oats, 1 of buckwheat, $\frac{1}{2}$ of flax, 1 of potatoes, 36 in meadow, 18 in pasture, and a garden 50 feet square.

As M. Croteau obtained 65.25 marks, he is entitled to a diploma of Merit.

No. 77.—JOSEPH LESARD.

We found ourselves, on the 1st. August, at the farm of M. Joseph Lesard, of St. Joseph, Beauce. Its extent is 210 arpents, 135 of which are arable, and 70 in bush: soil, alluvial, but part gray and yellow loam.

M. Lesard's farming is faulty; he sows grain after grain, year after year, without manuring his land enough; this must ultimately ruin the farm. Rotation: First year, after meadow, oats with grass-seeds; after pasture, wheat, oats, buckwheat. Second year, oats with seeds, buckwheat after the wheat of the previous year, he plants potatoes with manure, which he follows with $\frac{1}{2}$ arpent of beans the next year, with grass-seeds sown in the fall. He mows his meadows 5 or 6 years, and pastures the uplands 3 or 4 years. Only 3 or 4 arpents of his farm are manured yearly.

The division of the farm is imperfect: only 1 mark allowed for this item. The fences are in good order.

Two points deducted on account of too many woods by far. The house is not well laid out, but the farm-buildings are good and fairly convenient. The implements are plentiful and of good kinds.

The preservation and increase of the manure are but poorly looked after; there is no dung-shed; so we had to deduct a mark.

The general order and management, imperfect, both in the buildings and the fields. No books kept by Mr. Lessard, who has made very few permanent improvements on his property, except drawing a few thousand loads of stones into heaps in his fields.

Stock: 2 work-horses; 5 bulls, 10 cows, 7 2-yr.-old beasts, 4 calves; 1 ram, 13 ewes, and 12 lambs.

Crops: 15 arpents of oats, 2 of buckwheat, $\frac{3}{4}$ of seed timothy, $\frac{1}{4}$ of flax, $\frac{1}{4}$ beans, 1 of potatoes, 36 in meadow, 40 in pasture, $\frac{1}{2}$ in orchard, and a garden of one square arpent.

M. Lessard wins 65.05 marks, and is therefore entitled to a diploma of Agricultural Merit.

No. 78.—EUGÈNE CARRIER.

We arrived at the farm of M. Eugène Carrier, Notre-Dame de Lévis, on the 20th July. It measures 135 arpents in superficies, 80 of which are arable, 10 in unploughable pasture, and 45 in bush: soil, clay and sand.

His system of farming is faulty, and we deduct 1 mark on that account: First year, oats partly manured. Second year, wheat, barley, buckwheat, with seeds. He mows 2 or 3 years, and pastures 2 years. He manures about half the land he ploughs, i. e., 8 acres. We advise M. Carrier and farmers in general to bear in mind the wise counsels of M. Charles Champagne: "Never impoverish your land by repeated cropping without manure; enrich it always; do not plough more poor land than you can manure thoroughly the following year. Manure it, and sow nearly the same extent of manured land every year.

The division and fences are good. Not only could we not allow M. Carrier marks for the destruction of woods, but we felt inclined to take off marks from him for other items for which he had gained marks. The weeds found in his fields were the ox-eyed daisy.

The house is good and fit to accommodate the family comfortably; stables, barns and other building are good too. Implements, good and almost sufficient in number; preservation and increase of manure, perfect: full points allowed for this item.

General management, good; still, for the above reasons, we could not allow full marks for it. M. Carrier keeps no books. The ditches, sufficient in number and well cleaned out.

Stock, of cross-breeds, insufficient in number for the extent of the farm, is as follows: 1 brood-mare, 3 work-horses, 1 2-yr.-old colt, 1 yearling; 1 bull and 9 cows.

Crops: 15 arpents of oats, $\frac{1}{2}$ of peas, $\frac{1}{2}$ of buckwheat, $2\frac{1}{2}$ of potatoes, 32 in meadow, and 22 in pasture.

As M. Carrier gains 65.00 marks, we recommend him for the diploma of Agricultural Merit.

The Household.

SUMMER DESSERTS.

Here are a few summer desserts given by a writer in the "Lady's Home Journal." If there is one time

of the year, she says, more than another, when desserts are welcomed with appreciative appetite, it is in the days of summer when heavier foods seem far too solid. The only thing demanded in summer desserts by those who eat them, is that they shall be both cool and light, and by those who make them, that they shall be easily and quickly prepared.

Vanilla Ice Cream.—Boil one pint of cream and half a pound of granulated sugar in a farina-kettle, stirring constantly, for about ten minutes. Take from the fire, add two tablespoonfuls of vanilla extract, and when cool, a second pint of cream. It is possible to use milk in the place of the second pint of cream, but this necessitates a sacrifice of the velvety taste peculiar to good ice cream. The quantities given make a dessert for six people.

Fruit Ice Cream.—Canned apricots, fresh bananas, peaches, strawberries or pineapples make delicious variations. In using these, care must be taken to add sugar in proportion to the acidity of the fruit, and to add the fruit, after being mashed finely, to the cream after freezing. A few turns after adding the fruit, preparatory to the final packing, is all that is necessary to incorporate it perfectly with the cream. Raspberries, lemons and oranges make better water ices than ice creams, as there seems to be something in their acidity which does not assimilate easily with cream.

Water Ices.—Water ices are inexpensive, delicious and seasonable. They are a trifle more troublesome to make and require a much longer time in freezing, but their lesser cost is more than compensation. The recipe given is for lemon ice, but with the variations of a little less sugar and of different fruits, it may be used with either oranges, pineapples, raspberries, strawberries, cherries or currants. A sherbet may be made by adding, just before packing to ripen, the white of an egg beaten to a stiff froth, into which has been mixed a tablespoonful of fine sugar.

To make the lemon water-ice, boil for five minutes exactly one quart of water and one pound and a quarter of white sugar, to which has been added the rind of three lemons and of one orange. Remove whatever scum arises and strain the syrup while hot through a muslin bag. When cool mix the juice of four lemons and of one orange with the syrup; strain a second time and freeze.

Frozen Fruits.—Frozen fruits are preferred by many people to either ice-cream or water-ice. Strawberries, raspberries, pineapples, oranges, peaches and cherries are the fruits which give the best results served in this manner. Raspberries and strawberries are improved by the addition to the fruit of the juice of a lemon.

Custard and Blanc-Mange.—Blanc-mange served ice-cold with preserved fruits and rich cream is delicious. By making a double quantity, dessert may be varied the second day by serving it with a rich egg custard. Custard, baked or boiled, and floating-island are most delicious desserts. A pretty dish is made by splitting stale ladies' fingers or sponge cakes—any stale cake may be used—and spreading them with some tart jelly. Cover with custard, and on the beaten whites drop tiny dots of jelly.

A cold rice pudding also makes a very acceptable dessert, as do baked apples served with cream.

DOWN CELLAR.

"WHAT, you sweep your cellar with lime? Well, I never, Mrs. Grey!" and the bright eyes of the little woman rounded with astonishment and shone like stars in the semi-darkness of the cellar.

"Yes," returned the lady addressed, "I try to make it a rule to sweep my cellar thoroughly (under the benches and all, you know) with dry lime once a week, at least, during the spring and summer months. It prevents dampness and keeps it sweet, we think."

"Yes," assented the first speaker, "some one told me lime was good to prevent damp walls in the cellar, so, after I had finished housecleaning this spring, Jack whitewashed the side walls thoroughly for me one rainy day, and I thought my cellar was going to be so nice; but in a little while the walls were all mildewed, and even pink-streaked, and the floor so wet and sticky, oh! I had kept it so well aired, too."

"How did you air it?" inquired Mrs. Grey.

"Why, I kept the back window open all the time, and even opened the door some days, but that let the flies in. They came in the window, too, but I put netting over it. Your cellar hasn't a place open to-day for air, as far as I can see, and yet it is so dry and nice that it will give me the shivers to go down into my dreadful den again."

"I'll tell you how I manage my airing, if you like."

"Oh, please," (and the little woman's eyes were even more eloquent than her words.)

"I first see that when the windows and doors are shut my cellar is comparatively air-tight; then, I never open it for air until the cool of the night comes on, so that when I open the windows a cooler air comes in than the cellar air itself. If it's a hot night, I even wait until morning, and then open and air for a little, taking care to close the windows and doors before the sun begins to heat the outside air, but on really cool, windy days I give my cellar all the air that will come in. I do not know," she added, "that I can advise you to open the cellar at night at all during the muggy heat we shall have now for six weeks or two months; for, let the evening be really cool, it often turns close again in the night. "You see," she added smilingly, "I have watched this way of doing with my cellar for three years and—"

"I know," interrupted the other, "what is so easy for you now is going to be a task for me; but it will be better than not trying at all, and can I come to you if I forget?"

"Surely you may, and you had better get a quantity of new, hard lime at once, (say a half bushel) and put it in your attic to air-slake; it will do so very soon." Her listener drew a long breath.

"I am going to try your way," she said, "but my cellar has so many places for the air to get in."

"Yes; so had mine until Henry gave it a rainy day all to itself for repairs."

"That is it. Jack is so busy and so tired, I haven't the heart to ask him to do repairs at night. I'll have to seize on a rainy day. But I'll tell him all about it at dinner to-day so as to get him ready. I'm so glad I went down cellar with you, Mrs. Grey."

EMILY H. STEDMAN.

(R. N.-Y.)

VEGETABLE ENTREES.

THOSE of my readers who have not as yet given much thought to the subject of superior vegetable cookery will be perfectly amazed, when they do begin to study it, to find into what an almost countless variety of dainty dishes these simple and wholesome articles of food can be converted. When served only in conjunction with fish, meat, &c., the delicate, delicious flavour of the vegetables is often destroyed, to a large extent, by the stronger and more pronounced flavour of the dish which they accompany, so that in order to be fully enjoyed and appreciated we should have them, now and then, cooked in a rather different and more skilful fashion, and served as an *entrée*, or separate dish. This plan is both wise and economical, and only those who have tried the dishes have any conception how very delightful and appetising they are. I have great pleasure, therefore, in furnishing this week a few specimen recipes, which I can heartily recommend as being well worthy of a trial.

NEW POTATOES WITH BUTTON ONIONS.—Take rather more potatoes than onions, and prepare them by carefully scraping the former and peeling the latter; then boil them in separate saucepans of boiling, slightly salted, water until sufficiently cooked, but not at all broken. When this point has been satisfactorily reached, drain off the water very thoroughly, and put into each saucepan a pat of butter—say, 2 oz. with the potatoes and $1\frac{1}{2}$ oz. with the onions—a seasoning of salt and white pepper, and a light sprinkling of finely-minced parsley, and toss over a gentle fire until the butter is entirely dissolved and the vegetables thoroughly hot and nicely coated; then dish up together in a pile on a very hot dish, pour over the whole some rich creamy white sauce, sprinkle the surface lightly with a mixture of minced parsley and sifted egg yolk, garnish round the base with sippets of toast or daintily-fried croûtons, and serve *very hot*.

FRENCH BEANS A LA MAITRE D'HOTEL.(1) —Take, for an ordinary-sized dish, 2 lb. of freshly-gathered French beans, and after removing the tops, tails, and strings, cut them up either into long thin strips or lozenge shapes, and boil them in the usual way until quite tender. The water, of course, should be well salted. While the beans are cooking, put into another saucepan 2 oz. of fresh butter and 1 oz. of fine flour, and fry together for a few minutes without discolouring the mixture; then add a small breakfast-cupful of milk, a seasoning of salt and white pepper, strained juice of a fresh lemon, and a tablespoonful of minced parsley, and stir together constantly until the sauce boils and becomes of a smooth, thick, creamy consistency, after which add the beans, when they have been sufficiently cooked and thoroughly drained, and toss gently over the fire until the whole re-boils and is well blended. Dish up in or pile in the centre of a very hot dish, garnish round the base with rings of daintily-fried bread placed on end, and slightly overlapping each other so as to form a full, close border, and tiny sprigs of parsley, and serve just as hot as possible, as vegetable *entrées* are worth nothing at all if sent to table lukewarm.

CREAMED CABBAGE WITH MASHED POTATOES.—Thoroughly cleanse two small fresh young cabbages and boil them in well-salted water until quite tender, then press them between two

(1) *Delicious.*—Ed.

plates so as to extract every drop of liquid, chop them finely, and return them to the hot dry stewpan with a seasoning of salt and pepper, 2 oz of butter, two well-beaten fresh eggs, and a teacupful of cream or good stock, and stir the preparation over a gentle fire until thoroughly hot, without boiling; then press it into some small cup or dariole moulds, which have been well buttered and tastefully ornamented in readiness with thin strips of red cooked-carrot and white of hard-boiled egg, placed alternately, about $\frac{1}{4}$ in. apart, and steam in the usual way for about half-an-hour. When done enough, turn out the little cabbage moulds carefully, and arrange them neatly upon a flat bed of well-mashed and seasoned potatoes, then pour a little rich brown gravy round the base, and serve very hot, accompanied by more gravy in a hot gravy-boat.

CAULIFLOWER AU GRAIN (1)—Prepare, and boil until sufficiently cooked, a large, freshly cut, firm cauliflower, then drain it well, divide it into small neat sprigs, and season these pleasantly with salt, pepper, and lemon juice. While the cauliflower is boiling (2) get ready about a pint of rich, creamy white sauce, and stir into four large tablespoonfuls of grated cheese the beaten yolks of two fresh eggs, a tablespoonful each of minced parsley and finely chopped boiled onion, a seasoning of salt, and a pinch of cayenne, and mix thoroughly without further boiling. Butter the inside of a very presentable looking pie-dish, and place at the bottom a layer of the sauce, then arrange a layer of the cauliflower sprigs, cover with more sauce, and so on until the dish is sufficiently full, letting sauce from the topmost layer. Sprinkle fine lightly-browned raspings on the surface, and bake in a moderate oven until the whole is just bubbling hot; then sprinkle with freshly-grated cheese, mixed with finely-minced parsley and sifted egg yolk, insert small sprigs of parsley round the edge so as to form a pretty border, fix a dainty frill or "collar" round the outside of the pie-dish, set it upon a fancy dish-paper with parsley sprigs round the base, and serve as quickly as possible.

GREEN PEAS WITH SPINACH.—Put a quart of freshly-shelled peas into a saucepan of boiling water with a whole peeled onion, a good seasoning of salt, and a head of lettuce tied up with a bunch of fresh mint, and boil fast, with the pan uncovered, from fifteen to twenty minutes; then remove the onion, with the lettuce and mint, drain off all the water, and toss the peas over the fire until they are quite dry, after which add a sprinkling of salt and pepper, about 2 oz. of fresh butter, and a few tablespoonfuls of cream or rich white sauce, and toss again until the peas are nicely coated and thoroughly hot. Have ready on a hot dish some carefully-cooked and well-drained spinach, which has been re-heated like the peas, with butter and appropriate seasonings, and formed into a neat firm border with a flat surface; ornament this surface with hard-boiled egg—the yolk sifted and arranged in tiny patches, and the white cut in long narrow strips and placed between; then dish up the peas in the centre, garnish the base with daintily-fried croûtons, and serve as hot as possible.

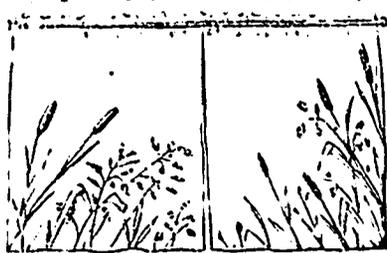
MARIE.

(1) Excellent.—Ed.

(2) Cauliflowers, when cooked whole, should be stood upright in the covered pot, and the water should not be higher than up to the beginning of the flower. Asparagus likewise.—Ed.

MANTLE CURTAINS.

After the stove has been taken down, the mantle and the space under it presents anything but an attractive



PRETTY MANTLE CURTAIN

appearance. The old time "fireboards" do not suit this æsthetic age, and housekeepers look for some new device. A very pretty one is shown in our illustration. Make two curtains of ceru or tan colored sateen, Gobolin cloth, or any of the new art linens that wash so beautifully and may be so effectively treated with paints or embroidery. A design of cat tails and meadow grasses is particularly pleasing. Shire the curtain on a small brass rod. Another delightful way of treating this space is to stand a large mirror flat against the wall, and in front of this a box of growing ferns. Still another way is to build a seat all across the jamb, upholster it with material to match the furnishings of the room, and place a couple of big pillows, one at either end, and two across the back, standing against the wall. The seat must be broad and rather low.

LAMP MAT.

Cut a circular piece of felt, blue, golden brown or dark red, to harmonise with the furnishings of your room. Scallop the edge, using a



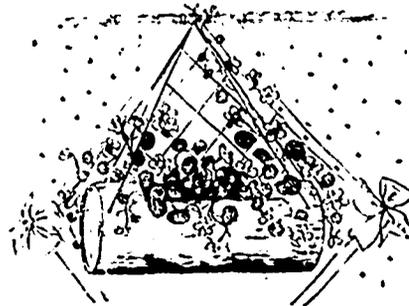
CIRCULAR LAMP MAT.

thimble or small spool for a guide, button hole with silk of a darker shade, and work with daisies in heavy white silk. For the dining table or for a mat under a lamp used to read or sew by, use heavy white linen, as white reflects the light.

FOR THE PIAZZA.

In summer, it is not enough that the house should be decorated, the piazza must be made beautiful also. A charming little ornament for holding growing vines can be made from a long tin box, such as ginger snaps come in. Put on the cover and hammer it down securely all around; with a can-opener cut a square opening in the top. Punch holes in the bottom for drainage, and in the top for wires by which to suspend it. Cover with bark glued or sewed on, fill with earth and plant with nasturtium seeds, and you will be soon repaid for your slight

trouble. They are equally pretty for hanging in the house in a sunny window in winter. Larger logs for standing on the piazza steps or about the grounds may be made by taking



PRETTY HANGING BASKET.

two rounds sawed from a log for the ends. On this let a tinsmith tack the tin. The bark also may be nailed on.

(American Ag.)

Ornamental and Forest Tree Planting.**ARBOR DAY.**

The efforts of the Hon. Mr. Joly de Lotbinière, as appeared in his article in the *Journal of Agriculture*, to educate the people on this most important branch of rural economy are above all praise! But unfortunately they are slow to appreciate or profit as they should by the clear and able teachings of the honorable gentleman.

It is patent to all observers that trees taken from the forest are as a rule unsuitable for transplantation, especially of the size they are usually chosen. We need not go far to see illustrations of this fact. Note the miserable failure to plant the Grande Allée, Quebec, with trees from the forest and contrast that with the success accomplished by planting nursery grown oaks under proper conditions, all of which took root at once and are now making rapid and vigorous growth.

Again, contrast the lanky, wretched distorted specimens planted at the Palais, many of them of unsuitable varieties, which, if they survive, will never be symmetrical or ornamental, with those planted at the Lake St. John Station which are attractive objects even now and will, without doubt, grow, annually increasing in beauty and become fitting monuments to the memory of the genius and philanthropy of the Hon. Gentleman who, notwithstanding the down pour of rain, superintended their planting.

When will those placed in authority learn the necessity of employing men who understand their business and will do it properly, instead of wasting money and time by abortive attempts and demonstrating again and again, how "not to do it"? A mistake made in the selection or planting of a tree either leads to years of disappointment, or costs double the amount to correct it.

The Hon. Mr. Joly's suggestion that each farmer should have a nursery of his own is an admirable one. I also think that there is a wide scope for the business of raising young trees from seed, as recommended by the honorable gentleman as a commercial speculation, if it were entered into on sound business principles and not with a desire to make undue profits.

A nurseryman who is well posted in his profession and is systematic, painstaking and attentive, can afford to raise seedling trees for a very

trifling cost. Prices for three years old trees of Larch, Tamarack, Oak, Ash, Elm, &c., in the European nurseries average about \$6 to \$8 per 1000, at this price bearing a fine profit to the grower, and I see no reason why they should not be raised here as cheaply and sold in quantities to at least the more prosperous habitants who have been led to see the ultimate advantage of tree planting, and no doubt the supply would increase the demand.

Well grown, once transplanted forest trees are best suited to plant permanently when three years old, but for lawn, avenue or city street-planting trees of larger growth are of course required, but, a go-a-head, business-like nurseryman could afford to supply these at little more than they would cost to dig from the forest and with a symmetry, quality, and certainty of success no forest-grown tree can possess no matter how carefully its removal has been accomplished.

There is no question but that the depletion of our forests has been attended in many cases with great evils. The salubrity of the climate has been affected and a large source of revenue destroyed by "killing the goose which laid the golden egg."

It is not too late to remedy this evil as far as future generations are concerned, and it is for posterity that every one should work. The few fleeting years allotted to man are ill spent if he does nothing to leave some mark of his life behind.

In the old countries, the duty of tree planting was recognised centuries ago, and its benefits are felt by the present generation.

A notable instance occurs in Warwickshire, England, at the Ancient Town of *Sutton Coldfield*. A large tract of land with many privileges was granted to its towns-people by king John, and the charter contained one remarkable provision, namely: a certain amount of timber might be cut annually but a percentage of its value was to be spent in the purchase and planting of young trees. By this provision, in time, the sale of the timber had become a source of large revenue and the crop suffered no diminution, being thus annually renovated.

It will be seen that our ancestors, generations back, did not lose sight of the importance of tree planting.

Those who have seen the magnificent forest of Fontainebleau or wandered through the Champs Elysées and Bois de Boulogne, in France, or enjoyed the glories of the grand avenues of Windsor, Hampton Court, and many another in the British Isles can gratefully testify to the skill, forethought, and philanthropy of the master minds of those days who conceived the ideas, made the plans, and had the noble work put into execution. A man who encourages and aids in the planting of trees has done that which will be honorable to him to the end of time.

The settlers in Massachusetts too, brought with them good ideas as to tree-planting; as the beautifully adorned streets of many New England cities attest. Alas for Canada! utilitarianism seems to have had such hold upon our pioneers that they set to chop down without any thought of replenishing, and if this state of things continues, the result must be disastrous in many respects.

The establishment of "Arbor day" is however a step in the right direction, but hitherto it has not been observed with the éclat it deserves. There is a great amount of prejudice and apathy to be overcome, and this can only be done by making the mo-

vement more popular by organisation. A city proclamation calling upon the people to participate in the planting of trees on that day is all very well, but a well organised plan of operations would still further arouse people to an active interest in the subject. Some such programme as the following should, I venture to premise, be arranged in every parish.

A school holiday should be given, and the teachers instructed to explain to their scholars its object and the reasons why it should be observed.

A band should be engaged, when practicable, and a general rendezvous of parents and children appointed.

It should be decided, beforehand what trees are to be planted and where.

These trees should be provided by the parish or by subscription of those who are willing to help the good cause.

Then a procession should be formed and march to the place designated, where each child who had merited the honor by good conduct should assist in the planting of a tree, which would be a lasting memorial, and to which he would call the attention, probably, of his childrens as one which he himself had planted.

This would lead to habits of domesticity and a love of home, a sentiment so desirable in the formation of the character of a good citizen. An orator or two should be invited to deliver short, patriotic, and explanatory addresses suitable to the capacity of the young. A song or two, apropos of the occasion, might be sung, and every thing done to make the day a joyous one, the annual recurrence of which would be looked forward to with pleasant anticipations by all.

Thus, the public sentiment would be awakened through the medium of the young and all would be alike benefited in the end.

It would appear, by the indifference of many, that to bring about a revival as to tree-planting the movement must be made popular by every means which can be devised.

It is true that the observance of *arbor day* this year was damped by the torrents of rain which fell, but it is doubtful whether sufficient notice would have been taken of the celebration, had the weather been fine. Many of the schools gave no holiday, nor did the children know any thing about *arbor-day*.

Would it be any good to form a general committee of gentlemen interested in this very important question, with M. Joly at the head, to consider the best means of popularising the movement during the current year by occasional deliberations and the formation of such committees, in every parish. Thus, take time by the forelock and have plans laid before hand and make "Arbor-day" a day to be anticipated with pleasure and enjoyed with profit to the actual participants and their yet unborn successors.

I do not doubt (seeing the noble efforts put forth by the government for the amelioration of the agricultural and industrial classes) that they would lend a helping hand if called upon to do so.

No good measure of reform is carried out in these days without application and agitation. Let us not lose sight of so desirable a movement for the public good, but keep the interest in it before the public, not only just at the season of the planting but throughout the year, then will our next *Arbor-day* be celebrated with an *éclat* worthy of the cause.

GEORGE MOORE.

SHADE AND ORNAMENTAL TREES FOR CITIES

GEORGE MOORE, MONTREAL.

The importance of judicious tree planting to the beauty and health of cities needs no argument, and I may therefore proceed to notice, briefly, a few details.

First.—The varieties of trees most suitable for street planting, are the elm, (*Ulmus Americana*), and the maple (*Acer platanoides* or *Norway maple*) Their stately, but compact habit of growth, their wealth of luxuriant foliage, their non-liability, generally speaking, to the ravage of insects, and their freedom from danger caused by the extremes of temperature, are qualities which render them the trees *par excellence* for our purpose. A mixture of both species in the same avenue is not advisable, because uniformity of growth should be aimed at; hence, it would be better to plant elms in the main thoroughfares, and maples in the shorter, or narrower ones. Also, for the sake of the uniformity so desirable, the planting of trees in the public streets should be undertaken by the municipal authorities, for, if left to the individual property-holders, the result will be unsatisfactory, because one would perhaps plant a willow, and another an ash, or a poplar, and at unequal distances. In this city, (Quebec) for example, this state of things is much to be deplored. If the Grande Allée could be made of the same width from the Parliament House to the Governor's residence, and planted with elms at equal distances, say sixty feet apart, of the proper quality, what a magnificent drive it would become a few generations hence!

The quality of the young trees to be planted claims our particular attention. These should be nursery-grown seedlings, properly prepared by frequent transplanting and pruning to adapt them to the purpose. It may be objected that nursery-grown trees cannot be obtained; but were they used in preference to those from the forest, the demand would create the supply, and enterprising nurserymen would raise them in large quantities.

In a recent article in the *Quebec Journal of Agriculture*, our Vice-President, M. Joly de Lotbinière, advises every landowner to establish a small nursery on his own account, in which to raise and cultivate seedlings of such shade and ornamental trees as he might require for his own use. When we consider that every estate is so much improved by good trees, and the advantages of rapid and symmetrical growth which such trees possess over those taken from the forest, we must hail with interest the valuable suggestion.

Great mistakes are made by corporate bodies or their servants, entrusted with public money for the purpose of tree planting; by trying to do the work as cheaply as possible. Economy does not consist in the purchase of unsuitable articles, or in the employment of inefficient workmen. It is remarkable that these very persons are most particular, as to material and execution of all other public works, but when it comes to the delicate and intricate operation of tree planting, in which mistakes are fatal to success, they think it so simple a matter that any tyro can perform it, and therefore set one to work to grub trees out of the forest and plant them without regard to the proper method; the inevitable result being failure, loss of money, and, what is almost more serious, loss of time.

Trees dug from the forest must have their large roots severed for the purpose of removal, and are therefore very liable to fail under the ordeal; besides which they are one-sided and ill-shaped from having grown in too close proximity to other trees. They are therefore a long time, supposing they survive, in becoming ornamental; being, if small, like whip-crops, or, if large, having been stripped of their branches to bring them into shape, like miniature telegraph poles, and surely our cities are already sufficiently disfigured with these. On the other hand, properly cultivated trees are well furnished with fibrous roots, which render their successful transplanting by skilful hands almost a certainty, and their branches are so arranged by judicious pruning as to make them beautiful objects as soon as they begin to develop their foliage, the very first season. The first cost of such trees is considerable in proportion to the others, as the nurseryman must be paid for the necessary labor, knowledge, and time to produce them, but eventually the outlay will not be greater, and even a saving may be effected, for it is more than probable that the forest trees will have to be replaced several times before any will succeed.

Cheap labor in this respect is usually the dearest. Properly qualified and careful men alone should be employed, and those under the superintendence of a competent and responsible foreman, who will see that the holes are dug with a due regard to the spreading of the roots, and of a sufficient size and depth; which in street tree planting should be larger than under ordinary circumstances; not less than four feet square and three feet deep. The gravel, or poor soil of which streets are generally composed, having been removed, the hole should be filled with partially decayed sods and a little well-rotted manure to give the plant a good start and insure vigorous and rapid growth.

A writer in the *Montreal Witness* lately suggested that gratings should be placed round trees in cities, so as not to impede the sidewalk: to admit air and water to the roots, and which could occasionally be removed and the earth loosened; this is unquestionably a good suggestion, for, as the writer remarks, concrete and paving stones prevent the roots from being duly aerated and moistened: processes necessary to the rapid and healthy growth of a tree. There has been much controversy as to the proper season of planting, but practical arboriculturists are now pretty well agreed that spring is the best, especially in this northern climate.

Though trees of moderate size are transplanted with the greatest safety, the necessities of the case demand that those for street planting should be larger than for ordinary purposes, being more exposed to danger of injury from various causes. They should be at least one inch and a half in diameter of the stem, which should be not less than eight feet high up to the first branches. They must be stout and stocky, which they will be if they have received careful attention, and been twice or thrice transplanted before leaving the nursery.

The distance at which trees are planted from each other must be regulated by circumstances. Elms in broad avenues should not be less than sixty feet apart, but maples may be a little closer. The shade should not be too dense, and a free circulation of air should be allowed round each tree when grown. Then, each will be a specimen of symmetry and beauty

in itself, and form a more elegant component part of the whole avenue.

It is most important that pruning should be done annually for the first few years at least, if the tree is to assume the desired perfection of shape, or become what the English call a "pictorial tree." This should be done by competent persons only, whose practical knowledge and judgment will guide them as to which branches to remove, and which to retain, to accomplish the end in view. If trees are allowed to go for years unattended to as to pruning, they can never be made so handsome, and are besides very much injured by the cutting away of too large branches.

Science points to the fact that when the sap is in the best condition to effect the healing of the wound quickly, is the proper time to prune, and this is in the early summer as soon as the young leaves expand.

Boxes, to protect from injury, and to keep them in their places, should be put around every tree; these should be of a plain, but artistic design, and painted dark brown, as best assimilating with the color of the trunk, and harmonising with that of the foliage.

In every city, by-laws should be enacted for the care and protection of the shade trees, and no Vandal should be allowed to cut and hack them in the manner too frequently done. A properly qualified and duly appointed officer, with full authority to arrest depredators, should have all the shade and ornamental trees under his charge, and if absolute necessity arises for the cutting away of any roots or branches, he should be duly notified, and the trees should be touched only under his direction and supervision.

In view of the sanitary advantage to the dwellers in cities, and especially to the working classes, to say nothing of the improved appearance of a place by the formation of parks, and the planting of lines of trees in the leading thoroughfares, it is of urgent necessity that steps be taken to foster and encourage the planting and after-care of trees everywhere, and to impart to the public as much of the knowledge necessary to success as will make the practice popular and conducive to their comfort in so many respects.

The Garden and Orchard.

HORTICULTURAL DEPARTMENT.

FRUIT IN CANADA.

We have received the Twenty-fourth Annual Report of the Fruit Growers' Association of Ontario, a pamphlet of 144 pages, copiously filled with valuable information on the fruits adapted to that comparatively cool region. Our Canadian friends have given special attention to the cultivation of the apple, as well as to other fruits, and the reputation which their shipments have attained, indicates their success. We shall not object, therefore, to the remark one of their speakers made at their annual meeting, that the fruit-growers of the Dominion understand fruit culture better than any people in the world.

In the course of the discussions on apple raising, the remarks indicated a thorough knowledge of the extent to which the roots of trees push out into the soil, instead of the small or cramped as mentioned by many cultivators

and writers Thomas Brooks of Brantford said that a tree was a living thing and cannot roam about for food, but was tied to the spot. "Take your cow," said he, "into the field, and give her only twenty feet of rope. She will soon have eaten up all the feed within the forty feet of her reach and have nothing but the ground to stand on, and if you do not supply her wants, the pail will soon show the reason. Now, I believe this to be the condition of too many of the apple trees; they have little more than the ground to hold them up." Much diversity of opinion was expressed by different members as to the kind of soil which gave the best crops. A strong clay loam was generally regarded as better than sand; but it appeared that natural drainage was essential. Mr. Brooks said that if the orchard was on hard clay or cold subsoil, deep and thorough tile draining with a perfect outlet was essential (1). He had seen ruinous results from over-much pruning. In answer to the question: "Would you take a crop from the soil?" C. C. Caston said: "I would not, unless sufficient fertilising material was put in, so that what is taken away would not rob the tree. If you have not sufficient fertilising material, do not crop at all, but simply summer-fallow and feed the tree. No better use could be made of the ground at forty feet when the trees come to maturity." On the subject of thinning, Prof. Craig said that the thinned gave a larger number of bushels, and he left it to fruit growers to say which would bring the most money.

On the subject of soils, Mr. Pattison said that in his experience, clay soil, and especially high red clay, was peculiarly well adapted to growing the following kinds of fruit, namely—grapes, pears, plums, apples, quinces, red and black currants. As applied to grapes, he claimed the following advantages on clay soil. First, earliness. On high red clay, most varieties will ripen from ten days to three weeks earlier than on sand in the same locality. This advantage is of great importance from a pecuniary point of view, frequently from this cause alone doubling the profits from the vineyard. He said grapes grown upon sand were insipid, watery, flavorless productions. He was informed by a neighbor, who attended the Hamilton market, that the buyers there eagerly sought for grapes grown upon a clay soil. In deciding questions of this kind and determining the value of different soils, there are several controlling causes to be borne in mind, such as one that is wet or thoroughly drained; deeply cultivated or with only shallow depth; while a strong soil will retain fertilisers, those consisting chiefly of sand would have them soon washed away.

The subject of timber screens for shielding crops from strong winds appears to have engaged special attention. Mr. Good of Brantford said that in his own and other exposed orchards there was hardly a perfect apple, while in the shaded orchards they were nearly all first-class, and sold for \$1.60 a barrel, which he ascribed wholly to the wind-break. Mr. Allen said wind-breaks were planted too close, and the trees should be placed thirty or forty feet apart, so as to allow a part of the wind to blow through and merely break the force; plant in a double row, which would make them practically twenty feet apart. Mr. Good spoke of an orch-

(1) A long experience enables us to say that the drains would soon be stopped up by the roots.—Ed.

and so closely screened that one could carry a lighted match on the lee side, and none of the fruit was affected with scab. Mr. Fraser took and opposite view and said his orchard was screened with trees twelve feet apart and thirty feet high, and his fruit was far more scabby than that on the trees of a neighbor who had no screen. Many other members gave an account of their experiments with wind-breaks, most of which were favorable, but others were decidedly opposed to their use, and when closely planted and in localities where they were not needed, they appear to have done more harm than good.

Much valuable information is given in the report relative to other fruits, and the association is one of much usefulness and success. There are over two thousand members, distributed over the whole province. A. H. PERRY, Grimsby, is president, and L. Woolverton, secretary-treasurer, of the same place, who claims that the membership is larger than that of any other association of its kind in the world. *Ex.*

ONION-RAISING—FAILURE AND SUCCESS.

Three years ago I raised a crop of cabbage on a piece of land but two years cleared of wild pasture growth and some hundreds of tons of rocks, mostly large boulders. The soil was naturally strong, and under good treatment it yielded an excellent crop of cabbage. Now, onions have the reputation of doing poorly when preceded by such potash-loving crops as cabbage and mangels, but I never found serious difficulty when planted after such crops, provided, in addition to very liberal manuring, I added an extra quantity of potash. It having been my plan to follow the cabbage with onions, soon after the cabbage crop was off I applied a hundred bushels of unleached ashes to the acre. I purchased these ashes from the same party whose former carload had analysed as high as 10 per cent potash. Though I could hardly expect to receive another carload as good as my first one, yet, as the party selling them to me stated that they were collected in the same region as the first lot, I assumed that they might be relied on to analyze as high as 7 or 8 per cent.

In the spring, I had plowed in eight cords of stable manure to the acre, to which had been added fish waste, the napes and bones of boned fish. This latter was composted with the manure, and much of the nitrogen it contained and a portion of the phosphoric acid doubtless became plant food in the course of the growing season. The fish waste was applied at the rate of about a ton to the acre. The stable manure was city made, and was deficient in both potash and nitrogen. I relied on the ashes to supply the deficiency of the former and the fish that of the latter. At planting time about 1,000 lb. per acre of a standard onion fertiliser was raked in. With such liberal treatment, though the land was new to onions, I anticipated a good crop. With the exception of being over-crowded with purslane at one period of growth, the crop had an average chance. The final result was a crop of onions averaging hardly half the normal size for market onions. What was the cause? Buying another carload of ashes from the same party the next year, I had it analysed. Instead of giving the seven or eight per cent, I had assumed to be present in the ashes I had applied to the

onion-bed, it yielded less than five per cent.

Last spring, after having applied about two cords more of the manure per acre than the previous season, using about the same quantity of fish, but in a form richer in nitrogen, and adding potash somewhat liberally, with the same kind and quantity of fertiliser applied at planting time I obtained an exceptionally fine crop of onions. While about all in the vicinity blighted badly and were under sized, this lot showed no sign of blight, were exceptionally large, and ripened down evenly and early with scarcely a scallion to the acre. Now, why did I fail the first season and succeed so well in the second? It is true that the quantity of potash in the ashes applied was probably not as high as I had assumed it to be, yet at 4.75 per cent, this would give over 200 lb. to the acre, as the ashes weighed about 45 lb. to the bushel, and 200 lb. of potash would be considered more than even a large crop would need. I am therefore led to conclude that the cause for the failure the first season was either that the potash in the ashes had not become all soluble, or that the onions were unable to find all that the soil contained. The practical inference I draw is, that when onions follow cabbage, a very liberal application of available potash is necessary to make success possible; otherwise a failure is likely to occur, even when all other plant food is most liberally applied. In neither season did the crop suffer from drouth.

Marblehead Mass.

JAMES J. H. GREGORY.

(Cultivator.)

WHEN TO SPRAY

EDS. COUNTRY GENTLEMAN—At what time should apple, pear and quince trees be sprayed—the apple trees for canker-worm, codling-moth and apple scab, the pear and quince trees for leaf-blight and scab? Farmers' Bulletin No 7. U. S. Department of Agriculture, says spray first when flowers are opening, I supposed spraying at that time would injure the fruit. As I have about ninety acres of orchard, I wish to economize the labor and expense of spraying, and put Paris green in the Bordeaux mixture so as to affect both scab and insects. Can you advise me what to do, or tell me where I can find authorities on the matter?

M. C. A.

Brockport, N.-Y.

Spray with Paris green for the canker-worm when the leaves of the apple tree are pushing from their buds, and again before the blossoms appear.

For the codling moth, spray after the blossoms have fallen and the fruit has set, and again a week or ten days later. If rain falls and washes away the arsenite, repeat the spraying.

As a preventive of apple-scab, spray with a solution of copper sulphate—one pound to 25 gallons of water, before growth starts, or with Paris green—one pound to 200 gallons of water, stirring in enough lime to give it a milky appearance. Prof. Goff's experiments appear to indicate that the Paris green is a valuable fungicide, and a better preventive of the scab than the copper sulphate. Or spray with the ammoniacal solution of copper carbonate, as recommended in Farmers' Bulletin, No 7, p. 14.

For pear-tree leaf-blight, spray with the ammoniacal solution of copper carbonate as the leaves begin to open,

and repeat two or three times at intervals of two weeks. Or spray with the Bordeaux mixture while in blossom and repeat in 10 or 12 days, and for the third and fourth times at two and four weeks intervals, as directed in Farmers' Bulletin No. 7, page 15.

For quince-tree leaf blight, employ the same treatment as for that of the pear. The recommendation in the bulletin cited of spraying when the blossoms are opening, is limited to the copper solution and to the Bordeaux mixture. It is not recommended to use the arsenites upon fruit trees while in blossom, lest it might blight the blossoms and poison visiting honey bees (see Bulletin cited, page 9).

It has been found economical in labor and expense to combine an insecticide with a fungicide in spraying, and satisfactory results have been obtained. The following for a combined mixture is recommended: 2 oz. Paris green and 2 oz. copper carbonate dissolved in 3 pints of ammonia, half a pound of lime added to 32 gallons of water, and the whole thoroughly mixed.

J. A. L.

ASPARAGUS FOR THE FARMER.

EDS. COUNTRY GENTLEMAN.—For years my parents, when I was a little boy, wished they had an "asparagus bed." For years they went along without it. I supposed it was an intricate and scientific job to start a bed and care for it, so never made the attempt. As I became a young man, I read many articles on asparagus culture, but it seemed to me that there was too much work about it. My neighbors had no asparagus, and they said it was necessary to dig a big hole in the ground, three or four feet deep, and fill it with old boots, shoes, tin pans, bones, corsets and bottles. They said this was necessary to make the "sparrowgrass" grow.

As I had never seen the above "home-made" mixture in any complete list of fertilisers, and knew not the chemical analysis thereof, I doubted its fitness for any civilized soil on this mundane sphere. So, instead of following the advice given by my neighbor—who, by the way, was down on "book farmin'"—I decided to follow the simplest directions given in the very best and most "scientific" farm journals. Two years ago I started a new garden, and arranged for a row (not a bed) of asparagus. I found it difficult to get good roots, without sending away, and decided to sow the seed. As my garden is in the form of a rectangle, I sowed the seed in a row in a rich place, where it could be easily worked both sides, either by a wheel hoe or horse cultivator. By use of the garden line I made a perfectly straight row (as all garden rows should be made), and sowed the seeds about two inches apart in the drill. No manure was used on the surface, as the soil was a rich loam, and manured the year previous.

It was some time before the plants appeared above the surface, and I feared the seed was not good. I took pains now to let my home-made fertiliser neighbor know nothing of what I was at. I wanted to surprise him. The soil in the rows was cultivated and raked several times before the fine, thread-like plants could be seen. Just as soon as the row of plants could be followed, the wheel-hoe was used. It was given the same culture as the other garden vegetables. After the plants had reached the height of four inches or more, we thinned out one-

half the row, leaving the plants about four inches apart. The other half was left just as it grew from the seed.

At it was late in June when the seed was sown, I did not expect a very heavy growth the first season. But I never saw a finer lot of young plants than these were the first of November. I left them out all winter without mulching, merely leaving the tops on. The following spring I transplanted them to their permanent places in two long rows on one side of the garden. The ground was heavily manured and plowed with the remainder of the garden for early vegetables. After the surface was thoroughly harrowed and pulverized, the two rows were measured out 4½ feet apart. Furrows were made with hoe and spade 7 or 8 inches deep. Then some of the richer surface soil was scattered in, partly filling the trench. The plants were taken up with a spade so as to save all the fine roots. By loosening the ground on both sides of the row the roots were easily lifted up. After trimming off the old tops the roots were shaken out and placed in their natural position in the trench 15 to 18 inches apart. When covered, the crowns were 3 or 4 inches below the leveled surface of the garden. This is very easy work and quickly done. The roots seemed to be very hardy, as not one failed to grow. I was pleased last fall when showing some friends the thrifty bushy tops. Not a weed was to be seen. All wanted to know how I managed to obtain "such splendid results," &c.

When transplanting these roots into the permanent rows I found I had three times as many as I needed. I sent word to several friends and neighbors to come and take as many as they wished, as I intended to plow up the ground. Four of them came from several miles away, and I found out afterwards, as a singular fact, that every one of them took and read one or more farm papers. The neighbor who was "agin book farmin'" was sent for, but would not come after a single root. I offered to send them to his house, all ready to set out, free of charge, but he would not have them. Some men are singular—as well as women. This same man will go to town and look at the bunches of asparagus in the grocery stores with a yearning look and a watery mouth. Then he will buy one small wilted bunch, getting a penny or so discount, to take home for his morning's breakfast. It is a fact that he has done this several times.

Our plants were transplanted one year ago. Last fall the ground was heavily manured for the winter. The tops were also left until this spring; then cut off and burned.

We shall not cut much for us this season. Have cut one painful this morning; may cut once or twice more, then let it grow. It is better for the roots. Next year we may use all we wish, and for the next twenty years, may be. With good care, cultivation and well manured each year, any farmer can follow our simple plan and have all the asparagus he wants.

Kalamazoo Co., Mich., May 13.

J. H. BROWN.

A CHAPTER ON GRAPE CULTURE.

[Part of a Paper Read at the Burlington N. J., County Institute, By Chas. Perry, Cinnaminson, N. J.]

Although grapes will grow and produce upon almost any soil that will grow corn, they do best upon a light

top soil, underlaid with a loose porous subsoil. On this kind of soil they are less subject to the attacks of phylloxera and fungoid diseases, and they produce fruit of the finest appearance and highest quality, whether considered for wine or table use.

Clean culture, keeping the surface mellow, and a moderate use of commercial fertilisers is the treatment best adapted to the grape. Stable manure is more difficult to apply, and being a prolific source of fungoid disease, is not as suitable as commercial fertilisers. A fertiliser low in nitrogen, where the vines are growing vigorously, with increasing quantities where the growth becomes weaker, will be found satisfactory.

Methods of training differ widely. In regions where there is little or no rain, as in California, and in some places where it does rain, the stump system prevails. The vines are trimmed back to a stump 18 inches to 2 feet in height. The vines are staked for a few years until strong enough to support themselves and thereafter need neither wire nor posts.

The practice, however, that meets with most favor is to train to wires stretched to posts. Some use one wire and some two. The vines are trained up to the wires and an arm stretched in each direction and trimmed either on the renewal or spur system. The trimming must be varied according to the varieties and circumstances. If a Telegraph vine is given as much wood as a Concord or Cottage, it will kill itself by overbearing. Or if a Clinton is trimmed as short as a Concord, it will bear few grapes. If the grapes are to be bagged, a few short arms of the strongest wood is all that should be left, so that the strength of the vine may be driven into a few large clusters, as it is a waste of time and money to bag small bunches. If bagging is not intended, more wood may be left, so as to make up in quantity what is lost in quality.

The question of varieties is a very important one, and must be decided by the taste of the grower. If he desire to grow a fine article at a good price, and is willing to take the time and trouble to spray and bag, such varieties as the Niagara, Brighton, Duchess, etc., will pay well. If he is willing to spray and not bag, Moore's Early, Concord, Pocklington and others may be grown. But if he will neither bag nor spray, such varieties as Janesville, Ives, Champion, Elvira and Draught Amber must be selected. It is asserted by epicures that these latter varieties are not fit to eat. I do not claim that they are, but I do claim that they sell well, and that the money they bring in market will buy groceries and pay a note in bank as well as the money obtained from the sale of Niagaras or Delaware, and if they turn out more clear money per acre, they will be grown. As long as the market will take champion grapes at 4 to 6 cents per pound, and a little later will only give 3 to 4 cents for Concord, just that long Champion will be grown.

As to spraying, it is a question whether it does not pay to spray all varieties of grapes. There are some that will grow well and bear well without it, but they do much better with it, hold their foliage so much later, ripen their wood and make such a strong growth for next year's crop, that they more than repay the trouble spent. By spraying with the Bordeaux mixture about three times, and with the carbonate of copper once or twice, loss by permitting, a good crop of grapes is insured.

The profits of grape culture a few

years back, when prices were higher, were very large. At present prices the returns are more moderate. But putting the yield at three tons per acre, and the finer varieties at 6 cents per pound, between \$300 and \$400 per acre would result, while commoner varieties at 3 or 4 cents per pound would yield about \$200 per acre. In California where the yield is from six to eight tons per acre, 1 to 1½ cents per pound is considered satisfactory. But it is a question whether in the future these prices will be maintained. The minimum price at which New-York grapes can be put in the market is about 2 cents per pound. When prices fall below that figureshipments stop. The cost of package, delivery to cars, freight to Philadelphia, cartage to store, and commissions are such that when a five-pound basket brings less than 10 cents there is but little left for the grower. It may be assumed then that 2 cents is about as low as grapes will be likely to get in the Philadelphia market and those who can deliver their grapes to the commission stores from their own wagons, can compete profitably with that price. This would give a minimum return of \$125 per acre and will compare favorably with many farm crops. Grapes give paying returns with as little fertilizer as most any other crop, and again it must be remembered that most of the work, tying, staking and trimming, can be done in winter when there is little else to do, while the marketing comes in September after the press of farm work is over, and other marketing is scarce.

Again for those engaged in such fruit culture, grapes fit in very nicely after blackberries. The same crates may be used to hold the five-pound boxes, and the same pickers will be glad to gather them at ½ cent per pound. Another advantage that grapes have is that they will hang for some time after they are ripe without spoiling.

Farm Journal.

Manures.

BUYING POTASH IN NOVA SCOTIA.

G. C. M., Middleton, N. S.—The best quality of finely pulverized bone testing three to four per cent of ammonia and 23 per cent of phosphoric acid, is retailed here at \$10 per ton; muriate of potash testing 50 per cent of potash is sold by the bag at \$45 per ton. On this basis of valuation, what should a fair average quality of unleached Canada ashes sell at? The importers have to pay about \$7.50 per ton freight, which added to cost and profit runs the price to \$19, and they are not very dry at that.

Ans—\$19 per ton for wood ashes is far too much. As an average of many samples analyzed at the Connecticut Station Prof. Johnson gives the following constituents in one ton of good quality:

	Pounds.
Sand, earth and coal.....	260
Water.....	240
Oxide of iron, alumina, soda, etc.....	131
Actual potash.....	110
Phosphoric acid.....	39
Carbonate of lime and magnesia.....	1,220
	2,000

The only things of agricultural value in this list are the lime, potash and phosphoric acid. Muriate of potash of high grade at \$15 per ton would mean 4½ cent per pound for potash. The potash in the ashes would cost at this price, \$4.95, and the phosphoric acid could be bought in the form of bone for \$4. A substitute for the ashes could be easily made for less than \$12. Prof. Johnson says that 800 pounds of oyster shell lime, 220 pounds muriate of potash, and 150 pounds Peter Cooper's bone, or 1,170 pounds in all, will give a close imitation of a ton of superior wood ashes. The Peter Cooper's bone contains but little nitrogen. If you use the bones sold at \$10 you should take 200 pounds. This will cost more, but the mixture will be worth more because of the nitrogen.

(N. Y. Yorker.)

The Hog.

AN ESSAY.

Read by R. Campbell before the Farmers' and Gardeners' club of Quebec at Bergerville.

M. CHAIRMAN AND GENTLEMEN,

Last season I had the pleasure of addressing you on the subject of Dairy farming. Now I am going to say a few words on the animal that should supplement the cow in producing food and rendering service, that is, the despised hog.

Farmers as a rule fail to recognise the value of their occupation because they do not consider what their occupation means in the world. Two men were once travelling together, and the one said to the other "My dear Sir what do you do when you are at home, what is your business?" Well said the "other I ain't got any business, I am "only a farmer now." I am sorry to say this is the conception that most farmers have of their business. If the farmer really had a true idea of his business, he would know that it is the most important of all businesses that occupy the powers and engage the attention of men in a material sense.

The farmers furnish the food of the world, and, if you except fish, every thing you eat comes from the soil. Now, surely if farmers are producing all the food for the world they are doing a very important work. In the progress of civilisation you will find that where farmers improved the food of the people the people have become more powerful and influential. The old rich pastures of England produce beef-steak which accounts a good deal for England's influence in the world today. Give a man bad food and he gets out of joint with the world, and it is hard to preach him such a sermon as will help to make him a good man. Not only do farmers supply the world's food, that is only one half of their work; they furnish the raw material for the clothing of the world, wool and cotton and leather are first products of the farmers' toil which the manufacturers elaborate into the finished articles for our comfort and service. The man who sells raw material alone gets only one half of the profit belonging to his calling when he fills his place to the full and both produces and manufactures.

To be a good producer and skilful manufacturer, a farmer needs to have a knowledge of his own business. Man need to require hard hands and plenty of muscle, but it has been shown that

he needs a clear head much more than hard hands. I must say that the most valuable commodity on our farms to day, which is rather scarce, is common sense with good skill. A man has no common sense who succeeds at knowledge as applied to his own business. Farmers should have particular, accurate and practical knowledge of their own calling. We hear it said often: "Oh we cannot compete with the cheap beef of the West," or such like things. Why is this? because we have not enough knowledge and don't put the knowledge we have into practice to aid us in our work.

There is a market for pork and bacon. We find that a large quantity of pork and bacon is imported here from the Western states. Well, the hog is not such an undesirable citizen if he is well fed and well kept. He is the one great citizen of the American Republic that has helped most to make it wealthy. We send to England of pork and bacon 8,530,000 lbs. and she buys abroad 545,000,000. I should like to lay down the proposition and make it clear, namely: that men who farm for profit should concern themselves far more with getting profit by reducing cost than by trying to raise the market price. There is only one way in the world whereby a man can raise for himself with certainty the market price of anything he sells and that is by improving its quality. Quality governs to every man the price he may obtain. And, as an illustration, let me say this: in all large cities butter ranges in prices from 10 to 25 cts a pound. Now no single farmer and no combination of farmers can force the butter market up or down. If it is forced up too much, then the butter that would otherwise go abroad is kept at home, if it is forced down, the butter is sent abroad. Thus, we cannot influence the market price, but any man can raise himself from being a 10 cent a pound man to being a 25 cents a pound man by sending to the market just the butter for which the people will pay 25 cts. a pound. Men are always looking for profit at the Market-end instead of the Home-end of their business and being mistaken in the direction of their effort, they have small success. Profit lies in any business between the price that is realised and the cost of production. If we can reduce the cost of production, we lengthen our line of profit certainly at one end in lessening the cost; and if the market goes up, we have two profits; one made by our skill and the other by the rise in the market. If the market goes down, we still have our profit at the safe end of our endeavor by having reduced the cost of production. So the man who can reduce the cost of production is the man who is farming with most profit, because reduction in the cost of production does not reduce the price he may realise. As an illustration: suppose that two men are living on neighboring farms and one man produces his butter at 25 cts. a pound. He feeds hay and meal to rather poorly bred and badly kept cows and his butter cost him 25 cts. a pound. The other man keeps cows that are better adapted for butter-making, feeds them on the cheapest kind of suitable food, including corn ensilage, and produces butter equally fine at a cost of 15 cts. a pound. They both sell in the same market. The man who produces his butter at 15 cts. a pound gets an equal price but a larger profit. He has a profit where his neighbor has none. So our endeavor should be to reduce the cost of production rather than to raise the price to be realised, except in this that the price can be modified by an

improvement in quality. The world to day wants food in the form of animal products and the farmer who would farm skilfully and successfully must keep stock that through them he may provide the kinds of food that people want and are willing to pay a high price for.

Having spoken generally, so far, I now come down to dealing with the animal which, as I said before, is the supplement to the cow in producing food. Farmers seldom understand the hog or they would keep more at their places. It does not pay to import \$2,000,000 worth of pork and export hog feed to other countries. If we would feed the hogs ourselves and sell the bacon we should have the producer's profit and the manufacturer's profit. It does not pay us to buy pork and rob the soil of all kinds of grain to give others the manufacturer's profit.

In feeding hogs the man who feeds them well will succeed with them. You must remember that the hog has a preference for being clean. I have read that in feeding a great many pens, one side of each was kept clean for a week, afterwards the pigs themselves kept that clean for their bed. One week's education did it, and if the hog gets a good chance and a good example he is all right. Every farmer with 100 acres, it is said, ought to feed 20 to 100 hogs. The common way of constructing floors of pens is unsuitable. If the floor slopes backwards from the trough it will be kept wet, that means sickly hogs that do not thrive well; it is better to have the floor slant towards the trough. Twice the profit can be made when the hog lies dry all the while, and, besides, the health of the hogs is much better. Then the feeding trough should have its holding capacity in length and not in depth.

It pays to feed them good clean food; they will thrive and do well on the waste from the table, but it should be kept in a clean tub or barrel and not in one which is never cleaned out in which it becomes fermented and sour and makes bad blood.

Hogs fed on clean food should gain at least 1 lb for every 4½ lbs. of grain used. I quote here from a report of the professor of Dairy husbandry at the Ontario agricultural college.

Dairy men neglect one of the best servants they can have in the animal creation when they do not avail themselves of the hog to aid in making money from the by-products of milk. The attitude of the farmers towards the pig has been an unfriendly one. It is a popular though untrue saying that the only good Indian is the dead Indian, and the farmers seem to cherish a similar belief in regard to the hog. That opinion however is in direct opposition to the best interests of the men who keep cows for the manufacture of dairy products. If the man who keeps 10 cows will fatten 20 hogs in the summer and half as many in the winter, he will find, perhaps to his amazement, that this little branch of business will bring him in more money and profit than he thought could be made from it. Whey is a valuable hog feed. There are nearly seven pounds in every hundred pounds of whey which the hog can use to advantage.

The elements of food value in 100 lbs of whey should produce at least 2 lbs. of live weight in hogs; one hundred lbs. of whey fed in the most judicious manner should produce 2 lbs. of pork; it will not do so, if fed alone, but fed in combination with other foods, it will. Sows like cows should be selected for their profit making powers. A man who

knows that unless he has a good dairy cow he need expect no profit from her, often acts as though he believed that anything that grunts will make money for him out of its feed; but the gruntings are the main part of it with some hogs.

In selecting a sow she should be selected first for her length, then for her depth and then for her breadth, a sow should be made to farrow in March or April and September. A breeding sow should never be fed on decayed food. Waste from the table and kitchen is wholesome food for pigs when it is fed clean and before it becomes decomposed, but a never empty and consequently never clean swill barrel is a menace to the health of the hog and a hindrance to profit. The quarters of a breeding sow should be comfortable in winter. Their sleeping place should be well ventilated and dry.

A boar should be selected for length, breadth and depth, he should have proportionally large bones, for small bones are indicative of a weak constitution and a disposition to lay on lard instead of lean meat; a plentiful supply of hair indicates a strong constitution and a predisposition to lay on flesh.

Young pigs should be suckled for about three months, (1) if they are weaned when five or six weeks old they will not do as well. The sow can nurse them as well as if properly fed, and the pigs will grow and thrive so much the better. Skim milk, butter milk, and bran should form some part of a milking sow's ration. It is profitable to scald or boil her feed, until after the pigs are weaned. The little pigs should always have access to cold water for drinking. In feeding and fattening little pigs they should have the trough room in length not in depth. Many hog troughs seem to have been constructed with the object of affording both accommodation for the pigs, so deep and so wide are they, that pigs take headers right into them. The feed for little pigs should be sweet not sour. In the souring of whey some of the sugar is converted in acid lactic. Acid has no feeding properties. It has a slightly helpful digestive action, so that whey or milk which is sour will do a pig no harm, but part of the food value has been lost. All meal fed with whey had better be a mixture of grains; peas, wheat middlings and bran are suitable.

Hog manure is one of the best fertilisers. In feeding hogs little is taken off the farm, much is left on it of manure value and satisfactory money returns may be realised. In addition to these reasons I believe the hogs of the country are an unrecognised and undeveloped source of wealth for men who endeavor to understand and use them well.

Three times a day is not too often to feed them. The hog does not take any harm from having food before it all the time. It is not like a horse or a cow in that respect.

The total value of bacon, hams and pork imported into Great Britain in 1891 was \$48,868,234. The total value sent from Canada in the year ending 30th June 1891 was 7,530,079 lbs. with a value of \$626,037. Denmark with a population of about 65,000 greater than Ontario sent over 50,000,000 lbs. for which she realized an average of 12 cts. a pound. We realized about 8½ cent, and the bacon from the United States was entered at an average of about 7 cts. a lb. The Danes have learned to cater for their customers and have not believed in trying to sell lard to a man who

wants to eat lean pork. So it will pay us to get leaner and less lardy hogs. The quality that is wanted is lean pork from dairy fed swine. To meet the requirements of the English markets larger numbers of our swine should be sold by our farmers alive. They could then be slaughtered at packing houses where the carcasses could be treated and cured in a uniform, satisfactory manner. As a rule, it pays the farmer and feeder better to sell his swine on foot than to market them as dressed hogs. Canada competed in the English market with the United States which sent to England the largest proportion of the bacon she imports. That realized 7 cts. lbs., and our bacon will sell for a cent to a cent and a quarter higher because our pigs are fed on the by-products of the dairy and mixed cereals, while theirs are fed chiefly on corn. We can increase the profit by reducing the cost through economic fattening and selling the animals before they are too large and too old.

Experiments show that 4½ lbs. of grain will give 1 lb of increase in live weight of swine, and that it is not profitable to fatten swine for any market after the weight of the animal exceeds 200 lbs. alive.

EXPORT HAY.

It is probable that Canadian hay will not meet with immediate acceptance on the English market, as the English, especially the farmers, are notoriously repugnant to anything they are not accustomed to. Canadian hay is chiefly timothy, which the English do not produce much and the taste for which they and their animals would have to acquire. There will probably be found other differences between the methods of cultivation and curing which will act, temporarily, at least, as a hindrance. Necessity is, however, a great destroyer of prejudices. It is a question, too, whether it is good economy to export fodder at almost any price. Hay is not quite so exhaustive to the soil as wheat, but it is very exhausting for all that. It is calculated that every ton of timothy hay takes from the soil nutritive elements, which are comparatively limited in most soils, to an extent that would cost at least five dollars to replace. To export hay at the low prices that have ruled during the last few years means simply to sell both the labor and the productiveness of a farm at about the cost price of one of them. That is a beggaring operation. There are whole districts in the Province of Quebec in which farms have been more or less exhausted without enriching their workers. A well-managed dairy farm could probably be worked forever without impoverishing it appreciably, and to the enrichment of its owner. Fine butter, for which there is always a good demand at fair prices, is among the least exhausting of all products. Butter, said one who has studied the subject, is mostly 'pure sunshine.' Timothy hay, straw and grain taken from the land potash, phosphates and other matters, which are restored to it if the farm is a dairy one and the manure is used upon it, but which are sent away if the grain and hay or straw is sold. Our farmers might restore these elements if they used mineral manures, like nitrates and phosphates and vegetable ones, like wood ashes. But wood ashes are now too scarce and dear, and phosphates are so difficult of reduction and so costly that they also are little used, although Canada is possessed of large tracts of them.

WITNESS.

(1) Two months is enough.—Ed.

SATIN WOOD PIANO.

Another very fine piano is just now exhibited in the windows of Mr. L. E. N. Pratte's waro rooms, No. 1676, Notre-Dame Street. It is a concert upright Grand in figured Satin Wood, natural color.

The beauty of the finish and the figures of this wood are beyond description. It has somewhat the appearance of golden watered silk and it is very scarce. There are only two pianos in this wood and lovers of the beautiful and rare should not miss the opportunity of examining it.

As to the artistic qualities of the instrument, it is only necessary to mention that it has been manufactured by Mr. L. E. N. Pratte, in Montreal, with valuable improvements contained in no other pianos.

MUSIC AT THE CONVENTION.

The Musical Committee of the Christian Endeavour Association have selected a *Dominion Organ*, with two manuals and pedals, from the piano rooms of Mr. L. E. N. Pratte, No. 1676, Notre Dame Street, for the religious meetings in the Drill Shed, in July last. The instrument has rendered good service and was very much admired.

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TO FRUIT GROWERS

The attention of our readers is called to the advertisement of the Blymyer Iron Works Co., of Cincinnati, Ohio, which appears in this issue. Their Zimmerman Evaporators for Fruits and Vegetables have for many years been looked upon as the Standard Machines. Parties in want of Evaporating machinery will do well to write for their catalogue.

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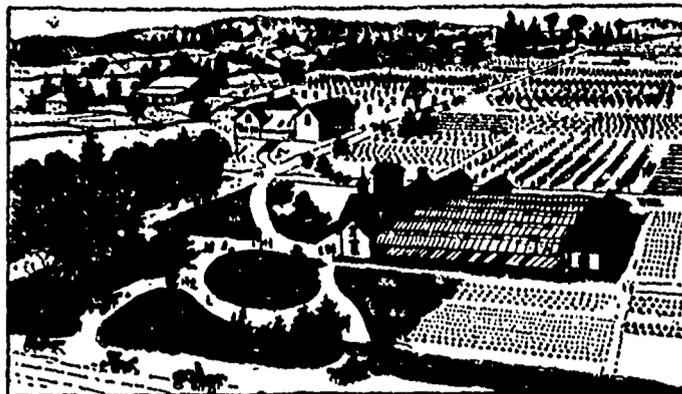
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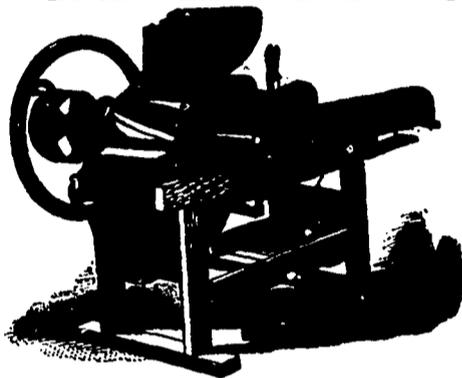
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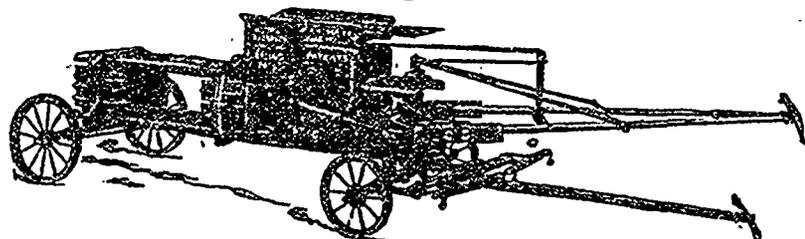
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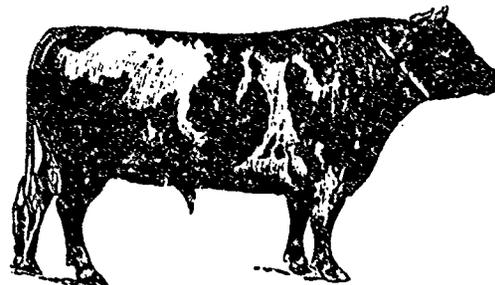
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